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PRESENTATION

Education is a field of knowledge in which different disciplines intertwine to form a greater whole. **From Theory to Practice: A Modern Approach to Educational Sciences – 2 Ed** is a work that expands this interconnection, bringing together 32 articles on various topics, written by experts from different areas of knowledge.

Developed by **Seven Publications**, this book presents a broad overview of the challenges, discoveries and advances in fields such as neurophobia, geosciences museum, rural education and much more.

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NEUROPHOBIA AS AN EDUCATIONALLY MEDIATED PHENOMENON: A CRITICAL REVIEW

NEUROFOBIA COMO UM FENÔMENO MEDIADO EDUCACIONALMENTE: UMA REVISÃO CRÍTICA

LA NEUROFOBIA COMO UN FENÓMENO MEDIADO EDUCATIVAMENTE: UNA REVISIÓN CRÍTICA



<https://doi.org/10.56238/sevened2026.022-001>

Renato Faria da Gama¹, Peterson Gonçalves Teixeira², Crisóstomo Lima do Nascimento³, Camila Castelo Branco Pupe⁴, Leonardo Maciel Moreira⁵

ABSTRACT

Background: Neurophobia, commonly defined as the fear of neurology among medical students and non-specialist physicians, is a persistent and internationally reported problem in medical education. It is often attributed to the intrinsic complexity of neurology, including neuroanatomy, lesion localisation and diagnostic reasoning. However, educational factors such as lack of integration between basic and clinical sciences, fragmented curricula and passive teaching methods have also been consistently identified. This suggests that neurophobia may not be explained by content complexity alone, but also by how neurology is taught and learned.

Methods: This study was designed as a critical review. Literature on neurophobia, neurology education and educational theory was purposefully sampled and reviewed. The aim of the review was not only to summarise the literature but to reinterpret neurophobia through the lens of educational theory and to develop a conceptual framework to explain its emergence and potential mitigation.

Results: The literature suggests that neurophobia is associated with difficulties in knowledge integration, low perceived relevance of neuroscience teaching, passive learning environments, fragmented curricula, high cognitive load and difficulty constructing mental models of neurological function. Educational theories, including meaningful learning theory, adult learning theory, critical pedagogy, curriculum theory, cognitive load theory and analogical learning, provide explanatory frameworks for these difficulties and suggest corresponding educational strategies.

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Discussion: This synthesis suggests that neurophobia is primarily an educationally mediated phenomenon resulting from a misalignment between the cognitive demands of neurology and the educational design through which it is taught. Educational theory provides a framework not only to explain neurophobia but also to guide curriculum design and teaching strategies aimed at improving knowledge integration, motivation, clinical reasoning development and student confidence.

Keywords: Neurology. Education, Medical. Learning. Curriculum. Cognition. Workload. Comprehension. Clinical Reasoning. Review Literature as Topic. Models. Educational.

RESUMO

Introdução: A neurofobia, comumente definida como o medo da neurologia entre estudantes de medicina e médicos não especialistas, é um problema persistente e relatado internacionalmente na educação médica. Frequentemente, é atribuída à complexidade intrínseca da neurologia, incluindo a neuroanatomia, a localização de lesões e o raciocínio diagnóstico. No entanto, fatores educacionais, como a falta de integração entre as ciências básicas e clínicas, currículos fragmentados e métodos de ensino passivos, também têm sido consistentemente identificados. Isso sugere que a neurofobia pode não ser explicada apenas pela complexidade do conteúdo, mas também pela forma como a neurologia é ensinada e aprendida.

Métodos: Este estudo foi concebido como uma revisão crítica. A literatura sobre neurofobia, educação em neurologia e teoria educacional foi selecionada intencionalmente e revisada. O objetivo da revisão não foi apenas resumir a literatura, mas reinterpretar a neurofobia à luz da teoria educacional e desenvolver um arcabouço conceitual para explicar sua emergência e possível mitigação.

Resultados: A literatura sugere que a neurofobia está associada a dificuldades na integração do conhecimento, baixa percepção de relevância do ensino de neurociência, ambientes de aprendizagem passivos, currículos fragmentados, alta carga cognitiva e dificuldade na construção de modelos mentais do funcionamento neurológico. Teorias educacionais, incluindo a teoria da aprendizagem significativa, teoria da aprendizagem de adultos, pedagogia crítica, teoria curricular, teoria da carga cognitiva e aprendizagem analógica, fornecem estruturas explicativas para essas dificuldades e sugerem estratégias educacionais correspondentes.

Discussão: Esta síntese sugere que a neurofobia é principalmente um fenômeno mediado educacionalmente, resultante de um desalinhamento entre as demandas cognitivas da neurologia e o desenho educacional por meio do qual ela é ensinada. A teoria educacional fornece uma estrutura não apenas para explicar a neurofobia, mas também para orientar o desenho curricular e estratégias de ensino voltadas para melhorar a integração do conhecimento, a motivação, o desenvolvimento do raciocínio clínico e a confiança dos estudantes.

Palavras-chave: Neurologia. Educação Médica. Aprendizagem. Currículo. Cognição. Carga de Trabalho. Compreensão. Raciocínio Clínico. Revisão de Literatura Como Assunto. Modelos Educacionais.

RESUMEN

Introducción: La neurofobia, comúnmente definida como el miedo a la neurología entre estudiantes de medicina y médicos no especialistas, es un problema persistente y reportado internacionalmente en la educación médica. A menudo se atribuye a la complejidad intrínseca de la neurología, incluyendo la neuroanatomía, la localización de lesiones y el

razonamiento diagnóstico. Sin embargo, factores educativos como la falta de integración entre las ciencias básicas y clínicas, los currículos fragmentados y los métodos de enseñanza pasivos también han sido identificados de manera consistente. Esto sugiere que la neurofobia puede no explicarse únicamente por la complejidad del contenido, sino también por la forma en que la neurología es enseñada y aprendida.

Métodos: Este estudio fue diseñado como una revisión crítica. La literatura sobre neurofobia, educación en neurología y teoría educativa fue seleccionada intencionalmente y revisada. El objetivo de la revisión no fue solo resumir la literatura, sino reinterpretar la neurofobia desde la perspectiva de la teoría educativa y desarrollar un marco conceptual para explicar su aparición y posible mitigación.

Resultados: La literatura sugiere que la neurofobia está asociada con dificultades en la integración del conocimiento, baja percepción de la relevancia de la enseñanza de la neurociencia, entornos de aprendizaje pasivos, currículos fragmentados, alta carga cognitiva y dificultad para construir modelos mentales del funcionamiento neurológico. Las teorías educativas, incluyendo la teoría del aprendizaje significativo, la teoría del aprendizaje de adultos, la pedagogía crítica, la teoría curricular, la teoría de la carga cognitiva y el aprendizaje analógico, proporcionan marcos explicativos para estas dificultades y sugieren estrategias educativas correspondientes.

Discusión: Esta síntesis sugiere que la neurofobia es principalmente un fenómeno mediado educativamente, resultante de una desalineación entre las demandas cognitivas de la neurología y el diseño educativo mediante el cual se enseña. La teoría educativa proporciona un marco no solo para explicar la neurofobia, sino también para orientar el diseño curricular y las estrategias de enseñanza dirigidas a mejorar la integración del conocimiento, la motivación, el desarrollo del razonamiento clínico y la confianza de los estudiantes.

Palabras clave: Neurología. Educación Médica. Aprendizaje. Currículo. Cognición. Carga de Trabajo. Comprensión. Razonamiento Clínico. Revisión de la Literatura Como Tema. Modelos Educativos.

1 INTRODUCTION

Neurophobia, a term first introduced by Jozefowicz (1), describes the fear of neurology among medical students and physicians and is commonly associated with low confidence in neurological examination, difficulty applying basic neuroscience knowledge to clinical practice and avoidance of the discipline. Since its original description, neurophobia has been reported in multiple countries and educational contexts, suggesting that it represents a persistent and widespread problem in medical education (2, 3).

The causes of neurophobia described in the literature are multifactorial. Students frequently report difficulties related to the complexity of neuroanatomy, challenges in lesion localisation and low confidence in neurological examination. However, many studies also highlight educational factors, including lack of integration between basic neurosciences and clinical neurology, inadequate curriculum structure, ineffective teaching methods and limited opportunities for active learning (4). These findings suggest that neurophobia may not be explained by content complexity alone, but also by how neurology is taught and learned.

Despite the growing literature on neurophobia, most studies focus on describing the phenomenon and identifying associated factors, while fewer studies attempt to interpret neurophobia through an educational theory framework. As a result, neurophobia is often treated as a problem inherent to neurology rather than as a phenomenon that may emerge from the interaction between the cognitive demands of neurology and the educational design through which it is taught.

This distinction is important because neurology is not the only complex domain in medicine. Many areas of medical practice require the integration of basic science knowledge, the construction of mental models of invisible physiological processes and the development of clinical reasoning under conditions of uncertainty. Yet neurology consistently appears as one of the disciplines most frequently associated with anxiety and avoidance among students. This suggests that neurophobia may represent not only a neurology problem but also a broader educational problem related to how complex knowledge is taught in medicine.

Educational theory offers a framework for understanding how students learn complex material, how knowledge is integrated, how motivation influences learning and how curriculum structure shapes learning experiences. However, the extent to which educational theory can explain neurophobia and inform strategies to mitigate it remains insufficiently explored.

This paper therefore does not aim merely to review the literature on neurophobia, but to critically reinterpret neurophobia through the lens of educational theory and to propose a conceptual framework that may help explain why neurophobia emerges and how it may be

mitigated. We argue that neurophobia may be better understood as the result of a misalignment between the cognitive demands of neurology and the educational design through which neurology is taught.

2 METHODS

This study was designed as a critical review with the aim of developing a conceptual framework to explain neurophobia and explore how educational theory may inform strategies to mitigate it. Critical reviews involve a narrative synthesis that brings an interpretative lens to the literature, combining the reviewer's theoretical premise with existing models to allow for the synthesis and interpretation of diverse studies (5). This method is particularly useful when the objective is to generate new theoretical insights and shift conversations in the field rather than merely aggregating data (6).

A purposeful literature search was conducted in major databases (PubMed/MEDLINE, ERIC, Scopus, Web of Science) to identify dominant themes and highly relevant publications addressing neurophobia, neurology education, and educational theories. Search terms included combinations of “neurophobia”, “neurology education”, “learning theory”, “curriculum”, “cognitive load”, and “meaningful learning”. Rather than attempting an exhaustive systematic search, our sampling strategy prioritised works that offered the most influential evidence or theoretical arguments necessary to shape our conceptual understanding of the phenomenon.

Reflexivity Statement

Because critical reviewers must exercise interpretative judgement throughout the process, reflexivity is essential to ensure rigour and transparency (7). Our research team comprises [inserir: ex: a clinical neurologist, a medical education researcher, and a cognitive psychologist]. Recognising that our diverse backgrounds inherently shape our analytical lens, we engaged in regular discussions to challenge our own assumptions. This collaborative reflexivity deliberately moved our focus away from viewing neurophobia purely as a clinical deficit of the learner, guiding us to filter the literature through a pedagogical and systemic lens to identify underlying educational misalignments.

Data analysis was conducted using a thematic and conceptual synthesis approach. First, we identified causes of neurophobia described in the literature and grouped them into thematic categories. Second, we mapped these themes to major educational theories. Third, we conducted a conceptual synthesis to develop a theory-informed framework describing neurophobia as an educationally mediated phenomenon.

3 RESULTS

Neurophobia in the literature

The literature consistently describes neurophobia as a phenomenon characterised by fear of neurology, low confidence in neurological examination, difficulty applying basic neuroscience knowledge to clinical practice and a tendency to avoid the discipline. One of the most frequently cited causes of neurophobia is the difficulty students experience in integrating basic neuroscience knowledge with clinical neurology. This difficulty often manifests as problems with lesion localisation, clinical reasoning and understanding how neurological systems function as integrated networks rather than isolated structures (8).

Other commonly reported causes include the perceived complexity of neuroanatomy, insufficient exposure to neurological patients, lack of confidence in neurological examination and the perception that neurology is abstract and difficult. However, several studies also highlight educational factors, including lack of integration between basic and clinical sciences, fragmented curricula, predominantly lecture-based teaching methods and limited opportunities for active learning.

Taken together, these findings suggest that neurophobia may be associated not only with the intrinsic complexity of neurology but also with how neurological knowledge is structured and taught within medical curricula.

Educational theories relevant to neurophobia

Several educational theories provide frameworks that help explain the learning difficulties described in the neurophobia literature.

Meaningful learning theory suggests that new knowledge is learned more effectively when it is integrated with prior knowledge in a structured and meaningful way. Adult learning theory emphasises that learners are more motivated when they perceive the relevance of what they are learning to real-life problems. Critical pedagogy suggests that passive learning environments may reduce engagement and limit deep understanding. Curriculum theory emphasises the importance of integration and progressive learning. Cognitive load theory suggests that learning may be impaired when the amount of information exceeds the learner's cognitive processing capacity. Analogical learning theory suggests that analogies and conceptual models may help learners understand complex and abstract systems.

Mapping neurophobia through educational theory

We mapped the causes of neurophobia described in the literature to mechanisms described in educational theory. Difficulties in knowledge integration can be interpreted through meaningful learning theory; low motivation through adult learning theory; passive learning environments through critical pedagogy; fragmented curricula through curriculum

theory; excessive information load through cognitive load theory; and difficulty understanding abstract systems through analogical learning theory. This relationship supports the interpretation of neurophobia as a phenomenon influenced by curriculum design, teaching strategies and learning environment rather than by content complexity alone.

Table 1

Mapping causes of neurophobia, educational theories and educational strategies

Cause of neurophobia	Educational theory	Educational strategy
Fragmented knowledge	Meaningful learning	Integration of basic and clinical sciences
Low motivation	Adult learning	Problem-based learning and clinical relevance
Passive learning	Critical pedagogy	Active learning
Fragmented curriculum	Curriculum theory	Spiral curriculum
Cognitive overload	Cognitive load theory	Instructional design
Abstract concepts	Analogical learning	Analogies and conceptual models

4 DISCUSSION

Primary findings and Theoretical implications

This review identified recurring themes in the neurophobia literature, including difficulties in knowledge integration, low perceived relevance of neuroscience teaching, passive learning environments, fragmented curricula, high cognitive load and difficulty constructing mental models. We argue that neurophobia emerges from a misalignment between the cognitive demands of neurology and the educational design through which neurology is taught. Neurology requires integration of knowledge, construction of mental models and development of clinical reasoning under uncertainty (9). When educational design does not support these processes, students may experience cognitive overload, fragmented knowledge, low confidence and reduced motivation.

We therefore propose a theory-informed framework in which neurophobia is understood as the result of misalignment between cognitive demands and educational design.

Equity, Diversity and Inclusion (EDI) Implications

Reconceptualising neurophobia as an educationally mediated phenomenon also raises important questions regarding equity and social justice in medical training, aligning with the growing recognition of how systemic structures impact learners. Rigid, fragmented curricula and passive learning environments do not affect all students equally. High cognitive load and the lack of contextualised learning may disproportionately disadvantage students from non-traditional or marginalised backgrounds, who might already expend cognitive resources navigating exclusionary aspects of the hidden curriculum. By improving

educational architecture to provide better cognitive scaffolding and active engagement, educators can foster a more inclusive learning environment that supports diverse cognitive needs and mitigates systemic alienation.

Practical implications for medical education

This framework has implications beyond neurology. If neurophobia is related to how complex knowledge is taught, then similar phenomena may occur in other areas of medical education involving complex systems and high cognitive load. Educational strategies such as integration between basic and clinical sciences, early clinical exposure, structured approaches to clinical reasoning, and instructional design that manages cognitive load may help reduce neurophobia (10). This perspective also reframes the role of the medical teacher from a mere transmitter of knowledge to an active designer of learning experiences.

Methodological considerations

This review has some limitations inherent to its design. As a critical review, our purposeful sampling strategy was not intended to be an exhaustive or highly reproducible mathematical search of the literature, but rather a representative selection necessary to build a robust theoretical framework. Our selection of educational theories was interpretative and influenced by the specific academic lenses of the research team. Exploring alternative frameworks, such as those strictly focused on organisational psychology or institutional hierarchies, might yield different, yet complementary, interpretations of neurophobia. The main contribution of this review, therefore, lies in its theory-informed synthesis rather than quantitative evidence of specific interventions.

Future directions

This framework generates a testable hypothesis: educational interventions explicitly designed based on educational theory may reduce neurophobia by improving knowledge integration, motivation, clinical reasoning development and student confidence. Future research should investigate theory-informed educational interventions in neurology education and their impact on student learning and attitudes towards neurology.

5 CONCLUSION

Neurophobia has traditionally been interpreted as a consequence of the intrinsic complexity of neurology. This review reconceptualises neurophobia as an educationally mediated phenomenon resulting from misalignment between the cognitive demands of neurology and the educational design of neurology teaching. Educational theory provides a framework not only to explain neurophobia but also to guide the development of educational strategies to mitigate it. Understanding neurophobia through educational theory shifts the

focus from simplifying neurology content to improving the educational architecture through which complex knowledge is taught and learned in medical education.

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HISTORY OF BRAZILIAN EDUCATION: CURRICULUM, PEDAGOGICAL PRACTICES, AND TEACHER-STUDENT RELATIONS IN DISPUTE

HISTÓRIA DA EDUCAÇÃO BRASILEIRA: CURRÍCULO, PRÁTICAS PEDAGÓGICAS E RELAÇÕES PROFESSOR-ALUNO EM DISPUTA

HISTORIA DE LA EDUCACIÓN BRASILEÑA: CURRÍCULO, PRÁCTICAS PEDAGÓGICAS Y RELACIONES PROFESOR-ALUMNO EN DISPUTA



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ABSTRACT

This study presents a historical overview of Brazilian education, analyzing the constitution and transformation of pedagogical paradigms from the colonial period to contemporary configurations, which are still largely marked by the persistence of a traditional perspective and neotechnicism. The main objective of this work was to understand how different conceptions of the human being, within specific historical contexts, have influenced the organization of the curriculum, pedagogical practices, and teacher-student relationships. Grounded in authors such as Dermeval Saviani, Paulo Freire, Abraham Maslow, Carl Rogers, Henri Wallon, and Philippe Ariès, the study examines Brazilian education as a field historically shaped by disputes between different educational projects and conceptions of the subject. Throughout this trajectory, it becomes evident that educational practices have been permeated by tensions between discipline, technical training, humanization, and emancipation, directly impacting the configuration of pedagogical relationships. There is a predominance of Cartesian rationality, and the dimension of affectivity and emotion, although

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present at different moments, has not been established in a continuous or structuring way, being at times relegated in favor of models centered on order and technical rationality, and at others revisited as a relevant element for integral education.

Keywords: History of Brazilian Education. Pedagogical Paradigms. Teacher–Student Relationship. Conceptions of the Subject. Pedagogical Practices.

RESUMO

Este trabalho apresenta um resgate histórico da educação brasileira, analisando a constituição e transformação dos paradigmas pedagógicos desde o período colonial até as configurações contemporâneas marcadas, sobretudo, ainda pela persistência de uma visão tradicional e pelo neotecnismo. O objetivo central do trabalho foi compreender como diferentes concepções de homem, em contextos históricos específicos, influenciaram a organização do currículo, as práticas pedagógicas e as relações entre professor e aluno. Fundamentado em autores como Dermeval Saviani, Paulo Freire, Abraão Maslow, Carl Rogers, Henri Wallon e Philippe Ariès, o estudo analisa a educação brasileira como um campo historicamente constituído por disputas entre diferentes projetos formativos e concepções de sujeito. Ao longo dessa trajetória, evidencia-se que as práticas educativas foram atravessadas por tensões entre disciplinamento, formação técnica, humanização e emancipação, impactando diretamente a configuração das relações pedagógicas. Há um predomínio de uma racionalidade cartesiana, e a dimensão da afetividade e da emoção, embora presente em diferentes momentos, não se estabelece de forma contínua ou estruturante, sendo ora secundarizada em favor de modelos centrados na ordem e na racionalidade técnica, ora retomada como elemento relevante para a formação integral.

Palavras-chave: História da Educação Brasileira. Paradigmas Pedagógicos. Relação Professor-Aluno. Concepções de Sujeito. Práticas Pedagógicas

RESUMEN

Este trabajo presenta un rescate histórico de la educación brasileña, analizando la constitución y transformación de los paradigmas pedagógicos desde el período colonial hasta las configuraciones contemporáneas, aún marcadas en gran medida por la persistencia de una visión tradicional y por el neotecnismo. El objetivo central del trabajo fue comprender cómo diferentes concepciones del ser humano, en contextos históricos específicos, han influido en la organización del currículo, las prácticas pedagógicas y las relaciones entre profesor y alumno. Fundamentado en autores como Dermeval Saviani, Paulo Freire, Abraham Maslow, Carl Rogers, Henri Wallon y Philippe Ariès, el estudio analiza la educación brasileña como un campo históricamente constituido por disputas entre distintos proyectos formativos y concepciones de sujeto. A lo largo de esta trayectoria, se evidencia que las prácticas educativas han estado atravesadas por tensiones entre el disciplinamiento, la formación técnica, la humanización y la emancipación, impactando directamente en la configuración de las relaciones pedagógicas. Se observa un predominio de una racionalidad cartesiana, y la dimensión de la afectividad y la emoción, aunque presente en diferentes momentos, no se establece de forma continua ni estructurante, siendo en ocasiones relegada en favor de modelos centrados en el orden y la racionalidad técnica, y en otras retomada como un elemento relevante para la formación integral.

Palabras clave: Historia de la Educación Brasileña. Paradigmas Pedagógicos. Relación Profesor–Alumno. Concepciones de Sujeto. Prácticas Pedagógicas.

1 INTRODUCTION

Brazilian education, throughout its more than five centuries of existence, has consolidated itself as a complex historical product, deeply influenced by various philosophical currents and conceptions of man that, in each era, determined its directions and practices. This work proposes to carry out a critical rescue of this trajectory, focusing on the paradigms that sustained the teaching action and the teacher-student relationship. More than a simple chronology, it seeks to understand how the school conceived the role of the subjects involved in the teaching-learning process and how different dimensions of the human experience, including affective aspects, were integrated or, sometimes, seconded in this path.

For this investigation, an in-depth analysis of the available literature on the subject was carried out, with the theme that guides this work, aiming to substantiate the concepts that are intended to be discussed. When considering contributions that address the relational dimension of the subject, the thought of Tisatto (2002) stands out, who states: "The person is a being in constant relationship. This relationship is established with oneself and with others, in an attempt to satisfy one's own needs, to mature and to fulfill oneself." Such a perspective allows us to understand that educational processes are not restricted to the cognitive dimension, but also involve broader aspects of the human experience.

At first, our motivation was to verify when and how affectivity and emotion were present in the scenario of Brazilian Education, building a mosaic from its origin, motivated by Wallon's idea when he states that the child should be seen as a complete being (Galvão, 2002), that is, without dissociating any constituent field of his being, among them movement, language and emotion (idem, p. 32), but also not limiting such manifestations to childhood. In adults, these dimensions are also present, influencing their ways of acting, learning and relating, hence the importance of seeing the teacher-student relationship. It is also important to remember the words of Rossini (2002, p. 15), when he highlights that "children must have the opportunity to develop their affectivity [...]", indicating the relevance of considering such aspects in the educational context.

Our assumption is that elements related to the affective and emotional dimension are inevitably present in the school environment, consciously or not, and may affect, to a greater or lesser extent, the teaching and learning processes. However, this study could not take these dimensions as the exclusive axis of analysis, due to the forces that were being mapped and that, continuously, were preventing this affective rationality from having effectiveness, place and driving force for pedagogical actions. Hence we chose to understand them within a broader framework, related to the different conceptions of man and the pedagogical paradigms that have guided Brazilian education over time.

To discuss this broad universe, we sought to solidify the research by rescuing the history of Brazilian education, focusing on the paradigms existing in each era and on how the school conceived the role of the teacher, the student and the relationships between them. Authors such as Dermeval Saviani (2005), Fernando de Azevedo (1953), Simone Paz de Melo (2008), Célio Juvenal Costa (2008), Paulo Freire (2003) and Maria Elisabeth Blanck Miguel (2008) were essential in the construction of the scenario in which education in Brazil has developed over time. When we approach issues such as the teacher-student relationship, considering this process in the light of historicity and the construction of the feeling of childhood as an influencer of teaching action, as well as the presence of subjective dimensions in pedagogical relations, we are guided by the studies of Paulo Freire (2003), Izabel Galvão (2002) and Henri Wallon (2002). Thus, it was possible to solidify important concepts in the understanding of the investigated scenario.

We also resort to the solidity of authors such as Carl Rogers (1972), who deals with the concepts of Person-Centered Learning, Meaningful Learning and Learning Facilitator, and Abraham Maslow (1954), who contributes with his ideas about motivation. As it is a broad research, as it needs to consider historical, cultural and individual subjectivity aspects, it was sought to be based on a vast literature, with the objective of approaching the issues investigated. In the following items, the main theoretical references that support the developed analysis will be presented.

2 CONTEXT AND HISTORY OF EDUCATION IN BRAZIL: THE VARIOUS CONCEPTIONS OF MAN SUSTAINING PEDAGOGICAL PRACTICES

As we seek to reconstruct the path through which Brazilian education has passed over five centuries of existence, it is necessary to remember that it developed as a historical product, influenced by the various philosophical currents and by the various ways of looking at man, which is still present today and determines the current directions of education. In a brief analysis, we can perceive three well-defined trends in the history of Brazilian education: one marked by the Church, another marked by the State and another, the one we still live in today, conditioned by the market.

As we know, according to Saviani (1987 apud Miguel, 2008), over time and as education in Brazil "evolved", it was influenced by the fundamental conceptions of the Philosophy of Education and by their respective paradigms, drastically changing, over time, its way of proceeding (here it refers to the government, society, managers and teachers) and positioning itself in the face of various situations, of the students themselves, of the knowledge, of the techniques and methods, of the teaching-learning process in general, in

addition to the conception of man that was wanted for society. According to the author, these were the trends:

Until 1945: Traditional "humanist" and modern "humanist" tendencies;

From 1945 to 1960: Predominance of the modern "humanist" tendency;

From 1960 to 1968: Crisis of the modern "humanist" tendency and articulation of the technicist tendency;

From 1968 onwards: Predominance of the technicist tendency and the concomitant emergence of criticism of official pedagogy and the educational policy that seeks to implement it (Saviani, 1987, p. 33).

It was these tendencies that, with their different ways of seeing man, influenced the organization of the school system, the constitution of the curriculum and selection of contents, pedagogical practices and teaching and evaluation methods, in addition to guiding the teacher-student relationship and defining the teacher's posture in the face of the actions and reactions of students. as well as their anxieties, fears and emotions. Paradigms are the main focus to be considered at this moment, since it is not possible to understand the teacher's posture towards the student without taking into account which truths this agent guides his teaching action, which has to do with the student, but mainly says about himself, since he determines his praxis and his way of relating to the institution, with the school environment, with the other and with oneself.

It is highlighted here the strong influence of Catholicism still very present today, the great strength of Positivism as a provider of order and progress, the capitalist influence and teaching techniques, and the emergence of a figure on the national scene who would certainly significantly mark pedagogical thinking in Brazil: Paulo Freire. It was he who, even inserted in a modern humanist context, inaugurated a new way of thinking about man and Brazilian education, based on Marxist ideas.

3 IN THE NAME OF THE FATHER: ON THE PATHS OF DISCOVERY, A PROPOSAL FOR EDUCATION FOR THE FAITH

Brazilian education is the result of a historical process and inserted in a nascent and very diverse culture due to the mixture of races and customs present since its origin. Therefore, it can only be understood if it is looked at broadly through social and economic transformations and, mainly, through the changes in paradigms in relation to man himself. The period of the "discovery" of Brazil was marked by major ideological and philosophical changes in humanity. The world was opening up to the world, cultural and thought transformations, including contestations to the Church, were the seeds that gave rise to the ideal of freedom and capitalist force began to seduce many. Hence the importance of

perceiving the historical trajectory in which the Portuguese colony and the first educational initiatives were inserted, going through the historical sequence that leads to what is lived today as a school reality, starting from the idea that "every individual is not only the synthesis of existing relationships, but also of the history of these relationships, that is, the summary of the entire past" (Gramsci, 1995, p. 40) needs to be considered in order to understand the present reality.

For a long period, the history of education in Brazil was intrinsically linked to Portugal, so that "from 1549 until around 1800 any attempt to make an autonomous and independent history of Brazilian education runs the risk of being too partial, because, in fact, to speak of Brazil in this period is to speak of Portugal, even because Brazil was Portugal" (Costa, 2008, p. 6). Although Portugal took possession of Brazilian lands in 1500, it was only in 1549 that the government of Portugal decided to make Brazil an effective part of the Portuguese Empire, even though there was already a significant population of Portuguese, explorers or expelled from Portugal to serve time in the distant land, starting to think of strategies that, at the same time, they protected the great colony from invading peoples and disseminated the Catholic faith.

Costa (2008) is clear on this subject, stating that only after 1549 did Brazil become an effective part of the Portuguese Empire, because with the political decision to establish a Governor-General, that is, a centralized and centralizing power, Brazil opened up as a territory to be colonized with another type of planning. It is no coincidence that it was only in 1549, together with Tomé de Souza, that the priests of the Society of Jesus came to Brazil with the task of being missionary subjects, taking care of the whites and evangelizing the gentiles (2008, p. 6). Despite the social, cultural, economic and political changes taking hold in sixteenth-century Europe, in the Iberian Peninsula things seemed rooted in the medieval past. Both Spain and Portugal (the latter mainly) reaffirmed their adherence to the Catholic Church, its principles and the fight against the Protestant advance. It is possible to see that, "since the territorial reconquest from the Moors, consolidated in the mid-fifteenth century, who had soon thrown the Portuguese into the seas in search of survival, Portugal had been increasingly isolated from the European, Renaissance and Enlightenment movement. This was a movement basically marked by the denial of the medieval world, in the name of the defense of individuality and freedom, as befitted the new mode of production that was being constituted, capitalism" (Xavier, 1994, p. 46).

In fact, as Silvia and Hespanha (1993) tell us, Portugal was much more inserted in the Catholic reality than in the European reality itself. They were mainly Catholics, so that they considered themselves more so than Europeans. The ideals of the Church were confused

with those of Portugal and the latter declared himself to be an authentic defender of the dogmas and truths expounded by the Church. It is not surprising that, without ceasing to be Portuguese, they were so in a much less clear and one-dimensional way than we suppose today, if we consider the paradigms of national distinction established since the nineteenth century. known as Jesuits or Knights of Christ, a group of erudite men trained in letters to combat the Protestant Reformation.

Considering that "evangelization was an inherent part of that context, since it was the task of the king – a task that was natural, regardless of any legal attribute – to bring true religion to those who did not have it. Along with the sword was the cross!" (Costa, 2008, p. 8). It should also be understood that the Portuguese Crown was not so naïve. His adherence to the Catholic faith, and consequently the handing over of the education of the court and the colonies to the Jesuits, was a guarantee of maintaining monarchical power, since the Church was opposed to the nascent ideals of struggle for freedom, insubordination and change of truths that had been unique until then. This is how the Jesuits landed in Brazil, inaugurating the first systematized educational initiative seen in these lands. They carried with them a task officially defined by the Portuguese Regiments. They would have to catechize and instruct the Indians, as well as the population that already inhabited these lands of their own free will or by force of the Crown, in the decades that had passed since the discovery.

The educational task of the pioneers of the Society of Jesus was basically to acculturate and convert "ignorant" and "naïve", like the natives, and to create a civilized and religious atmosphere for the exiles and adventurers who came here. This constituted an undertaking that required a lot of creativity with regard to the methods of action, considering the heterogeneity of the clientele they had before them (Xavier, 1994, p. 41).

Thus it is clearly perceived that the presence of the Jesuits was a sure guarantee that order would be maintained and that the king's words would find an echo in the distant land. Here is the real reason for the first educational initiative in Brazilian lands. The interests of the crown and the Church were what motivated any educational act, after all, it was necessary to combat the threat brought by the Protestants and by a group of intellectuals who contested the practices and domination of the Church.

Upon arriving in the colony, one of the first initiatives of the Jesuits was the establishment of schools, using incentives and subsidies from the Portuguese crown. This situation was consolidated with the statute of the "redizima" instituted in 1564 (Mattos, 1958) through which a tenth of the revenue obtained by the Portuguese crown in the colony was destined to the maintenance of the Jesuit colleges. This fact was prominent for the Society

of Jesus to maintain a certain fear of contradicting Portuguese orders or ideals, since the mission for which it was created, evangelizing and combating the Protestant advance, at least in Brazilian lands, depended directly on the financing of the Portuguese Crown. It was, therefore, under these conditions that "Catholic pedagogy was installed in the country, first in the version of the Nóbrega Plan, which I would call "Brazilian pedagogy", as it sought to adapt to the conditions of the colony, and later, in the version of the "*Ratio Studiorum*", whose canons were adopted by Jesuit schools throughout the world. Thus, throughout the first two centuries, from 1549 to 1759, the date of the expulsion of the Jesuits, Christian pedagogy, of Catholic orientation, enjoyed an indisputable hegemony in Brazilian education" (Saviani, 2005, p. 4).

Concerned with reaching the existing population in Brazil (Indians and white adventurers, explorers and deportees), the Jesuits sought to know the reality of those who lived here, developing means and methods to achieve the existing diversity. Anchieta, an anthological figure in Brazilian history, was known for his Tupi grammar and his theatrical plays that aimed to transmit teachings to the natives and whites of the great colony. But what really cannot go unnoticed in all this is the conception of man that predominated in the practice of the educators (Jesuits) of the Brazilian colonial period. It was she who, at this time (as it is in any era) who directed the course of national education. Thus, "as a result of the conception of the world and of man, the principles of authority and discipline were prioritized in education. The formalism present in the literary contents selected from the classics, the disciplines that made up the *trivium* and *quadrivium* (a study plan for the colleges that replaced Nóbrega's study plan), the emphasis on literary and academic activities, the rhetorical teaching system, mnemonic and that lacked meaning for the learners, characterized the formal aspect of education" (Miguel, 2008).

It was necessary to form a man who would serve the interests of the Church and the Counter-Reformation. A man firm in his faith, a practitioner of religious precepts, a defender of the Church and a believer in dogmas. It was this expectation, based on a vision of man who should be at the service of faith, in which daily life was not dissociated from religious life, that determined the attitude and practices of the educators of that period: the Jesuits. Through a propaedeutic teaching and whose subjects revolved around the religious sphere, the Jesuits turned their attention to the indigenous people and sought to convert them to the Catholic faith, thus increasing the flock. This happened in contrast to the contempt for blacks, who were considered descendants of Ham¹⁰, and due to their polytheistic religious practices,

¹⁰ In the biblical narrative, Ham (or Ham) was one of the three sons of Noah, a survivor of the Flood. According to a certain theological reading, he was considered the ancestor of several African peoples and the region of Canaan. He was cursed, according to the biblical narrative, for having seen the nakedness of his drunken father

were ontologically and culturally inferior, legitimizing their enslavement. The indigenous people, in turn, were seen as naïve, silly beings, even if, at first, the doubt arose whether they had a soul or not.

4 FROM ANGELS TO DEMONS: THE JESUITS EXPELLED BY POMBAL – PERSONAL INTERESTS AND IDEOLOGIES

If at first the pedagogy proposed by the Jesuits, called by Saviani (2005) as Brazilian pedagogy, was adapted to the conditions existing in the colony and to its reality, translating itself as an extension of royal power, it would not take long for the Renaissance thought of the Jesuits to appear in the midst of such a situation. Despite the belief that, as the vanguard of the Counter-Reformation, the Soldiers of Christ would turn their backs on modernity and rekindle the flame of the ideals of the Middle Ages, this was not quite what happened. They wished to defend Catholic hegemony, but, according to Cesca (1996), at the same time they reformulated scholasticism as they absorbed the elements of their time, especially issues related to free will, which arose from Renaissance ideas and elaborated by the main Jesuit theologian Francisco Suárez.

It was in the *"Ratio Studiorum"* that perhaps the clearest expression of this effort was found, translated into the pedagogical practice of the Jesuits, as stated by Durkheim (1995), for whom, at the same time, the Fathers of the Society of Jesus could make use of the classics of antiquity and promote Catholic Christian instruction, instead of modern literature full of anti-Catholicism. and to appropriate the ideas of "active pedagogy", which constituted a true revolution. Thus, Saviani will affirm that Durkheim's ideas raise the image of the Jesuits, "placing them in the line of overcoming medieval educational practices towards modern pedagogy. In fact, the emergence of the individual associated with the idea of free will is typical of modern times, which leads to the understanding that man in general and, consequently, also the Christian man must be active, that is: he needs to translate the faith he professes into actions, and it is not enough for him to meditate and pray" (Saviani, 2005, p. 7).

Even though the *"Ratio Studiorum"* version was known today as Traditional Pedagogy, it represented drastic changes in the nineteenth-century view of man. According to Saviani (2005), it brought the idea of man as constituted by "a universal and immutable essence and it would be up to education to bring each student closer to the universal essence that would be the ideal to be achieved by each human being. But this ideal should be achieved by the

and reporting the fact to his brothers, Shem and Japheth. Hence all his descendants are also cursed, justifying black slavery.

individual commitment of each man." Certainly, with the passage of time, it was perceived by the Portuguese Court of the time that the Jesuit posture, inspired by the Renaissance, no longer fit within the ideals expected by the Crown. In addition, they were clearly opposed to the possible enslavement of the Indians by the rich sugar plantation farmers.

Despite having set up a significant educational scheme, yet primarily linked to the interests of the dominant white elite, the Jesuits were accused of being "culturally backward, economically powerful, and politically ambitious. According to Pombal, its permanence would put the new recovery projects at risk. Despite this, Metropolis and Colonia did not break with the Catholic Church" (Xavier, 1994, p. 53). The Jesuits were expelled from Brazil and the era of Pombaline reforms was inaugurated. Despite so many arguments, Carvalho (1980) considered that the real motivation for the expulsion of the Jesuits was even linked to their position in relation to the royal authority.

Marquis of Pombal, the Portuguese prime minister, who according to Romanelli (1978) had a line of thought closely linked to encyclopedism that was avowedly anticlerical, proposed a series of changes opposing the dominance of religious ideas, proposing secular education as an alternative for educational advancement. According to Costa (2008, p. 3), the Enlightenment influence suffered by the Marquis of Pombal came to prevail in historiography or, at least, in part of it. From this it is easy to understand his attitude towards the Jesuits, since the Enlightenment elected as mortal enemies the Catholic Church and the nobility, the two pillars that supported medieval society.

This Enlightenment mentality of Pombal is not without a certain interest. So much so that he did not want to "have anything to do with the French Enlightenment, because it contained elements capable of endangering authority in general and royal authority in particular. Rousseau and Voltaire continued to be forbidden in the new order" (Carvalho, 1980, p. 53). Although the Pombaline reforms were inspired by the Enlightenment and the influence of rationalist humanist pedagogy, it should be considered that the Portuguese Court was still governed by the statute of patronage, which made it closely linked to the Catholic Church. Thus, despite the expulsion of the Jesuits, other religious orders were entrusted with the schooling process, ensuring a religious climate, equally Catholic.

The Marquis of Pombal introduced the system of "royal classes", which consisted of single classes taught by a professor appointed and paid for by the Portuguese Court. However, those who were prepared to perform such a function ended up abandoning them due to low salaries. It is no wonder that school life after the expulsion of the Jesuits is considered by many authors as a period of complete abandonment and great regression. However, once again it seems that the Portuguese nobles were not very concerned with the

Brazilian reality. For Xavier, "while in Portugal this was part of a project of cultural reconstruction and ended up leading to the creation of a public education system, more modern and more popular, among us it was the pure and simple suppression of the system that existed. No cultural reform, no educational reform; it seems that Brazilian society had more to worry about and occupy itself with" (1994, p. 49).

Numerous difficulties arose with the expulsion of the Jesuits. According to Romanelli (1978), thirteen years passed until the first steps were taken to replace the teachers and, consequently, the Jesuit model. In addition, with the expulsion, an entire administrative and teaching structure was suppressed. The uniformity of pedagogical action and the perfect transition from one level of education to another had been replaced by a diversity of isolated disciplines and laymen began to exercise the positions of educators. It continued under the yoke of the ideas of the ruling elite. The rich sent their children to Europe, while the poor... They had nothing to complain about, at least that was what the upper classes of society thought, after all, why would they need to know how to read and write? The school was made for the wealthy. It had always been exclusionary, focused on the ideals of Portuguese society. Still based on Catholic rules and focused on the cultural and patriarchal reality of Lusitanian society, the school carried an ideal of man that sustains the stratification of society and the maintenance of the power of the elites.

The search for improvements in the school during the colonial period, and the interest in new methods and different ways of looking at the human person, would only be present if, in some way, it went against the interests of the nobles, the rich farmers or the great merchants. In order to understand the molds of the school during the Pombaline reforms, we will resort to what Saviani said when talking about the method called Mutual Teaching, also called monitorial or Lancasterian, which emerged in England to meet the demands of the growing demand for elementary public education due to the growing wave of industrialization, and which consisted of appointing the most skillful and prominent students as monitors to accompany the other students. According to the author, "the method presupposed predetermined rules, strict discipline and the hierarchical distribution of students seated on benches arranged in a single and very large hall: "the teacher, at the end of the room, seated in a high chair, supervised the entire school, specifically the monitors" (Vilela, 1999, p. 147). In short, the method implied "a continuous system of evaluation of the student's performance and behavior" (Idem, p. 148), making competition an active principle of the school's functioning. "The old didactic procedures with their sequence of syllabus and spelling" (Manacorda, 1989, p. 259), remain untouched. "With the exception of the 'low voice', nothing has changed. Equally mechanical is the teaching of arithmetic and, of course, all the guidance

for children's behavior" (Idem, p. 260). Once again, education is at the service of dominant ideologies, seeking to form a man who meets the needs of the society in question.

We see the birth of a model of classroom organization during the colonial period, still present today, and defended by numerous educators. In addition, it is clear that in this period the master exercised a supervisory and dominant function, the mechanical way of learning and the students had to present an impeccable conduct, since their behavior would be continuously evaluated, very similar to what the Jesuits proposed, who based their teachings on the moral rules assumed by the Church.

Only in the second half of the nineteenth century, the mutual method was progressively replaced. This is when the intuitive method comes into play, which brought as an innovation the production of didactic materials, including parietal blackboards; boxes for teaching colors and shapes; pictures of the plant kingdom, engravings, wooden objects, color charts for primary education; Maps, rims, diagrams... (Saviani, 2005). At this juncture, a different concern emerges from those that existed until then. For the first time, he was concerned with how to teach, which brings us to the idea that it was important to learn and learn well. That is why what was in question was the teaching method, which was understood as a safe orientation in the conduct of students. According to Reis Filho (1995 apud Saviani, 2005, p. 9) in the intuitive method, "teaching must start from a sensitive perception. The principle of intuition requires the provision of sensitive data to the student's observation and perception. All the processes of illustration with objects, animals or their figures are then developed". This pedagogical model remained active in Brazil until the mid-1920s, covering the entire imperial period, marked by the arrival of the Royal Family and the Portuguese Court here, even with all the transformations that came with this change.

During the imperial period, with the promulgation of the decree of October 15, 1827, the guarantee of primary education to all citizens of the Empire was resumed. However, according to Xavier, "in the process of drafting this historic decree, there is a greater concern with the sophistication of this level of education than with its extension to all citizens. On the other hand, there is an inexplicable carelessness in its promulgation with regard to the guarantees of effective compliance with the law" (1994, p. 61). Thus, despite the responsibility of the state with regard to education, it is certain that during the Imperial period, primary education and elementary instruction continued under the responsibility of wealthy families, who did not give up quality education based on doctrinal principles that associated wealth and instruction, also in the so-called Realist Pedagogy, in force in industrialized countries. Despite numerous efforts, Rui Barbosa saw his ideas distorted in the name of the ideology that dominated his time. In this way, "the liberals of the "redemptive" school,

promoter of individual and social progress, mobile of economic development, ended up translating into the narrow defense of the expansion of the traditional system, which produced dominant elites. Educational proposals, such as those contained in the rapid Opinions of Rui Barbosa, which linked school and work, progress and democracy, sounded like mere rhetoric and had little influence on imperial society" (Xavier, 1990, p. 61).

Rui Barbosa, according to Xavier (1994), would also contribute, with one of his ideas, even if this was not his objective, to the dissemination of a myth in common sense, and which would be used by the dominant class to strengthen its influence among those of less privileged social class. According to the author, "it was the myth that the cause of the country's backwardness and social misery was basically to be found in ignorance, reproduced by the absence or precariousness of popular education" (Xavier, 1994, p. 98).

Based on this principle, and since several political positions in this period of the Empire were chosen by vote, Rui Barbosa would preach that the restriction of the vote of the illiterate would result in pressure on the public power that would strive to disseminate education, since it would be interested in having voters. But this was nothing more than an illusion. In fact, the action had the opposite effect. Once again, Xavier (1994) will tell us that this argument had been taken by the elite to disseminate prejudice and social discrimination against the illiterate. For the first time in Brazil, illiteracy became synonymous with incompetence and incapacity. But Rui Barbosa's ideals would serve as a foundation for strong future discussions. Although his ideas did not result in significant practical measures, they would certainly infect the thinking of the century to come. He disseminated among the population "the modern pedagogical principles, based on experience and action, which in a few decades would find their national version in the New School movement" (Xavier, 1994, p. 99). The Republican Revolution arrives and with it numerous transformations in Brazilian society.

5 ORDER AND PROGRESS: THE REPUBLIC AND THE POSITIVIST INFLUENCE

Benjamin Constant, Prime Minister of Education, Posts and Telegraphs of the new political order, the Republic, was the purposeful agent of these transformations in Brazilian education. His proposal reconciled the trend that had already manifested itself during the Empire and that had lasted until the Republic: the humanism of letters with a positivist Enlightenment encyclopedism. According to Comte, only "positive philosophy can be considered the only solid basis for social reorganization, which must end the state of crisis in which the most civilized nations have found themselves for so long" (2000, p. 39).

At this time, Comte's pretensions to establish a universal truth broke the boundaries of France, his country of origin, and even Europe, so that "the ideological political amalgam

of the positivist religion had taken root in Latin America: in Brazil, Chile, Mexico. The Brazilian revolution of 1889 was the work of the positivist sects: since then the Brazilian flag has had the motto Order and Progress. Benjamin Constant, the Minister of Public Instruction at that time, reformed education according to Comte's points of view" (Verdenal, 1974, apud Andrey, 2001, p. 375). Some reforms in education, especially in secondary education, were proposed from then on. Influenced by the Enlightenment and now also by Positivism, the school began to adopt the study of the sciences (along the lines of Auguste Comte's proposal). In these studies, notions of Sociology, Morals, Law, Political Economy, as well as traditional disciplines were addressed.

From then on, the influence of philosophy, science and positive religion, facets of the same ideology, in Brazilian education was notorious. Severiano (1990) states that "the secular liberal ideology, which was affirming itself and gained presence in Brazilian education, especially from the Republic onwards, has its theoretical roots in the Enlightenment and Positivism of previous centuries. These two philosophical orientations arrived in Brazil to the extent that they influenced Brazilian scholars who went to study in Europe and who disseminated their ideals here" (1990, p. 80).

Positivism is a theoretical line of sociology, created by the Frenchman Auguste Comte (1798-1857), who sought to extreme the primacy of reason, breaking with theology and metaphysics. According to Henry Myers (1966), "Positivism is the view that serious scientific inquiry should not look for ultimate causes that derive from some external source, but rather confine itself to the study of existing relationships between facts that are directly accessible by observation". In other words, the positivists abandoned the search for the explanation of external phenomena, such as the creation of man, for example, to seek to explain more practical and present things in man's life, as in the case of laws, social relations and ethics. For Comte, the positivist method consists of the observation of phenomena, subordinating imagination to observation. The founder of the line of thought synthesized his ideal in seven words: real, useful, certain, precise, relative, organic and sympathetic. Comte was concerned with trying to elaborate a system of values adapted to the reality that the world was experiencing at the time of the Industrial Revolution, valuing the human being, peace and universal harmony. Positivism had strong influences in Brazil, having as its maximum representation, the use of the positivist phrase "Order and Progress", extracted from the maximum formula of Positivism: "Love as a principle, order as a basis, progress as an end", in the middle of the Brazilian flag. The phrase tries to convey the image that everything in its proper place would lead to the perfect ethical orientation of social life. Although positivism has been widely accepted in Europe and also in Brazil, and still figures as the basis of modern

sociological thought, Comte's ideas have been harshly criticized by the Marxist sociological and philosophical tradition, especially the Frankfurt School.

But what, in fact, did Positivism propose? What influences did he bring to Brazilian education? Positivism clearly brought a proposal for the establishment of truth and a universal truth. It was intended as the only means to arrive at this immutable truth, in order to establish clear means for it to be obtained. One of these means was order. "For the new philosophy, order is constantly the fundamental condition of progress and, conversely, progress becomes the necessary goal of order; as in the animal mechanism, balance and progression are mutually indispensable, as a foundation or destination" (Comte, apud Andrey, 2001, p. 379).

Translated into the school, this order was the purest representation of discipline, of compliance with schedules, of the well-defined curricular proposal and of the fixation on the school's objectives, at least in this conception: to apprehend the knowledge accumulated by society so that one can arrive at the positive truth. In this context, there are deep arguments for sustaining postures in which the Teacher is the one who sets the limits and order, the manifestations of spontaneity come to be seen as subversive and inappropriate for learning, the chairs need to be properly placed in rows in order to promote order and the establishment of a proper rhythm for teaching and learning.

Starting from the idea that, "for Comte, any insubordination to power corrupts a pre-established order (...)" (Andrey, 2001, p. 390) it is easy to understand why the discipline was so worshipped in the period of influence of Positivism in Brazil (and still today), since without order there is no progress in any form, including education, and this order was obtained through disciplinary rules. Also according to the Positivist purposes, it was not possible to have school manifestations of change or that intended to modify the established order. For Comte, everything was in place and what had been put forward could not be changed since it constituted the purest and clearest truth. Thus, "since Comte supposes that society depends on and needs order to progress, he supposes, as a consequence, that it also depends on strong and permanent institutions, it depends on the existence of different social groups and on a peaceful and harmonious coexistence among them" (Andrey, 2001, p. 390).

In this way, the school would also need to be a strong institution, with clear rules and severe punishments for those who went against the established norms and the current limits. Otherwise, there would be no progress or learning, and his primary objective was to teach reading, writing, and counting. Thus, the "modernization" of Brazilian education during the First Republic was made "by the introduction of the Positive Sciences in a serial and, more than ever, propaedeutic secondary curriculum" (Xavier, 1994, p. 111). Which, for some thinkers, such as Azevedo (1953), did not represent a real modernization, or at least did not

constitute a full reality, since "from the cultural and pedagogical point of view, it did not succeed: it was a revolution that aborted and that, being content with the change of regime, did not have the thought or the decision to carry out an intellectual renewal of the cultural and political elites, necessary for the new democratic institutions" (1953, p. 134).

The school was in the midst of the political changes of the Republic, promoted by the elite, which implies the maintenance of the dominant power; the strong religious culture, rooted in everyday life, arising from Portuguese colonization, the Enlightenment ideals of freedom and rupture with the Church, and the Positivist practices and philosophy, both defenders of freedom of education and the radical break with Catholic "domination". A scenario that is at least complex and difficult in terms of clear postures of action and vision of men. Thus, the teacher's posture towards the student and the relationships established between them were guided sometimes by moralistic Catholic ideals, sometimes by positivist ideals contrary to the spontaneity that was associated with indiscipline, and the student's protagonism. Thus, it is not difficult to conjecture that these relationships were based on the image of the teacher who should speak and be heard and the student who should listen and comply with the established orders, in a relationship of domination of the teacher over the students as a means of making these "citizens" for a positive society.

6 AND BEHOLD, EVERYTHING IS INTENDED NEW: THE EDUCATIONAL REVOLUTION OF THE 30S AND NEW SCHOOLISM

It was only during the 1930s that significant proposals for change in relation to the attitude towards teaching and learning, an indication of a paradigm shift towards the student and the practice itself, emerged in the national context. This movement became known as the Movement of the Pioneers of the New School, or simply Escolanovismo, already mentioned above. Strongly developed in Europe, it consisted of a movement of educational transformation, arriving in America and Brazil during the first half of the twentieth century.

In America, the great exponent of this movement was the philosopher and pedagogue John Dewey (1859-1952), an American who influenced the Brazilian elite with his ideas. Dewey was a strong critic of traditional pedagogy and the application of the Taylorist and Fordist models to the educational context. He stated that "the traditional school is organized to allow the practice of certain mechanical skills and certain ideas, without considering the practice of other desirable moral and emotional traits in a personality. How to learn, in fact, honesty, kindness, tolerance, in the regime of 'lessons' scheduled for the next day? Only a real life situation, in which one has to exercise a certain character trait, can lead to its practice

and, therefore, to its learning. Hence it is necessary for the school to offer a living social environment, whose situations are as real as those outside the school" (Dewey, 1965, p. 34).

In the midst of this new way of thinking, in Brazil in the thirties, during the provisional government of Getúlio Vargas, he handed over to a group of intellectuals the pedagogical imperative that was now claimed by the revolution. Thus, these intellectuals, infected by Dewey and Durkheim's sociology (which was based on positivism), got together and promulgated, in 1932, a manifesto containing the main ideas of what would come to be known in Brazil as *Escolanovismo*. It was the *Manifesto of the Pioneers of New Education*. Among them we find Fernando de Azevedo, and great humanists such as Lourenço Filho and Anísio Teixeira.

The new school brought great innovations in the way of seeing education and elected a new look at it: the student. It is good to remember that that traditional logic would be replaced by another in which it was not enough to teach, but what mattered was learning. Thus, it would be essential to look at what would attract the student, his interests and his potentialities. Thus,

In this new conception of the school, which is a reaction against the exclusively passive, intellectualistic and verbalist tendencies of the traditional school, the activity that is at the basis of all its work is the spontaneous, joyful and fruitful activity, directed to the satisfaction of the needs of the individual himself. In true functional education, therefore, the problem must always be present, as an essential element inherent in its very nature, not only of the correspondence between the levels of education and the stages of intellectual evolution fixed on the basis of interests, but also of the adaptation of educational activity to the psychobiological needs of the moment. What distinguishes the new school from the traditional school is not, in fact, the predominance of manual and bodily work, but the presence, in all its activities, of the psychobiological factor of interest, which is the first condition of a spontaneous activity and the constant stimulus to the student (child, adolescent or young person) to seek all the resources at his disposal. 'thanks to the force of attraction of deeply felt needs'. It is true that, by moving the source of inspiration for school activities to the child and his interests, mobile and transitory, in this way, the order that the traditional programs presented, from the point of view of the formal logic of adults, is broken in order to bring them into accordance with the 'psychological logic', that is, with the logic that is based on the nature and functioning of the child's spirit (*Manifesto of the Pioneers of New Education*, 2006, p. 196).

The elements defended by the new school were the individual right of each citizen to his or her integral education, offered free of charge by the state in its various degrees and manifestations, the secularity of education as a means of social freedom in which the school would be above religious beliefs and disputes, in addition to the consideration of the natural aptitudes of students, the incorporation of teaching studies into the university and the equivalence of masters and teachers with regard to their salaries and workload. All this

pedagogical practice that emerged from escolanovismo, called "renewed pedagogy", brought great discussions to the field of education, since it also saw the individual as a free, active and social being. Bringing a humanistic character, the new school is intended as a new way of looking at the human person different from that adopted by the traditional school.

But, according to Quintana (1988, apud Melo, 2008) it is also in this context of discourse on the social that we perceive the great influence of Durkheim's positivist sociology, which aims to adapt the individual to society and aims at the incorporation of social structures and circumstances by individuals. Thus, although the proposals of escolanovismo were opposite to what had been experienced in Brazilian education since the reforms of Benjamin Constant, the Positivist influence continued to be active and strongly conditioning pedagogical practices. Thus, the existing relationships in the classroom (teacher-student), despite being influenced by humanism and discussions about the need for the school to be a place of encounter between people, continued to be influenced by the positivist paradigm of order and disciplinarization. Attempts to consider the student as the center of the educational process and to rethink the teaching posture were quickly stifled by the technicist paradigm, which used positivism and capitalist ideas to redirect the pedagogical proposal of schools. But we will talk about that later.

7 HUMANIST CONTRIBUTIONS TO EDUCATION: ROGERS AND MASLOW IN THE PERSPECTIVE OF AFFECTIVITY

With the scenario brought by escolanovismo, man's frustration with man himself after the recklessness that occurred in the Second World War and the search for a new understanding of man, the perspectives of Carl Rogers and Abraham Maslow, exponents of humanistic psychology that offer a significant counterpoint to merely instrumentalizing understandings, proposing the centrality of the subject and his emotional needs in learning, arrive in Brazil. These conceptions did not necessarily configure official public policies, nor were they carried out by educators who still maintained themselves under traditional teaching perspectives, but they would come back to the fore in the scenario brought, in the future, by the citizen constitution of 1988, composing, along with other theories, the different scenario of the educational conceptions of this period.

Carl Rogers (1902-1987), an American psychologist and one of the founders of the Person-Centered Approach (PCA), extended his therapeutic principles to the field of education, proposing a pedagogy that values the student's autonomy, experience, and potential for self-realization (Rogers, 1972). For Rogers, the most meaningful learning is that

which is self-initiated, pervasive, and evaluated by the learner himself, involving both the intellect and the feelings (Rogers, 1983).

Person-Centered Learning inverts the traditional logic of teaching, shifting the focus from the teacher to the student. The educator is no longer the exclusive holder of knowledge, but a facilitator of learning, whose function is to create a psychological climate of security and freedom. The essential attitudes of the facilitator teacher, according to Rogers, include authenticity (congruence), positive unconditional acceptance (respect), and empathetic understanding (Nogueira, [n.d.]). These attitudes are crucial for the development of affectivity in the classroom, as they promote an environment where the student feels safe to express their emotions, explore their ideas, and build their own knowledge.

From this perspective, affectivity is not a mere accessory, but an intrinsic and essential component of learning. When students feel accepted, understood, and valued, their intrinsic motivation to learn increases, and they engage more deeply and meaningfully. Rogers' view of man is that of a being with an innate tendency to self-actualization, who seeks to grow and develop his maximum potential. Education, therefore, must be a process that supports this natural tendency, allowing the individual to become a fully functional person, capable of integrating their cognitive and emotional experiences.

The application of Abraham Maslow's theory to education reveals significant implications for the understanding of learning processes. A student whose physiological needs (such as food and rest) or security (stable school environment free of threats) are not minimally met tends to have difficulties in concentrating and engaging in school activities. In the same way, the satisfaction of the needs of belonging, expressed in interpersonal relationships and in the feeling of integration into the group, and of esteem, linked to recognition and self-confidence, is a relevant condition for emotional balance and for active participation in the educational process (Maslow, 1954; Libâneo, 2013; Charlot, 2000).

Affectivity, in this context, acts as a facilitator of motivation. A school environment that promotes welcoming, respect and recognition of students' emotions contributes to the satisfaction of social needs and esteem, freeing up energy for the search for self-realization and learning. Maslow's vision of man is that of a being in constant search for growth and fulfillment, driven by a hierarchy of needs that, when satisfied, lead to self-realization. Education, by considering and meeting these needs, becomes a path for the integral

development of the individual, where emotion and motivation are inseparable elements of the process of knowledge construction.

8 MAN IN HIS COMPLETENESS IS A TRANSFORMER OF REALITY: A DEMOCRATIC AND EMANCIPATORY EDUCATION IN THE IDEAS OF PAULO FREIRE

Here, we open a parenthesis to consider a very important figure in the national context and who had his pedagogical posture influenced by the humanist ideals, disseminated in Brazil by the Pioneers of the New School, and by the struggle to make the school a means of liberation of men for the full exercise of citizenship. His posture and his ideas, as we will see below, were not only important for Brazil, but for the whole world that was able to think of a new way of doing school and the new possibilities for the relationship between teachers and students.

The end of the 50s and the beginning of the 60s was marked by intense changes in the world context. Women were fighting for a place in the labor market, the sexual revolution was in full swing, the pill had given families another direction and the post-war period had left great marks, even on those who remained distant. The world economy was going through serious crises and here in Brazil it could not be different. It is in the midst of all this that Paulo Freire finds the strength to think about man, starting from his own childhood and the sufferings he experienced. It is recalled all that he writes:

Born, thus, into a middle-class family that had suffered the impact of the economic crisis of 1929, we were "connective boys". Participating in the world of those who ate, even if we ate little, we also participated in the world of those who did not eat, even if we ate more than they did – the world of the boys and girls of the streams, the mocambos, the hills. To the first, we were linked by our class position; the second, because of our hunger, although our difficulties were less than theirs, much less. (Freire, 2003, p. 45)

And it was from his own social context that Freire found the necessary tools to think that something could be done to change reality and that the best way would be through education. Freire perceived a society, according to Damke (1995), marked by a deep foreign debt that did not allow an improvement in the population's standard of living, making the people weakened in their rights, justifying the so-called "culture of silence", and had chosen as a life option, to commit to change. According to Bandeira (2006), because it is

reflexively committed to his time, Paulo Freire understood that the Brazilian reality in transformation was deeply marked by colonial legacies, which impregnated the daily life of the people and imposed silence on them, at the same time that they promoted resistance to it, giving rise to the need for voice expression, sharpening the rebellions,

which needed to be consciously reflected and critically incorporated in the democratization of the country (p. 126).

Due to his positions, he became a well-known figure throughout the world and his ideal of a liberating education, which makes man the protagonist of his own story, travels the four corners of the earth, announcing that it is necessary to dream possible dreams and believe that it is possible to change the world around him. In this way, "considered as the inaugural philosopher of critical pedagogy, Freire was able to proceed with a global reorientation of pedagogy, directing it towards a radical politics of historical struggle, a perspective that he developed as a life project... What is now called 'politics of liberation' has vital significance for education activists around the world, and to what Paulo Freire contributed in a pioneering and fundamental way" (McLaren, 1999, p. 16-17).

Freire's pedagogical proposal was intended beyond the walls of the school. It was in life, with all its daily life, that he found the source of knowledge. And it was from this daily life that he wanted to instigate everyone for autonomy through dialogue, the feeling of responsibility and critical reflection. Items that lead the subject to found a political thought based on pedagogical practice, in which democracy is the central issue. No wonder he will tell us that

It was no longer possible to exist without assuming the right and duty to choose, to decide, to fight, to do politics. And all this brings us back to the imperative of the training practice, of an eminently ethical nature. And all this brings us back to the radicality of hope. I know that things can even get worse, but I also know that it is possible to intervene to improve them (Freire, 2000, p. 30).

Freire's ideas are not only political, but inaugurate a new way of looking at man beyond faith, the maintainer of social structures, the labor force that meets the desires of the market. Due to his humanist and existential background, Freire will reflect and propose reflection of man and for man from his own existence. Taking the concepts of Marxist theory, he will say that this existing man, with all his potentialities, needs to take possession of what he is and "learn to write his life, as an author and as a witness of his history" (Freire, 1981, p. 4), and "replace, as far as possible, the position of object by the position of subject of history itself" (Damke, 1995, p. 34).

Freire (1981) called the current education elitist, banking and exclusionary, indicating that the need is not only for literacy, but for a passage from a magical and naïve understanding of reality to a critical understanding. According to Damke (1995, p. 30), Freire's ideas "positively influenced the social movements and popular struggles of the early 1960s." So much so that, despite having been invited in 1963 to coordinate the National Literacy Plan,

he had to go into exile a year later (1964), after the military took power, because his ideas were considered subversive, even because, "from the beginning of his activities in the field of education, Paulo Freire was characterized by nonconformity and fierce criticism of the authoritarian relations so present in Brazilian society; it is concerned with the mechanism of the traditional school and seeks, therefore, in the valorization of dialogue, means to stimulate and develop popular participation in the daily life of the country" (Bandeira, 2006, p. 129).

Throughout the period of military dictatorship in Brazil, Paulo Freire's name was remembered in clandestinity by intellectuals and educators who shared his ideas, however in the official school scenario, his thoughts could not be considered or even cited, after all he challenged the brutality of society to elect man as the center and starting problem, in a dialectical process of continuous construction, within a real, concrete, objective history of constant inconclusion. It is possible to perceive that, "much more than training the student in the faithful performance of his expected dexterity, the Freirean conception of education implies, far beyond these limits, the revitalization of the dream and utopia cruelly rejected by neoliberal ideological fatalism, and the explicit assumption of a pedagogical praxis committed to the ethics of the human being" (Braga, 2006, p. 157).

Paulo Freire's proposal traveled the world and infected many. His universal thoughts of tolerance, respect and ethics in relation to the other, to oneself and to the teaching practice served as inspiration for many critical authors and helped in the redimensioning of the pedagogical look back to the student, a little different from that proposed by modern humanism, since the latter, at any time and at any age, In addition to being an existing being, a man, he is also a citizen, full in his rights, duties and responsibilities. That is why Giroux (1997, p. 156) will tell us that "history becomes dialectical in P. Freire's work because it is used to distinguish the present as given and the present as the bearer of possibilities of emancipation. In addition, Fr. Freire demonstrates once again that he is not only a man of the present; he is also a man of the future. Their speech, actions, warmth, and vision represent a way of recognizing and criticizing a world that lives dangerously on the brink of destruction. In a sense, Freire's work and presence are there not only to remind us of what we are, but also to suggest what we can become." However, in Brazil his thoughts met with resistance. In order not to get ahead of ourselves in history, we will return to Freire later, since it is necessary to speak first of the military dictatorship, and of its accusations as subversive, having the principles of its epistemology removed from school environments, being restricted to a few brave people who still dared to mention his name.

9 IN THE WORLD OF TECHNIQUE: THE SCHOOL AS MAN'S FACTORY FOR CAPITALISM

The twentieth century was marked by constant economic and social transformations and, influenced by these, also educational. During this period, not only Dewey stood out on the world stage. Tyler, another American, also ended up being recognized with his ideas of a curriculum with a technicist focus, with an emphasis on the adaptation of human behavior to society, based on Skinner's theory (SILVA, 2003, p. 25). Everywhere the strengthening of capitalism was witnessed, and its establishment as a "world" economic system boosted the search for a formation of man that would meet the desires of the consumer market.

In Brazil, while the ideas of the Pioneers of New Education still echoed, ideas were also developed that defended the preparation of labor for industry as the best path to be followed by schools, and it did not take long for this focus to gain strength and become hegemonic. Due to "the exhaustion of escolanovismo"¹¹ and the low productivity in the school system, the Technicist Theory was developed from 1964 onwards in Brazil, in the educational sphere, which had as its main characteristic the rigid control of pedagogical activities, directed in a mechanical, automatic, repetitive and programmed way" (Santos, 2009).

In the opinion of John Watson (1878-1958), who coined the term "Behaviorism" in 1913, this was the appropriate method to "enter the mind", an entity that has eluded philosophical investigation for centuries. Skinner, on the other hand, trying to reconfigure the behaviorist perspectives to something closer to the context of psychological science, after the decadence of Watson's ideas, based his theories on the analysis of observable behaviors.

No thinker or scientist of the 20th century took the belief in the possibility of "controlling" and shaping human behavior as far as Burrhus Frederic Skinner. His work is the most famous expression of behaviorism, a current that dominated the thought and practice of psychology in schools and offices in the United States until the 1950s, but which in Brazil had its influence from the 1960s and 70s.

Behaviorism focuses its study on behavior, taken as a set of reactions of organisms to external stimuli. The principle of behaviorism is that it is only possible to theorize and act on what is scientifically observable. B.F. Skinner's theory is based on the idea that learning occurs as a function of change in manifest behavior. Changes in behavior are the result of

¹¹ But it was not only the exhaustion of the ideas of the pioneers that favored the implementation of technicist pedagogy. The military dictatorship, established in 1964, found in the Technicist Theory the ideal model for the training of the labor necessary for the country's economic development project. The school, in this context, was instrumentalized to form the "man-machine", an individual adapted to the demands of the labor market, devoid of critical sense and autonomy. Affectivity and emotion, in this paradigm, were seen as elements that could hinder the objectivity and efficiency of the educational process, and were therefore suppressed or ignored. The teacher-student relationship became merely technical, where the teacher was an executor of plans and the student a passive receiver of information, aiming at the reproduction of predefined behaviors and skills.

an individual response to events (stimuli) that occur in the environment. An answer produces a consequence: hitting a ball, solving a mathematical problem. When a particular Stimulus-Response (S-R) pattern is reinforced (rewarded), the individual is conditioned to react. The distinguishing feature of operant conditioning from earlier forms of behaviorism (e.g., Thorndike, Hull) is that the organism can emit responses, rather than only eliciting responses due to an external stimulus. Reinforcement¹² is the key element in Skinner's S-R theory.

To better understand it, it is necessary to understand that, in Skinner's radical behaviorism, the fundamental unit of behavior analysis is the contingency of three terms, represented as $S_d - R - S_r$. In this model, the Discriminative Stimulus (S_d) signals the occasion in which a given Response (R) is more likely to be followed by a Reinforcing Stimulus (S_r). It is not a mechanical relationship, but a functional interaction between the organism and the environment, in which behavior is selected for its consequences. Hence the difference between the perspectives of Watson, Thorndike and Hull.

In educational practice, this triad is intended to be a powerful instrument of didactic planning. The teacher acts by arranging teaching conditions that function as discriminative stimuli for specific academic responses (such as writing, calculating, or arguing) and by ensuring that such responses are followed by appropriate reinforcers (such as accurate feedback, grades, recognition, or opportunities for advancement). The functional analysis of behavior in the classroom, based on this S_d - R - S_r scheme, allows us to identify how antecedent stimuli control students' responses and how consequences strengthen or weaken learning, always focusing on the observable relationships between student behavior and the environmental events that precede and follow it.

Although Skinnerian behaviorism has presented a solid theoretical-practical proposition and brought great perspective to the educational scenario, this teaching/learning model did not have much breath in the context of Brazilian schools. What could be seen was even the distortion of the behaviorist theory, making it seem like a mere practice of mass reward and often punitive, causing old criticisms of behaviorism to return.

9.1 TECHNICISM AND TEACHING MACHINES: THE RECONFIGURATION OF THE TEACHER IN THE 70S

Skinner's teaching machines were not machines in today's complex sense, but devices that presented content in small units, required an active response from the student, and

¹² A booster is anything that strengthens the desired response. It can be a verbal compliment, a good grade, or a feeling of accomplishment or growing satisfaction. The theory also covers negative reinforcements - an action that avoids an unintended consequence (CÂMARA ZACHARIAS, Vera Lúcia. Skinner and Behaviorism. Educational Reference Center [online]. Available in <http://www.centrorefeducacional.com.br/skinner.htm>. Accessed on: March 17, 2009).

provided immediate feedback by reinforcing correct responses. Learning was divided into sequential stages, and the student advanced at his own pace, receiving positive reinforcement with each correct answer. This approach aimed at maximum efficiency and the elimination of errors, transforming the teaching-learning process into a logical and controlled sequence of stimuli and responses.

In Brazil, as already discussed, Skinner's ideas and technicist pedagogy were widely incorporated into the educational system, especially in the context of the 1971 education reform. This reform was articulated with the developmental project of the military regime, guided by the need to train qualified labor to meet the demands of industrialization and economic modernization of the country. In this scenario, education was progressively aligned with the interests of the market, assuming an instrumental function aimed at efficiency and productivity (Faheina, 2014; Romanelli, 1978). The school thus came to be conceived as a kind of "factory" of productive individuals, with a curriculum structured in such a way as to ensure the systematic transmission of technical skills and knowledge.

The organization of activities in schools in the 70s was deeply influenced by this logic. Scheduled instruction, teaching modules, and objective assessment have become commonplace. Planning was centralized, and teachers received detailed manuals with the contents to be taught and the activities to be developed. The emphasis was on the measurement of results and the standardization of teaching, seeking uniformity and predictability of the educational process.

In this scenario, the role of the teacher was significantly reconfigured. No longer understood as a mediator of knowledge and promoter of the integral development of the student, the teacher began to assume a predominantly technical role, linked to the execution of previously structured programs. Its performance consisted, to a large extent, of strictly following the guidelines of the instructional materials, applying standardized assessment instruments and recording the performance of students according to previously defined criteria. Teacher autonomy, as well as the possibility of adapting to the singularities of the learning process, was progressively reduced in favor of a logic of rationalization and control of pedagogical work, characteristic of the technicist model (Saviani, 2008; Libâneo, 2013).

The teacher, in this model, was seen as a cog in the system, responsible for ensuring the effectiveness of the transmission of content and the modification of student behavior according to the pre-established objectives. The teacher-student relationship has become impersonal and objective, focused on the task and the result, and not on human development. Affectivity and emotion, in this context, were considered variables that could interfere with the objectivity of the process, and were therefore ignored or controlled.

This instrumental view of the teacher and the student generated a profound emptying of the meaning of pedagogical practice, transforming the classroom into an environment of reproduction and training, far from a full and emancipatory human formation.

10 EDUCATION IN REDEMOCRATIZATION: THE CITIZEN AS A SUBJECT AND THE RESCUE OF AFFECTIVITY

With the end of the military dictatorship and the promulgation of the Federal Constitution of 1988, Brazil began a period of redemocratization that reverberated deeply in education. The "Citizen Constitution" established education as a fundamental right of all and a duty of the State and the family, aiming at the full development of the person, his preparation for the exercise of citizenship and his qualification for work. This new Magna Carta represented a milestone in overcoming the technicist and instrumental vision of education, which had prevailed during the military regime, and paved the way for a more humanist and democratic conception (Senado, [n.d.]).

The Law of Guidelines and Bases of National Education (LDB) No. 9,394/96, which regulated article 205 of the Constitution, consolidated these principles. The new LDB brought as pillars the decentralization of educational management, the expansion of access and the guarantee of autonomy to educational institutions (Melo, 2025). She emphasized training for citizenship, the appreciation of education professionals and the democratic management of public education. Education came to be understood in its entirety, encompassing the formative processes that take place in family life, in human coexistence, at work, in teaching and research institutions (Brasil, 1969).

In this context of redemocratization, the vision of man cultivated in schools sought to rescue the subject in its fullness, with critical capacity, autonomy and social participation. The "citizen-man" became the ideal, as opposed to the "machine-man" of technicism. Education, therefore, should promote not only the acquisition of knowledge, but also the development of ethical, aesthetic and social values, essential for the construction of a more just and egalitarian society.

Affectivity and emotion, which had been marginalized in the technicist period, began to be revalued. The LDB, by proposing an education aimed at the "full development of the person", implicitly opened space for the consideration of the socio-emotional dimensions of the student. Studies and pedagogical practices began to emphasize the importance of the affective bond between teacher and student, of welcoming and recognizing emotions as facilitating elements of the teaching-learning process (UERJ, 2016; Finom, [n.d.]). The understanding that affectivity is inherent to human development and crucial for the motivation

and engagement of students gained strength, aligning itself with the perspectives of authors such as Wallon and Freire, who already defended the inseparability between cognition and affect.

However, the implementation of these ideals has faced and still faces challenges. The transition from a centralizing model to a democratic one required significant cultural and structural changes. The valorization of affectivity, although present in the discourse, has not always translated into effective pedagogical practices, often bumping into rigid curricula, inadequate teacher training and precarious working conditions. The search for an education that contemplates the human being in its totality, including its emotions and subjectivity, has become a continuous objective and a field of constant debate and improvement.

11 NEOLIBERALISM, COMPETENCY-BASED EDUCATION AND NEOTECHNICISM: THE RECONFIGURATION OF THE SUBJECT

Parallel to the process of redemocratization and the search for an education guided by more humanist principles, Brazil, as well as much of the world, was strongly impacted by the rise of neoliberalism from the 1990s onwards. This rationality, which redefines the role of the State and expands the centrality of the market in the organization of social life, produced significant effects in the educational field, reconfiguring both the conception of man and the purposes attributed to the educational process. In this context, education is progressively guided by criteria of efficiency, productivity and competitiveness, aligning itself with market demands and the demands of capital (Harvey, 2005; Frigotto, 2010; Laval, 2004).

In the educational context, neoliberalism began to express itself through policies guided by the search for efficiency, productivity, and adequacy of the school to the demands of the labor market. Education was progressively conceived as a strategic investment, whose value is measured by its ability to generate economic return, while the student came to be understood as the bearer of a "human capital" to be developed and optimized (Schultz, 1961; Frigotto, 2010).

This rationality contributed to the emergence of what is conventionally called neotechnicism, characterized by the reupdating of principles of classical technicism in new forms, especially through the centrality attributed to training by competencies and skills. In this model, the educational process is organized based on measurable results and performance standards, reinforcing the subordination of the school to the demands of the productive world (Laval, 2004; Libâneo, 2013).

Competency-based education has become the flagship of this new approach. Instead of prioritizing the transmission of encyclopedic content, the focus shifted to the development

of skills that would allow the individual to solve problems, adapt to different contexts and act effectively in the world of work. Curriculum documents, such as the National Common Curriculum Base (BNCC), have incorporated the language of competencies and skills, reflecting this global trend (Khan Academy, 2023).

In this scenario, the vision of man is again instrumentalized, although in a more subtle way. The subject is valued for his ability to be productive, flexible and adaptable to market demands. Autonomy, previously seen as emancipation, is re-signified as the ability to self-manage and seek continuous improvement to meet external demands. The "citizen-man" of redemocratization gives way to the "entrepreneur-man" or "competent-man".

Affectivity and emotion, in this model, assume an ambiguous role. On the one hand, there is a growing recognition of the relevance of the so-called socio-emotional competencies for the professional performance and social insertion of individuals. Skills such as emotional intelligence, resilience, collaboration, and communication are now valued as essential attributes, especially in the context of economies driven by flexibility and competitiveness (Organization for Economic Cooperation and Development, 2015; Christian Laval, 2004). Such a movement may, at first sight, suggest greater attention to the affective dimension in the educational process.

However, this appreciation of affectivity often occurs in an instrumental way. Emotions are managed and interpersonal relationships are developed not for an end in themselves, but as tools to increase productivity, adaptability, and competitiveness. Affectivity is "trained" to serve external objectives, and not to promote the integral and emancipatory formation of the subject. There is a risk that emotion will be co-opted by the logic of the market, transforming itself into yet another "competence" to be acquired and evaluated, losing its genuine character and its transformative power (Cuadernos Educación, 2025).

Thus, neotechnicism, under the guise of competency-based education, replaces man in the educational scenario, but with a vision that, although apparently more complete because it includes socio-emotional aspects, still subordinates him to the logics of the market and efficiency. Affectivity, in this context, is evoked, but runs the risk of being instrumentalized, losing its critical dimension and its potential for the construction of a truly human and liberating education.

12 CONCLUSION: WEAVING NEW PATHS BETWEEN THE HISTORY OF EDUCATION IN BRAZIL AND THE CONDITIONS OF CONCEIVING AFFECTIVITY

The reconstruction of the historical path of Brazilian education, as developed in this study, makes us understand that the school has never been constituted as a neutral space,

but as a field crossed by disputes between different projects of human formation. In each historical period, different conceptions of subject guided the organization of the curriculum, pedagogical practices and the relationships between teacher and student, configuring specific ways of teaching, learning and relating within the school institution.

From the hegemony of Jesuit pedagogy, guided by religious formation and the maintenance of the colonial order, through the Pombaline reforms and the positivist influence in the Republic, to the emergence of escolanovismo, critical pedagogy and technicism, it is observed that Brazilian education was constantly reconfigured as a function of political, economic and cultural interests. In this path, the school assumed, at different times, functions that varied between moral formation, social adaptation, technical preparation and the possibility of emancipation.

The analysis carried out allows us to affirm that the teacher-student relationships are experienced, although not in a hegemonic way, by the pedagogical paradigms predominant in each historical context. When guided by conceptions that emphasize order, discipline, and technical rationality, these relations tend to take on hierarchical and prescriptive forms. On the other hand, when based on perspectives that recognize the subject as an agent of his or her own formation, possibilities for more dialogical and participatory practices are opened.

In this sense, the dimension of affectivity and emotion, although it has not been constituted as a structuring axis throughout the historical trajectory, appears recurrently as a tensioning element of pedagogical practices, especially in moments when it was sought to overcome models centered on the mere transmission of content. Its presence, although not continuous, reveals the complexity of educational processes and the impossibility of reducing them to an exclusively technical or instrumental logic.

Finally, understanding the historicity of Brazilian education implies recognizing that contemporary teaching practices and pedagogical relations are crossed by legacies of these different paradigms. Such understanding not only contributes to a critical reading of the present, but also enables the problematization of the conditions that continue to guide the formation of subjects in the educational context.

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THE IMPLEMENTATION OF SOCIO-EMOTIONAL SKILLS IN THE TEACHING AND LEARNING PROCESS IN SCHOOLS IN THE STATE OF CEARÁ

A IMPLEMENTAÇÃO DAS COMPETÊNCIAS SOCIOEMOCIONAIS NO PROCESSO DE ENSINO E APRENDIZAGEM EM ESCOLAS DO ESTADO DO CEARÁ

LA IMPLEMENTACIÓN DE HABILIDADES SOCIOEMOCIONALES EN EL PROCESO DE ENSEÑANZA Y APRENDIZAJE EN LAS ESCUELAS DEL ESTADO DE CEARÁ



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ABSTRACT

Addressing socio-emotional skills in the school context has become an important tool in holistic education. From this perspective, this work aims to address the importance of socio-emotional skills in the teaching-learning process in schools in the State of Ceará, through a literature review. According to the literature, the implementation of socio-emotional development policies in Ceará's education system, mainly the Center for Work, Research and Social Practices (NTPPS) and the Class Director Teacher Project (PPDT), has positively impacted student development, a fact corroborated by several authors, who in turn highlight improvements in academic results and interpersonal relationships, as well as the development of emotional self-regulation and the ability to resolve conflicts among students. Therefore, socio-emotional skills are a tool of paramount importance in the development and learning of students as a whole.

Keywords: Socio-Emotional Skills. Teaching-Learning. Educational Policies.

RESUMO

Abordar as competências socioemocionais no contexto escolar tem se tornado uma ferramenta importante na educação holística. Nesta perspectiva, este trabalho visa abordar a importância das habilidades socioemocionais no processo ensino-aprendizagem em escolas do Estado do Ceará, por meio de uma revisão bibliográfica. De acordo com a literatura, a implementação de políticas de desenvolvimento socioemocional na educação cearense, principalmente o Núcleo de Trabalho, Pesquisa e Práticas Sociais (NTPPS) e o Projeto Professor Diretor de Turma (PPDT), tem impactado positivamente o desenvolvimento dos discentes, fato este corroborado por diversos autores, que por sua vez, destacam as

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melhorias nos resultados acadêmicos e nas relações interpessoais, bem como o desenvolvimento da autorregulação emocional e a capacidade de resolução de conflitos dos alunos. Portanto, competências socioemocionais são uma ferramenta de suma importância no desenvolvimento e aprendizagem dos educandos em sua totalidade.

Palavras-chave: Competências Socioemocionais. Ensino-Aprendizagem. Políticas Educacionais.

RESUMEN

Abordar las habilidades socioemocionales en el contexto escolar se ha convertido en una herramienta fundamental en la educación integral. Desde esta perspectiva, este trabajo busca analizar la importancia de las habilidades socioemocionales en el proceso de enseñanza-aprendizaje en las escuelas del estado de Ceará, a través de una revisión bibliográfica. Según la literatura, la implementación de políticas de desarrollo socioemocional en el sistema educativo de Ceará, principalmente el Centro de Trabajo, Investigación y Prácticas Sociales (NTPPS) y el Proyecto Docente Director de Clase (PPDT), ha impactado positivamente el desarrollo estudiantil, un hecho corroborado por diversos autores, quienes a su vez destacan mejoras en los resultados académicos y las relaciones interpersonales, así como el desarrollo de la autorregulación emocional y la capacidad para resolver conflictos entre los estudiantes. Por lo tanto, las habilidades socioemocionales constituyen una herramienta de suma importancia para el desarrollo y el aprendizaje integral del alumnado.

Palabras clave: Habilidades Socioemocionales. Enseñanza-Aprendizaje. Políticas Educativas.

1 INTRODUCTION

Historically, education was based on the traditional approach, focused on rational and cognitive knowledge, in which emotional aspects were not part of the teaching-learning process. However, this perspective has been transforming over the last few years, and thus, emotional knowledge has been strengthened in several areas, structuring itself as a significant aspect with regard to human development (ALMEIDA, 2016; COLAGROSSI; VASSIMON, 2017; DA SILVA, 2020).

Given their importance in the school context, the issues inherent to socio-emotional skills have been commonly implemented in contemporary educational public policies (CARVALHO; DA SILVA, 2017; GONÇALVES; MAGALHÃES JÚNIOR, 2021; RUIZ, 2021). In 2020, the National Common Curriculum Base (BNCC) reorganized teaching, defining new guidelines for the school curriculum aimed at promoting various skills in the pedagogical field, in order to subsidize the development and learning of students in their entirety (CANETTIERI; PARANAHYBA; SANTOS, 2021).

This document directs educational institutions to include, among other competencies, socio-emotional competence in their curricula. However, for this guideline to be implemented, it is of great relevance that the school understands how to carry out the approach, so that an intentional pedagogical action occurs, avoiding superficial practices or those that negligently enter the student's psychology, overcoming the teachers' field of action (SOUSA CAMPOS, 2022).

In general, socio-emotional competencies help students to establish positive interpersonal relationships, the ability to resolve conflicts, as well as the development of responsibility to make decisions and manage challenging situations in a constructive and ethical way (ALZINA; ESCODA, 2012; WEISSBERG et al., 2013; CASTILHO-GUALDA et al., 2017; HAMBURG, 2019; ARAÚJO; OLIVEIRA, 2022; FÁVERO et al. 2022).

Therefore, the aforementioned competencies are of paramount importance for the development of students, considering that such skills enhance cognitive competencies and benefit individual and collective life, increasing the levels of academic proficiencies and, consequently, their quality of life (BRITO, 2019; CHAVES, MOTTA; GAWRYSZEWSKI, 2020; SILVA; DA SILVA, 2021).

In the international scenario, socio-emotional competencies in schools are approached as an important instrument in the personal and professional formation of the individual, as highlighted by the works of Durlak et al. (2011), Knowler and Frederickson (2013), Weissberg et al. (2013), Berger et al. (2014), etc.

In Brazil, several researchers in the field of education have been seeking to understand the effectiveness of its implementation in the school context, including the works of Abed (2016), Caluz (2018), Tessaro and Lampert (2019), Canettieri, Paranahyba and Santos (2021), Araújo and Oliveira (2022), Bortolossi et al. (2022), Muto and Galvani (2023), Santos (2023), among others. At the State level, the works of Monteiro (2019), Gonçalves and Magalhães Júnior (2021), Cordeiro (2020), Farias (2021), Pontes (2021), etc. stand out.

In this way, it is understood that the inclusion of socio-emotional development permeates pedagogical practices, they help students to know their emotions and think about their reactions to them. Thus, the student will develop their emotional intelligence, focusing on self-development and preparation to deal with the adversities experienced, improving their social skills and feeling safe to relate to the external world and the people around them, acting positively for the common good (SOUSA CAMPOS, 2022).

In this perspective, this work aims to analyze the importance of socio-emotional skills in the teaching-learning process, in order to contribute to the dissemination of the theme, especially with regard to the implementation of socio-emotional development policies in schools in Ceará and their positive impacts.

The methodology used concerns a bibliographic survey in which national and international articles obtained from the *Scientific Electronic Library Online* (SciELO) and *Web of Science* database were analyzed, as well as dissertations and theses available in the Capes database, with a time frame of fifteen years (2008-2023), using the keywords "socio-emotional development", "socio-emotional competence" and "teaching-learning process" as descriptors.

Therefore, the present work is divided into two sections, in order to contemplate the socio-emotional aspects and their importance in the school context, and the positive impacts arising from their implementation in schools in the State of Ceará. The approach will be carried out under the prism of several authors, in order to establish their relationships with regard to socio-emotional skills and the construction of the student's professional and personal knowledge.

2 SOCIO-EMOTIONAL ASPECTS AND THEIR IMPORTANCE IN THE SCHOOL CONTEXT

According to Abed (2016), the discussions about socio-emotional aspects in the school context took place, a priori, in the 90s, when the global movement was instituted that supported the reflections on the desired school for the twenty-first century, having as one of the main historical facts, the publication of the report by Delors (2010), entitled *A Treasure to Discover: Report to UNESCO of the International Commission on Education for the 21st*

Century, which, in turn, contemplates a critical reflection on the education desired and necessary for the current century, emphasizing knowledge from a more active teaching perspective, linked to the skills of coexistence and the development of different skills.

Another milestone related to the theme concerns the publication of the book *The Seven Necessary Knowledges for the Education of the Future*, authored by Edgar Morin (2011), which addresses the fundamental learning for the education of the future, based on the paradigm of complexity. The aforementioned documents refer to and reiterate the importance of the integral development of the student, especially in relation to socio-emotional aspects, permanently transforming the patterns of school education until the end of the twentieth century.

According to Silva and Da Silva (2021), such publications, among other factors, influenced the elaboration of Brazilian policies, such as the Law of Guidelines and Bases for Basic Education (LDB) and the National Common Curricular Base (BNCC), the latter is characterized as a normative document, which, in turn, establishes a diversity of competencies to be worked on throughout basic education and highlights:

In the new world scenario, recognizing oneself in one's historical and cultural context, communicating, being creative, analytical-critical, participatory, open to the new, collaborative, resilient, productive and responsible requires much more than the accumulation of information. It requires the development of skills to learn how to learn, to know how to deal with the information that is increasingly available, to act with discernment and responsibility in the contexts of digital cultures, to apply knowledge to solve problems, to have autonomy to make decisions, to be proactive in identifying the data of a situation and seeking solutions, to live with and learn from differences and diversities (BRASIL, 2018, p. 15).

Among these competencies, the socio-emotional one stands out, which from the perspective of Cardoso and Castro (2020), in the school environment, concerns the skills that contemplate the construction of knowledge and make up a set of characteristics that can support the learning process, through the development of competencies and contexts. Thus, it is of paramount importance to address the needs related to skills to deal with issues other than academics.

In general, socio-emotional skills and competencies in the school context preserve and assist the individual's personal development. Such competencies also collaborate for the learning of curricular contents, aiming to ally the matrix of competencies for the new century, that is, malleable and adaptable to the different strategies that add cognitive and socio-emotional competencies (CARVALHO; SILVA, 2017).

From the perspective of Zabala and Arnau (2010), the socio-emotional competencies addressed in schools contribute to the development of students in an integral way, through the performance of contextualized and interrelated actions with conducts, concepts and procedures, as well as allowing the re-signification of various memorized and stereotyped knowledge, which in turn hinder their interaction and growth in society.

For Colagrossi and Vassimon (2017), the teaching of socio-emotional capacity can currently be considered one of the most relevant methods for promoting efficient reforms in the school environment. Based on several researches, the authors highlight the benefits of social-emotional learning, highlighting improvements in academic results and interpersonal relationships, the development of emotional self-regulation, the reduction of conflicts between students, the understanding of content in the classroom and finally, allow the individual, from an early age, to be healthier and more successful in the personal and academic sphere.

According to Moraes (2024), the promotion of socio-emotional skills in education becomes a basic element in the holistic growth of students. For the author, it is not only about transmitting academic knowledge, but also addressing the skills that help them face life's challenges. Therefore, the educational environment is of paramount importance in this process, as it provides opportunities for socio-emotional development.

It should be noted that socio-emotional development is not limited only to students, but also to teachers and non-teaching staff. It is important that the educator receives adequate training in order to understand and identify signs of emotional distress, as well as the ability to provide the necessary support (ABED, 2016).

Nevertheless, teachers are the protagonists of the process of socio-emotional formation in basic education (ALZINA; GONZÁLEZ; NAVARRO, 2015). Therefore, promoting the development of these competencies and skills in these professionals will contribute to their development, also in the students (MARQUES; TANAKA; FÓZ, 2019).

The teacher must guide the teaching-learning process of the emotional aspects of the students, always relating the elements that go beyond the theories addressed in the classroom (VITAL; URT, 2022). Given this situation, socio-emotional education should not be considered as an additional responsibility for educators, but as a pedagogical strategy that will provide the construction of better relationships and more humanized learning (SOUSA CAMPOS, 2022).

In short, socio-emotional development is an essential factor to improve the teaching-learning process, and thus, provide school success, as well as stimulate the social development of students, in view of the involvement of internal and external factors to the institution, but which must be addressed throughout the school process (MORAIS, 2022).

In this context, the importance of the implementation of educational programs aimed at socio-emotional development in the school context is highlighted. The following topic will address the effectiveness of these development policies in Ceará, and the positive impacts of their implementation will also be presented.

3 IMPLEMENTATION OF SOCIO-EMOTIONAL DEVELOPMENT POLICIES IN CEARÁ AND THEIR POSITIVE IMPACTS

Gonçalves and Magalhães Júnior (2021), highlight that since 2012, the Department of Education of the State of Ceará (SEDUC) has carried out several interventions in basic education, based on the perspective of developing students' socio-emotional skills and, consequently, on effective and meaningful learning. In January 2016, the State proposed the formulation of educational policies through the curricular organization of Full-Time High School. This formulation was based on an education that develops the student in its entirety, covering the physical, affective, cognitive, intellectual and ethical dimensions of the human being, through the expansion of time, space and curriculum.

Regarding the formulation of the Policy for the Development of Socio-emotional Competencies in the State of Ceará, the aforementioned authors point out that several initiatives were publicized in order to present the means of implementation of the policy in question, namely: Youth in Action; Educational Psychologists; Social Mediation and Culture of Peace; Education, Gender and Sexuality at School; Cooperative Learning; Learning Community; Life and World of Work Project, Labor, Research and Social Practices Center (NTPPS) and the Class Director Teacher Project (PPDT).

According to Farias (2021), these initiatives were well received in the state of Ceará, which in turn sought to adapt the school curriculum, especially in high school. Among the actions mentioned above, the PPDT and NTPPS stand out, which were inserted in the school curriculum of regular, full-time and professional schools, and became the basis for this policy.

Sousa et al. (2019) point out that the implementation of the PPDT in Ceará took place in 2008, when SEDUC implemented the project in 25 State Schools of Professional Education in Ceará, and in 2010, adherence was expanded to regular schools. The aforementioned authors emphasize that the objective of the project is:

To raise school performance through an approximation between school, student and family, making it possible to get to know students individually not only in their school difficulties, but also in their social context and, in particular, in the relationship with the family, habits, aptitudes and personal tastes (SOUSA et al, 2019, p. 09).

Morais (2024) points out that, in general, the PPDT has played an important role in contemporary education, by highlighting the relevance of students' socio-emotional development as an essential factor for their personal and professional growth. For the aforementioned author, the project in question can help identify the challenges faced by student students and thus offer adequate support through welcoming, providing counseling, referral to specialized professionals or other strategies. Through the PPDT, students seek the healthiest way to express their emotions, to actively listen to other students and to find constructive solutions for the resolution of conflicts. Such skills are of great significance not only in the school environment, but also in everyday life, preparing individuals for future interpersonal relationships.

From this author's point of view, the implementation of the PPDT has positively impacted the development of students through several socio-emotional aspects, such as:

- Improvement in Interpersonal Relationships: PPDT helps students develop communication and conflict resolution skills, making them better able to build healthy relationships with peers and adults.
- Self-knowledge and Self-control: Students learn to recognize and manage their own emotions, which contributes to self-control and ethical decision-making.
- Development of Empathy: PPDT promotes empathy by helping students understand the perspectives and feelings of others.
- Improvement in Academic Performance: Social-emotional development is correlated with academic performance, since emotionally healthy students tend to be more motivated and involved in learning (MORAIS, 2024, p. 3078).

With regard to the NTPPS, it is understood as a curricular component that encourages the application of new pedagogical practices that aim to develop socio-emotional skills through research, interdisciplinarity, as well as student protagonism. This program aims to obtain the enthusiasm and commitment of students, and also to stimulate dialogue between the disciplines and subjects of the institution through the communication established by professors under the guidance of research, providing the improvement of the teaching-learning process (CORDEIRO, 2020).

According to Pontes (2021), the NTPPS proposes an organization of activities for each year, addressing personal, social, and professional aspects. According to the author, in the 1st year of High School, the activities are directed to the discussion about the family and the school, with the student as the protagonist. In the 2nd year, the arguments arise from the need to lead the student to perceive himself as an individual belonging to a community and as an important social actor. In the 3rd year, with the completion of the High School stage,

the focus of the program is more focused on the consolidation of life projects, aiming to reflect on the world of work and the possibilities for students to follow their trajectories at the end of the school term.

According to the Ayrton Senna Institute (2017), it is evident that several socio-emotional skills can be developed in students, which are a fundamental part of the NTPPS, such as self-management, interaction and engagement with others, kindness, emotional resilience, as well as the possibility of openness to the new.

Regarding the positive impacts of the implementation of socio-emotional skills in schools in Ceará. Several studies highlight the difficulties, importance, and impacts of implementing these programs in schools in the state, including the works of Monteiro (2019), Cordeiro (2020), Gonçalves and Magalhães Júnior (2021), Farias (2021), Pontes (2021), Almeida, Santos and Melo (2023), Morais (2024), etc.

Monteiro (2019), through exploratory research, discusses the challenges of developing socio-emotional skills in a full-time high school in Ceará. According to teachers and managers, the main difficulties in the implementation of the NTPPS are the staffing and training of teachers, the absence of collective planning and pedagogical monitoring, as well as the scarcity of pedagogical and material resources. Regarding the positive impacts of its implementation, 79% of the students interviewed stated that the NTPPS curricular component helped them to deal with their feelings, emotions and problems.

Farias (2021), through a literature review, highlighted the importance of developing socio-emotional skills in a full-time high school located in the municipality of Carnaubal, in the northern region of Ceará. The aforementioned author addresses the importance of socio-emotional competencies in the school curriculum addressed through the PPDT and NTPPS. Regarding the positive impacts of these programs, these disciplines stimulate students to student protagonism and work on their intellectual autonomy. This fact is corroborated by the approval results presented by the institution's Pedagogical Political Project (PPP), since the approval rate from 2016 to 2019 grew from 90% to 96.73%, while the dropout rate decreased from 4% to 2.4%.

Almeida, Santos and Melo (2023) presents the analysis of the effectiveness of the NTPPS component in a full-time school in the public school system in Ceará. To this end, the authors carried out an exploratory study, in order to discuss the perceptions of teachers. According to the results obtained, when teaching the NTPPS, the teacher perceives himself as more participative in school projects, has a greater familiarity with academic production, as well as a good interpersonal relationship with his co-workers. The professors also state

that the changes and transformations in the students after the insertion of the NTPPS are observed.

The aforementioned researchers believe that this perception of teachers is due to the achievement of one of the objectives of the aforementioned curricular component, that is, the promotion of the development of socio-emotional skills that underlie their work in the classroom. In short, the authors found that teachers need to practice interdisciplinarity, in order to be able to deal with social, emotional, cultural and cognitive issues that are often omitted or ignored.

Morais (2024) seeks to describe the importance of the PPDT as an important tool in socio-emotional development in the school context. According to the author, the PPDT is characterized as an efficient approach in promoting the growth of students as a whole, positively impacting their academic and socio-emotional needs. Through open discussions and individualized support, teachers help strengthen students' socio-emotional skills, such as empathy, emotional self-management, and conflict resolution. However, the author highlights that for a successful implementation of the PPDT, a commitment is required on the part of the teaching team, and it is necessary to carry out adequate training for these professionals, as well as to create a supportive environment for them to effectively perform their function.

4 FINAL CONSIDERATIONS

In this work, a literature review was proposed on the implementation of socio-emotional competencies in schools in Ceará, in order to address their impacts on the teaching-learning process, given their positive contributions to the development and learning of students.

It is notorious that socio-emotional skills in the school context have been strengthened over the years, in view of the need to understand and support students in their social and professional development. In Ceará, several socio-emotional development policies have been implemented, all of them based on an education that provides the development of the student in its entirety, through changes in the curriculum and pedagogical practices.

Among the educational policies adopted, the NTPPS and PPDT curricular components stand out, which, according to the literature analysis, has helped teachers to identify the challenges faced by students, allowing such professionals to provide adequate support, in order to welcome, advise or refer the student to specialized professionals. Researchers in the area also point out that such disciplines stimulate students to student protagonism and work on their intellectual autonomy, increasing the approval rate and reducing the dropout rate.

In short, socio-emotional skills are a tool of paramount importance in the development and learning of students in social, emotional and professional aspects.

As new studies, the main obstacles found in the school environment that hinder the implementation of educational policies in schools, to consider the student profile, as well as the possible pedagogical practices that may address this problem in an interdisciplinary way in school curricula.

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PROBLEM-BASED LEARNING MEDIATED BY A DIGITAL PLATFORM: COMPETENCY DEVELOPMENT IN BUSINESS ACCOUNTING EDUCATION

APRENDIZAGEM BASEADA EM PROBLEMAS MEDIADA POR PLATAFORMA DIGITAL: DESENVOLVIMENTO DE COMPETÊNCIAS NO ENSINO DE CONTABILIDADE EMPRESARIAL

APRENDIZAJE BASADO EN PROBLEMAS MEDIADO POR PLATAFORMA DIGITAL: DESARROLLO DE COMPETENCIAS EN LA ENSEÑANZA DE CONTABILIDAD EMPRESARIAL



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ABSTRACT

This article analyzes, based on a broader research project, how Problem-Based Learning (PBL), mediated by the Be Active digital platform, contributes to the development of students' competencies in the Business Accounting course of an undergraduate Business Administration program. The study is grounded in the understanding of competencies as the articulation of knowledge, skills, and attitudes, aiming to highlight the formative effects of this proposal in higher education. It is a qualitative and intervention-based study conducted with students from a higher education institution in the interior of the state of São Paulo, Brazil. Data production involved participant observation, document collection, and questionnaires, including the Free Word Association Test, the Kolb Learning Style Inventory, and a questionnaire on PBL. Data were analyzed through triangulation, supported by Similitude Analysis, Discursive Textual Analysis, and Prototypical Analysis. The results indicate that the articulation between PBL and digital mediation fostered the mobilization of knowledge related to course content, the improvement of investigative, communication, and problem-solving skills, as well as the strengthening of attitudes linked to autonomy, responsibility, and collaboration among students. It is concluded that the analyzed experience contributed to a more active and formative learning process in higher education.

Keywords: Active Methodologies. Higher Education. Professional Education. Educational Technologies. Collaborative Learning.

RESUMO

Este artigo analisa, a partir de um recorte de pesquisa mais ampla, como a Aprendizagem Baseada em Problemas (ABP), mediada pela plataforma digital Be Active, contribui para o desenvolvimento de competências de estudantes na disciplina de Contabilidade Empresarial, no curso de Administração. O estudo orienta-se pela compreensão de

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competências como articulação entre conhecimentos, habilidades e atitudes (CHA), buscando evidenciar os efeitos formativos dessa proposta no ensino superior. Trata-se de uma pesquisa de abordagem qualitativa e caráter interventivo, desenvolvida com estudantes de uma instituição de ensino superior do interior do estado de São Paulo. A produção de dados envolveu observação participante, coleta documental e aplicação de questionários, incluindo o Teste de Associação Livre de Palavras (TALP), o Inventário de Estilo de Aprendizagem de Kolb e um questionário sobre a ABP. A análise foi conduzida por triangulação, com apoio da Análise de Similitude, da Análise Textual Discursiva (ATD) e da Análise Prototípica. Os resultados indicam que a articulação entre ABP e mediação digital favoreceu a mobilização de conhecimentos relacionados ao conteúdo da disciplina, o aprimoramento de habilidades de investigação, comunicação e resolução de problemas, bem como o fortalecimento de atitudes vinculadas à autonomia, à responsabilidade e à colaboração entre os estudantes. Conclui-se que a experiência analisada contribuiu para uma aprendizagem mais ativa e formativa no ensino superior.

Palavras-chave: Metodologias Ativas. Ensino Superior. Formação Profissional. Tecnologias Educacionais. Aprendizagem Colaborativa.

RESUMEN

Este artículo analiza, a partir de un recorte de una investigación más amplia, cómo el Aprendizaje Basado en Problemas (ABP), mediado por la plataforma digital Be Active, contribuye al desarrollo de competencias de estudiantes en la asignatura de Contabilidad Empresarial, en el curso de Administración. El estudio se orienta por la comprensión de las competencias como articulación entre conocimientos, habilidades y actitudes, buscando evidenciar los efectos formativos de esta propuesta en la educación superior. Se trata de una investigación de enfoque cualitativo y carácter interventivo, desarrollada con estudiantes de una institución de educación superior del interior del estado de São Paulo, Brasil. La producción de datos incluyó observación participante, recolección documental y aplicación de cuestionarios, entre ellos el Test de Asociación Libre de Palabras, el Inventario de Estilos de Aprendizaje de Kolb y un cuestionario sobre el ABP. El análisis se realizó por triangulación, con apoyo del Análisis de Similitud, del Análisis Textual Discursivo y del Análisis Prototípico. Los resultados indican que la articulación entre el ABP y la mediación digital favoreció la movilización de conocimientos relacionados con los contenidos de la asignatura, el perfeccionamiento de habilidades de investigación, comunicación y resolución de problemas, así como el fortalecimiento de actitudes vinculadas a la autonomía, la responsabilidad y la colaboración entre los estudiantes. Se concluye que la experiencia analizada contribuyó a un aprendizaje más activo y formativo en la educación superior.

Palabras clave: Metodologías Activas. Educación Superior. Formación Profesional. Tecnologías Educativas. Aprendizaje Colaborativo.

1 INTRODUCTION

Higher education education, especially in applied areas, has been challenged to overcome pedagogical models centered on the transmission of content and the passive performance of students. In the Administration course, this need becomes even more evident, since the training process involves not only the understanding of concepts, but also the ability to analyze situations, make decisions, and act collaboratively in complex professional contexts (**Chiavenato, 2022**).

In this context, active learning methodologies have been discussed as alternatives that favor greater involvement of students in the training process. Among these approaches, Problem-Based Learning (PBL) stands out for organizing learning based on problem-situations that require investigation, formulation of hypotheses and construction of reasoned responses. For Barrows and Tamblyn (1980), the problem acts as a structuring element of learning, while Hmelo-Silver (2004) emphasizes its potential to promote intellectual autonomy and critical reasoning.

In the field of Administration and Accounting, the use of PBL is particularly pertinent, as academic training requires the development of skills related to problem solving, communication and teamwork. Studies such as that of Manaf, Ishak and Hussin (2011) indicate that this methodology can bring the teaching process closer to concrete situations of professional practice, contributing to a more contextualized learning.

At the same time, the presence of digital technologies in education has expanded the possibilities of organizing activities, interaction between participants and monitoring the learning process. Moran (2012) argues that the pedagogical potential of these technologies depends on their integration with educational objectives, not limited to instrumental use. From this perspective, digital platforms can contribute to structuring more dynamic training experiences, especially when articulated with active methodologies (**Borges; Sousa, 2024**).

In the study that gives rise to this article, the Be Active platform was used as a mediation environment for PBL in the discipline of Business Accounting, bringing together elements such as organization of activities, interaction between students and registration of the investigative path. This use made it possible to observe, in a more systematic way, how the pedagogical proposal developed and what learning was mobilized throughout the process.

Although there are studies that address PBL and, in parallel, studies on digital technologies in education, it is still relevant to investigate more specifically how this articulation contributes to the development of students' skills in higher education. In this context, this study is justified by the need to deepen the understanding of the formative effects

of the integration between active methodologies and digital mediation, with an emphasis on the development of knowledge, skills, and attitudes (CHA), in line with the formative guidelines present in the National Curriculum Guidelines **(Brasil, 2023)**.

In this article, we adopt the understanding of competencies as a category that integrates different dimensions of the training process, involving the construction of knowledge, the development of skills and the mobilization of attitudes. This approach allows for the analysis of learning beyond the acquisition of content, also considering the student's ability to act, interpret and position himself in concrete situations **(Perrenoud, 1999; Zabala; Arnau, 2010)**.

This text is an excerpt from a broader research developed in higher education, focusing specifically on the development of students' competencies in the discipline of Business Accounting, based on PBL mediated by the Be Active platform.

In view of this, the study is guided by the following research question: how does PBL, mediated by the digital platform Be Active, contribute to the development of knowledge, skills and attitudes of students in the discipline of Business Accounting in higher education?

Thus, the objective of this article is to analyze, based on the research data, how PBL, mediated by the digital platform Be Active, contributes to the development of knowledge, skills and attitudes of students in the discipline of Business Accounting in higher education.

In addition to this introduction, the article is structured into three development sections and one concluding section. In the first, the theoretical framework is presented, addressing PBL, the concept of competencies and the digital mediation of learning. In the second, the research methodology is described. In the third, the results are presented and discussed in the light of the dimensions of knowledge, skills and attitudes. Finally, the conclusion summarizes the main findings of the study.

2 THEORETICAL FRAMEWORK

2.1 PROBLEM-BASED LEARNING IN HIGHER EDUCATION

The organization of higher education has been strained by demands that go beyond the transmission of content, requiring practices that favor the active participation of students in the learning process. In this context, PBL is configured as an approach that reorganizes the dynamics of the classroom by proposing that knowledge be built from the analysis of problem situations.

PBL is structured based on the presentation of an initial problem that mobilizes students to identify what they already know, what they need to learn and how to seek information to respond to the proposed situation. For Barrows and Tamblyn (1980), this

methodology shifts the focus from teaching to the research process, in which the student assumes an active role in the construction of knowledge. In line with this perspective, Schmidt (1983) highlights that learning occurs through the interaction between previous knowledge and new information, articulated in the context of the problem.

In higher education, this approach has been used in different areas of knowledge, especially in courses that require decision-making and analysis of complex situations. According to Hmelo-Silver (2004), PBL favors the development of critical reasoning and self-directed learning, by requiring the student to actively participate in the construction of responses. In the field of Administration and Accounting, this characteristic becomes relevant, as professional training involves the interpretation of scenarios and the resolution of problems related to organizational practice.

Despite its potential, the implementation of PBL requires didactic organization, faculty monitoring, and student engagement. Ribeiro (2022) points out that the effectiveness of the methodology is related to the quality of the proposed problems, pedagogical mediation, and the participation of those involved in the process. Thus, PBL is not reduced to a teaching technique, but constitutes a way of organizing learning that demands pedagogical intentionality and articulation between its elements.

2.2 COMPETENCE DEVELOPMENT: KNOWLEDGE, SKILLS AND ATTITUDES

The notion of competencies has been widely mobilized in the educational field as a way to understand learning beyond the simple acquisition of content. From this perspective, higher education education involves not only conceptual mastery, but also the ability to mobilize knowledge in concrete situations, articulating cognitive, operational and attitudinal dimensions (Perrenoud, 1999).

According to Perrenoud (1999), the development of competencies implies the ability to act effectively in situations, mobilizing diverse knowledge in an integrated manner. This understanding allows us to analyze the training process considering not only what the student knows, but also what he is able to do with this knowledge and how he positions himself in the face of the demands of the context.

In this article, the organization of competencies in three dimensions is adopted: **knowledge, skills and attitudes (CHA)**. The dimension of knowledge refers to the appropriation of concepts, theories and information necessary to understand a certain field of study. The skills refer to the ability to apply this knowledge in practical situations, involving analysis, communication and problem solving. Attitudes, on the other hand, are related to

aspects such as autonomy, responsibility, participation and collaboration in the learning process.

In the context of higher education, especially in applied areas, this articulation becomes essential for professional training. Zabala and Arnau (2010) highlight that meaningful learning occurs when the student is able to integrate different dimensions of knowledge in concrete situations, overcoming the fragmentation between theory and practice. In this sense, the development of competencies is directly related to the way learning experiences are organized.

In the context of Brazilian higher education, the discussion about competencies is also articulated with the guidelines established by the National Curriculum Guidelines for undergraduate courses, which emphasize training oriented to the development of CHA, as well as the critical and reflective performance of students in professional contexts (Brasil, 2023). These guidelines reinforce the need for pedagogical practices that promote the articulation between theory and practice, in line with more integrated training processes.

From this perspective, the use of active methodologies, such as PBL, is particularly pertinent, since it proposes learning situations that require the integrated mobilization of CHA. Thus, the focus on the CHA allows a more comprehensive analysis of the formative effects of pedagogical practices in higher education, constituting itself as the analytical axis of this study.

2.3 DIGITAL TECHNOLOGIES AND LEARNING MEDIATION

The presence of digital technologies in higher education has reconfigured ways of organizing pedagogical practices, expanding possibilities of communication, registration, monitoring and circulation of information (Moran, 2012). However, its educational potential does not result only from the presence of technological resources, but from the way these resources are integrated into didactic planning and training purposes. In this sense, Moran (2012) emphasizes that pedagogical innovation is not in the isolated use of technology, but in its articulation with methodologies that favor the active participation of students.

Within the scope of active methodologies, digital technologies can contribute to the organization of pedagogical work, to the systematization of learning stages and to the expansion of interaction spaces beyond the classroom. This contribution becomes especially relevant when it comes to PBL, since the methodology requires investigation, recording of the course, monitoring of tasks and collaborative production of responses. In this sense, Borges and Sousa (2024) highlight that the articulation between PBL and Digital Information

and Communication Technologies (DICT) expands the possibilities of investigation, collaboration, and monitoring of the learning process.

More than serving as technical support, digital environments can assume a mediating role in the development of the pedagogical proposal, making visible the stages of the work, the materials used, the interactions between the participants and the records produced throughout the activity (**Borges; Sousa, 2024**). This perspective displaces the understanding of technology as an accessory tool and situates it as a component of the didactic arrangement, capable of sustaining more organized, interactive and procedural formative practices.

In the research that supports this article, the Be Active platform was used as a mediation environment for PBL, bringing together in a single digital space the organization of activities, the interaction between students and the monitoring of the proposed problem. According to the platform itself, its proposal consists of supporting practices based on active methodologies through integrated digital resources, favoring the conduction of different stages of learning in the same environment (Be Active, 2022). This characteristic is particularly relevant in experiences that require continuous monitoring of the investigative path.

Thus, digital mediation, when articulated with PBL, can favor not only access to information, but also the organization of reasoning, the distribution of tasks, communication among students, and the visibility of the collective construction process. In this way, technology does not act in parallel with the methodology, but integrates the learning movement itself, offering conditions to enhance investigative, collaborative, and reflective processes in higher education.

3 METHODOLOGY

This article derives from an analytical excerpt from a qualitative research with an interventional nature, developed in the context of higher education, focusing on the use of PBL, mediated by the digital platform Be Active, in the discipline of Business Accounting of the Administration course. The qualitative approach was adopted because it enables the understanding of the meanings attributed by the participants to the pedagogical experience, allowing the analysis of processes, interactions and learning built throughout the proposal (Triviños, 1987; André, 2005). The interventional character of the research stems from the intentional implementation of the methodology in the context of the discipline, with the objective of monitoring and analyzing the pedagogical effects of the action developed (Damiani *et al.*, 2013).

The research was carried out with students regularly enrolled in the Business Administration course of a higher education institution located in the interior of the state of São Paulo. The selection of participants occurred intentionally, considering the class in which the pedagogical proposal was applied. The intervention consisted of the implementation of PBL throughout the course, structured from a problem related to Business Accounting, elaborated with the purpose of articulating theoretical content to practical situations, requiring students to investigate, analyze and build solutions.

The production of data involved multiple procedures, organized in such a way as to enable the triangulation of information. Participant observation, document collection and questionnaires were used. Participant observation allowed us to follow the development of the methodology, the dynamics of the activities and the participation of the students, being understood as a relevant strategy when the researcher is inserted in the investigated context and directly follows the subjects and processes analyzed (Gil, 2008).

The documentary collection focused on the records produced in the digital environment of the Be Active platform, including materials prepared by the students, interactions carried out, team organization and stages of the problem resolution process. These records made it possible to analyze the investigative path and the forms of participation throughout the pedagogical experience.

The questionnaires included different data collection instruments. Among them, the Free Word Association Test (TALP) stands out, used to identify representations associated with the experience with PBL (Coutinho; Bú, 2017), the Kolb Learning Style Inventory, which allowed the characterization of the learning profiles of the participants (Cerqueira, 2008), and a structured questionnaire aimed at evaluating the methodology, covering aspects related to learning, collaboration, engagement and participation.

Data analysis was conducted through triangulation, articulating different sources and analytical techniques, with the objective of increasing the consistency and reliability of the results. For the treatment of textual data from the TALP and part of the discursive corpus of the research, the IRAMUTEQ software was used, through which the word cloud, the similarity analysis (Donato *et al.*, 2017) and the dendrogram of the lexical classes were generated, making it possible to identify frequencies, co-occurrences and semantic groupings in the analyzed material (Camargo; Justo, 2013). Discursive Textual Analysis (DTA) was also used, aimed at producing understandings based on the unitarization and categorization of data (Moraes; Galiazzi, 2016; Medeiros; Amorim, 2017), as well as Prototypical Analysis, applied to data from the TALP, based on the organization of the central and peripheral elements of social representations (Vergès, 1992; Abric, 2001; Wachelke; Wolter; Matos, 2016). In

addition, descriptive analyses of the answers obtained in the questionnaires were carried out, seeking to identify regularities and meanings attributed by the participants to the learning experience.

For the purposes of this article, we chose to focus on data related to the development of students' competencies, organized in the dimensions of **knowledge, skills and attitudes**. This approach is consistent with the original research design and makes it possible to deepen the analysis of the formative effects of PBL mediated by a digital platform in the context investigated.

Regarding the ethical aspects, the research was conducted in accordance with the guidelines for studies with human beings, ensuring the confidentiality of the information and the preservation of the identity of the participants. All subjects were informed about the objectives of the research and participated voluntarily, upon acceptance of the Informed Consent Form.

As a limitation of the study, the fact that the research was carried out in a specific context, with a single class and institution, which restricts the generalization of the results, stands out. In addition, as it is a pedagogical intervention, the data reflect a situated experience, influenced by the conditions of the context, by the teacher mediation and by the participation of the students. Even so, the findings offer relevant contributions to the understanding of the articulation between active methodologies and digital technologies in higher education.

4 RESULTS AND DISCUSSIONS

The data analysis was guided by the objective of understanding how PBL, mediated by the digital platform Be Active, contributed to the development of students' competencies, considering the dimensions of **knowledge, skills and attitudes**. To this end, the results were organized based on these three dimensions, articulating evidence from the TALP, the similarity analysis, the ATD, the platform records and the students' responses to the instruments applied.

More than identifying recurrent words or isolated categories, we sought to understand how the students constructed meanings about the lived experience and how this experience had repercussions on their formative process. In this sense, the triangulation of the data allowed us to observe that the pedagogical proposal did not only focus on the learning of the contents of the discipline, but also on ways of analyzing problems, organizing strategies, interacting with colleagues and assuming responsibilities along the way.

processual and significant character, as the content has come to be understood in terms of its analytical utility.

To summarize this first movement of reading the data, Table 1 is presented.

Table 1

Core Elements of the Word Cloud and Its Formative Meanings

Featured Terms	Predominant direction	Analytical indication
Company	Central context of the problem-situation	Approximation between content and professional practice
Analyze	Recurrent cognitive action	Mobilization of interpretative reasoning
Balance Sheet / Equity	Technical content of the course	Appropriation of accounting concepts
Liquidity	Relevant financial indicator	Construction of applied knowledge
Problem	Structuring axis of the activity	Concrete challenge-driven learning

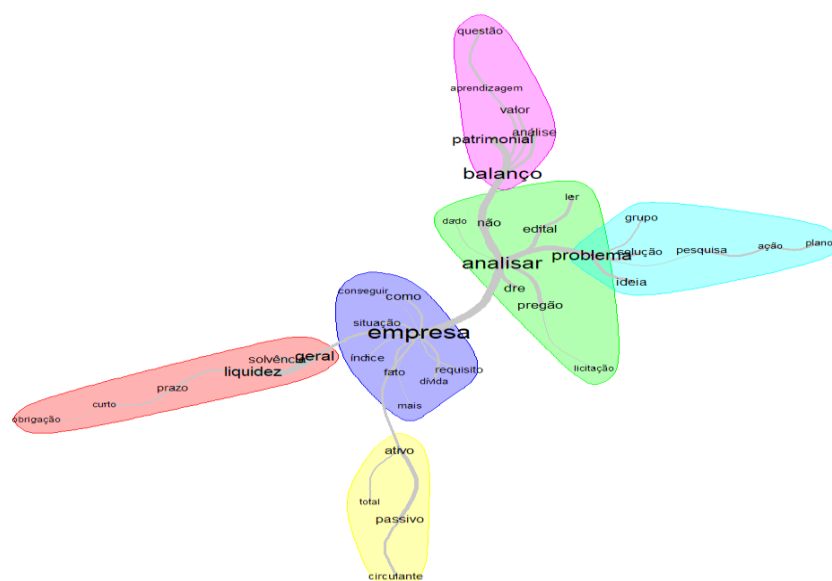
Source: Prepared by the authors based on Hernandes (2023).

The data in Table 1 reinforce that the most recurrent terms do not appear in a dispersed way, but are articulated in a context of accounting analysis and problem solving. This indicates that the methodological proposal favored the construction of knowledge linked to concrete objects of study, strengthening the understanding of the contents in the situation.

To deepen this understanding, the analysis of similarity made it possible to identify the relationships established between the evoked terms, evidencing the semantic organization of the representations constructed by the students.

Figure 2

Analysis of the similarity of evocations related to PBL



Source: Survey data (Hernandes, 2023).

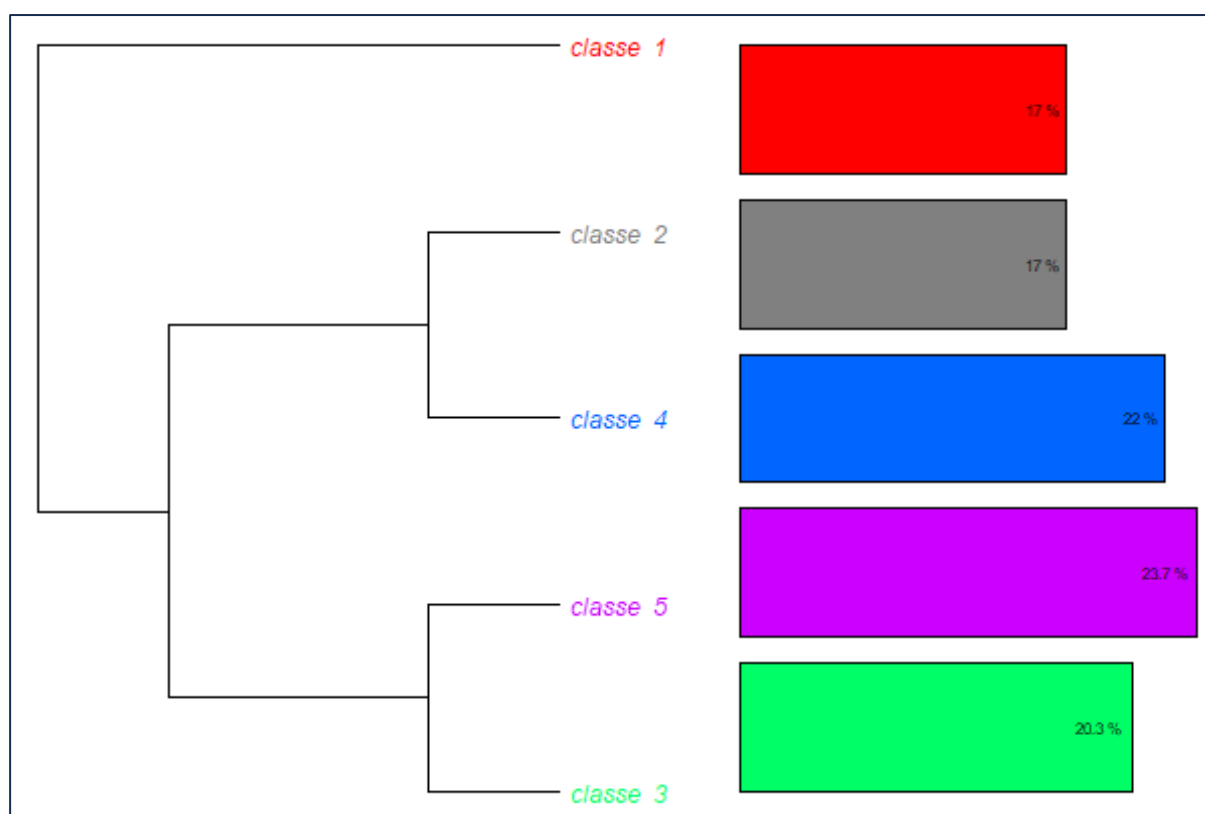
The structure of similarity (Figure 2) reveals the centrality of the term "company" as the articulating nucleus of the relations, connected to technical concepts such as "liquidity", "solvency", "balance sheet", "assets" and "liabilities", as well as to elements associated with the methodological path, such as "analyzing", "problem" and "planning". This configuration indicates that the learning process occurred through the articulation between concepts, analysis procedures and decision-making.

This aspect deserves to be highlighted because it shows that the students not only recognized terms specific to the area, but also began to relate them to each other. The presence of connections between technical concepts and cognitive actions suggests that learning involved a movement of integrated understanding, in which theory and practice do not appear dissociated. In formative terms, this means that PBL favored not only the acquisition of knowledge, but also the ability to organize it in a structure of reasoning applicable to the resolution of situations.

In the same direction, the analysis in the form of a dendrogram broadened the understanding of this path, by evidencing the organization of the corpus into lexical classes, whose interpretation was carried out in the light of the DTA.

Figure 3

Dendrogram of the lexical classes obtained in the similarity analysis



Source: Survey data (Hernandes, 2023).

The structure of the dendrogram (Figure 3) shows the formation of five thematic classes, which express different stages of the learning process experienced by the students. Class 3 (20.3%) refers to investigative strategies and resolution planning, characterizing the initial moment of the experience, in which students dedicate themselves to reading the notice, searching for information and defining ways to understand the problem. This data reveals that the construction of knowledge began with the organization of the investigation.

Class 2 (17%) evidences the conceptual appropriation of accounting indicators, marked by the understanding of notions such as current liquidity, general liquidity and general solvency. At this stage, students seek to master concepts that were not yet fully consolidated, which shows that PBL has driven them to seek theoretical foundations to support the analysis.

Class 4 (22%) highlights the analytical process of the balance sheet and the Income Statement (P&L), evidencing the practical application of the knowledge. In this grouping, students move from conceptual understanding to the operationalization of contents, performing technical readings, reorganizing data and calculating indicators.

Class 5 (23.7%), the most representative, is related to collaborative learning and the collective construction of solutions, which indicates that knowledge was not produced individually and in isolation, but in interaction with the group. Finally, Class 1 (17%) refers to decision-making based on the criteria of the notice, representing the moment when students convert analysis into judgment.

This progression can be seen in a synthetic way in Table 2.

Table 2

Dendrogram classes and identified training path

Class	Main emphasis	Interpretation
Class 3 (20.3%)	Investigative strategies and planning	Beginning of the process: reading the problem, organizing the investigation
Class 2 (17%)	Conceptual appropriation	Construction of theoretical foundations necessary for analysis
Class 4 (22%)	Analysis of the balance sheet and P&L	Practical application of accounting knowledge
Class 5 (23.7%)	Collaborative learning	Collective construction of solutions and social mediation of learning
Class 1 (17%)	Decision making	Final judgment based on criteria in the public notice

Source: Prepared by the authors based on Hernandes (2023).

Table 2 shows that the training path identified in the data is consistent with the assumptions of PBL: students start with research, advance to conceptual understanding, technically apply knowledge, construct responses in collaboration and, finally, make reasoned decisions. Thus, the joint analysis of the word cloud (Figure 1), the similarity (Figure

2) and the dendrogram (Figure 3) shows that PBL favored a more active, articulated and contextualized construction of knowledge.

4.2 SKILL DEVELOPMENT

The analysis of the skills dimension showed that the experience with PBL contributed to the development of competencies related to investigation, problem solving, communication and teamwork. Unlike a didactic organization centered only on the exposition of the content, the proposal required students to take a set of practical and cognitive actions aimed at understanding and solving the situation presented.

One of the most evident skills was investigative. The students needed to locate information, interpret data, identify concepts not yet understood and seek elements that would allow them to support their analyses. In this process, research did not appear as an accessory activity, but as a constitutive part of learning. This can be observed both in the words evoked and in the structure of the classes identified in the dendrogram (Figure 3), especially those related to the planning of the resolution and the technical analysis of the problem.

Another central aspect refers to the ability to solve problems. The proposed activity required students to analyze the documentation presented, interpret the notice, examine equity and financial data, and formulate a judgment on the company's situation. This movement involved analytical reasoning, selection of relevant information and construction of justifications, indicating a formative exercise that goes beyond the conceptual domain.

Communication and collaboration skills were also relevant. The need to construct group responses required negotiation, listening, argumentation, and the search for consensus. In this sense, learning took place in an environment of exchange, in which students needed to make their points of view explicit, dialogue with their classmates and collectively reorganize the constructed interpretations.

In addition, the mediation of the Be Active platform contributed to the development of organizational skills. The monitoring of tasks, the registration of the stages and the visualization of the route allowed the students to better structure their actions, distribute activities and monitor the progress of the work. Technology, therefore, operated as a support for the management of the learning process.

The synthesis of these findings can be seen in Table 3.

Table 3

Skills mobilized in the learning process with PBL

Ability	Observed evidence	Training contribution
Investigation	Search for information, reading the notice, researching concepts	Expansion of cognitive autonomy
Troubleshooting	Data interpretation, equity analysis, solution formulation	Strengthening analytical reasoning
Communication	Group discussions, exchange of ideas, justifications	Development of the argument
Collaboration	Collective construction of responses	Socially mediated learning
Organization	Use of the platform, task tracking	Work planning and management

Source: Prepared by the authors based on Hernandez (2023).

The data in Table 3 should not be understood as isolated competencies, but as articulated dimensions. Research, for example, underpins problem-solving; communication strengthens collaboration; and the organization enables the development of collective work. This articulation confirms that the experience with PBL contributed to the development of skills that dialogue directly with academic and professional training in the field of Administration and Accounting.

4.3 ATTITUDE DEVELOPMENT

The dimension of attitudes evidenced changes in the students' attitude towards the learning process, especially with regard to autonomy, responsibility, engagement and participation. Although these dimensions are not always captured with the same visibility as knowledge and skills, the survey data indicate that they constituted an important part of the formative experience.

The records of the platform, the interactions observed and the students' responses suggest that PBL favored greater involvement with the proposed activities. When faced with a situation that required action, investigation and positioning, the students began to assume a more active role in the development of the work. This change in posture is significant because it displaces the student from a condition of receiver to a position of participant in the process.

Responsibility also stood out as a relevant attitude. The monitoring of tasks in the digital environment, the need to contribute to the group and the requirement to substantiate the decisions made favored greater commitment to the activities. The student not only needed to participate, but he needed to participate with quality, justifying his choices and responding for the path developed.

Another important aspect concerns engagement. The pedagogical proposal, by articulating real problem, investigation and collective construction, seems to have favored greater adherence of students to the training process. Engagement, in this case, should not be understood only as the presence or execution of tasks, but as effective involvement with the activity and with the objective of understanding and solving it.

Collaboration, in turn, does not appear only as an operational skill, but as an attitude. This is because the collective construction of the answers required a willingness to listen to the other, review positions, negotiate interpretations and share responsibilities. Such aspects reveal that learning was also a space for ethical and relational formation.

The synthesis of these attitudes is presented in Table 4.

Table 4

Attitudes developed in the context of PBL mediated by the digital platform

Attitude	Observed evidence	Formative sense
Autonomy	Active participation in the search and analysis of information	Protagonism in the learning process
Responsibility	Fulfillment of tasks and justification of decisions	Commitment to the training path
Engagement	Involvement with the activity and the proposed problem	Greater adherence to the learning process
Collaboration	Listening, negotiation and joint construction	Development of a cooperative posture
Participation	Active presence in interactions and activity stages	Expansion of student performance

Source: Prepared by the authors based on Hernandez (2023).

The data summarized in Table 4 reinforce that the experience with PBL, mediated by the Be Active platform, did not focus only on the mastery of content or on the execution of tasks. There were also important repercussions in the way students positioned themselves in the face of learning, the group and the problem. In this sense, the development of attitudes appears as a constitutive dimension of experience, and not as a secondary effect.

In general, the articulation between active methodology and digital mediation contributed to the formation of a more active and committed posture in higher education. This finding is relevant because it shows that learning, when organized based on problems and accompanied by a structured digital environment, can favor not only the acquisition of knowledge, but also the development of skills and attitudes that are fundamental to academic and professional training.

5 CONCLUSION

This study aimed to analyze how PBL mediated by the digital platform Be Active contributes to the development of competencies — knowledge, skills and attitudes — of students in the teaching of Business Accounting, in the context of higher education.

The results showed that the pedagogical proposal favored the construction of knowledge in a more articulated and contextualized way, allowing students to mobilize accounting concepts in practical situations. The analysis of the word cloud, the similarity and the dendrogram indicated the centrality of terms related to the analysis of balance sheets, financial indicators, investigation and problem solving, showing that the learning process was guided by the application of the contents in real contexts. In addition, the organization of the lexical classes revealed a structured formative path, in which students go through stages that involve investigation, conceptual understanding, technical application, collaboration and decision-making.

With regard to skills, the findings indicate that the experience with PBL contributed to the development of investigative, analytical, communicative, collaborative, and organizational competencies. The need to interpret data, seek information, discuss in groups and construct reasoned answers favored capacities that go beyond the conceptual domain and approach the requirements of the professional context.

Regarding attitudes, it was observed that the methodology favored greater autonomy, responsibility, engagement and participation of students. The organization of activities on the digital platform contributed to the monitoring of tasks and the visibility of the process, encouraging a more active posture and commitment to learning. In addition, the interaction between students strengthened collaboration and the collective construction of knowledge, evidencing the social dimension of the training process.

In general, the results indicate that the articulation between PBL and mediation through a digital platform enhances the development of competencies in higher education, by integrating knowledge, skills and attitudes in an active and contextualized learning process. In theoretical terms, the study reinforces the understanding that active methodologies associated with digital technologies expand the possibilities of analysis on the development of competencies in higher education. In practical terms, the findings offer subsidies for the planning of more participatory pedagogical strategies in disciplines of applied nature, such as Business Accounting. In this way, the results also dialogue with contemporary guidelines for higher education education, which emphasize the development of integrated competencies and the articulation between theory and practice. In this sense,

the use of active methodologies mediated by digital technologies is in line with current training demands, by favoring the critical, reflective and collaborative action of students.

As a limitation, the fact that the research was carried out in a specific context, with a single class and institution, which restricts the generalization of the results, is noteworthy. In addition, as it is a situated pedagogical intervention, the findings are related to the specific conditions of implementation of the proposal. Even so, the results offer relevant contributions for future research that seeks to deepen the relationship between active methodologies, digital technologies and skills development in higher education.

As future perspectives, it is suggested the expansion of the study to different institutional contexts and areas of knowledge, as well as the long-term investigation on the impacts of PBL mediated by digital technologies on the academic and professional training of students.

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MUSEO DE GEOCIENCIAS, EXTENSIÓN UNIVERSITARIA Y PRODUCCIÓN DEL CONOCIMIENTO: ARTICULACIONES ENTRE ENSEÑANZA, INVESTIGACIÓN Y FORMACIÓN EDUCATIVA EN LA ENSEÑANZA DE GEOGRAFÍA, CIENCIAS E HISTORIA

MUSEU DE GEOCIÊNCIAS, EXTENSÃO UNIVERSITÁRIA E PRODUÇÃO DO CONHECIMENTO: ARTICULAÇÕES ENTRE ENSINO, PESQUISA E FORMAÇÃO EM EDUCAÇÃO, ENSINO DE GEOGRAFIA, CIÊNCIAS E HISTÓRIA

GEOSCIENCES MUSEUM, UNIVERSITY EXTENSION, AND KNOWLEDGE PRODUCTION: ARTICULATIONS AMONG TEACHING, RESEARCH, AND EDUCATIONAL TRAINING IN GEOGRAPHY, SCIENCE, AND HISTORY EDUCATION



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RESUMEN

Este estudio tiene como objetivo analizar las contribuciones de los proyectos de investigación y extensión vinculados al Museo de Geociencias de la Universidad Estadual del Norte de Paraná (UENP), destacando su articulación con la enseñanza, la formación docente y la producción del conocimiento científico. Metodológicamente, se trata de una investigación cualitativa basada en revisión bibliográfica, análisis documental y sistematización de prácticas institucionales. El estudio se fundamenta en enfoques teóricos que discuten la función social de la universidad, la epistemología crítica y el papel de los museos como espacios de mediación científica, con base en autores como Santos, Freire, Hooper-Greenhill y Cavalcanti. Los resultados evidencian que el museo se configura como un espacio estratégico para la integración entre enseñanza, investigación y extensión, contribuyendo a la preservación del patrimonio geológico y arqueológico, así como a la

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educación científica y la alfabetización geográfica. Asimismo, se destacan avances en la formación de estudiantes mediante su participación en proyectos de investigación y extensión, con énfasis en metodologías activas, recursos didácticos innovadores y tecnologías digitales. Se concluye que la articulación entre universidad y sociedad fortalece la construcción de una ciencia más democrática, interdisciplinaria y socialmente comprometida.

Palabras clave: Geociencias. Extensión Universitaria. Enseñanza de Geografía. Museo. Producción del Conocimiento.

RESUMO

Este estudo tem como objetivo analisar as contribuições dos projetos de pesquisa e extensão vinculados ao Museu de Geociências da Universidade Estadual do Norte do Paraná (UENP), evidenciando suas articulações com o ensino, a formação docente e a produção do conhecimento científico. Metodologicamente, trata-se de uma pesquisa de natureza qualitativa, baseada em revisão bibliográfica, análise documental e sistematização das práticas desenvolvidas no âmbito institucional. O trabalho fundamenta-se em referenciais teóricos que discutem a função social da universidade, a epistemologia crítica e o papel dos museus como espaços de mediação científica, destacando autores como Santos, Freire, Hooper-Greenhill e Cavalcanti. Os resultados indicam que o Museu de Geociências configura-se como um espaço estratégico para a integração entre ensino, pesquisa e extensão, contribuindo para a preservação do patrimônio geológico e arqueológico, bem como para a promoção da educação científica e da alfabetização geográfica. Além disso, evidenciam-se avanços na formação de estudantes por meio da participação em projetos de iniciação científica e extensão, com destaque para o uso de metodologias ativas, recursos didáticos inovadores e tecnologias digitais. Conclui-se que a articulação entre universidade e sociedade, mediada por práticas extensionistas e educativas, fortalece a construção de uma ciência mais democrática, interdisciplinar e socialmente comprometida.

Palavras-chave: Geociências. Extensão Universitária. Ensino de Geografia. Museu. Produção do Conhecimento.

ABSTRACT

This study aims to analyze the contributions of research and extension projects linked to the Geosciences Museum of the State University of Northern Paraná (UENP), highlighting their articulation with teaching, teacher education, and scientific knowledge production. Methodologically, this is a qualitative study based on bibliographic review, document analysis, and systematization of institutional practices. The research is grounded in theoretical frameworks addressing the social role of the university, critical epistemology, and the role of museums as spaces of scientific mediation, drawing on authors such as Santos, Freire, Hooper-Greenhill, and Cavalcanti. The results indicate that the Geosciences Museum functions as a strategic space for integrating teaching, research, and extension, contributing to the preservation of geological and archaeological heritage, as well as to scientific education and geographical literacy. Furthermore, the study highlights advances in student training through participation in research and extension projects, particularly through the use of active methodologies, innovative teaching resources, and digital technologies. It is concluded that the articulation between university and society strengthens the construction of a more democratic, interdisciplinary, and socially engaged science.

Keywords: Geosciences. University Extension. Geography Teaching. Museum. Knowledge Production.

1 INTRODUCCIÓN

La universidad contemporánea enfrenta el desafío de reafirmar su función social en un contexto marcado por profundas transformaciones científicas, tecnológicas y socioambientales. En este escenario, la articulación entre enseñanza, investigación y extensión emerge como uno de los principales pilares para la producción de un conocimiento socialmente relevante, capaz de dialogar con las demandas de la sociedad y contribuir a la formación crítica de los sujetos.

En el ámbito de las Geociencias y la Geografía, esta integración adquiere un papel aún más significativo, ya que dichas áreas se dedican a la comprensión de las dinámicas entre sociedad y naturaleza, así como al análisis de los procesos espaciales que estructuran el territorio. La creación y consolidación de museos universitarios, especialmente aquellos orientados a las Geociencias, se insertan en este contexto como estrategias fundamentales para la democratización del conocimiento científico y la preservación del patrimonio natural y cultural.

De acuerdo con Boaventura de Sousa Santos (2006), la universidad debe superar la lógica de producción de conocimiento desvinculada de la realidad social, promoviendo una ecología de saberes que valore diferentes formas de conocimiento. En esta perspectiva, los museos universitarios se configuran como espacios privilegiados de mediación entre la ciencia y la sociedad, contribuyendo a la construcción de una ciencia más plural, crítica y accesible.

Además, la creciente valorización del patrimonio geológico, arqueológico y ambiental refuerza la importancia de iniciativas orientadas a su preservación y difusión. En el caso específico de la Universidad Estadual del Norte de Paraná (UENP), la estructuración del Museo de Geociencias en el Campus de Cornélio Procopio representa una acción estratégica que articula investigación científica, prácticas de extensión y actividades pedagógicas, tal como se evidencia en los proyectos institucionales desarrollados.

En este sentido, es importante enfatizar que la universidad pública desempeña un papel fundamental en la estructuración y el desarrollo de la sociedad contemporánea. Se presenta como un instrumento de transformación social, de oportunidades y de inclusión, sin distinción, además de dirigir su mirada hacia las problemáticas sociales y las desigualdades estructurales que afectan al colectivo. Se consolida como un espacio de construcción compartida del conocimiento científico, de reflexión crítica y de promoción de la emancipación cultural del individuo. Su importancia radica, sobre todo, en su accesibilidad a diferentes estratos sociales, permitiendo que individuos accedan a una educación superior de calidad independientemente de su condición económica.

En un primer momento, la educación superior brasileña fue instaurada en 1808 bajo una fuerte influencia eurocéntrica, constituyendo un esbozo inicial de lo que hoy se entiende como universidad pública. A medida que el mundo atravesaba transformaciones, también cambiaban las formas de enseñar y aprender. Este proceso se dio en el marco de una sociedad monárquica subordinada a la Corte portuguesa y a las necesidades derivadas del mantenimiento del sistema colonial.

El educador y jurista Anísio Teixeira señala que “Brasil fue uno de los últimos países del mundo en instituir universidades en su territorio” (Teixeira, 1989, p. 45), lo cual se explica por el traslado apresurado de la Corona portuguesa a Río de Janeiro. Esta situación generó la necesidad de formación especializada, particularmente en áreas vinculadas al ámbito militar y a la organización territorial, dada la incertidumbre que orientaba las decisiones de la Corona. Asimismo, cabe destacar que una de las funciones prácticas de las Geociencias estaba estrechamente vinculada al reconocimiento territorial con fines estratégicos y al desarrollo de técnicas de cartografía.

Brasil constituye una excepción en América Latina: mientras España difundió universidades por sus colonias - alcanzando 27 al momento de la independencia - Portugal, fuera de los colegios reales jesuitas, limitó la educación superior a las universidades de la metrópoli: Coimbra y Évora (Teixeira, 1976, p. 244⁹).

Hasta el final del Período Imperial, en 1889, se observó un desarrollo gradual en el ámbito de la educación superior, ya que tanto los colonizadores como la colonia, en particular la recién formada élite brasileña, manifestaron una fuerte resistencia a la creación de una institución nacional. Esta situación se deriva de un pensamiento y hábito patriarcal de enviar a sus hijos a estudiar en países considerados referentes civilizatorios y centros de producción de conocimiento.

De este modo, se hace evidente el surgimiento de un proceso de sobrevaloración de la cultura extranjera en detrimento de la construcción de una identidad nacional; sus efectos aún pueden observarse en la tendencia a privilegiar lo producido en el exterior frente a aquello desarrollado en el territorio nacional. Asimismo, es importante señalar que el eurocentrismo académico contribuyó al mantenimiento de desigualdades epistémicas, al definir qué conocimientos eran considerados válidos y cuáles eran relegados a posiciones secundarias. Esta dinámica afecta no solo la producción científica, sino también la formación de los individuos en las universidades y el desarrollo sociocultural (Quijano, 2005).

⁹ O Brasil constitui uma exceção na América Latina: enquanto a Espanha espalhou universidades pelas suas colônias – eram 27 ao tempo da independência – Portugal, fora dos colégios reais dos jesuítas, nos deixou limitados as Universidades da Metrópole: Coimbra e Évora (Teixeira, 1976, p. 244).

En este período, resultaba evidente la preocupación de los pensadores por establecer relaciones entre la importancia de la institución universitaria y los demás pilares estructurantes de la sociedad. En 1931, cabe destacar uno de los avances más significativos en este ámbito: la Reforma Francisco Campos, que autorizó y reguló el funcionamiento de las universidades, además de establecer una mayor centralización administrativa en sus estructuras, así como la organización de la enseñanza secundaria y superior en el país (Coelho; Vasconcelos, 2009).

Art. 108. Para la implementación de medidas de asistencia y beneficencia dirigidas al estudiantado de las instituciones de educación superior, incluyendo la concesión de becas, deberá establecerse coordinación entre la Asociación de Profesores Universitarios y la Federación Central de Estudiantes, a fin de que dichas medidas se rijan por criterios rigurosos de justicia y oportunidad (Brasil, 1931¹⁰).

En síntesis, este conjunto de decretos, liderado por el Ministro de Educación, orientó diferentes estrategias educativas a nivel legal, promoviendo una organicidad disciplinaria con impacto cultural directo en la contemporaneidad y en la forma en que la enseñanza fue sistematizada a partir de la centralización político-administrativa e ideológica. Puede afirmarse que esta acción tuvo como objetivo canalizar la producción académica y dirigirla hacia la supervisión estatal (Sguissardi, 1993).

En cuanto al estado de Paraná, en contraste con lo ocurrido en otros centros del país, la primera institución de educación superior fue una universidad. La élite paranaense no disponía de grandes recursos económicos, y las dinámicas educativas se desarrollaron en paralelo a la construcción económica del recientemente constituido estado. Según Wachowicz (1983), se buscó instituir una enseñanza de carácter general, en la cual la investigación aún no era considerada primordial ni indispensable.

El período del Estado Novo introdujo el concepto de federalización, entendido como un intento de democratizar la educación y evitar que quedara restringida a las élites, como señala Michelotto (2011). En consonancia con esta perspectiva, el sociólogo Florestan Fernandes formuló el siguiente paradoja: “tener una universidad rica en un mundo pobre o una universidad revolucionaria en una sociedad conservadora”, evidenciando la importancia del papel de la universidad como agente de transformación y de inclusión en la construcción de la identidad nacional.

¹⁰ Art. 108. Para efetivar medidas de providências e beneficência, em relação aos corpos discentes dos institutos de ensino superior, inclusive para a concessão de bolsas de estudos, deverá haver entendimento entre a Sociedade dos Professores Universitários e o Diretório Central dos Estudantes, a fim de que naquelas medidas seja obedecido rigoroso critério de justiça e de oportunidade (Brasil, 1931).

En el marco de la construcción histórica y del constante proceso de innovación, el siglo XX estuvo marcado por la multiplicidad de corrientes ideológicas, la modernización y la valorización del desarrollo nacional. Las transformaciones políticas e intelectuales surgieron de la necesidad de renovación y de los procesos de descolonización, incorporando diversas corrientes teóricas críticas orientadas a romper con estructuras invisibles de dominación.

La crítica al eurocentrismo fue profundizada por autores latinoamericanos, especialmente en el ámbito de los debates sobre la consolidación de la identidad nacional, evidenciando la persistencia de estructuras de poder en el campo epistemológico. Entre los principales movimientos, destacan las corrientes renovadoras y las tecnocráticas.

El movimiento de la Escuela Nueva, como una de estas corrientes, representa una perspectiva que articula enseñanza, investigación y extensión. Buscaba analizar y fomentar las aptitudes individuales, además de considerar el bagaje cultural previo aportado por los estudiantes. En oposición a la enseñanza tradicional, defendía el uso de metodologías activas, centradas en el protagonismo del estudiante en su propio proceso de construcción del conocimiento.

En este contexto, se comienza a hablar de “ciencias de la educación”, adoptándose medidas educativas orientadas a lo que se consideraba “el principal problema de la Nación”, lo que implicó la difusión de teorías y técnicas psicológicas, la publicación de obras didáctico-metodológicas y el estudio de la pedagogía como una “ciencia experimental” (Coelho; Vasconcelos, 2009, p. 9¹¹).

Es necesario considerar también la vertiente tecnocrática, derivada del progreso económico y fundamentada en la formación especializada. Como instrumento capitalista dotado de planificación técnica, buscaba racionalizar el modelo de producción del conocimiento mediante el cientificismo, con el objetivo de garantizar mejores resultados (Santos; Rothen, 2015).

[...] La tecnocracia debe velar por que la persona tenga asegurada la oportunidad de acceder y completar su formación educativa en una institución pública de enseñanza, bajo la responsabilidad del Estado (Santos; Rothen, 2015, p. 87¹²).

De este modo, al retomar el arduo proceso mediante el cual la academia brasileña buscó consolidarse en el país, se constata reiteradamente que el rigor académico adoptado en Brasil ha privilegiado los modelos científicos provenientes de Europa, tomándolos como

¹¹ Fala-se em ‘ciências da educação’, utilizam-se as medidas educacionais [...] ‘o principal problema da Nação’ passamos a divulgação de técnicas e teorias psicológicas, a promulgação de obras didático-metodológicas, ao estudo da pedagogia como ‘ciência experimental’ (Coelho; Vasconcelos, 2009, p. 9).

¹² [...] A tecnocracia deve zelar para que a pessoa humana tenha assegurada a oportunidade de acessar e completar a sua formação instrucional em uma instituição pública de ensino, sob a responsabilidade do Estado (Santos; Rothen, 2015, p. 87).

referencia de legitimidad, rigor metodológico y verdad absoluta. Esta perspectiva se vincula directamente con el pensamiento del sociólogo Boaventura de Sousa Santos, quien sostiene que los estudios decoloniales promueven narrativas subalternas, permitiendo intervenciones epistemológicas ausentes en los estudios poscoloniales, y ampliando la comprensión de las complejas intersecciones entre raza, género y clase.

Asimismo, en el marco de las dificultades inherentes a la construcción institucional, en la actualidad es posible hablar de democracia en el ámbito universitario; sin embargo, durante la década de 1960, la vida académica estuvo profundamente atravesada por la supresión de los derechos constitucionales y marcada por una intensa violencia. En este contexto, las instituciones, como parte integrante de la sociedad, no permanecieron aisladas de la censura y la represión.

El período dictatorial, que se extendió de 1964 a 1985, fue responsable de múltiples violaciones a los derechos de libertad individual y colectiva. “Justificado” mediante el Acto Institucional n.º 5 (AI-5), se impuso un control riguroso sobre la producción literaria y sobre los recursos destinados a la investigación y la extensión.

No obstante, también se observa un estímulo a la inversión en investigación aplicada, a través de la creación de organismos como el Consejo Nacional de Desarrollo Científico y Tecnológico (CNPq), con el objetivo de impulsar el desarrollo tecnológico e incidir en el crecimiento económico del país. En este sentido, el economista Gary Becker (1993) señala posteriormente que “la educación y la formación incrementan la productividad de los individuos, elevando sus ingresos futuros” (Becker, 1993, p. 17).

A partir de 1969, se produjo un aumento significativo del financiamiento público en el sector educativo, lo que impulsó de manera decisiva la investigación científica. En algunos casos, este proceso permitió sustituir a destacados intelectuales expulsados durante el régimen por una nueva generación de profesionales. En este contexto, se estructuró el sistema nacional de posgrado, cuando sectores estratégicos del gobierno fueron convencidos de la importancia de invertir en educación (Motta, 2014, p. 198¹³).

En contraste con las funciones sociales vinculadas a la investigación y a las producciones derivadas de esta, Farraco (2002) señala que “[...] la división entre disciplinas básicas y profesionalizantes ha establecido un complejo vacío académico del cual aún no hemos logrado liberarnos”. Esta reflexión pone de relieve, en particular, el campo de la

¹³ A partir de 1969, houve expressivo aumento do financiamento público no setor educacional, impulsionando fortemente a pesquisa, o que permitiu em algumas situações “substituir” importantes nomes expurgados por outros de uma nova geração de profissionais. Nesse contexto, foi estruturado o sistema nacional de pós-graduação, quando setores estratégicos do governo foram convencidos sobre a importância dos investimentos em educação [...] (Motta, 2014, p. 198).

geología física, considerando el interés en el estudio del suelo y la prioridad otorgada a la minería estratégica.

El análisis, aunque sea breve, del proceso gradual de formación de las universidades resulta imprescindible. En el debate sobre la relevancia de fomentar la investigación y la extensión, se considera que la memoria histórica constituye un elemento vivo que otorga valor a la narrativa científica, en contraposición a conceptos obsoletos heredados del legado colonial que aún persisten en la sociedad. Uno de los principales desafíos de la academia en el período posmoderno es enfrentar discursos ampliamente difundidos que, de manera tácita, deslegitiman la función social de las universidades y de la educación en general, reduciéndolas a intereses meramente económicos y desconectándolas de su finalidad social.

En consecuencia, el proceso de redemocratización de la sociedad brasileña estuvo influenciado por diversos movimientos sociales y académicos, tales como la resistencia de las instituciones educativas y su articulación con movimientos sociales. En el estado de Paraná, estos procesos se reflejan en la expansión del movimiento docente y en la reorganización del movimiento estudiantil. A nivel nacional, las universidades buscaron sobrevivir y reestructurarse frente a las dificultades heredadas del período autoritario del régimen militar.

Posteriormente, ante la necesidad de una Constitución que priorizara la dignidad humana y evitara la vulneración de los derechos civiles y constitucionales, Silva (2020) sostiene que la consolidación de un Estado Democrático de Derecho, bajo el principio de la soberanía popular, depende fundamentalmente de la efectividad de los derechos consagrados en ella. En este contexto, las universidades asumen un papel estratégico en la materialización y aplicación de dichas normas.

Tal como lo establece la Constitución Federal de 1988, el derecho a una educación de calidad es un derecho fundamental de carácter colectivo.

La calidad es el elemento central cuando se trata de cualquier servicio ofrecido a la sociedad, y este principio también se aplica al ámbito educativo. Es indiscutible que el país necesita una juventud bien formada como garantía esencial para asegurar el progreso, el desarrollo y la madurez de la sociedad presente y futura. Familias y estudiantes buscan mejorar sus condiciones de vida invirtiendo en educación, con la convicción de que ello les permitirá alcanzar sus aspiraciones. En definitiva, existe un consenso general en que la educación marca la diferencia (Juliatto, 2005, p. 47¹⁴).

¹⁴ Qualidade é o que realmente interessa, quando falamos de qualquer tipo de serviço oferecido à sociedade. Tal princípio também vale quando o assunto é educação. Está fora de dúvida que o país necessita de juventude bem-educada, como a sua maior garantia para assegurar o progresso, desenvolvimento e madureza da sociedade atual e vindoura. Famílias e estudantes procuram melhorar de vida, investindo na educação, na

La integración entre la investigación y la extensión es responsable de la consolidación del vínculo entre la comunidad externa y la comunidad académica, y esta tríada se articula con los procesos de construcción social. A nivel regional, al considerar el Norte de Paraná, esta relación resulta particularmente relevante debido a su diversidad geológica y ambiental, que incluye suelos variados, formaciones sedimentarias y recursos hídricos significativos.

Con la promulgación de la Constitución Federal de 1988, que consolidó el papel de las universidades como espacios de producción de conocimiento y formación ciudadana, estas instituciones asumieron una función central en la sociedad, garantizando la efectividad de los derechos establecidos. En este contexto, corresponde a las ciencias, y, en particular, a las Geociencias, actuar con autonomía intelectual y compromiso social.

Desde esta perspectiva, la universidad pública se presenta como un instrumento de transformación social, al contribuir a la reducción de desigualdades y a la construcción de una sociedad más justa. Al ofrecer educación gratuita y de calidad, estas instituciones amplían oportunidades y permiten la movilidad social de grupos históricamente marginados. Además, son responsables de una parte significativa de la producción científica del país, lo que evidencia su papel estratégico en el avance tecnológico, la innovación y la formulación de políticas públicas eficaces orientadas al desarrollo nacional (Quijano, 2005).

Asimismo, cabe destacar que la enseñanza de las Geociencias en las universidades brasileñas se caracteriza por la articulación entre teoría y práctica. Cordani y Ernesto (2018) señalan que la disciplina debe desarrollarse de manera integrada, promoviendo en los estudiantes competencias analíticas, metodológicas y científicas. También destacan que la extensión universitaria permite vincular el conocimiento geocientífico con la sociedad, haciéndolo accesible más allá del ámbito académico y posibilitando la participación directa de estudiantes e investigadores en proyectos aplicados, retomando así la idea de oportunidad.

Alves y Barreto (2024) subrayan que las actividades de extensión, como los programas de alfabetización científica en Geociencias, contribuyen a la democratización del conocimiento, promoviendo el interés y la familiarización con conceptos previamente inaccesibles para amplios sectores de la población.

En síntesis, se sostiene que la universidad, como institución social históricamente constituida, desempeña un papel central en la formación del individuo, no solo desde una perspectiva técnico-profesional, sino, sobre todo, en la construcción de sujetos críticos, reflexivos y socialmente comprometidos. La articulación entre Geociencias, geopolítica,

crença de que assim realizam os seus sonhos. Simplesmente todos acreditamos que a escola faz a diferença (Juliatto, 2005, p. 47).

sociedad y sostenibilidad se configura como un eje fundamental de análisis para la comprensión de las dinámicas contemporáneas relacionadas con el territorio y los recursos naturales.

En este sentido, la producción de conocimiento está intrínsecamente vinculada al principio de la indisolubilidad entre enseñanza, investigación y extensión. La valorización de una cultura de aprendizaje en el ámbito universitario se presenta como una condición esencial para la efectividad de estos procesos formativos. Concebir la educación como una práctica continua, colaborativa y socialmente situada, en la que el conocimiento se construye colectivamente y se orienta hacia la transformación de la realidad, constituye una necesidad urgente.

De este modo, el presente trabajo tiene como objetivo analizar las contribuciones de los proyectos de investigación y extensión vinculados al Museo de Geociencias de la UENP, destacando su papel en la formación académica, en la producción del conocimiento y en la promoción de la educación científica. Asimismo, se busca reflexionar sobre las interfaces entre patrimonio, memoria y epistemología, evidenciando el potencial de estos espacios en la construcción de una educación geográfica crítica e interdisciplinaria (Campos et al., 2024; Campos et al., 2025).

2 MUSEOS DE GEOCIENCIAS, PATRIMONIO Y MEMORIA

Los museos de Geociencias desempeñan un papel fundamental en la preservación y difusión del patrimonio geológico y arqueológico, constituyéndose como espacios de producción y socialización del conocimiento científico. A diferencia de una concepción tradicional que los define como meros depósitos de objetos, los museos contemporáneos son comprendidos como entornos dinámicos de construcción de significados y de mediación cultural.

Según Eilean Hooper-Greenhill (1992), los museos deben ser entendidos como instituciones que producen narrativas e interpretan el mundo, actuando como agentes activos en la construcción del conocimiento. Este enfoque desplaza el énfasis de la conservación hacia la comunicación, destacando el papel educativo y social de estas instituciones.

En este sentido, la noción de memoria se vuelve central para la comprensión de la función de los museos. Como argumenta Pierre Nora (1993), los museos pueden ser considerados “lugares de memoria”, es decir, espacios simbólicos donde se materializan y se preservan las experiencias colectivas. En el caso de los museos de Geociencias, esta

memoria se relaciona tanto con la historia natural de la Tierra como con las interacciones humanas con el ambiente.

En el ámbito de la Geografía, esta discusión se articula con la categoría de territorio, entendido no solo como un espacio físico, sino como una construcción social e histórica. De acuerdo con Milton Santos (2006), el territorio es el resultado de la interacción entre técnica, tiempo y sociedad, siendo fundamental para el análisis de las dinámicas espaciales. Así, el museo puede ser interpretado como un territorio simbólico en el que se entrelazan ciencia, cultura y memoria.

Las Geociencias abarcan un conjunto de conocimientos relacionados con los componentes físico-naturales que estructuran el planeta Tierra, incluyendo campos como la edafología, la geología, la geomorfología y la hidrología, entre otros. Su objetivo es comprender, desde una perspectiva interdisciplinaria, la evolución, la dinámica y la estructura del planeta. Para alcanzar este propósito, tanto en el ámbito teórico como en el práctico, se apoyan en espacios que resguardan y contribuyen a dicha finalidad, como los museos.

El museo puede ser definido como un espacio dedicado a la investigación, el estudio y la realización de actividades científicas y culturales, adaptado a las características de cada colección, ya sea de carácter social o natural (IBRAM, 1987, p. 6), con el objetivo de atender a la sociedad mediante acciones de divulgación científica, educación, preservación y construcción de la memoria.

En este contexto de preservación, memoria y educación, emerge la importancia del patrimonio geológico y arqueológico como fuentes fundamentales, tanto terrestres como humanas, para el desarrollo del conocimiento. El primero resguarda elementos abióticos de la naturaleza, comprendiendo un conjunto de componentes de la geodiversidad responsables de la comprensión de la evolución y la dinámica de la Tierra. Por su parte, el patrimonio arqueológico preserva los vestigios materiales de la cultura humana, siendo los museos los espacios encargados de custodiar las herencias sociales y naturales del planeta, que incluso trascienden las escalas temporales.

Según lo señalado por José Brilha (2009, p. 29), el patrimonio geológico constituye un registro fundamental de la historia de la Tierra, destacando la importancia de contar con espacios adecuados para su preservación y difusión con fines educativos. Para el autor, la geodiversidad y todos sus elementos no deben ser comprendidos únicamente desde una perspectiva utilitarista o mercantilista, sino como un valor sociocultural que sustenta la existencia humana, otorgando sentido al presente a partir de los vestigios del pasado.

En este mismo sentido, como señalan Pereira, Rios y García (2016, p. 199-200), la conservación de estos vestigios geológicos y arqueológicos en espacios educativos y museológicos resulta esencial para la alfabetización científica y para la promoción de una conciencia colectiva que reconozca la geodiversidad como un soporte fundamental para la educación y el desarrollo del conocimiento geocientífico en la sociedad.

Frente a ello, el museo se configura como un espacio de producción y divulgación científica, desempeñando un papel relevante en la comunicación y difusión del conocimiento. La gestión de estos patrimonios y de sus colecciones exige un enfoque basado en los principios de la museología científica, que establece criterios que permiten trascender la concepción del museo como un simple depósito de artefactos. En este sentido, el museo se define como un espacio donde el rigor metodológico en la catalogación y conservación de los acervos geológicos y arqueológicos garantiza la preservación y transmisión precisa de la información científica a la sociedad, contribuyendo a la producción y valorización del conocimiento (IBRAM, 1987, p. 12).

Se concluye que las Geociencias, cuando son desarrolladas en espacios de producción y difusión científica como los museos, trascienden las fronteras físicas de las instituciones para consolidarse en la relación entre memoria y territorio en la sociedad. En los museos, el patrimonio geológico y arqueológico de una determinada región no se limita a la preservación de objetos carentes de significado, sino que constituye testimonios de la evolución de los espacios, tanto sociales como naturales, que configuran la base material y simbólica de las identidades culturales de un pueblo.

De este modo, el museo se convierte en un territorio de memorias colectivas, donde la comprensión de la dinámica de la biosfera, los artefactos materiales de la cultura y los vestigios del pasado fortalecen el sentido de pertenencia de las poblaciones locales, otorgando significado y valor al territorio apropiado por cada cultura, tanto en su dimensión material como inmaterial.

Por lo tanto, los museos de Geociencias se consolidan como interfaces fundamentales entre el conocimiento científico y la sociedad, actuando como espacios dinámicos de educación, preservación y memoria. Al considerar el papel de los museos como custodios del patrimonio geológico y arqueológico, estas instituciones no solo protegen vestigios materiales, sino que también otorgan significado al territorio en el que se encuentran. En este sentido, al visibilizar la historia geológica de la Tierra y los rastros de la ocupación humana, el museo permite que la sociedad reconozca su propia identidad, transformando el conocimiento geocientífico en un instrumento de concienciación ambiental y fortalecimiento de la memoria colectiva.

En el caso del Museo de Geociencias de la UENP, la organización y catalogación de las colecciones arqueológicas, mineralógicas y paleontológicas, tal como se describe en el proyecto de investigación institucional, refuerzan su función como espacio de preservación y producción de conocimiento (Campos et al., 2024; Campos et al., 2025). La sistematización de estos materiales no solo garantiza su conservación, sino que también posibilita nuevas interpretaciones científicas y educativas.

3 METODOLOGÍAS DE INVESTIGACIÓN Y PRODUCCIÓN CIENTÍFICA

La arqueología brasileña se fundamenta en el análisis sistemático de vestigios materiales que evidencian la complejidad social, la excelencia artística y la diversidad cultural de las poblaciones precolombinas. El desarrollo de esta disciplina en Brasil ha transitado desde una fase inicial de curiosidad por parte de cronistas y naturalistas hacia una ciencia rigurosa, sustentada en métodos geocientíficos y arqueológicos que buscan comprender la interacción entre el ser humano y el medio ambiente (Prous, 1992).

La sistematización del patrimonio arqueológico brasileño se inició de manera incipiente a partir de los relatos de cronistas coloniales, quienes identificaban sitios como sambaquís e inscripciones rupestres, aunque sin un propósito científico definido. A partir del siglo XIX, con la llegada de la Corte portuguesa y la actuación de naturalistas como Peter Wilhelm Lund, la investigación adquirió un carácter más metódico. Lund, considerado el padre de la paleontología brasileña, realizó el inventario de cientos de cavernas en la región de Lagoa Santa, estableciendo las bases para el debate sobre la antigüedad del ser humano en América (Prous, 1992).

La institucionalización de las colecciones se consolidó con la creación de entidades como el Museo Nacional, el Museo Paulista y el Museo Paraense Emílio Goeldi. Entre 1965 y 1971, el Programa Nacional de Investigaciones Arqueológicas (PRONAPA) representó un hito en la sistematización a nivel nacional, promoviendo prospecciones que dieron lugar al registro de miles de sitios y a la definición de tradiciones cerámicas. Actualmente, el patrimonio arqueológico está protegido por la Ley n.º 3.924/1961, que establece que los monumentos arqueológicos son bienes de la Unión, prohíbe su explotación económica y garantiza su preservación con fines científicos (Prous, 1992).

La producción de datos arqueológicos depende de la aplicación de técnicas que varían según la naturaleza del sitio y los objetivos del investigador. La estratigrafía constituye un método fundamental para determinar la secuencia de deposición de los sedimentos, proporcionando una cronología relativa de los vestigios (Leal y Silva, 2025). En Brasil, la elección metodológica suele dividirse entre:

- Niveles naturales: Siguen la microtopografía prehistórica y las capas geológicas, permitiendo la localización isócrona de los vestigios y la visualización de las estructuras de ocupación.
- Niveles arbitrarios: Capas de espesor constante (generalmente entre 10 y 15 cm), utilizadas cuando la estratigrafía natural no es perceptible o cuando la densidad de vestigios es baja.

El análisis se basa en la identificación de estructuras arqueológicas, entendidas como conjuntos significativos de vestigios (Leal y Silva, 2025). Estas se clasifican en:

- Macroestructuras: Relacionadas con la organización del territorio en su conjunto y con las formas de explotación económica.
- Estructuras medias: Referidas a la organización general de un sitio, delimitando áreas de uso doméstico, ritual o de descarte.
- Microestructuras: Incluyen conjuntos aislados, tales como fogones, silos, áreas de enterramiento o perforaciones de postes.

Los métodos geocientíficos también se aplican en el estudio del paleoambiente, mediante el análisis de sedimentos, polen fósil y microvestigios con el fin de reconstruir las condiciones climáticas y la vegetación de épocas pasadas (Severino, 2014).

La producción científica en la arqueología brasileña enfrenta desafíos particulares debido al clima tropical húmedo, que acelera la degradación de los materiales orgánicos y acidifica los suelos, dificultando la conservación de huesos y restos vegetales. En consecuencia, gran parte del conocimiento se basa en materiales más resistentes, como la piedra y la cerámica (Severino, 2014; Leal y Silva, 2025).

El escenario actual de la producción de conocimiento se caracteriza por la expansión de centros universitarios y por la creación de la Sociedad de Arqueología Brasileña (SAB) en 1980. La arqueología ha dejado de ser una disciplina marginal para integrarse en investigaciones históricas sobre quilombos, misiones jesuíticas y fortificaciones coloniales. Asimismo, la instalación de laboratorios de datación por radiocarbono en Brasil ha permitido la elaboración de marcos cronológicos más precisos, posibilitando que la arqueología nacional alcance un alto nivel de autonomía científica, con aproximadamente el 80% de las referencias bibliográficas provenientes de investigadores brasileños (Prous, 1992).

En síntesis, la metodología arqueológica en Brasil ha evolucionado hacia un enfoque interdisciplinario que no solo busca el análisis de objetos aislados, sino también la reconstrucción de los modos de vida y de las adaptaciones ecológicas de las poblaciones del pasado.

La producción de conocimiento científico en el ámbito de las Geociencias está directamente relacionada con la adopción de metodologías rigurosas de recolección, catalogación, documentación y análisis de materiales. En el contexto del Museo de Geociencias de la UENP, estos procedimientos constituyen la base para la consolidación de una colección científica y educativa, tal como se evidencia en el proyecto de investigación desarrollado.

La catalogación y documentación de artefactos arqueológicos y muestras geológicas se configuran como procesos fundamentales para la preservación e interpretación del patrimonio científico. Estos procedimientos implican etapas sistemáticas, tales como el inventario, el registro fotográfico, la clasificación tipológica y el almacenamiento adecuado, permitiendo la organización y el acceso a la información generada.

Según Lewis Binford (2001), la arqueología debe orientarse por métodos científicos rigurosos, capaces de producir interpretaciones fundamentadas sobre el pasado humano. Esta perspectiva resalta la importancia de la sistematización de los datos y del análisis contextual de los vestigios materiales.

Además, el enfoque metodológico adoptado en el proyecto evidencia la integración de diferentes áreas del conocimiento, como la Geología, la Arqueología y la Geografía Física. Esta interdisciplinariedad contribuye a una comprensión más amplia de los procesos naturales y sociales, ampliando el potencial científico de la colección.

Otro aspecto relevante se refiere al uso de tecnologías digitales para la gestión de las colecciones, como sistemas de catalogación y bases de datos. Estas herramientas permiten no solo la organización de la información, sino también su difusión, facilitando el acceso por parte de investigadores, estudiantes y de la comunidad en general.

4 EXTENSIÓN UNIVERSITARIA E IMPACTO SOCIAL

La extensión universitaria se constituye como uno de los pilares fundamentales de la formación académica, al promover la articulación entre el conocimiento producido en la universidad y las demandas de la sociedad. En el contexto de las Geociencias, esta dimensión adquiere especial relevancia, ya que posibilita la difusión del conocimiento científico y la sensibilización de la población respecto a cuestiones ambientales, patrimoniales y territoriales.

Según Paulo Freire (1996), la educación debe ser entendida como una práctica de libertad, fundamentada en el diálogo y en la construcción colectiva del conocimiento. Desde esta perspectiva, las acciones de extensión no se limitan a la transmisión de contenidos, sino

que se configuran como procesos formativos que promueven la concienciación crítica de los sujetos.

El proyecto de extensión orientado a la estructuración del Museo de Geociencias de la UENP evidencia esta concepción al desarrollar actividades que involucran tanto a la comunidad académica como a la sociedad en general, tales como exposiciones, talleres, conferencias y acciones de divulgación científica. Según lo descrito en el proyecto institucional, estas iniciativas tienen como objetivo fortalecer el papel de la universidad en la difusión del conocimiento, contribuyendo al enriquecimiento cultural y educativo de las comunidades atendidas.

Además, el uso de medios digitales, como las redes sociales, amplía significativamente el alcance de las acciones de extensión, permitiendo la democratización del acceso a la información. De acuerdo con Manuel Castells (2010), las redes digitales han transformado los procesos comunicativos contemporáneos, posibilitando nuevas formas de interacción y circulación del conocimiento.

En este sentido, el Museo de Geociencias de la UENP se configura como un espacio de mediación entre la ciencia y la sociedad, promoviendo la integración entre saberes académicos y populares, y contribuyendo a la formación de una conciencia crítica respecto a las problemáticas socioambientales (Campos et al., 2024; Campos et al., 2025).

5 ENSEÑANZA DE LA GEOGRAFÍA Y FORMACIÓN DOCENTE

La enseñanza de la Geografía desempeña un papel central en la formación de sujetos críticos, capaces de comprender e interpretar las dinámicas espaciales y las complejas relaciones entre sociedad y naturaleza. En este contexto, la incorporación de espacios no formales de educación, como los museos, amplía significativamente las posibilidades pedagógicas, contribuyendo a la construcción de aprendizajes más significativos, contextualizados e interdisciplinarios.

De acuerdo con Cavalcanti (1998), la enseñanza de la Geografía debe estar anclada en la realidad de los estudiantes, posibilitando la construcción del conocimiento a partir de sus experiencias concretas. Desde esta perspectiva, los museos de Geociencias, al proporcionar el contacto directo con materiales como rocas, fósiles y artefactos arqueológicos, favorecen la materialización de conceptos abstractos, potenciando la comprensión de los contenidos geográficos y la articulación entre teoría y práctica.

En este mismo sentido, Callai (2005) enfatiza la necesidad de articular el espacio vivido con el espacio representado en el proceso de enseñanza-aprendizaje. El museo, como espacio de mediación pedagógica, permite que los estudiantes establezcan relaciones

entre el conocimiento científico y su realidad cotidiana, promoviendo una lectura más crítica e integrada del espacio geográfico.

Otro aspecto relevante se refiere a la formación docente. Según Castellar (2012), los museos constituyen entornos privilegiados para la formación inicial y continua de profesores, al posibilitar la experimentación de metodologías innovadoras e interdisciplinarias. En el ámbito de la formación en Geografía, la inserción en espacios museológicos contribuye al desarrollo de prácticas pedagógicas más reflexivas, investigativas y contextualizadas.

En los cursos de grado en Geografía, se observa que la práctica pedagógica adquiere nuevos significados al transitar entre los espacios formales y no formales de educación. El Museo de Geociencias, a través de las acciones de extensión universitaria, se consolida como un campo de investigación y experimentación pedagógica, en el cual la teoría académica se articula directamente con la práctica educativa.

Como señalan Lopes y Murriello (2005, p. 24), los museos no se configuran únicamente como espacios expositivos, sino como instituciones que integran educación y ciencia, desempeñando un papel fundamental en la construcción de redes de comunicación con diversos públicos. En este contexto, la integración de colecciones arqueológicas con materiales geocientíficos amplía las posibilidades formativas, al promover un enfoque interdisciplinario del conocimiento.

Para profundizar esta relación, se recurre a la concepción de espacio geográfico propuesta por Santos (2006, p. 39), quien lo define como un “conjunto indisociable de sistemas de objetos y sistemas de acciones”. En el ámbito museológico, los artefactos arqueológicos y las muestras geológicas constituyen los “objetos” que expresan las “acciones” humanas y los procesos naturales a lo largo del tiempo. De este modo, el estudiante de Geografía puede comprender, de manera concreta, cómo las técnicas humanas se han desarrollado en interacción con los recursos naturales disponibles.

En este sentido, la utilización de metodologías activas en el contexto museológico permite que estudiantes y visitantes dejen de ocupar una posición pasiva en el proceso de aprendizaje, asumiendo un papel protagónico en la construcción del conocimiento. Como destacan Pontuschka, Paganelli y Cacete (2007, p. 132), la enseñanza de la Geografía debe fundamentarse en la investigación, siendo el trabajo de campo y el contacto directo con los objetos elementos esenciales para estimular la observación, la descripción y el análisis crítico del espacio.

De este modo, al mediar el contacto con materiales arqueológicos y geológicos, los estudiantes involucrados en los proyectos - especialmente los becarios - desarrollan prácticas pedagógicas que articulan el pasado técnico con las dinámicas sociales

contemporáneas, promoviendo una comprensión más amplia y crítica del espacio geográfico.

En el ámbito del proyecto desarrollado en la UENP, las actividades realizadas en el Museo de Geociencias contribuyen de manera significativa a la formación de estudiantes de licenciatura en Geografía, al proporcionar experiencias que integran teoría y práctica, fortaleciendo la construcción de una educación geográfica crítica, contextualizada y socialmente comprometida.

6 INNOVACIÓN PEDAGÓGICA Y FORMACIÓN ESTUDIANTIL

La articulación entre la enseñanza, la investigación y la extensión constituye el fundamento esencial de la educación superior brasileña, estableciendo un ciclo de retroalimentación que cualifica tanto la formación del estudiante de grado como la realidad de las comunidades educativas involucradas. En el campo de la Geografía, esta tríada adquiere características específicas cuando se orienta hacia la innovación pedagógica, buscando superar modelos tradicionales de enseñanza basados exclusivamente en la memorización y la descripción.

La participación de estudiantes en programas de Iniciación Científica y en proyectos de extensión permite que el futuro docente experimente la teoría en la práctica, transformando la investigación académica en soluciones didácticas concretas.

De acuerdo con lo establecido por la Política Nacional de Extensión Universitaria (FORPROEX, 2012), la extensión es un proceso educativo, cultural y científico que articula de manera indisoluble la enseñanza y la investigación. Al introducir en la escuela pública nuevas metodologías, como el uso de tecnologías y lenguajes visuales, la universidad cumple su función social y, simultáneamente, proporciona al estudiante de grado una inmersión crítica en la realidad de su futura profesión.

Esta experiencia se aproxima a lo que Demo (2011) define como “educar por la investigación”, en la cual el aprendizaje no se produce mediante la simple recepción de información, sino a través de la construcción activa del conocimiento basada en el cuestionamiento y la experimentación.

En este escenario de renovación, la incorporación de lenguajes lúdicos, como juegos educativos, medios digitales y historietas (cómic), emerge como una respuesta fundamental a la demanda por alfabetización científica y cartográfica. Castellar (2012) sostiene que la educación geográfica debe priorizar el desarrollo del razonamiento espacial, lo que exige que los docentes adopten estrategias que incentiven la percepción y el análisis del espacio vivido por los estudiantes.

En este proceso, los juegos didácticos, en particular, desempeñan un papel mediador. En el contexto escolar, los juegos cumplen dos funciones principales: una lúdica, que garantiza la participación y el interés, y otra educativa, orientada a la adquisición de conceptos y competencias específicas.

Además de los juegos, las historietas y los medios digitales constituyen un puente visual esencial para la comprensión de fenómenos geográficos que, con frecuencia, resultan abstractos en los materiales didácticos tradicionales. Rama y Walty (2004) destacan que las historietas poseen un lenguaje híbrido (textual y visual) que facilita la transposición didáctica, permitiendo abordar temas complejos como la geopolítica, las cuestiones ambientales y la urbanización de manera dinámica e interdisciplinaria.

La interdisciplinariedad, de hecho, representa uno de los principales aportes de este enfoque innovador, ya que permite que la Geografía dialogue con las Artes, la Lengua y las Ciencias de la Naturaleza, superando la fragmentación del conocimiento escolar.

La formación de estudiantes a través de la Iniciación Científica enfocada en medios y lenguajes permite que el alumnado de grado desarrolle competencias tecnológicas hoy indispensables. El uso de software, plataformas digitales y recursos audiovisuales en la enseñanza de la Geografía no constituye únicamente una modernización estética, sino una necesidad frente a la cultura digital en la que están inmersos los estudiantes de la educación básica. Lévy (1999) ya señalaba que la cibercultura modifica nuestras formas de aprender y de relacionarnos con el conocimiento; por lo tanto, la geografía escolar no puede ignorar estos nuevos soportes de información.

De este modo, la combinación de la investigación académica con la extensión universitaria, mediada por la innovación pedagógica, genera un entorno propicio para la creación de materiales didácticos originales y contextualizados. Al desarrollar un juego o una historieta fundamentada en una investigación científica sobre un territorio específico, el estudiante de grado sintetiza el rigor académico con la práctica docente. Este proceso refuerza la identidad profesional del futuro geógrafo y contribuye a la construcción de una escuela pública más diversa, tecnológica y capaz de formar ciudadanos críticos que comprendan e interpreten el mundo contemporáneo.

La incorporación de metodologías innovadoras en el proceso educativo ha demostrado ser fundamental para el desarrollo de prácticas pedagógicas más dinámicas, participativas e inclusivas. En el contexto del Museo de Geociencias de la UENP, destacan iniciativas que articulan diferentes lenguajes y estrategias de enseñanza, tales como juegos didácticos, recursos visuales y medios digitales.

El uso de juegos educativos, como el desarrollado en el proyecto (“¿Quién soy?”), se fundamenta en la perspectiva constructivista de Jean Piaget (1972), que enfatiza el papel de la actividad y de la interacción en el desarrollo cognitivo. Estas estrategias estimulan la curiosidad, el razonamiento lógico y la participación activa de los estudiantes en el proceso de aprendizaje.

De manera complementaria, Edgar Morin (2000) propone una educación basada en la complejidad, que integre diferentes saberes y supere la fragmentación disciplinaria. La articulación entre Geología, Arqueología y Geografía, observada en las actividades del museo, ejemplifica este enfoque interdisciplinario.

El uso de medios digitales y recursos visuales también se destaca como una estrategia relevante para la difusión del conocimiento científico. Según Howard Gardner (1993), los individuos presentan diversas formas de aprendizaje, lo que hace necesario diversificar las estrategias pedagógicas para atender dicha diversidad.

En este sentido, la producción de contenidos en formatos accesibles, como historietas y publicaciones en redes sociales, amplía el alcance de las acciones educativas y favorece un aprendizaje más inclusivo y significativo.

Asimismo, la participación de estudiantes en proyectos de iniciación científica y extensión contribuye a su formación académica y profesional, al posibilitar el desarrollo de habilidades como la investigación, el análisis crítico, el trabajo en equipo y la comunicación científica (Campos et al., 2024; Campos et al., 2025).

7 CONSIDERACIONES FINALES

El análisis desarrollado a lo largo de este estudio evidencia que la articulación entre enseñanza, investigación y extensión constituye un eje estructurante para la actuación de la universidad pública contemporánea, especialmente en el campo de las Geociencias y la Geografía. En este contexto, el Museo de Geociencias de la Universidad Estadual del Norte de Paraná se consolida como un espacio estratégico de producción, mediación y difusión del conocimiento científico.

Se observa que la estructuración del museo trasciende la dimensión material de la organización de colecciones, configurándose como un territorio educativo y simbólico en el que se articulan patrimonio, memoria y epistemología. Esta perspectiva refuerza el papel de los museos universitarios como espacios de construcción de significados, capaces de promover la democratización del conocimiento y la valorización de la ciencia en el ámbito social.

En el campo de la educación, se destacan las contribuciones del museo para la enseñanza de la Geografía y para la formación docente, al posibilitar la integración entre teoría y práctica, así como la utilización de metodologías activas e interdisciplinarias. Las acciones desarrolladas favorecen la construcción de una educación geográfica crítica, comprometida con la comprensión de las dinámicas socioespaciales y con la formación de sujetos conscientes de su papel en la sociedad.

Asimismo, las actividades de extensión evidencian la importancia de la articulación entre la universidad y la comunidad, ampliando el acceso al conocimiento científico y promoviendo procesos de alfabetización científica y cultural. El uso de tecnologías digitales, recursos didácticos innovadores y lenguajes accesibles contribuye a la construcción de prácticas educativas más inclusivas y contemporáneas.

Finalmente, se concluye que los proyectos analizados reafirman el papel de la universidad pública como agente de transformación social, al integrar producción científica, formación académica y compromiso social. En este sentido, iniciativas como la estructuración del Museo de Geociencias se revelan fundamentales para el fortalecimiento de una ciencia crítica, interdisciplinaria y socialmente comprometida con los desafíos del mundo contemporáneo.

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INTERPROFESSIONAL EDUCATION AS A TOOL FOR TEACHING-SERVICE INTEGRATION AND TRANSFORMATION: EXPERIENCE REPORT ON THE STUDY OF ENVIRONMENTAL DETERMINANTS AND RESPIRATORY HEALTH DISORDERS

A EDUCAÇÃO INTERPROFISSIONAL COMO FERRAMENTA DE INTEGRAÇÃO ENSINO-SERVIÇO E TRANSFORMAÇÃO: RELATO DE EXPERIÊNCIA SOBRE ESTUDO DOS DETERMINANTES AMBIENTAIS E AGRAVOS À SAÚDE RESPIRATÓRIA

LA EDUCACIÓN INTERPROFESIONAL COMO HERRAMIENTA DE INTEGRACIÓN ENSEÑANZA-SERVICIO Y TRANSFORMACIÓN: RELATO DE EXPERIENCIA SOBRE EL ESTUDIO DE LOS DETERMINANTES AMBIENTALES Y LOS AGRAVOS A LA SALUD RESPIRATORIA



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ABSTRACT

This experience report analyzes Interprofessional Education as a central strategy within the Curricular Unit of Teaching-Service-Community Integration Practices at the Centro Universitário de Votuporanga, focusing on the study of environmental determinants and their impacts on respiratory health within the territory during the year 2024. Air pollution, intensified by an extreme rate of wildfires in the Midwest region and the transport of smoke to Votuporanga,

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served as the setting for a Project-Based Learning methodology that integrated students and professors from Medicine, Nursing, and Environmental Engineering. The main objective was to investigate the correlation between particulate matter levels (PM10 and PM2.5) and the volume of clinical visits at Emergency Care Units (UPA), training future professionals to identify the impact of climate conditions on acute illness and to provide support for local public management. The methodology consisted of a retrospective and quantitative study that cross-referenced ICD-10 diagnoses, such as acute upper respiratory infections (J00) and cough (R05), with data from CETESB's automatic monitoring network. The results revealed a drastic deterioration in air quality, with PM10 increasing from 17 $\mu\text{g}/\text{m}^3$ in January to a peak of 100 $\mu\text{g}/\text{m}^3$ in September, accompanied by PM2.5, which reached 47.5 $\mu\text{g}/\text{m}^3$ during the same period. Clinically, it was observed that, contrary to the historical pattern in which respiratory diseases decline after winter (May to July), in 2024 the incidence of cases remained high until October, coinciding with the end of the wildfire season. Age-group analysis confirmed the vulnerability of the elderly population, especially individuals over 70 and 90 years old, whose peaks in healthcare visits closely followed the atmospheric pollution curve. It was concluded that interprofessional practice clearly demonstrated the impact of environmental determinants on public health, transcending academic boundaries by providing real indicators that support healthcare actions and future public policies aimed at mitigating the effects of wildfires on population health.

Keywords: Interprofessional Education. Environmental Determinants. Wildfires. Respiratory Health. Air Pollution.

RESUMO

Este relato de experiência analisa a Educação Interprofissional como estratégia central na Unidade Curricular de Práticas de Integração Ensino Serviço e Comunidade do Centro Universitário de Votuporanga, focando no estudo dos determinantes ambientais e seus agravos à saúde respiratória no território durante o ano de 2024. A poluição atmosférica, intensificada por um índice extremo de queimadas na região centro-oeste e o transporte de fumaça para Votuporanga, serviu como cenário para uma metodologia de Aprendizagem Baseada em Projetos que integrou estudantes e professores de Medicina, Enfermagem e Engenharia Ambiental. O objetivo central foi investigar a correlação entre os níveis de material particulado (MP 10 e MP 2.5) e o volume de atendimentos clínicos nas Unidades de Pronto Atendimento (UPA), capacitando futuros profissionais para identificar o impacto climático no adoecimento agudo e fornecer subsídios para a gestão pública local. A metodologia consistiu em um estudo retrospectivo e quantitativo que cruzou diagnósticos da CID-10, como infecções agudas das vias superiores (J00) e tosse (R05), com dados da rede automática da CETESB. Os resultados revelaram uma degradação drástica da qualidade do ar, com o MP10 saltando de 17 $\mu\text{g}/\text{m}^3$ em janeiro para um pico de 100 $\mu\text{g}/\text{m}^3$ em setembro, acompanhado pelo MP2.5, que atingiu 47,5 $\mu\text{g}/\text{m}^3$ no mesmo período. Clinicamente, observou-se que, ao contrário do padrão histórico em que as doenças respiratórias declinam após o inverno (maio a julho), em 2024 a incidência de casos manteve-se elevada até outubro, coincidindo com o término das queimadas. A análise por faixa etária confirmou a vulnerabilidade da população idosa, especialmente acima de 70 e 90 anos, cujos picos de atendimento acompanharam exatamente a curva de poluição atmosférica. Concluiu-se que a prática interprofissional foi inequívoca ao demonstrar o impacto dos determinantes ambientais na saúde pública, transcendendo os muros acadêmicos ao entregar indicadores reais que fundamentam ações de assistência e futuras políticas públicas de mitigação dos efeitos das queimadas na saúde da população.

Palavras-chave: Educação Interprofissional. Determinantes Ambientais. Queimadas. Saúde Respiratória. Poluição Atmosférica.

RESUMEN

Este relato de experiencia analiza la Educación Interprofesional como estrategia central en la Unidad Curricular de Prácticas de Integración Enseñanza-Servicio y Comunidad del Centro Universitario de Votuporanga, enfocándose en el estudio de los determinantes ambientales y sus agravios a la salud respiratoria en el territorio durante el año 2024. La contaminación atmosférica, intensificada por un índice extremo de incendios forestales en la región centro-oeste y el transporte de humo hacia Votuporanga, sirvió como escenario para una metodología de Aprendizaje Basado en Proyectos que integró a estudiantes y docentes de Medicina, Enfermería e Ingeniería Ambiental. El objetivo principal fue investigar la correlación entre los niveles de material particulado (PM10 y PM2.5) y el volumen de atenciones clínicas en las Unidades de Atención de Emergencia (UPA), capacitando a futuros profesionales para identificar el impacto climático en el agravamiento agudo de enfermedades y proporcionar subsidios para la gestión pública local. La metodología consistió en un estudio retrospectivo y cuantitativo que cruzó diagnósticos de la CIE-10, como infecciones agudas de las vías respiratorias superiores (J00) y tos (R05), con datos de la red automática de CETESB. Los resultados revelaron un deterioro drástico de la calidad del aire, con el PM10 aumentando de 17 $\mu\text{g}/\text{m}^3$ en enero a un pico de 100 $\mu\text{g}/\text{m}^3$ en septiembre, acompañado por el PM2.5, que alcanzó 47,5 $\mu\text{g}/\text{m}^3$ en el mismo período. Clínicamente, se observó que, contrario al patrón histórico en el que las enfermedades respiratorias disminuyen después del invierno (mayo a julio), en 2024 la incidencia de casos se mantuvo elevada hasta octubre, coincidiendo con el fin de los incendios forestales. El análisis por grupo etario confirmó la vulnerabilidad de la población anciana, especialmente de las personas mayores de 70 y 90 años, cuyos picos de atención coincidieron exactamente con la curva de contaminación atmosférica. Se concluyó que la práctica interprofesional fue inequívoca al demostrar el impacto de los determinantes ambientales en la salud pública, trascendiendo los muros académicos al proporcionar indicadores reales que fundamentan acciones asistenciales y futuras políticas públicas de mitigación de los efectos de los incendios forestales sobre la salud de la población.

Palabras clave: Educación Interprofesional. Determinantes Ambientales. Incendios Forestales. Salud Respiratoria. Contaminación Atmosférica.

1 INTRODUCTION

Air pollution is a critical environmental determinant that directly impacts public health, increasing the incidence of respiratory and cardiovascular diseases. In 2024, the scenario was aggravated by an extreme rate of fires in the central-west region, with severe effects in Votuporanga and surroundings due to the burning of biomass and the transport of smoke by winds. This report details an interprofessional learning strategy that involved students and professors of the Medicine course, during the educational strategy of Project-Based Learning, developed in the curricular unit of Teaching-Service-Community Integration Practices, at the University Center of Votuporanga. This action had the voluntary participation of nursing and engineering professors and students involved with the execution of the project, for the analysis of the impact of the fires on the population, analysis of the health indicators of the emergency care units and analysis of the air quality in the region.

1.1 OBJECTIVE OF THE STUDY

The main objective of this study was to analyze the impacts of interprofessional education and the study of environmental determinants on the understanding of respiratory health in Votuporanga-SP during the year 2024, using the collection of clinical and environmental data as a pedagogical and management tool.

1.2 SECONDARY OBJECTIVES

- Analyze the volume of respiratory care in the UPA and Pozzobon Mini-Hospital during the peak of the fires.
- To investigate the correlation between particulate matter levels (PM 2.5 and PM 10) and ICD-10 diagnoses.
- Train students to identify climatic determinants in acute illness.
- Substantiate the decision-making of health managers and teams with local epidemiological data.

1.3 RESEARCH HYPOTHESIS

Interprofessional practice would confirm that worsening respiratory health between July and October 2024, especially in the elderly, is intrinsically linked to environmental determinants (fires), requiring a coordinated response from the health system.

2 MATERIALS AND METHODS

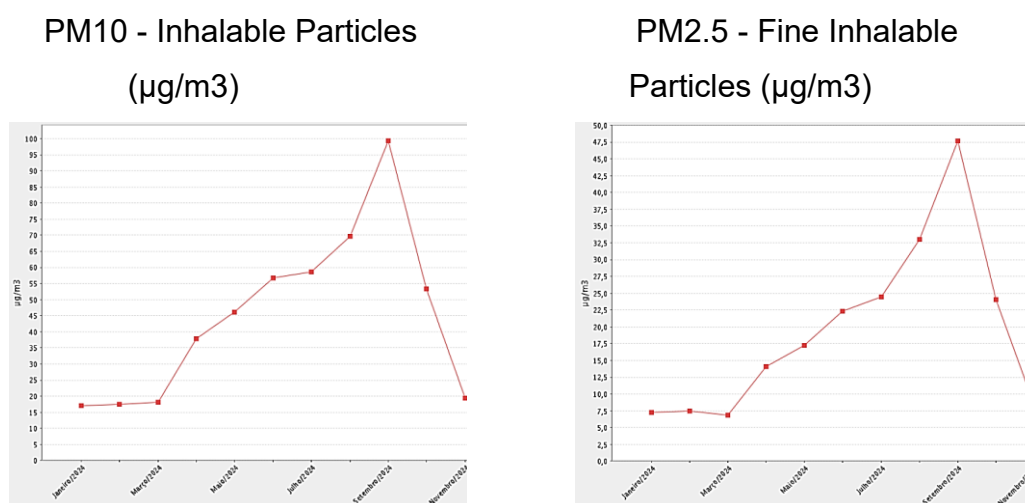
The experience was based on a retrospective and quantitative study. Data from care at the Pozzobon UPA and Mini-Hospital were analyzed, using specific ICDs such as J00 (acute upper tract infections) and R05 (cough). At the same time, data from CETESB's automatic network for PM10 and PM2.5 were correlated with the epidemiological calendar. The methodology involved the integration of knowledge between the medical area (diagnosis) and environmental engineering (pollutant analysis).

2.1 RESEARCH RESULTS

The results show the seriousness of the environmental scenario in 2024. The concentration of PM10 peaked in September at $100 \mu\text{g}/\text{m}^3$, a dramatic jump from the $17 \mu\text{g}/\text{m}^3$ recorded in January. Fine particulate matter (PM2.5) followed the same curve, reaching $47.5 \mu\text{g}/\text{m}^3$ in September.

Figure 1

Monthly Evolution of Air Quality (PM10 and PM2.5) in 2024

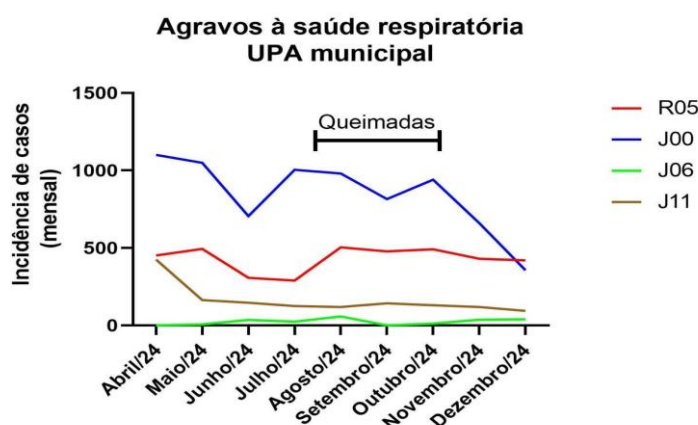


Legend: The atypical peak in the concentration of inhalable particles is observed coinciding with the burning period that intensified in 2024 in relation to the dry season, in previous years. Source: CETESB (Adapted from).

In the clinical sphere, the interprofessional experience revealed that, during the interval between the fires (July and October), there was a significant increase in cases of cough (R05) and upper respiratory infections (J00).

Figure 2

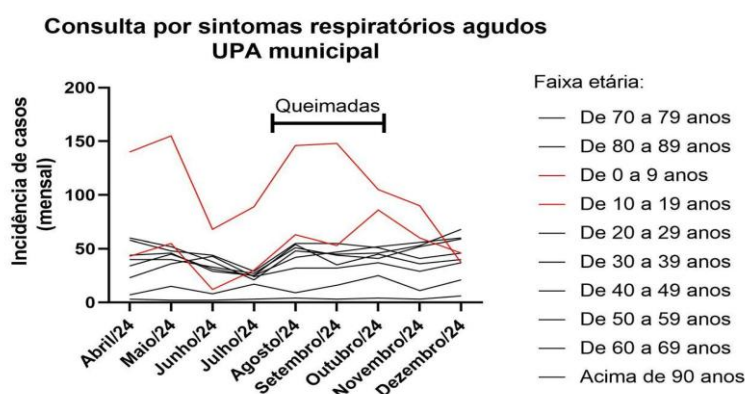
Respiratory health problems in the Municipal UPA



Source: The researchers.

Figure 3

Acute Respiratory Consultations by Age Group



Legend: The analysis by age group confirmed the hypothesis of vulnerability: elderly people in the 70 to 79 age group and over 90 years old showed peaks in attendance that coincide exactly with the period of greatest atmospheric pollution. Source: The researchers.

3 CONCLUSION

This teaching action unequivocally demonstrated the impact of interprofessional education and the study of environmental determinants in the training of more aware and prepared professionals. The integrated analysis of climatic and clinical data allowed the identification of the direct correlation between fires and illness among the elderly population in Votuporanga. Above all, the results of this action transformed and modified the health care environment by providing subsidies for health actions based on real data. By delivering these indicators to the care team and municipal managers, the academic experience transcended the walls of UNIFEV, allowing the improvement of medical care strategies and supporting future public policies for the prevention and mitigation of the effects of fires on public health.

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RURAL EDUCATION AND PUBLIC POLICIES: POPULAR KNOWLEDGE AND SOCIAL MOVEMENTS AS EXPRESSIONS OF STRUGGLE AND RESISTANCE

EDUCAÇÃO DO CAMPO E POLÍTICAS PÚBLICAS: SABERES POPULARES E MOVIMENTOS SOCIAIS COMO EXPRESSÕES DE LUTA E RESISTÊNCIA

EDUCACIÓN RURAL Y POLÍTICAS PÚBLICAS: EL CONOCIMIENTO POPULAR Y LOS MOVIMIENTOS SOCIALES COMO EXPRESIONES DE LUCHA Y RESISTENCIA



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ABSTRACT

Rural Education is a historical, political, and pedagogical construct woven from social movements led by peasant subjects seeking to guarantee rights, especially to an education designed for and with their people, based on territorial and cultural specificities, and guaranteeing access, quality, and permanence. This movement contributes to achievements legitimized in legal frameworks, the Public Policies for Rural Education. Thus, the objective was to analyze the relationship between Rural Education and educational public policies, highlighting how popular knowledge and the actions of social movements constitute expressions of struggle and resistance in the construction of counter-hegemonic educational practices committed to the emancipation of rural subjects. This research was developed through bibliographic and documentary investigation by means of a survey of related themes and the study of texts in: books, articles, dissertations, theses, digital platforms, and periodicals; as well as in current educational legislation. The main sources are: Arroyo (2006); Arroyo, Caldart and Molina (2004); LDB - Law No. 9.394/1996; CNE/CEB Resolution No. 1/2002; Coutinho (2009); Caldart (2004); Decree No. 7.352/2010; and Hage (2016). The results demonstrated that debating rural education in the sense proposed here requires recognizing that it is a political-pedagogical project in constant dispute, since it did not arise from a concession by the state, but from a historical process of struggles led by organized social movements that, in turn, pressured the transformation of collective demands into public policies. It is an expression of struggle and resistance that seeks to ensure the right to difference without relinquishing equality of rights. Therefore, it was concluded that Rural Education is not limited to a geographical space, but is configured as a permanent movement of resistance for the guarantee of rights and recognition of identity, since it has ensured the citizenship of rural populations, offering a teaching and learning process in accordance with the specificities of the countryside.

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Keywords: Rural Education. Public Policies. Popular Knowledge. Social Movements.

RESUMO

A Educação do Campo se constitui como uma construção histórica, política e pedagógica tecida a partir dos movimentos sociais liderados por sujeitos camponeses que buscam a garantia de direitos, principalmente à uma educação pensada para e com o seu povo, a partir das especificidades territoriais e culturais, e com garantia de acesso, qualidade e permanência. Esse movimento contribui para a conquistas legitimadas em marcos legais, as Políticas Públicas de Educação do Campo. Assim, objetivou-se analisar a relação entre a Educação do Campo e as políticas públicas educacionais, evidenciando como os saberes populares e a atuação dos movimentos sociais se constituem como expressões de luta e resistência na construção de práticas educativas contra-hegemônicas e compromissadas com a emancipação dos sujeitos do campo. A referida pesquisa foi desenvolvida por meio da investigação bibliográfica e documental por meio de levantamento de temáticas afins e estudo de textos em: livros, artigos, Dissertações, Teses, plataformas digitais e periódicos; assim como na legislação educacional em vigor. As principais fontes são: Arroyo (2006); Arroyo, Caldart e Molina (2004); LDB - Lei nº 9.394/1996; Resolução CNE/CEB nº 1/2002; Coutinho (2009); Caldart (2004); Decreto nº 7.352/2010; e Hage (2016). Os resultados demonstraram que debater educação do campo no sentido que aqui se propõe, exige reconhecer que se trata de um projeto político-pedagógico em constante disputa, visto que não surgiu de uma concessão do estado, mas de um processo histórico de lutas liderados por movimentos sociais organizados que, por sua vez tensionaram à transformação das demandas coletivas em políticas públicas. É expressão de luta e resistência que busca assegurar o direito à diferença sem abrir mão da igualdade de direitos. Logo, concluiu-se que, a Educação do Campo não se limita a um espaço geográfico, mas configura-se como um movimento permanente de resistência pela garantia de direitos e reconhecimento de identidade, visto que veio garantir a cidadania das populações camponesas, oferecendo um processo de ensino e aprendizagem de acordo com as especificidades do campo.

Palavras-chave: Educação do Campo. Políticas Públicas. Saberes Populares. Movimentos Sociais.

RESUMEN

La educación rural es una construcción histórica, política y pedagógica tejida a partir de movimientos sociales liderados por sujetos campesinos que buscan garantizar derechos, especialmente a una educación diseñada para y con su gente, basada en especificidades territoriales y culturales, y que garantice acceso, calidad y permanencia. Este movimiento contribuye a logros legitimados en marcos legales, las Políticas Públicas para la Educación Rural. Por lo tanto, el objetivo fue analizar la relación entre la educación rural y las políticas públicas educativas, resaltando cómo el conocimiento popular y las acciones de los movimientos sociales constituyen expresiones de lucha y resistencia en la construcción de prácticas educativas contrahegemónicas comprometidas con la emancipación de sujetos rurales. Esta investigación se desarrolló a través de una investigación bibliográfica y documental a través de un estudio de temas relacionados y el estudio de textos en: libros, artículos, disertaciones, tesis, plataformas digitales y periódicos; así como en la legislación educativa vigente. Las principales fuentes son: Arroyo (2006); Arroyo, Caldart y Molina (2004); LDB - Ley No. 9.394/1996; Resolución CNE/CEB n.º 1/2002; Coutinho (2009); Caldart (2004); Decreto n.º 7.352/2010; y Hage (2016). Los resultados demostraron que debatir la educación rural en el sentido aquí propuesto requiere reconocer que se trata de un proyecto político-pedagógico en constante disputa, ya que no surgió de una concesión del Estado, sino de un proceso histórico de luchas lideradas por movimientos sociales organizados que, a su vez, presionaron la transformación de las demandas colectivas en políticas públicas. Es una expresión de lucha y resistencia que busca garantizar el derecho

a la diferencia sin renunciar a la igualdad de derechos. Por lo tanto, se concluyó que la Educación Rural no se limita a un espacio geográfico, sino que se configura como un movimiento permanente de resistencia para la garantía de derechos y el reconocimiento de la identidad, puesto que ha asegurado la ciudadanía de las poblaciones rurales, ofreciendo un proceso de enseñanza y aprendizaje acorde con las especificidades del campo.

Palabras clave: Educación Rural. Políticas Públicas. Conocimiento Popular. Movimientos Sociales.

1 INTRODUCTION

In the contemporary educational context, it is observed that Rural Education is constituted as a historical, political and pedagogical construction woven from social movements led by peasant subjects in search of the guarantee of rights. Unlike the hegemonic proposal of rural education, subordinated to the interests of agrarian capital, Rural Education emerges as an affirmation of rights and recognition of rural cultures, identities and ways of life. For Arroyo, Caldart and Molina (2004), it is a movement of action and reflection that seeks to register, explain and theorize the historical, political and cultural meanings that form the subjects of the countryside, understanding them as protagonists of their educational trajectory.

In this way, thinking about Rural Education leads to the recognition that rural subjects are not mere recipients of educational policies, but men and women who construct knowledge and claim the right for their contexts to be the basis of the object of knowledge for the recognition of their identities and territorialities, for years forgotten in the scenario of educational policies.

Thus, in the context of public policies, Rural Education portrays the achievements legitimized in legal frameworks in order to guarantee the right to free and quality education, recommended in Law No. 9,394/1996 (LDB), which ensures curricular and organizational adjustments to the peculiarities of peasant life and Resolution CNE/CEB No. 1/2002, which establishes the Operational Guidelines for Basic Education in Rural Schools. These and other normative instruments conquered show that the right to education must consider territorial and cultural specificities, ensuring access, quality and permanence.

In this sense, the discussion proposed here is justified by the need to reaffirm education as an essential right of peasant subjects, historically denied by educational policies guided by an urban and market logic. Furthermore, according to Coutinho (2009), understanding the trajectory of Rural Education requires considering the social forces that incited its materialization as a public policy, especially the social movements that pressured the State to recognize rural subjects as subjects of rights. Thus, approaching Rural Education articulated with public policies implies understanding it as a field of dispute and collective construction. It is not only a matter of offering schooling in rural areas, but of consolidating an educational project committed to emancipation, social justice and the strengthening of peasant identities, with a view to ensuring contextualized education.

Thus, the present work arises from the following problem: How do public policies for Rural Education dialogue and are influenced by popular knowledge and by the action of social movements in peasant territories that fight for the guarantee of rights? And, for this, the theme

was born: **Rural education and public policies: popular knowledge and social movements as expressions of struggle and resistance.** And, in view of this theme, the following guiding questions were established: How did the historical construction of public policies influence the consolidation of Rural Education in Brazil?; To what extent does the valorization of popular knowledge strengthen the identity, belonging and protagonism of rural subjects?; How do social movements contribute to the recognition of Rural Education as a specific and counter-hegemonic political-pedagogical project?

Thus, for a better organization of the study described here, this text consists of five topics: 1 - Introduction; 2- Education in the Countryside in the context of Public Policies; 3 - Popular knowledge in the construction of peasant pedagogical identity; 4 - The contribution of social movements to Rural Education; and, 5 – Conclusion.

This research was developed through bibliographic and documentary research through a survey of related themes and study of texts in: books, articles, dissertations, theses, digital platforms and journals; as well as in the educational legislation in force, in an analytical-discursive way making connections between the texts and the perceptions experienced in education in the peasant zone today. The main sources are based on: Miguel Arroyo (2006), with the work "The rural school and the field research: goals"; Miguel Arroyo, Roseli Caldart Salete and Mônica Molina (2004), with the work "Por uma Educação do Campo"; LDB - Law No. 9,394/1996 that establishes the guidelines and bases of national education; Resolution CNE/CEB No. 1, of April 3, 2002, which establishes Operational Guidelines for Basic Education in Rural Schools; Adelaide Coutinho (2009), with the work "From the right to Rural Education: the struggle continues"; Roseli Caldart (2004), with the work "For a Rural Education: traces of an identity under construction"; Decree No. 7,352, of November 4, 2010, which provides for the Rural Education Policy and the National Program for Education in Agrarian Reform – PRONERA; and, Salomão Hage (2016), with the work "Movement of Rural Education and Pedagogical Alternation as a reference for policies and practices of educator training. All of them supporting the research with their works and theories that deal with Rural Education in Brazil.

Therefore, the general objective was to analyze the relationship between Rural Education and public educational policies, showing how popular knowledge and the performance of social movements are constituted as expressions of struggle and resistance in the construction of counter-hegemonic educational practices committed to the emancipation of rural subjects, followed by the specific objectives: Understand the trajectory of public policies for Rural Education and its developments in the organization of education systems; To analyze the contribution of popular knowledge in the construction of the

pedagogical identity of Rural Education; Discuss the main pedagogical contributions of social movements for the construction of contextualized, emancipatory educational practices linked to the reality of the countryside.

2 EDUCATION IN THE COUNTRYSIDE IN THE CONTEXT OF PUBLIC POLICIES

Education performs a significant social function, helping in the formation and attribution of meaning to the characteristics of the human being in relation to his position in the economic, social and political structure, configuring him as a subject.

According to Freire (2001, p. 14), education represents an achievement of what is considered unattainable, becoming, therefore, a possibility verified by the human being, who is incomplete and, through it, can reach its fullness. It is understood, therefore, that through education, the human being seeks to realize himself as a subject, thus being the protagonist of his own educational process, and therefore cannot be considered only an object of this process. When dealing with the exercise of citizenship, it becomes evident to obtain citizenship related to nationality and political law, in addition to providing a voice and ensuring that the individual has and achieves dignified conditions to live in society. Arroyo (2000) highlights the importance of the educational model in influencing the behaviors and attitudes of individuals in society.

[...] If education has come to be thought of as a central mechanism in the constitution of the new social order, it has become one of the control mechanisms of this new social order: not just any man will be accepted as a subject of participation in social life, but only civilized, the rational, the modern, the cultivated, the educated and educated. (Arroyo, 2000, p. 37).

In this sense, educational models are directly linked and in conformity with the institution of social order, making education one of the essential elements for human development, so that, from the perspective of modernity, it is through education that men and women establish themselves as civilized beings. The foundations of education are guaranteed in the Federal Constitution, including in the Law of Guidelines and Bases of National Education – LDB.

And, in the context of Rural Education, when discussing the social and educational achievements achieved by the peasant people, it is necessary to establish a connection with the social movements fighting for the guarantee of their rights, because the legal existence of the right does not mean the guarantee of them, this is a constant struggle, already evidenced in the normative advances in Brazil. This is due to the fact that, through these movements and their significant achievements, workers have sought to resignify their

relationship between the countryside and the city, understanding, highlighting and valuing their belonging in rural areas. Such a search frees them from the condition of servitude in relation to the city, preventing their space from being devalued, as emphasized by Silva (2011).

The analysis of the connection between public policies, especially those aimed at education, and the right to education of rural peoples, based on the considerations of Coutinho (2009), contributes to the elucidation of the object of this study, given that Coutinho (2009) emphasizes the importance of understanding the course of education in the countryside, as well as recognizing that this process developed through social forces and movements of struggle that occurred throughout the history of Brazil, as a result of the interests of capital.

As stipulated by Secchi (2013), a public policy encompasses two guidelines related to human responses in relation to the guidelines it presents: one refers to the activity and the other to the passivity of an individual. In addition, it has two fundamental pillars that support it: the public intention and the proposed solution to the identified public problem.

According to Viero and Medeiros (2018), when discussing the historical heritage of rural education in this nation, it is essential to highlight that education is intrinsically related, directly or indirectly, to the orientations of the economic, political, social and cultural sectors. There are numerous manifestations of discontent in Brazilian society in its search for social advances, in opposition to the elites. The countryside began to be associated with a space of economic aspirations and profitability, which resulted in a perspective focused on a technicist education, causing an even greater reduction in the attention dedicated to the rural population.

Rural education is addressed in the LDBEN – Law of Guidelines and Bases of National Education (Brasil, 1996), in which both the contents and the methodology must be adequate to the genuine interests of the nature of the work. This resulted in the approval of the Operational Guidelines for Basic Education in Rural Schools, through Resolution CNE/CEB No. 1, of April 3, 2002 (Brasil, 2002), resulting from numerous struggles and social movements that took place in and for the countryside, seeking to consider their cultures, daily life and their values in an integrated way in the relationship between school and countryside. According to the Operational Guidelines, the current Law of Guidelines and Bases of National Education (Brasil, 1996) establishes in its Article 28 that:

In the provision of basic education to the rural population, the education systems shall promote the necessary adaptations to adapt them to the peculiarities of rural life and of each region, especially: I - curricular content and methodologies appropriate to the

real needs and interests of students in rural areas; II - own school organization, including adaptation of the school calendar to the phases of the agricultural cycle and climatic conditions; III - adequacy to the nature of work in the rural area. (BRAZIL, 1996).

Therefore, there is the presence of significant documents that ensure the right to education in the countryside, such as the National Education Plan - PNE (2014-2024), approved by Law No. 13,005, of June 25, 2014, which proposes in goals 2.10 and 15.5, to promote the provision of Basic Education education and implement programs aimed at training education professionals in rural educational institutions, as well as in indigenous communities, quilombolas and in special education.

The Peasant Movement, in seeking its rights, which are denied by the State, stood out in the implementation of projects through public policies that presented specificities both in methods and content, being called Rural Education. In this conception, the Rural School is not a different school, but a peculiar school, with its own identity - it is as it is - because it has its own characteristics, and it is up to it to enable its entire community, whether students, families, organizations or social movements, to reflect on the reality in which it is inserted: Who is it? Where did it come from? What are your needs? Where do you want to go?

So that, based on reflections such as these, it can be made visible as a policy that ensures the education of rural peoples - who are mostly excluded from public systems - as subjects of the right to education and quality schooling for all the time necessary, as already provided for in Decree No. 7,352, of November 4, 2010, because it recognizes rural education as a National Policy, which was prepared with the purpose of regulating the policy of education in the countryside and the National Program of Education in Agrarian Reform – PRONERA.

Thus, it is essential to consider the particularities of the rural environment (Brasil, 2010), that is, to recognize rural education as a right of the citizens who live there, reflecting on the duty of the State to ensure these guarantees. On the other hand, Rural Education is configured as that which considers the implementation of projects aimed at the development and interests of capital, considering that, in the light of the social logic of capitalism, the specificities of the education mentioned above would generate conflicts, but this contradiction would leave, at least, a significant experience.

With the advent of the National Program for Rural Education – PRONACAMPO, instituted in March 2012, through Ordinance No. 86, of February 1, 2013 of the Ministry of Education, it constitutes the set of articulated actions that can be accessed by the states, municipalities and the Federal District, through the Articulated Action Plan (PAR), with the objective of technically and financially supporting the States, Federal District and

Municipalities in the implementation of the rural education policy, aiming to expand access and qualification of the offer of basic and higher education to rural subjects (H AGE, 2016).

On the other hand, in the political and economic scenario in which Brazil is currently inserted, under a capitalist administration, the government's concern and objective lie in achieving previously defined results, instead of concentrating on the necessary processes, especially with regard to the care of the rural population. In the context of education policies, the interests of citizens are focused on obtaining more favorable living conditions, mainly through capital.

However, despite the implementation of programs aimed at supporting the objectives of assistance to peasant inhabitants, capitalist development proposals and public policies elaborated will be subject to the influences of the capitalist state itself. In the context of the Brazilian State, epistemological and political disputes tension, deepen and generate a scenario of disputes, at the same time that new demands arise from society, the State remains conditioned by a game of power and decision.

3 POPULAR KNOWLEDGE IN THE CONSTRUCTION OF PEASANT PEDAGOGICAL IDENTITY

In recent years, Rural Education has been subjected to a pedagogical analysis in relation to its social function and the formation of subjects who live in rural areas. The transformation in perspective and interaction with popular knowledge has generated unrest among peasants, teachers and rural schools in many education systems at the national level. The approach to education in the countryside emerges with a new practice, in which peasant subjects are not limited to being mere recipients of an urban education, but rather protagonists who are formed from their local context and their relationship with the global.

In this way, education in the countryside recognizes the subjects in their origins, their histories, their cultures, as well as their relationships with the environment and with the collectivity, configuring them as individuals who seek to understand themselves in order to later understand the world. This understanding encompasses their roots, their histories, their relationships with the environment, their culture, thus enabling self-identification and understanding of the universe around them. In this context, Arroyo, Caldart and Molina (2004, p. 12) argue that:

Here it is understood by Rural Education. A movement of action, intervention, reflection, qualification that tries to give organicity and capture, record, explain and theorize about multiple historical, political and cultural meanings that consequently formative, educational.

Rural Education is, therefore, an action that aims to intervene in a reflective way, with the aim of organizing, investigating, experiencing and theorizing qualitatively the various meanings and historical, political and cultural knowledge of rural people, in order to seek new possibilities. The definition of Rural Education is aligned with what is recommended by Popular Education, which, as a conception and/or methodology, sustains the proposal of starting from the popular knowledge of the group of individuals to whom it is directed, and advancing, providing new knowledge and learning, as well as understandings that expand the knowledge already experienced.

Popular Education is mentioned in this context of Rural Education, in view of the diversity of groups of residents and rural workers. The reflection on Rural Education leads us to understand that this modality of teaching is elaborated, outlined and conceived from popular knowledge, which enables interaction with global knowledge; in other words, it promotes dialogue between the local and the global.

Rural Education emerges in the dynamics of groups that inhabit rural areas, through their organizations and movements aimed at defending the rights of the peasant population. In this context, rural people are understood as all those who have a direct connection with rural life: family farmers, small producers, peasants, rural workers, landless people, and, consequently, all those who live in or depend on work in the countryside. These groups, through their social mobilizations, integrated into their struggle the search for a quality education for their children, rejecting the rural school as a simple "little school" devoid of adequate conditions, resources and pedagogical purpose, characterized by precarious education.

The rural school is distinguished from other educational institutions by its peculiar characteristics, which emerge as a function of the context and the educational demands it presents. This school has its own specificity that recognizes it, having a clear intentionality focused on the cultural and social environment in which it is located. It covers several social, economic, environmental and human education issues, considering their interrelations and connection with the physical and social space. Arroyo, Caldart and Molina (2004, p. 100-101) describe agricultural activity as a significant form of learning:

The work on the land, which accompanies the day-to-day process that makes a seed a plant and a plant a food, teaches in a very unique way that things are not born ready, but that they need to be cultivated: it is the hands of the peasant who can till the land so that it can produce bread. This is also a way of understanding that the world is to be made and that reality can be transformed, as long as it is open to telling its subjects how to do it, just as the land shows the farmer how it needs to be worked to be productive.

It is essential to recognize that the world is not in a definitive state, but in continuous transformation, and that we are inserted in this process, so that, simultaneously, we metamorphose and impact the changes in reality. Learning about cultivation, care and production is an essential foundation that rural families have to collaborate with the school, so that it transforms such teachings regarding seeds and soil, redirecting them to cultivation and care for human beings. With this understanding, it is concluded that rural education incorporates the particularities and traditional knowledge that families and the community carry, which are transmitted from generation to generation. However, a large part of this is manifested orally, resulting in scarce records, and this knowledge is crucial as a foundation to guide the learning process.

Pedagogical practice is a collective action, involving not only the entire group, but also the society in which the school is located. This is due to the need for the collective thinking and intentions of this procedure to be defined by this collective. Thus, significant aspects, such as the values, the historical trajectory and the cultural roots of the rural environment, must be taken into account in educational training in the context of the countryside. Miguel Arroyo (2004, p. 80 cited by Arroyo; Caldart; Molina, 2004) state that:

When we situate education as a process of human transformation, of human emancipation, we realize how much the values of the countryside are part of the history of human emancipation. So, how will the school work on them? Will the school ignore them? The question is more fundamental, it is to go to the cultural roots of the countryside and work on them, to incorporate them as a collective heritage that mobilizes and inspires struggles.

It is with this perspective that the research developed acquires relevance, since it aims to identify, in the curriculum and in the pedagogical practices performed in the rural school, the relationship that is established with the popular knowledge of the community in which it is inserted, observing in the school documentation, especially in the Pedagogical Political Project, how this theme is being addressed. Thus, the realization of this notion is verified in the educational work; It analyzes whether or not there are links with popular knowledge and the interactions that are formed from them.

Reflecting on the formation of the new generations implies transcending the social environment in which the school institution is found. Moving from the local to the global level is a requirement. In the face of accessible technologies and globalization that dominates the world scenario, it is necessary that we adapt and offer students experiences that connect the local context to the global context. Milton Santos (2012, p. 339) argues that "Each place is, at the same time, the object of a global reason and a local reason, coexisting dialectically." It

is essential to provide an understanding of the whole based on the lived experience, to establish conditions for more concrete choices and understandings, especially with regard to children and adolescents. The problem of reality and abstraction must be considered according to the student's level of development. Thus, it is essential that the teacher has knowledge about human development, in order to understand the appropriate ways and conditions to deal with the various topics in the classroom, remembering that the school environment is the basis and that, from there, it expands to the global scope.

Rural Education, from this context, acquires characteristics of Popular Education, since it is based on the knowledge previously developed and assimilated by the members of this group. Popular knowledge constitutes the basis for interconnection with scientific knowledge, allowing us to understand the local context in order to interpret the global context. The modalities of relationships, the environment, time, space, climate, relief, narratives, traditions, culture and religiosity of the groups reflect the previous knowledge they hold and, from this foundation, it is possible to establish connections with other spaces, places and times, using and appropriating scientific knowledge.

4 THE CONTRIBUTION OF SOCIAL MOVEMENTS TO RURAL EDUCATION

Historically, education in Brazil originated in the context of Portuguese colonization, with deep links in the project of domination and submission of the less favored. An imposition with brands that stamped the fabric used to consolidate the education project for the Portuguese colony, with economic, cultural and religious domination. Since then, education projected the formation of the Brazilian colonial elites, only after this period, education began to be thought of for the urban space, in direct connection with industrial production.

Rural educational institutions, whose proposal is to strengthen the connection between men and women in the countryside and the land, were gradually converted into schools located in rural areas, in which the particularities of life in the countryside occurred due to the standardization of the contents listed in the curricular guidelines guided by the national ruling class. These contents have been influenced by the market perspective, playing a relevant role in the formation of increasingly competitive, consumerist subjects and, mainly, replicators of the logic of land exploitation based on neoliberalism and agribusiness.

Understanding the new dynamics of the field is essential to assess whether such movements are promoting the overcoming or increasingly accentuating inequalities. In the context of education, in what way are these dynamics and these movements exerting pressure to change the educational system, educational policies, the school institution and education professionals? In this context, Arroyo (2006, p. 106) emphasizes that "rural

movements can contribute to making the school more dynamic", as they "bring the idea of rights". They situate education within the scope of rights.

Rural education, as a right, focused on the diversity of peasant communities, is a recent issue. It was disregarded and marginalized, including through investigations, pedagogical reflection, curricular guidelines and even by the Laws of Guidelines and Bases of National Education, for a long time. This neglect, according to an investigation carried out by Caldart (2004, p.149), is linked to the narrowing of political and educational perspectives for rural populations, which reflects a negative view of the countryside and the education that should be developed in the countryside, based on the belief that "to manage the hoe or take care of the cattle, neither letters nor skills are indispensable". "School is not essential."

Originating from the structuring of social movements, rural education emerges as a response to rural education. Rural education in Brazil establishes a significant relationship with the class of large landowners, that is, it emerged "from the minds of the ruralists as a way of subordinating the peasants and reserving for them a controlled space in education policies to civilize and maintain subordination" (Leite, 1999, p.14). It has its origins in the ideological conceptions linked to the educational system implemented by the Jesuits in Brazil, as well as in the political-ideological analysis of the agrarian oligarchy, popularly summarized in the phrase: "people from the countryside do not need studies, this is a thing for people from the city" (Leite, 1999, p.09). On the other hand, rural education – different from rural education or rural education – represents a way of affirming the rights of people who live in the countryside, so that they can enjoy their own, specific educational training, in the same way that there is an education that is made available to the inhabitants of urban areas, guaranteeing their specificities.

The recent trajectory of rural education reveals the critical character of this modality of teaching, driven by social movements, which seek to question society, the State and its policies, the school system, the institution, the curriculum, training and teaching practice, as well as state and municipal education managers and training centers for rural educators. According to Arroyo (2006), such concerns emerge from the plurality of social movements and organized peasant communities. These actions transform the perception of rural inhabitants, previously considered "individuals seen as ignorant, servile, and easily manipulated by agrarian and political elites" and "mere recipients of benefits", into "managers of public policies as collective subjects" (idem, ibidem, p. 13).

In this sense, it is worth emphasizing that the search for recognition of the right to difference demands particularity without disdain, the alternative without attribution of blame and the strict application of a categorical imperative. According to the statement of

Boaventura de Sousa Santos: "we have the right to be equal, whenever difference makes us inferior; we have the right to be different whenever equality mischaracterizes us" (Santos, 2003, p. 339).

From this perspective, an aspect that demands care concerns the conception of the educational institution aimed at the peasant context. It is imperative that this school is able to fulfill the formal functions of the schooling process, without disregarding the training necessary for the student. Thus, the educator must ponder on the execution of his attributions to achieve his own goals, that is, it is essential that the effective objectives are achieved and not only those that are announced. According to Caldart (2004, p. 3), this implies progressing in theoretical and project clarity with the objective of promoting a significant advance in the quality of political struggles and pedagogical practices, giving substance to the flag raised by this struggle and continuously reflecting on education in the countryside:

This challenge unfolds into three combined tasks: to keep alive the memory of Rural Education, continuing and dynamizing its construction and reconstruction by its own subjects; To identify the fundamental dimensions of the political struggle to be waged at the present time; To continue in the construction of the political and pedagogical project of Rural Education (Caldart, 2004, p. 3).

The battle for education designed from the countryside and with the subjects of the countryside has already made progress, however, there is still a long way to go for residents and workers in the countryside to be able to actually enjoy quality education that meets their needs for teaching-learning, belonging to the countryside and protagonists of their own history. As according to Caldart:

That is also why the pedagogies that are placed for the oppressed, the workers and the social movements are much more common, and not the pedagogies that are their own. When the social struggle comes to be seen as educational, the view of who the educating subjects are necessarily changed. Also in pedagogy it is possible to try to turn the world upside down, or at least start to look at it from another point of view (Caldart, 2004, p. 340).

In this sense, the importance of implementing public policies aimed at rural education is reaffirmed with the necessary validity of the experiences built within organizations and social movements, despite their contributions to problematize the real situations of inequalities and propose equitable strategies in the implementation of policies to overcome conflicts related to this education movement.

[...] It is not possible to deal with educational policy detached from the issues of work, culture, the clash of field projects, and today, from models or logics of agriculture, which have implications for the project of the country, for society and for conceptions of public policy, education, and human formation. (CALDART, 2015, p.04)

Social movements have played a crucial role in the search for answers to the challenges that permeate education in the peasant context. They act not only as agents of pressure on the government, but also as disseminators of innovative and inclusive educational practices. Garcia (2014) emphasizes that the pedagogy of alternation, in turn, is a methodological approach created by social movements, which integrates periods of school learning with periods of work activity in the communities, favoring a contextualized and meaningful education for the rural reality.

The effective performance of communities in the administration of educational institutions and in the elaboration of public policies represents another fundamental factor for the improvement of rural education. Almeida (2016) argues that local communities should be recognized as collaborators in the educational process, offering their knowledge and experiences for the elaboration of an education that effectively responds to the needs of their people.

Expectations for the future of rural education include the imperative need for a constant commitment to promoting educational conditions in rural regions. The application of resources in appropriate school infrastructure is essential to ensure a favorable learning environment. In addition, it is essential to implement continuing education programs aimed at educators, enabling them to handle the particularities of teaching in the context of the field.

The incorporation of educational technologies is also an encouraging possibility. Amaral (2019) proposes that the use of technological resources can promote access to knowledge and contribute to improving the quality of education in non-urban communities. However, such a situation requires investments in technological infrastructure and in the training of teachers for the efficient use of these tools.

A relevant aspect is also the valorization and strengthening of social movements, as well as local communities, in the elaboration and management of educational policies. Mendes (2016) argues that educational training in the rural sector should be developed based on dialogue and collaboration between the government, social movements and local communities. The adoption of a participatory approach is essential to ensure that public policies are effectively effective and meet the demands of rural communities.

5 CONCLUSION

Rural education needs to be understood far beyond a modality of teaching basic education, but as a guarantee of the right to education signed for all, regardless of any specificity or particularity. For a long time, rural subjects suffered under the direction of a hegemonic education, and in turn, exclusionary, because it did not meet the real needs of the peoples who lived and live in the countryside, in the waters and in the forests. As a result, the peasant population was stigmatized as rude and backward, since their knowledge, values, customs and cultures were disregarded, especially the day-to-day experiences with climatic conditions and agroecological production.

After numerous demands from social movements and civil society, rural education began to be guaranteed by legislation, such as the LDB and Decree No. 7,352/2010, in which it considers the desires and needs of the peasant population, thus becoming more inclusive and autonomous. It is worth mentioning that Brazilian legislation guarantees the access and permanence of students, as well as provides for the necessary adaptations for rural education to be meaningful, so that the rates of repetition and school dropout are reduced, and so that it does not seek to fit into the reality of the city, since its environment is the countryside.

In view of the above, the construction of this research represented a unique theoretical framework, especially because it addresses a subject that articulates historical, legal, cultural and pedagogical dimensions in an inseparable way. Debating the education of peasant subjects in relation to public policies required recognizing that it is a political-pedagogical project in constant dispute. The greatest challenge was to articulate theoretical sources consistent with current legal aspects and with historical contexts of struggle of peasant subjects, avoiding reductionism and understanding the countryside as a territory of conflicts, resistance and knowledge production.

Throughout the study, huge discoveries were confirmed. One of them is the fact that Rural Education did not arise from a concession from the state, but from a historical process of struggles led by organized social movements that, in turn, pushed for the transformation of collective demands into public policies. Another significant verification concerns the central role of popular knowledge in the constitution of the peasant pedagogical identity, reaffirming that the rural school must start from the productive practices of the communities, always maintaining the dialogue between the local and the global.

Regarding the objectives proposed for this writing, it can be understood that they were satisfactorily achieved when one perceives in this text the presence of the analysis of the trajectory of public policies for Rural Education, covering their unfolding in the education systems and evidencing the subsidies of popular knowledge and social movements in the

construction of counter-hegemonic educational practices. It was also demonstrated that Rural Education is composed as an expression of struggle and resistance, ensuring the right to difference without giving up equal rights, as argued by the authors discussed in the theoretical foundation.

And, among the positive points evidenced in this research, the emphasis on the legal advances achieved that made clear the official recognition of Rural Education as a policy and emancipation policy, favoring the academic debate on the subject and strengthening social participation in the construction of educational proposals that value work, culture, territoriality and collective memory as formative dimensions. But on the other hand, it is worth remembering that there are challenges that still remain and that cannot be ignored, such as: the fragility in the implementation of these policies, the insufficiency of investments in infrastructure and teacher training, the permanence of a capitalist logic that tensions the peasant educational project and the tendency towards curricular homogenization that disregards territorial specificities.

In view of this scenario, for the consolidation of the theme, it is essential to strengthen mechanisms for monitoring and evaluating public policies aimed at Rural Education, in order to ensure that the legal frameworks are effective in school practices, as well as to expand training programs for educators committed to the critical and emancipatory perspective defended by social movements, and, to ensure structural and technological investments that reduce the historical inequalities between the countryside and the city, without detracting from the peasant identity.

Finally, it is essential to keep alive the memory of the struggles that gave rise to Rural Education and that continue to stimulate the active participation of communities for the consolidation of a counter-hegemonic education in the countryside that fosters the continuity of social mobilizations, the permanent dialogue between State and society and the ethical-political commitment to human emancipation. Therefore, it is reaffirmed that Rural Education is not limited to a geographical space, but is configured as a permanent movement for the construction of rights, identity and resistance, since it has come to guarantee the citizenship of peasant populations, offering a teaching-learning process according to the specificities of the field, without the student having to submit to a reality different from his own, since this student has already been excluded and discriminated against throughout the of history.

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TEACHER COLLABORATION IN HIGHER EDUCATION: A SYSTEMATIC LITERATURE REVIEW ON PRACTICES MEDIATED BY PROJECT-BASED LEARNING

COLABORAÇÃO DOCENTE NO ENSINO SUPERIOR: UMA REVISÃO SISTEMÁTICA DA LITERATURA SOBRE PRÁTICAS MEDIADAS PELA APRENDIZAGEM BASEADA EM PROJETOS

COLABORACIÓN DOCENTE EN LA EDUCACIÓN SUPERIOR: UNA REVISIÓN SISTEMÁTICA DE LA LITERATURA SOBRE PRÁCTICAS MEDIADAS POR EL APRENDIZAJE BASADO EN PROYECTOS



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ABSTRACT

This article analyzes how teacher collaboration has been addressed in the literature on Project-Based Learning (PBL), through a Systematic Literature Review (SLR) conducted following the PRISMA protocol. The investigation was guided by the following question: how is teacher collaboration described, enabled, and limited in studies on PBL implementation in formal education settings? Searches were carried out in five national and international databases between January 2021 and May 2025, resulting in a final corpus of seven studies. Thematic analysis revealed that collaboration manifests unevenly across the domains analyzed: present in planning, partial in execution, and practically absent in assessment. The results indicate that its emergence depends on deliberate institutional conditions, such as protected time and committed pedagogical leadership, without which teacher isolation persists as the norm. The findings point to a relevant gap: the absence of empirical investigations into these conditions, particularly within Brazilian vocational and technical education.

Keywords: Teacher Collaboration. Project-Based Learning. Systematic Literature Review. Vocational and Technical Education. Pedagogical Practices.

RESUMO

Este artigo analisa como a colaboração docente tem sido abordada na literatura sobre ensino superior mediado pela Aprendizagem Baseada em Projetos (PBL), por meio de uma Revisão Sistemática da Literatura (RSL) conduzida pelo protocolo PRISMA. A investigação foi guiada pela seguinte questão: como a colaboração entre docentes é descrita, viabilizada e limitada

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nos estudos sobre implementação da PBL em contextos de educação formal? As buscas foram realizadas em cinco bases de dados nacionais e internacionais, entre janeiro de 2021 e maio de 2025, resultando em um corpus final de sete estudos. A análise temática revelou que a colaboração se manifesta de forma desigual entre os domínios analisados: presente no planejamento, parcial na execução e praticamente ausente na avaliação. Os resultados indicam que sua emergência depende de condições institucionais deliberadas, como tempo protegido e liderança pedagógica comprometida, sem as quais o isolamento docente persiste como norma. A contribuição deste trabalho é evidenciar, com base em evidências sistemáticas, que a colaboração docente constitui uma condição estruturante para a efetividade da PBL, e não uma variável secundária, o que tem implicações diretas para a formação docente e para a gestão institucional na Educação Profissional e Tecnológica (EPT) brasileira.

Palavras-chave: Colaboração Docente. Aprendizagem Baseada em Projetos. Revisão Sistemática da Literatura. Educação Profissional e Tecnológica. Práticas Pedagógicas.

RESUMEN

Este artículo analiza cómo la colaboración docente ha sido abordada en la literatura sobre enseñanza mediada por el Aprendizaje Basado en Proyectos (ABP), mediante una Revisión Sistemática de la Literatura (RSL) realizada siguiendo el protocolo PRISMA. La investigación fue guiada por la siguiente pregunta: ¿cómo se describe, viabiliza y limita la colaboración entre docentes en los estudios sobre implementación del ABP en contextos de educación formal? Las búsquedas se realizaron en cinco bases de datos, entre enero de 2021 y mayo de 2025, resultando en un corpus final de siete estudios. El análisis temático reveló que la colaboración se manifiesta de forma desigual entre los dominios analizados: presente en la planificación, parcial en la ejecución y prácticamente ausente en la evaluación. Los resultados indican que su emergencia depende de condiciones institucionales deliberadas, como el tiempo protegido y el liderazgo pedagógico comprometido, sin las cuales el aislamiento docente persiste como norma.

Palabras clave: Colaboración Docente. Aprendizaje Basado en Proyectos. Revisión Sistemática de la Literatura. Educación Profesional y Tecnológica. Prácticas Pedagógicas.

1 INTRODUCTION

Project-Based Learning (*PBL*) is one of the most discussed pedagogical approaches in the literature on professional and technological training. Inspired by the pedagogy of John Dewey (1936), it organizes knowledge around authentic and contextualized situations, resignifying the role of the teacher as a mediator of the learning process (Bender, 2014; Barbosa; Moura, 2013). In project-based teaching, the student assumes a central role in the construction of knowledge, while the teacher coordinates and integrates knowledge from different fields. However, the successful implementation of PBL depends on a condition that the literature describes as often absent in institutions: collaboration between teachers.

In this context, the role of the teacher shifts from a transmitter of content to a mediator of the learning process, as discussed by Pimenta and Anastasiou (2014), which requires new forms of professional action, including collaborative work. Teacher collaboration presupposes joint planning, co-responsibility and collective reflection on practice (Fiorentini, 2004). These practices face persistent structural obstacles: work overload, curricular fragmentation, lack of institutionalized time for collective work, and a pedagogical culture that historically values isolation (Hargreaves, 1998; Masson, 2009).

In the context of Brazilian Professional and Technological Education (EFA), this tension is particularly evident. The National Curriculum Guidelines demand interdisciplinary practices while the organizational structures of the institutions rarely create conditions to make them effective (Saviani, 2003; Frigotto, 2007). This article starts from the premise that teacher collaboration is not a prerequisite that can be simply demanded, but an emergent property of an intentionally cultivated system (Thomas; Brown, 2011). This perspective shifts the focus from the individual goodwill of teachers to the institutional conditions that make collaboration possible and sustainable.

The objective of this paper is to analyze how teacher collaboration has been approached in the literature on higher education mediated by PBL, through a Systematic Literature Review (RSL) guided by the PRISMA protocol, identifying: (a) the domains in which collaboration manifests itself; (b) the enablers and recurrent barriers; and (c) the empirical gaps that require investigation, especially in the context of Brazilian EFA.

2 THEORETICAL FRAMEWORK

To understand how teacher collaboration emerges in PBL contexts, it is necessary to articulate three conceptual axes: the logic of learning ecosystems, which provides the systemic framework; project pedagogy, which defines the context of practice; and the literature on teacher collaboration, which delimits the object of investigation. These three axes

are not independent: collaboration can only be understood as an educational phenomenon when one considers the environment in which it occurs and the pedagogical approach that requires it.

2.1 CREATIVE ECOSYSTEMS AND THE LOGIC OF COMPLEXITY

The concept of learning ecosystem, based on Thomas and Brown (2011), proposes a transition from learning as the acquisition of knowledge to active participation in a living system, composed of a structured environment and a collective of people who interact. In these environments, innovation is not planned from the top down, but emerges from the relationships between participants. This perspective represents a break with transmissive models of teaching, in which the teacher operates in isolation and the curriculum works as a sequence of independent contents.

The relevance of this framework for the present study lies in the nature of the problem investigated. Morin (2005) argues that it is necessary to overcome the paradigm of disjunction and simplification, understanding the whole from the interactions between the parts. In the educational field, isolated pedagogical practices are incapable of responding to problems that are, by nature, systemic. Teacher collaboration, in this context, is not only a didactic strategy, but a condition for the learning environment to function as a coherent system. Resnick (2017) reinforces this perspective by identifying that meaningful learning occurs in mutual support networks, which is true for both students and the teachers who teach them.

The limit of this framework, however, needs to be recognized: Thomas and Brown (2011) and Resnick (2017) developed their arguments mainly in contexts of informal learning and basic education. Its transposition to technical-professional higher education requires theoretical mediation, which is provided by the following two axes.

2.2 PBL AS AN ORGANIZING AXIS OF PEDAGOGICAL PRACTICE

PBL organizes teaching around authentic problems that require investigation, collaboration, and the production of concrete results (Bender, 2014). Its foundation goes back to Dewey's pedagogy (1936), for whom genuine learning occurs through reflective experience and not through the passive transmission of contents. In the context of higher education, Schön (2000) complements this perspective by arguing that professional practice is inherently reflexive, which makes PBL especially suitable for professional and technological training.

There is, however, an unresolved tension in the literature: while PBL is widely recommended as an integrative approach, studies on its implementation reveal that it rarely

transforms the teaching culture spontaneously. Pimenta and Anastasiou (2014) argue that teaching in higher education requires the ability to articulate pedagogically and work in a team, but traditional teacher training does not prepare teachers for this. This contradiction is central to the present study: PBL requires collaboration, but the conditions for it to occur need to be deliberately constructed.

2.3 TEACHER COLLABORATION: PRACTICES, FORMS AND CONDITIONS

The literature on teacher collaboration presents consensuses and tensions that need to be made explicit. The central consensus is that genuine collaboration goes beyond the coordination of tasks: it presupposes joint planning, co-responsibility for the results and collective reflection on practice (Fiorentini, 2004). Hargreaves (1998) distinguishes four types of teaching cultures, individualism, artificial collegiality, balkanization, and genuine collaboration, arguing that most institutions operate in balkanization, in which faculty subgroups function in isolation and sometimes competitively. This distinction is relevant because it indicates that not all joint work constitutes collaboration.

The tension in literature lies in the question of conditions. Hargreaves (1998) emphasizes structural and cultural conditions, such as protected time, physical space, and committed pedagogical leadership. Tardif (2014), in turn, shifts the focus to training: teaching knowledge is built throughout the professional trajectory, and contexts that do not promote interaction between teachers produce fragmented knowledge. Imbernón (2010) articulates the two perspectives by arguing that training should occur in collective, reflexive and situated contexts, treating collaboration not only as a pedagogical strategy, but as a process of continuous professional development.

The gap identified in this literature is twofold. On the one hand, Masson (2009) demonstrates that teacher training policies in Brazil rarely prepare teachers for collective work, creating a structural distance between pedagogical demands and the competencies developed. On the other hand, the international literature on teacher collaboration in PBL, as evidenced by the RSL presented in this article, deals predominantly with the domains of planning and professional development, leaving collaboration in evaluation as a systematically neglected field. It is precisely this lacuna that justifies the research proposed here.

3 METHODOLOGICAL PATH

This study is a Systematic Review of the Literature with a qualitative approach and descriptive-interpretative character, guided by the PRISMA protocol (*Preferred Reporting*

Items for Systematic Reviews and Meta-Analyses). Adherence to this protocol ensures traceability, transparency, and replicability of findings (Fujita; Barbosa, 2020).

The investigation was guided by the following guiding question: how is collaboration between teachers described, made feasible and limited in studies on the implementation of PBL in formal education contexts? The searches were carried out between January 2021 and May 2025, in five databases: Web of Science, Scopus, SciELO, ERIC and Google Scholar. The search strategy combined descriptors from three conceptual axes: PBL, teacher collaboration, and educational context.

The inclusion criteria were:

- a) explicitly mention PBL;
- b) to address collaboration practices involving professors, not only among students;
- c) be linked to contexts of formal education.

Articles with an exclusive focus on student collaboration, purely theoretical studies without description of practices, and non-academic publications were excluded.

The selection process started from 358 records identified. After removing duplicates ($n = 11$), deletion by automation ($n = 20$), screening by title and abstract ($n = 311$ excluded), and reading it in full for eligibility verification ($n = 15$ evaluated, 8 excluded), we arrived at a final corpus of seven studies. The reasons for exclusion in the full reading were:

- a) exclusive focus on students without faculty collaboration ($n = 4$);
- b) PBL applied outside the formal educational context ($n = 3$);
- c) theoretical study without description of practices ($n = 1$).

The entire screening path was systematized through the Bibliographic Records Explorer (RBS), a digital tool developed in this project to record metadata, inclusion and exclusion criteria, and justifications for each decision, ensuring traceability and auditability of the RSL (Figure 1). The RBS is available permanently at: <https://gptedcom.com.br/erb/>

Figure 1

Bibliographic Records Explorer (ERB) interface

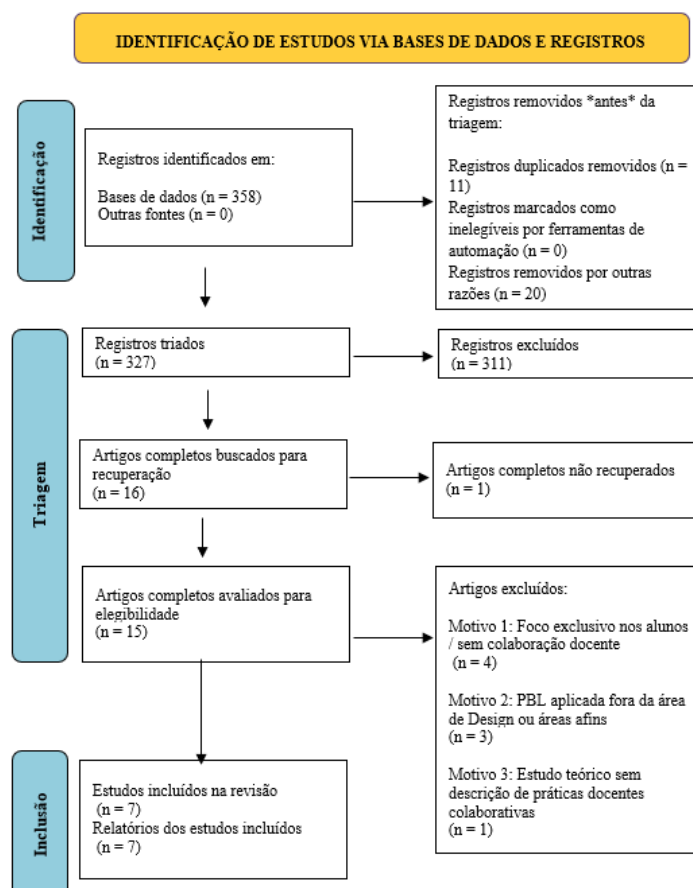


Source: Prepared by the authors.

The selection process is detailed in the PRISMA flowchart (Figure 2).

Figure 2

PRISMA flowchart of the article selection process



Source: Prepared by the authors.

3.1 LIMITATIONS OF THE METHODOLOGICAL APPROACH

The main limitation of this study is the relatively restricted corpus, a reflection of the incipience of specific productions on teacher collaboration in PBL. This characteristic requires caution in generalizing the results. The development of the analyses was anchored, for this reason, in research from related fields, such as Education, Engineering and Language Teaching. This transposition is simultaneously a strength, due to its interdisciplinary nature, and a limitation, because the findings have not yet been confronted with direct empirical investigations in the context of Brazilian EFA.

4 MAPPING OF FACULTY COLLABORATION: FINDINGS OF THE RSL

Table 1 shows the identification of the seven studies that made up the final corpus of this RSL.

Table 1

Identification and Characterization of Studies Included in the RSL

ID	Study (Author, Year)	Research Context and Focus
164	Knoblauch (2024)	Teacher training in the context of international collaboration (Germany/India) via PBL.
169	Zaafour; Salaberri Ramiro (2022)	Difficulties and solutions for the implementation of Cooperative PBL in English teaching (Spain).
202	Santos; Gupta; Petrova (2025)	Impact of pedagogical leadership and faculty collaboration on PBL curriculum implementation (Australia).
221	Dagan; Ragonis; Goldman (2023)	Implementation of an interdisciplinary STEM course via PBL in a professional master's degree (Israel, student perspective).
229	Pratiwi <i>et al.</i> (2025)	Effectiveness of the PBL model based on <i>Lesson Study</i> to improve creative thinking (Indonesia).
266	Silva (2021)	Proposition of a didactic sequence model with active methodologies for professional training (Brazil).
277	Cintra (2023)	Experiences of teachers and students with the PBL methodology in a Computer Engineering course (Brazil).

Source: Prepared by the authors.

The thematic analysis of the seven studies allowed us to map the forms, conditions and effects of teacher collaboration in PBL contexts. Chart 2 summarizes the findings by domain, identifying facilitators, barriers, and gaps.

Table 2

Facilitators, Barriers, and Gaps of Teacher Collaboration in PBL

Domain	Facilitators	Barriers	Gaps
Planning	Formal structures (periodic meetings); pedagogical leadership; institutional need for innovation.	Work overload; academic bureaucracy (ID 277); difficulty in curricular alignment (ID 202).	Absence of instruments for recording and evaluating collective planning processes.
Professional Development	Leadership that fosters collaborative culture; structured models such as <i>Lesson Study</i> (ID 229); international collaboration (ID 164).	Lack of specific training; cultural resistance to collective work; teacher isolation.	Scarcity of continuing education programs focused on collaboration in PBL.
Execution	Diversity of knowledge; formal structures that provide for co-presence (ID 221).	Logistical challenges (incompatible schedules); different pedagogical styles; lack of experience in shared teaching.	Few reports of systematized co-teaching; punctual and non-formalized practices predominate.
Evaluation	Highly structured methodologies that formalize the joint reflection stage (ID 229).	Absence of models and instruments for the collaborative assessment of learning.	Domain with less presence in the literature: indirect mentions predominate, without formalized instruments.

Source: Prepared by the authors.

The findings reveal that teacher collaboration manifests itself with greater frequency and structure in the domains of planning and professional development. A clear trend can be observed: the closer to the moment of evaluation, the lower the presence of collaboration. This pattern suggests that collaboration is still partially understood by the contexts studied, restricted to the preparation phase of teaching and rarely extended to the stage in which pedagogical decisions have the greatest impact on students.

The predominance of collaboration in planning indicates that this dimension is recognized as central to the implementation of PBL, but other stages of the pedagogical process remain less explored. This gap is relevant: if collaboration does not reach evaluation, the shared pedagogical cycle remains incomplete. Lack of time, work overload, and academic bureaucracy are cited as the main systemic barriers in all contexts analyzed (Heemann; Lima; Corrêa, 2010; Masson, 2009), which indicates that the problem is structural, not individual.

This finding reinforces the need for research that not only documents collaborative practices, but also analyzes the institutional conditions that make them possible and sustainable, especially in domains where the literature is more silent.

5 DISCUSSION

The results of this review indicate that teacher collaboration is not only a pedagogical strategy, but a structuring condition for the effective implementation of PBL. Without collaboration, PBL risks being reduced to a change of format, keeping intact the culture of isolation that fragments the curriculum and limits student learning.

The emphasis on collaboration in planning, identified in the literature, reveals a tendency to partially understand the phenomenon, often restricted to the initial phase of the pedagogical process. This limitation may be related to teacher training itself, which, according to Tardif (2014), still favors individualized practices and rarely prepares teachers for collective work. The result is that collaboration, when it exists, tends to be voluntary and informal, dependent on personal affinities between teachers, and not on institutional arrangements that sustain it.

The findings of the RSL, although derived from a predominantly international context, find a direct correspondence in the challenges of Brazilian EFA. The barriers identified, such as work overload, academic bureaucracy, and a culture of isolation (ID 277, ID 202), are particularly acute in Brazilian public institutions. The rigid departmental structure, the distribution of hours that rarely provide time for collective planning, and a tradition of teacher autonomy that is often confused with individualism create an unfavorable terrain for the emergence of sustainable collaborative practices.

This scenario reveals a relevant contradiction in relation to national curriculum policies. Although the National Curriculum Guidelines and the EFA frameworks require interdisciplinary and flexible practices (Saviani, 2003; Frigotto, 2007), such proposals often remain at the formal level, due to the lack of institutional mechanisms for their implementation. Imbernón (2010) reminds us that teacher training needs to take place in collective and situated contexts: it is not enough to prescribe interdisciplinarity if teachers are not able to practice it.

The analysis of the facilitators identified in the RSL indicates that collaboration emerges with greater consistency when there are three simultaneous conditions: protected time for collective work, pedagogical leadership committed to the collaborative culture, and structured models that formalize the processes of joint reflection. None of the studies analyzed recorded sustainable collaboration in the absence of these conditions. This finding

has direct implications for institutional managers: collaboration needs to be planned and enabled, not just encouraged.

The field of evaluation deserves special attention. None of the seven studies identified formalized models for the collaborative assessment of learning in PBL contexts. The absence of collaborative practices in this domain indicates that, even in contexts where collaboration is established in planning and execution, it does not necessarily extend to the most consequential stage of the process. This gap points to a necessary research agenda: empirical studies are required that investigate, in real EFA contexts, which institutional arrangements favor the emergence of teacher collaboration in PBL, with special attention to the domain of evaluation.

6 FINAL CONSIDERATIONS

The results of this review indicate that teacher collaboration is not only a pedagogical strategy, but a structuring condition for the effectiveness of PBL in higher education. Without it, the approach risks being reduced to a change of format, keeping intact the culture of isolation that fragments the curriculum and limits student learning. RSL confirmed that collaboration emerges with greater consistency where there are formal structures that make it viable: protected time, committed leadership, and structured models of collective reflection.

The main contribution of this work is to show, through systematic mapping, that this condition is not distributed homogeneously: it is present in planning, partially in execution and almost absent in evaluation. This asymmetry is not accidental. It reflects the real conditions of teaching work in institutions where collective time is not protected and continuing education rarely addresses collaborative work.

In the context of Brazilian EFA, the findings have direct implications for teaching and institutional management. For the teachers, the results suggest that collaboration needs to be understood as a formative process in itself, not just as a condition for implementing PBL. For managers, the data indicate that it is not enough to demand interdisciplinarity: it is necessary to create the structural conditions that make collaboration possible, including protected time, collective spaces and continued support (Imbernón, 2010; Tardif, 2014).

This study has limitations that need to be acknowledged. The corpus is restricted and most of the studies analyzed come from international contexts, which limits the direct transferability of the findings to the Brazilian reality. Empirical investigations, conducted in real EFA contexts in Brazil, are needed to confront and deepen the patterns identified in this review.

As an additional product of this RSL, the development of the RBS, a digital instrument that contributes to the management and auditability of systematic reviews, stands out. It is recommended that future studies conduct case studies in EFA institutions, employing interviews, focus groups, and document analysis, in order to empirically identify the institutional conditions that favor the emergence and sustenance of faculty collaboration in PBL contexts.

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TERRITORIAL LITERACY IN PUBLIC SCHOOLS: POETIC PRODUCTION AND THE CONSTRUCTION OF MEANING ABOUT LIVED SPACE

LETRAMENTO TERRITORIAL NA ESCOLA PÚBLICA: PRODUÇÃO POÉTICA E CONSTRUÇÃO DE SENTIDOS SOBRE O ESPAÇO VIVIDO

ALFABETIZACIÓN TERRITORIAL EN LAS ESCUELAS PÚBLICAS: PRODUCCIÓN POÉTICA Y CONSTRUCCIÓN DE SIGNIFICADO SOBRE EL ESPACIO VIVIDO



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ABSTRACT

This article analyzes the relationship between reading, territory, and the production of meaning about lived space, based on the pedagogical experience “Niterói in Verse,” developed with 4th-grade classes in a municipal public school. It is a qualitative research study, configured as an analytical experience report, with approaches to an interpretative case study. The corpus consists of students' poetic productions, pedagogical records, and observations of teaching practice. The theoretical framework articulates Paulo Freire's critical pedagogy, literacy studies, with emphasis on Magda Soares and Angela Kleiman, and critical geography, especially Milton Santos. The results indicate that poetic production favored the elaboration of meaning about the territory, highlighting different forms of relationship with space, such as sociability, daily practices, and perceptions of inequality. As a contribution, the study proposes the notion of territorial literacy, understood as the articulation between language, experience, and space in the production of socially situated meanings.

Keywords: Reading. Territory. Territorial Literacy. Identity. Public School.

RESUMO

Este artigo analisa a relação entre leitura, território e produção de sentidos sobre o espaço vivido, a partir da experiência pedagógica “Niterói em versos”, desenvolvida com turmas do 4º ano do ensino fundamental em uma escola pública municipal. Trata-se de uma pesquisa qualitativa, configurada como relato de experiência de caráter analítico, com aproximações a um estudo de caso interpretativo. O corpus é composto por produções poéticas dos estudantes, registros pedagógicos e observações da prática docente. O referencial teórico articula a pedagogia crítica de Paulo Freire, os estudos do letramento, com destaque para

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Magda Soares e Angela Kleiman, e a geografia crítica, especialmente Milton Santos. Os resultados indicam que a produção poética favoreceu a elaboração de sentidos sobre o território, evidenciando diferentes formas de relação com o espaço, como sociabilidade, práticas cotidianas e percepções de desigualdade. Como contribuição, o estudo propõe a noção de letramento territorial, entendida como articulação entre linguagem, experiência e espaço na produção de sentidos socialmente situados.

Palavras-chave: Leitura. Território. Letramento Territorial. Identidade. Escola Pública.

RESUMEN

Este artículo analiza la relación entre lectura, territorio y producción de sentidos sobre el espacio vivido, a partir de la experiencia pedagógica “Niterói en versos”, desarrollada con grupos del 4º año de la educación primaria en una escuela pública municipal. Se trata de una investigación cualitativa, configurada como un relato de experiencia de carácter analítico, con aproximaciones a un estudio de caso interpretativo. El corpus está compuesto por producciones poéticas de los estudiantes, registros pedagógicos y observaciones de la práctica docente. El marco teórico articula la pedagogía crítica de Paulo Freire, los estudios de alfabetización y letramiento, con énfasis en Magda Soares y Angela Kleiman, y la geografía crítica, especialmente Milton Santos. Los resultados indican que la producción poética favoreció la elaboración de sentidos sobre el territorio, evidenciando diferentes formas de relación con el espacio, como la sociabilidad, las prácticas cotidianas y las percepciones de desigualdad. Como contribución, el estudio propone la noción de letramiento territorial, entendida como una articulación entre lenguaje, experiencia y espacio en la producción de sentidos socialmente situados.

Palabras clave: Lectura. Territorio. Letramiento Territorial. Identidad. Escuela Pública.

1 INTRODUCTION

The articulation between reading, school and territory constitutes a strategic field for understanding the processes of formation of subjects in contexts marked by socio-spatial inequalities. In the daily life of public schools, the presence of students is recurrent who, although they experience the urban space intensely, have difficulties in recognizing, naming and signifying the territories in which they live.

This dissociation between lived experience and understanding of space can be understood as an expression of broader processes of inequality, which cross both access to cultural goods and the possibilities of reading the world. In this sense, thinking about reading beyond decoding implies considering it as a situated social practice, crossed by relations of power, language and territory.

It is in this context that the experience "Niterói in verses" emerges, developed with classes of the 4th year of elementary school in a public school in the region of the Beaches of Niterói Bay, RJ. The students, mostly from communities such as Preventório, Grota and Cavalão, presented weaknesses in the construction of territorial references, evidencing limits in the constitution of initial forms of spatial identity.

In view of this, the study proposes to analyze how reading practices mediated by poetic language contribute to the production of meanings about the territory, in the context of the public school, proposing, from this analysis, the notion of territorial literacy.

2 READING, LITERACY AND TERRITORY: EXPANDED THEORETICAL BASES

The understanding of reading as a social practice finds in Paulo Freire one of its main foundations. By stating that the reading of the world precedes the reading of the word, the author shifts the centrality of written language to the concrete experience of the subjects, situating reading as a practice of interpreting reality. From this perspective, reading implies not only decoding texts, but producing meanings from the relationships established with the social, historical and cultural context.

Such understanding is deepened in the field of literacy studies, especially in the contributions of Magda Soares and Angela Kleiman, who conceive reading and writing as situated social practices, crossed by uses, purposes and power relations. In the same direction, Brian Street proposes the distinction between autonomous and ideological models of literacy, emphasizing that reading and writing practices are socially and culturally constructed. By articulating this understanding with the field of geography, it becomes possible to expand the notion of reading beyond the written text, incorporating space as a constitutive dimension of the production of meanings. In this sense, Milton Santos conceives

space as an inseparable set of systems of objects and actions, showing that territory is produced by historically situated social relations. Space, therefore, is neither neutral nor homogeneous, but crossed by inequalities that condition the forms of access, use and appropriation.

In addition, David Harvey highlights that the urban space is constituted by dynamics of production and reproduction of inequalities, being crossed by economic and social processes that directly impact the living conditions of the subjects. Such a perspective allows us to understand that the urban experience of students is not only spatial, but also socially marked, influencing the ways in which they perceive and signify their territories.

In the context of contemporary school geography, the contributions of Maria Encarnação Beltrão Sposito make it possible to understand territorialities as social constructions produced in everyday interactions, especially in the urban context. By considering the experiences of the subjects, the author expands the analysis of the territory beyond its physical dimension, incorporating symbolic, cultural and relational aspects.

In dialogue with the National Common Curricular Base, which proposes the development of spatial thinking and reading of the territory as school competences, the importance of pedagogical practices that articulate school knowledge and lived experience is reinforced. Such articulation allows students not only to recognize space, but to develop ways of interpreting and signifying it.

In this context, language assumes a central role as a mediation between experience and knowledge. By enabling the naming, description and interpretation of the world, language contributes to the production of meanings about the lived space. In particular, poetic language presents itself as a specific form of mediation, insofar as it allows the expression of affective, symbolic and imaginative dimensions of experience.

Thus, by articulating reading, literacy and territory, this study is based on the assumption that the formation of subjects involves the ability to produce meanings about the space in which they live. Such articulation underpins the proposition of the notion of territorial literacy, understood as the process by which subjects mobilize language practices to interpret, signify and resignify the territory, based on their social experiences.

3 METHODOLOGICAL PATHS

The research is inserted in the field of qualitative approach, assuming as an investigative strategy the report of an analytical experience, with approximations to an interpretative case study. Such methodological choice is justified by the nature of the object

investigated, which involves the understanding of processes of production of meanings in a school context, demanding a situated and contextualized analysis of pedagogical practices.

The study was developed in a municipal public school located in the city of Niterói (RJ), involving two classes of the 4th year of elementary school, composed of approximately 50 students, aged between 9 and 11 years, living in communities in the Praias da Baía region of the city of Niterói, RJ. The selection of the empirical field is directly related to the insertion of the researchers in the investigated context, which enabled the continuous monitoring of the practices and the production of records throughout the development of the proposal.

The research dataset consists of different data sources produced during the pedagogical experience, including:

- poetic productions collectively prepared by the students;
- pedagogical records of the activity;
- reflective notes of the professors-researchers;
- observations of the interactions that occurred during the activities.

The diversity of sources allowed a more comprehensive analysis of the investigated phenomenon, favoring the triangulation of the data.

Considering the age group of the participants, the analysis favored the identification of signs and initial movements of production of meanings about the territory, avoiding inferences that extrapolated the forms of expression typical of childhood. Such methodological care is based on the understanding of children as subjects in the process of constructing meanings, whose productions demand contextualized and non-projective interpretations.

Data analysis was carried out through an interpretative procedure of thematic inspiration, guided by successive readings of the corpus and by the identification of regularities and variations in the students' productions. From this process, emerging analytical categories were constructed, namely:

- territory as a space of sociability;
- territory as a space for daily practices;
- territory as landscape;
- Evidence of an expanded reading of the territory.

In a complementary way, a survey of the recurrence of these categories in the productions was carried out, with the objective of identifying patterns in the forms of signification of space. This procedure was not statistical, but analytical, contributing to give greater consistency to the interpretation of the data.

The interpretation of the data was discussed with professors involved in the experiment, with the aim of strengthening the consistency of the analysis. In addition, the explanation of the procedures adopted contributes to the transparency of the investigative path.

4 THE EXPERIENCE: POETRY, TERRITORY AND PARTICIPATION

The proposal began with a survey of previous knowledge, in which students were invited to share perceptions, references and experiences related to the territories in which they live. This initial moment evidenced both the presence of repertoires linked to everyday life and gaps in the naming, location and meaning of spaces, indicating different levels of familiarity with the territory.

From this stage, the collective production of poetry was developed, organized in groups, with the objective of mobilizing memories, affections and experiences. The activity enabled students to resort to concrete experiences, articulating elements of everyday life to forms of written expression. In this process, poetic language operated as a resource for symbolic elaboration, allowing the expression of perceptions about space that did not always emerge in more descriptive activities.

In verses such as:

In Grota there is an uphill and an alley, but there are also friends at the window

The articulation between physical elements of the territory ("ascent", "alley") and relational dimensions ("friend") is observed, indicating initial forms of meaning of space. This combination suggests that students are not limited to the description of the environment, but incorporate experiences of coexistence and sociability in the construction of meanings about the territory.

5 WAYS OF READING THE TERRITORY IN THE STUDENTS' PRODUCTIONS

The analysis of the productions evidences different ways of reading the territory, which are manifested in an articulated way in the students' poems.

First, the territory stands out as a space of belonging:

There I have friends who are like my brothers

In this case, the meaning of space is centered on social relations, indicating that the territory is understood from the bonds established in everyday life. The emphasis on

friendship relationships suggests that the meaning attributed to place is directly associated with experiences of coexistence, rather than with physical or geographical elements.

Next, the territory is observed as a space for daily practices:

People go to the market, buy tasty vegetables and fruits

This type of enunciation indicates the perception of space based on its uses, revealing a reading of the territory linked to daily activities and the circulation of subjects. The reference to the fair, for example, highlights the presence of social practices that organize life in the neighborhood, contributing to the construction of meanings about the place.

The aesthetic dimension of the territory also emerges:

I see the sunset that is beautiful

In this case, the valorization of visual and sensory aspects of the space is observed, indicating that the relationship with the territory also involves sensitive perceptions. The presence of this type of enunciation suggests that students mobilize not only practical experiences, but also ways of appreciating the environment.

In addition, signs of an expanded reading of the territory are identified:

There is pollution, violence and prejudice

This excerpt suggests initial movements of recognition of problematic aspects of the urban reality. Although in a synthetic way, the students mobilize references that go beyond the immediate experience, indicating the presence of elements of a reading that incorporates broader social dimensions.

Finally, verses such as:

The grotto sprouts in my head

indicate symbolic and creative forms of appropriation of the territory. The linguistic construction evidences an expressive use of language, in which space is re-signified through sound games and imaginative associations, suggesting a relationship that is not only descriptive, but also inventive with the territory.

6 READING THE WORLD AND TERRITORIAL LITERACY

The analysis indicates that poetic language acted as a mediation between experience and the production of meanings, allowing students to elaborate, through writing, interpretations about the territory in which they live. By mobilizing elements of everyday life, the productions show that the relationship with space is not limited to description, but involves processes of signification crossed by social experiences.

In verses such as:

There are people who fight every day

Elements of interpretation of social reality are observed, to the extent that students incorporate, albeit synthetically, references to the living conditions present in their contexts. The presence of the idea of "struggle" suggests a reading of the territory marked by the perception of daily effort, indicating initial ways of understanding the social dynamics that cross the urban experience.

Considering that these are children aged 9 to 11 years, living in urban communities, such enunciations should not be interpreted as consolidated conceptual formulations, but as indications of processes under construction, in which lived experiences begin to be named and shared through language. In this sense, the poetic production evidences the children's ability to mobilize references from their social context in the elaboration of meanings about space.

These productions dialogue with Paulo Freire's notion of reading the world, by indicating that subjects, even in the initial process of schooling, are capable of interpreting reality based on their experiences. At the same time, they are close to Milton Santos' understanding of space as a social construction, insofar as they reveal a territory constituted by relationships, practices and inequalities.

In the context of public schools, especially in territories marked by socio-spatial inequalities, the possibility of expressing and sharing these experiences through language plays a relevant role. The proposed activity created conditions so that experiences that are often naturalized in everyday life could be enunciated, favoring the construction of meanings about the territory.

It is in this context that the notion of territorial literacy is proposed, understood as the process by which subjects mobilize language practices to interpret, signify and resignify the lived space, articulating experiences, social practices and cultural references. This notion allows us to show that the production of meanings about the territory is also a dimension of the reading and writing practices developed in school.

The poetic production also favored the strengthening of initial forms of belonging, by enabling students to recognize themselves in their territories and attribute meaning to their experiences. This movement indicates that language practices, when articulated to the lived context, can contribute to the construction of more meaningful relationships between the subjects, the school and the space in which they are inserted.

7 FINAL CONSIDERATIONS

The analysis developed shows that the articulation between reading, poetic language and territory constitutes a relevant strategy for the formation of public school students, by enabling the production of meanings about the lived space. Throughout the experience, it was observed that the students' productions were not limited to the description of places, but incorporated relational dimensions, daily practices, sensitive perceptions and, in some cases, references to aspects of the broader social reality.

These results indicate that, even in the early stages of schooling, children are able to mobilize lived experiences in the elaboration of meanings about the territory. Such a movement reinforces the understanding that reading, when articulated with the social context of the subjects, goes beyond the technical domain of language, configuring itself as a practice of interpretation of reality.

Poetic language, in this context, proved to be a powerful mediation, by allowing the expression of dimensions that do not always emerge in more structured school activities. By mobilizing memories, affections and experiences, the students produced their own ways of signifying space, showing that the territory is understood not only as a physical dimension, but as a space lived and shared.

By proposing the notion of territorial literacy, the study contributes to the field of education by highlighting the importance of considering the spatial dimension as constitutive of reading and writing practices. This notion allows for the expansion of literacy studies, by showing that the production of meanings about the territory is also configured as a social practice of language, especially in contexts marked by socio-spatial inequalities.

In the context of public schools, particularly in popular territories, this articulation takes on even greater relevance, since it enables experiences that are often invisible in the school space to be recognized and elaborated through language. In this sense, pedagogical practices that articulate reading and territory can contribute to the strengthening of bonds of belonging and to the construction of more meaningful relationships between students, the school and the space in which they live.

At the same time, the results point to the need to understand such practices within structural conditions that cross the school routine. Socio-spatial inequalities, limitations on access to cultural goods and teaching working conditions are elements that directly impact the continuity and consolidation of proposals of this nature.

Finally, it is highlighted that the study has limitations related to its empirical approach, developed in a single school, which does not allow generalizations. However, by assuming an analytical character, the research offers elements that can contribute to the reflection on pedagogical practices in similar contexts. By articulating reading, language and territory, the study reaffirms the role of the public school as a space for the production of meanings about the world, showing that the formation of readers also implies the possibility of reading and signifying the space in which one lives.

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ART IN ELEMENTARY EDUCATION: CURRICULAR GUIDELINES, CHALLENGES, AND PEDAGOGICAL POSSIBILITIES

ARTE NO ENSINO FUNDAMENTAL: DIRETRIZES CURRICULARES, DESAFIOS E POSSIBILIDADES PEDAGÓGICAS

EL ARTE EN LA EDUCACIÓN PRIMARIA: DIRECTRICES CURRICULARES, DESAFÍOS Y POSIBILIDADES PEDAGÓGICAS



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ABSTRACT

This article is the result of a dissertation defended in a Postgraduate Program in Education that aimed to analyze Art as an essential field of knowledge in the integral formation of individuals, even though, historically, it has occupied a secondary position in school curricula. This study analyzes the curricular guidelines for the subject of Art in Elementary Education, identifying pedagogical challenges and possibilities. The investigation was based on bibliographic research, document analysis, and a review of academic literature (2013-2023). As a theoretical basis, the studies of authors Ana Mae Barbosa, Ferraz & Fusari, Paulo Freire Pérez-Gómez, Imbernón, among others, were consulted, in addition to normative documents (LDB, PCNs, BNCC). The results indicate a shortage of specialist teachers, weaknesses in infrastructure, and a predominance of traditional methodologies. However, they also point to innovative experiences that value cultural diversity and student protagonism. It is concluded that valuing art in the curriculum, combined with consistent public policies and ongoing teacher training, is a necessary condition for a critical, creative, and civic education.

Keywords: Education. Art. Curriculum. Pedagogical Possibilities.

RESUMO

Este artigo é resultante de uma dissertação defendida em um programa de Pós-Graduação em Educação que objetivou analisar a Arte como campo de conhecimento essencial na formação integral dos sujeitos, ainda que, historicamente, tenha ocupado posição secundária nos currículos escolares. Este estudo analisa as diretrizes curriculares da disciplina de Arte no Ensino Fundamental, identificando desafios e possibilidades pedagógicas. A investigação baseou-se em pesquisa bibliográfica, análise documental e revisão da literatura acadêmica (2013-2023). Como base teórica, buscou-se os estudos dos autores Ana Mae Barbosa, Ferraz & Fusari, Paulo Freire Pérez-Gómez, Imbernón entre outros, além de documentos normativos (LDB, PCNs, BNCC). Os resultados indicam a carência de professores especialistas, fragilidades na infraestrutura e predomínio de metodologias tradicionais. Contudo, também apontam experiências inovadoras que

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valorizam a diversidade cultural e o protagonismo discente. Conclui-se que a valorização da Arte no currículo, aliada a políticas públicas consistentes e à formação continuada de professores, é condição necessária para uma educação crítica, criativa e cidadã.

Palavras-chave: Educação. Arte. Currículo. Possibilidades Pedagógicas.

RESUMEN

Este artículo es el resultado de una tesis defendida en un Programa de Posgrado en Educación que tuvo como objetivo analizar el Arte como un campo de conocimiento esencial en la formación integral de los individuos, a pesar de que, históricamente, ha ocupado una posición secundaria en los currículos escolares. Este estudio analiza las directrices curriculares para la asignatura de Arte en Educación Primaria, identificando retos y posibilidades pedagógicas. La investigación se basó en la búsqueda bibliográfica, el análisis documental y una revisión de la literatura académica (2013-2023). Como base teórica, se consultaron los estudios de autores como Ana Mae Barbosa, Ferraz y Fusari, Paulo Freire Pérez-Gómez e Imbernón, entre otros, además de documentos normativos (LDB, PCN, BNCC). Los resultados indican una escasez de docentes especializados, debilidades en la infraestructura y un predominio de metodologías tradicionales. Sin embargo, también señalan experiencias innovadoras que valoran la diversidad cultural y el protagonismo estudiantil. Se concluye que la valoración del arte en el currículo, junto con políticas públicas coherentes y la formación docente continua, es una condición necesaria para una educación crítica, creativa y cívica.

Palabras clave: Educación. Arte. Currículo. Posibilidades Pedagógicas.

1 INTRODUCTION

The teaching of Art is a field of great relevance in the integral formation of students. However, its presence in Brazilian public schools still faces numerous challenges, such as the lack of specific public policies, insufficient teacher training and the low valuation of the discipline in the school curriculum. This study aims to analyze the curricular guidelines of Art teaching, identifying the main challenges faced by teachers and pointing out pedagogical possibilities that can increase the effectiveness of Art teaching.

The research problem that guides this study is: how can the curricular guidelines of the discipline of Art enable innovative changes that are effective in pedagogical practices, considering the contemporary demands of teaching? Thus, the article is structured from the theoretical discussion, documentary analysis and the main results observed, bringing as a contribution the reflection on the importance of consolidating Art as an indispensable area of knowledge in the formation of citizenship.

2 ART AND ITS FORMATIVE FUNCTION

Art, historically marginalized in the Brazilian school curriculum, today occupies a space of growing recognition as an essential area of knowledge in the integral formation of subjects. Current educational legislation, such as the Law of Guidelines and Bases of National Education (LDB, 1996) and the National Common Curricular Base (BNCC, 2018), recognizes Art as a mandatory and indispensable component for the aesthetic, cultural, and critical development of students.

For Barbosa (1998), Art should be understood not only as an individual expression, but as a cultural language that enables the student to critically read reality. This perspective breaks with the utilitarian view that has historically limited the teaching of Art to manual or decorative practices, repositioning it as a fundamental social and cultural practice for the formation of citizenship.

3 CONTRIBUTIONS BY ANA MAE BARBOSA AND THE TRIANGULAR APPROACH

Ana Mae Barbosa is the main reference in the field of Art and Education in Brazil. Her proposal, known as the **Triangular Approach**, articulates three dimensions of Art teaching: **artistic making, reading of images and historical and cultural contextualization**. This perspective has transformed teaching practice, shifting the focus from the mere production of objects to the valorization of Art as language and knowledge (BARBOSA, 2004).

According to the author, the reading of images in contemporary times assumes a central role in the educational process, especially because we live in a society saturated with

visual and media images, which permeate different aspects of daily life. Each individual is constantly exposed to photographs, videos, illustrations, and digital content, many of which carry commercial, ideological, or cultural intentions, and are not always perceived critically.

For Ana Mae Barbosa:

"Art is a form of knowledge that manifests itself through sensitivity, intuition, and creativity. It enables the integral development of the human being, stimulating imagination, expression, and critical reflection. Education through art should be understood as a process that integrates doing, appreciating, and contextualizing, promoting a broader and deeper understanding of artistic manifestations." (BARBOSA, 2020. p. 45)

In this sense, the school has a fundamental role in providing students with tools and strategies to interpret these images consciously, developing skills that go beyond superficial recognition.

The critical reading of images involves understanding their explicit and implicit meanings, as well as the historical, social, and cultural context in which they were produced. When analyzing an image, the student must be able to identify who produced it, for which audience, and with what objectives, recognizing the possible manipulations or distortions present. In addition, it is necessary to consider the visual language used — colors, shapes, framings, and symbols — and understand how these elements contribute to the construction of meaning.

The author emphasizes that this practice is not restricted to the field of Visual Arts, but extends to multiple areas of knowledge, as the image has become a predominant form of communication in contemporary society. In this context, visual education should be incorporated in a transversal way into the school curriculum, promoting experiences that encourage reflection, interpretation and critical analysis.

To this end, the teacher must create pedagogical situations that instigate debate, problematization and investigation, encouraging the student to question, compare and contextualize different images. Tools such as media analysis, visual production workshops and discussions on visual culture can contribute significantly to the development of these skills.

By cultivating this critical stance, the school not only prepares students to deal with the excess of visual stimuli, but also enables them to understand the society in which they live, recognizing the discourses, values, and interests behind the images. In this way, the reading of images becomes an instrument of intellectual and cultural emancipation, in line with the

perspective that educating is to form citizens capable of interpreting, questioning, and intervening in reality.

4 ART, CURRICULUM AND TEACHER TRAINING

The role of the teacher in the teaching of Art is a fundamental element for the effectiveness of the curricular guidelines. Imbernón (2010) defends the need for constant teacher updating, highlighting that training cannot be seen as a completed stage, but as a continuous process of development. Nóvoa (2009) complements this view by emphasizing professional identity as a collective construction, which is strengthened in interactions between peers and in critical reflection on pedagogical practice.

Freire (2002) contributes by stating that teaching is always a political act, and that the teacher must assume a problematized posture, encouraging the student to be an active subject of his learning. In the teaching of Art, this means going beyond the reproduction of techniques, fostering creation, interpretation and cultural criticism.

5 MULTICULTURALISM, DIVERSITY AND ART IN SCHOOL

The contemporary school is a space of cultural diversity, and the teaching of Art must reflect this plurality. Canclini (2010) highlights the importance of understanding culture in its hybrid dimension, marked by the interaction between local and global elements. This view contributes to overcoming teaching models centered only on the European tradition, opening space for popular, indigenous and Afro-Brazilian manifestations.

Santos (2005) adds that globalization, while bringing cultures closer together, also generates exclusions and inequalities. In this scenario, the teaching of Art can function as an emancipatory practice, valuing silenced cultural identities and promoting intercultural dialogue.

6 ART AND INTERDISCIPLINARITY

Another relevant aspect is the relationship between Art and other areas of knowledge. Abramovich (2005) defends interdisciplinarity as a pedagogical strategy that favors more meaningful learning. In this sense, Art can be articulated with disciplines such as History, Portuguese Language and Science, enhancing the critical understanding of reality.

Ferraz and Fusari (1999) reinforce this understanding by pointing out that Art should not be treated as an isolated or minor discipline, but as a field of knowledge that dialogues with multiple knowledges, developing sensitivity, creativity and criticality in students.

7 THE TEACHING OF ART IN BRAZIL: TRAJECTORIES, CHALLENGES AND PERSPECTIVES IN THE LIGHT OF PAULO FREIRE

The teaching of Art in Brazil has a trajectory marked by advances and setbacks, reflecting the historical, social and political context of the country. During the colonial period, artistic practice was strongly linked to Jesuit education, aimed at the moral and religious formation of the population, as well as training in artisanal activities. In this period, Art did not have an emancipatory or critical character, being essentially functional and subordinated to the demands of the Church and the Portuguese Crown. According to Barbosa (1995), "artistic training during the colonial period had a utilitarian and religious character, restricted to a few who had access to formal education, especially in Jesuit schools".

In the nineteenth century, the consolidation of Art as an elitist discipline can be observed, associated with the academies of fine arts, restricting access to aesthetic enjoyment and artistic production to a limited social stratum. This academic logic followed European standards and emphasized formal techniques, prioritizing the reproduction of classical models and despising popular cultural manifestations. Thus, Art remained distant from the social reality of the majority of the population, functioning as an instrument of social and cultural distinction.

It was only in the twentieth century, especially from the 1970s onwards, that the teaching of Art began to take on a broader critical and cultural dimension. The art-education movement, strengthened by authors such as Ana Mae Barbosa, contributed to the appreciation of multiple artistic languages, recognizing the importance of artistic expression for the integral formation of the individual. In this context, Paulo Freire (1996) offers essential contributions, emphasizing that education must go beyond the mere transmission of content:

"One cannot speak of education without the dimension of freedom and awareness. Teaching requires respect for the student, considering him the subject of his learning. Education, in order to be liberating, must enable the student to perceive reality in a critical way, understanding his social relations and responsibilities, so that he can transform it." (FREIRE, 1996, p. 52)

Freire (1996) thus reinforces the importance of a pedagogical practice that values dialogue and the recognition of the student as an active subject, capable of producing knowledge. Applied to the teaching of Art, this principle implies understanding the student as a central participant in the creative process, stimulating not only technique, but critical reflection on cultural manifestations, identities and social contexts.

The implementation of the National Common Curricular Base (BNCC, 2018) brought significant advances by structuring the teaching of Art in four languages — Visual Arts,

Dance, Music, and Theater — promoting the integration of different forms of expression and recognizing the country's cultural diversity. The BNCC also highlights the need for pedagogical practices that articulate artistic knowledge, aesthetic sensitivity, and the development of socio-emotional skills. However, despite the well-defined guidelines, the effective application of the curriculum faces persistent challenges, such as the shortage of specialist teachers, the precariousness of school infrastructure, and the lack of adequate continuing education.

From this perspective, Freire (1996) emphasizes:

"Education cannot be conceived as a deposit of information to be received passively by the learner. There needs to be an active participation, in which educator and learner dialogue, question, problematize and build knowledge together. Only in this way does education fulfill its function of liberation and social transformation, becoming an instrument of critical awareness and responsible action in the world." (FREIRE, 1996, p. 67).

From this conception, the teaching of Art should be understood as a space for dialogue, experimentation and critical construction, in which the student is stimulated to develop autonomy and reflective thinking. The Freirean approach contributes to breaking the elitist tradition of the discipline, promoting the appreciation of local cultural expressions, intangible heritage and popular artistic manifestations.

The shortage of qualified teachers represents a central challenge. Many Art teachers do not have specific training in the area or in the critical teaching methodology, making it difficult to implement pedagogical practices that stimulate creativity and critical thinking. In addition, insufficient school infrastructure — lack of materials, laboratories and adequate spaces for artistic practice — limits the student experience, compromising the development of skills provided for in the BNCC.

However, innovative initiatives have shown that it is possible to reconcile critical education with technical and artistic learning. Community art-education projects, integrated workshops and partnerships with cultural institutions favor the expansion of students' cultural repertoire and promote reflection on the role of Art in society. In this sense, Freire (1996) recalls:

"True education happens when the student is recognized as the subject of his learning. The educational process must be dialogical, problematizing and culturally significant, capable of engaging the student in the transformation of his reality and in the construction of meaning for his own life." (FREIRE, 1996, p. 71)

The articulation of the BNCC with these pedagogical practices allows us to consolidate an approach to teaching Art that goes beyond technique, incorporating social, cultural, and emotional dimensions. The challenge is to train educators capable of applying these principles consistently, promoting meaningful experiences that strengthen critical awareness and the integral development of the student.

In summary, the trajectory of Art teaching in Brazil reveals an evolution from an elitist and restricted discipline to a practice that seeks to integrate diversity, criticism and creativity. Paulo Freire's contributions are fundamental to understanding the emancipatory role of art education, emphasizing dialogue, problematization and valuing the learner as an active agent in the learning process. The BNCC offers modern and inclusive guidelines, but overcoming structural and formative challenges is essential for Art to consolidate itself as an instrument of social transformation and full cultural expression.

8 METHODOLOGY

The methodology adopted in this study was designed to enable a comprehensive, careful and rigorous analysis of the teaching of Art in Elementary School. Considering the complexity of the research object and the multiplicity of dimensions that cross the field of Art and Education, a qualitative approach was chosen, with an exploratory and descriptive character. This choice is justified by the fact that qualitative research allows us to understand phenomena in their entirety, prioritizing the meaning of practices and discourses and not only their quantification.

According to Minayo (2010), qualitative research makes it possible to capture the essence of social and educational practices, since it values the representations, perceptions and meanings attributed by the subjects. In the field of Education, this perspective is especially relevant, as it allows for dialogue with pedagogical, cultural, historical and social dimensions. Art, as a school subject, cannot be reduced to the mere transmission of content, as it involves symbolic, sensitive and aesthetic aspects that require interpretative and critical analysis. Thus, the qualitative methodology proved to be adequate for this study, allowing deeper interpretations to be reached about the challenges and possibilities of teaching Art in the investigated municipality.

9 TYPE OF RESEARCH

From a technical point of view, the research was developed on three main fronts: **bibliographic research, documentary analysis and literature review.**

The **bibliographic research** was carried out based on classic and contemporary references of Art and Education, such as Ana Mae Barbosa (1988, 1998, 2004), Ferraz and Fusari (1999), Paulo Freire (1996), Pérez-Gómez (2006), Imbernón (2010) and Nóvoa (2009). These authors made it possible to build a solid reference for the analysis of curricular guidelines and teaching practices in Art.

The **documentary analysis** included the normative texts that guide Brazilian and local Education. Among them, the Federal Constitution of 1988, the Law of Guidelines and Bases of National Education (LDB, 1996), the National Curriculum Parameters (PCNs, 1997) and the National Common Curricular Base (BNCC, 2018). In addition, the curricular documents of the municipality of Rio Claro – SP, which structure the pedagogical performance of teachers of the discipline of Art in the municipal network, were examined. These documents were studied critically, observing both their theoretical foundations and their practical applicability.

The **literature review** focused on academic production published between 2013 and 2023, selected from the **BDTD** (Brazilian Digital Library of Theses and Dissertations) and **CAPES databases**. The objective was to identify trends, challenges, and more recent contributions to the teaching of Art in public schools. Inclusion criteria were defined that favored works that addressed the discipline of Art in Elementary School, especially in the public network. Works from other stages of education (Early Childhood Education or High School) were considered only when they dialogued directly with the central discussion.

10 CONTEXT AND SETTING OF THE RESEARCH

The scenario delimited for the investigation was the municipality of Rio Claro – SP. The city, located in the central region of the State of São Paulo, has socioeconomic and cultural characteristics that directly influence its educational practices. According to IBGE data (2022), Rio Claro has an estimated population of around 210 thousand inhabitants, with educational indices in the process of consolidation. The Basic Education Development Index (IDEB, 2021) revealed advances in the municipal network, but also pointed out inequalities in relation to student performance.

The municipal education network is composed of approximately 59 school units, serving Early Childhood Education, Elementary School I and Youth and Adult Education (EJA) programs. Some units offer differentiated proposals, such as agricultural schools, which reflect the socioeconomic profile of the region. This characterization was essential to understand the concrete reality in which the Art curriculum guidelines are inserted.

11 DATA COLLECTION INSTRUMENTS AND TECHNIQUES

The instruments used consisted of the survey of normative documents, local curriculum texts and academic production in digital databases. The documents were obtained from official platforms, such as the MEC portal, government websites and archives of the Municipal Department of Education of Rio Claro. Academic production was searched in the **BDTD and CAPES databases**, through the use of descriptors such as "Art Teaching", "Basic Education", "Art Curriculum" and "Art in public schools".

The selection process followed inclusion and exclusion criteria. Works published between 2013 and 2023 that dealt specifically with the discipline of Art in Brazilian school contexts, with a focus on curriculum analysis, teacher training, and pedagogical practices, were included. Works that dealt only with isolated artistic languages unrelated to Basic Education were excluded, as well as studies that focused exclusively on High School or Early Childhood Education, without dialogue with Elementary Education.

12 ANALYSIS PROCEDURES

The analysis was organized into **three stages**:

1. **Organization and systematization of the collected data** – preliminary reading of the documents, initial categorization of the studies and bibliographic file.
2. **Categorization into analytical axes** – definition of four axes: (I) teacher training; (II) pedagogical practices; (III) structural challenges; (IV) pedagogical possibilities.
3. **Cross-referencing of data** – confrontation between literature, normative documents and local reality. This methodological triangulation allowed the identification of convergences and contradictions, ensuring greater scientific rigor to the findings.

13 SCIENTIFIC RIGOR AND VALIDITY

Scientific rigor was ensured through the constant confrontation between theory and practice, the critical analysis of official documents and the review of the most recent literature. Reliability was reinforced by the **triangulation** of sources, a methodological strategy that combines different perspectives to expand the validity of the results.

By opting for this methodology, it was sought not only to describe the reality of Art teaching in Rio Claro – SP, but also to understand its meanings and pedagogical implications, pointing out possible ways to strengthen the discipline in other school networks.

14 RESULTS AND DISCUSSION

The results indicate that, although the municipal curriculum guidelines are aligned with the BNCC, their implementation encounters significant obstacles. Among the main challenges, the absence of teachers specialized in Art, the precariousness of infrastructure and materials, and the predominance of traditional practices centered on drawing and painting stand out.

In the literature review, it was observed that teacher training is one of the biggest obstacles, and it is frequent that the discipline is taught by teachers from other areas. In addition, the students' perception of Art remains restricted, associated with free activities and disconnected from their critical potential.

Despite this, innovative pedagogical experiences were also identified, especially in interdisciplinary projects that articulated music, theater, dance and visual arts. These initiatives contributed to broadening the students' vision, bringing Art closer to their daily lives and valuing local culture.

15 FINAL CONSIDERATIONS

The study shows that the teaching of Art reflects the challenges faced at the national level: lack of institutional appreciation, absence of specialists and scarcity of resources. However, it also shows that Art has great potential to transform pedagogical practice and contribute to the critical and sensitive formation of students.

It is concluded that the valorization of Art as a curricular subject requires investment in initial and continuing training of teachers, as well as public policies that ensure adequate infrastructure and materials. The promotion of interdisciplinary practices and the valorization of local cultural expressions emerge as ways to strengthen the teaching of Art in public schools.

Thus, Art should be understood as an area of knowledge that favors the integral development of subjects and strengthens the construction of a more critical, creative and citizen society.

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INFORMATION TECHNOLOGY EDUCATION IN ELEMENTARY AND SECONDARY EDUCATION: CONTRIBUTIONS OF MAKER CULTURE AND THE STEAM APPROACH TO ACTIVE LEARNING

EDUCAÇÃO EM TECNOLOGIA DA INFORMAÇÃO NO ENSINO FUNDAMENTAL E MÉDIO: CONTRIBUIÇÕES DA CULTURA MAKER E DA ABORDAGEM STEAM PARA A APRENDIZAGEM ATIVA

EDUCACIÓN EN TECNOLOGÍA DE LA INFORMACIÓN EN LA ENSEÑANZA PRIMARIA Y SECUNDARIA: CONTRIBUCIONES DE LA CULTURA MAKER Y DEL ENFOQUE STEAM PARA EL APRENDIZAJE ACTIVO



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ABSTRACT

Information Technology Education in Elementary and Secondary Education has followed contemporary transformations that demand more dynamic, integrated, and student-centered pedagogical practices. In this context, Maker Culture and the STEAM approach have gained

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prominence by promoting learning experiences based on experimentation, collaboration, and the articulation between different areas of knowledge, contributing to the construction of educational pathways more aligned with current demands. The present study aims to analyze how Maker Culture and the STEAM approach contribute to the promotion of active learning in Information Technology Education in Elementary and Secondary Education. Regarding the methodological procedures, the investigation was guided by a qualitative approach, since it sought to understand educational phenomena through the interpretation of meanings, practices, and relationships established within the analyzed context. As a research strategy, a bibliographic review was adopted, understood as a procedure that makes it possible to identify, systematize, and examine existing scientific productions, favoring the construction of a consistent theoretical framework articulated with the theme under study. In summary, the study demonstrates that the integration between Maker Culture and the STEAM approach in Information Technology Education favors the promotion of active learning in Elementary and Secondary Education by articulating theoretical foundations and pedagogical practices that stimulate student participation and the development of competencies aligned with contemporary educational demands.

Keywords: Maker Culture. STEAM. Active Learning. Information Technology.

RESUMO

A Educação em Tecnologia da Informação no Ensino Fundamental e Médio tem acompanhado as transformações contemporâneas que demandam práticas pedagógicas mais dinâmicas, integradas e centradas no estudante. Nesse cenário, a Cultura Maker e a abordagem STEAM ganham destaque ao promoverem experiências de aprendizagem baseadas na experimentação, na colaboração e na articulação entre diferentes áreas do conhecimento, contribuindo para a construção de percursos formativos mais alinhados às exigências atuais. O presente estudo tem como objetivo geral analisar de que modo a Cultura Maker e a abordagem STEAM contribuem para a promoção da aprendizagem ativa na Educação em Tecnologia da Informação no Ensino Fundamental e Médio. Quanto aos procedimentos metodológicos, a investigação foi orientada por uma abordagem qualitativa, uma vez que buscou compreender fenômenos educacionais por meio da interpretação de significados, práticas e relações estabelecidas no contexto analisado. Como estratégia de pesquisa, recorreu-se à revisão bibliográfica, entendida como um procedimento que possibilita identificar, sistematizar e examinar produções científicas já existentes, favorecendo a construção de um referencial teórico consistente e articulado à temática em estudo. Em síntese, o estudo demonstra que a integração entre Cultura Maker e abordagem STEAM na Educação em Tecnologia da Informação favorece a promoção da aprendizagem ativa no Ensino Fundamental e Médio, ao articular fundamentos teóricos e práticas pedagógicas que estimulam a participação discente e o desenvolvimento de competências alinhadas às demandas educacionais contemporâneas.

Palavras-chave: Cultura Maker. STEAM. Aprendizagem Ativa. Tecnologia da Informação.

RESUMEN

La Educación en Tecnología de la Información en la Enseñanza Primaria y Secundaria ha acompañado las transformaciones contemporáneas que demandan prácticas pedagógicas más dinámicas, integradas y centradas en el estudiante. En este contexto, la Cultura Maker y el enfoque STEAM adquieren relevancia al promover experiencias de aprendizaje basadas en la experimentación, la colaboración y la articulación entre diferentes áreas del conocimiento, contribuyendo a la construcción de trayectorias formativas más alineadas con las exigencias actuales. El presente estudio tiene como objetivo general analizar de qué manera la Cultura

Maker y el enfoque STEAM contribuyen a la promoción del aprendizaje activo en la Educación en Tecnología de la Información en la Enseñanza Primaria y Secundaria. En cuanto a los procedimientos metodológicos, la investigación fue orientada por un enfoque cualitativo, ya que buscó comprender fenómenos educativos mediante la interpretación de significados, prácticas y relaciones establecidas en el contexto analizado. Como estrategia de investigación, se recurrió a la revisión bibliográfica, entendida como un procedimiento que posibilita identificar, sistematizar y examinar producciones científicas ya existentes, favoreciendo la construcción de un marco teórico consistente y articulado con la temática en estudio. En síntesis, el estudio demuestra que la integración entre la Cultura Maker y el enfoque STEAM en la Educación en Tecnología de la Información favorece la promoción del aprendizaje activo en la Enseñanza Primaria y Secundaria, al articular fundamentos teóricos y prácticas pedagógicas que estimulan la participación estudiantil y el desarrollo de competencias alineadas con las demandas educativas contemporáneas.

Palabras clave: Cultura Maker. STEAM. Aprendizaje Activo. Tecnología de la Información.

1 INTRODUCTION

Information Technology teaching in middle and high school has changed to reflect how digital technologies are becoming more common in social and academic life. In this context, traditional pedagogical practices have been challenged by initiatives that aim to integrate theory and practice, emphasizing the active participation of students. The Maker Culture and STEAM approach fit into this scenario to scientific learning experiences that focus on experimentation, problem-solving, and the connection between different areas of knowledge. This helps to create more dynamic and relevant learning paths.

When analyzing this movement, it is noted that the fusion between Maker Culture and STEAM expands teaching opportunities in the field of Information Technology, by promoting the creation, development of projects and a significant application of technologies. These approaches help to reorganize the pedagogical space, shifting the focus from the transmission of content to the construction of knowledge through action, collaboration, and reflection. Thus, the student takes a more active role in the teaching process, participating more directly and consciously in their own learning.

Considering the relevance of this theme in a broad way for education in general and objectively for the achievement of educational goals, the present work aims to discuss in a critical and reflective way the contributions of the implementation of the Maker Culture and the STEAM approach to active learning, in elementary and high school and as this one, can mobilize new teaching practices in the exercise of teaching. This question accompanies the reflection on how this proposal correlates access to technology and innovation practices to the promotion of good practices in view of a more active, playful and engaged learning.

The objectives of this study were defined as follows: General Objective: To analyze how the Maker Culture and the STEAM approach contribute to the promotion of active learning in Information Technology Education in Elementary and High School. Specific Objectives: 1. To understand the conceptual foundations of the Maker Culture and the STEAM approach in the educational context.; 2. To investigate the contributions of pedagogical practices based on Maker Culture and STEAM to the development of active learning in Elementary and High School.; 3. To analyze the implications of the integration between Maker Culture, STEAM and Information Technology Education for the development of students' cognitive, creative and technological skills.

Regarding the methodological design, the research was conducted under a qualitative approach, since it sought to interpret educational phenomena from the analysis of meanings, practices and relationships built in the investigated context. As a methodological procedure, the

bibliographic review was adopted, understood as a strategy that allows gathering, organizing and analyzing already consolidated scientific productions, contributing to the construction of a consistent theoretical framework articulated with the theme studied.

The article was structured into four main sections. The introduction presents the contextualization of the theme and the objectives of the research. The methodology describes the paths adopted for the development of the study. The theoretical foundation discusses the main concepts related to Maker Culture, the STEAM approach and active learning. Finally, the final considerations summarize the main aspects analyzed and indicate possibilities for future studies.

2 METHODOLOGY

The evolution and increasing inclusion of digital technologies in the educational environment have generated significant momentum for the need for a comprehensive reconfiguration of pedagogical practices. This is especially evident with regard to Information Technology Education, which covers the levels of Elementary and Secondary Education. This transformation reflects an adaptation to the new demands and realities brought about by technological innovations, requiring a careful review of teaching approaches to better prepare students for contemporary challenges.

Within this context, the Maker Culture, together with the STEAM approach, emerges as a set of reference elements that provides the creation of more dynamic and interactive learning environments. In these spaces, students are not only present, but actively and meaningfully involved in the educational process, contributing to the development of their skills and knowledge. This context highlights the importance of conducting investigations that examine, in a methodical and organized way, how these different approaches collaborate to facilitate and stimulate active learning.

Regarding the methodological approach adopted in the research, it is classified as being qualitative in nature. This is because this investigation has as its main objective to understand phenomena that manifest themselves in the educational field, starting from the analysis and interpretation of meanings, practices and also the relationships that are established within the context that is being investigated.

According to the statement highlighted by the authors Pereira et al. in 2018, the qualitative research approach follows a path that makes it possible to carry out a thorough and detailed analysis of the dynamics that permeate both the social and educational spheres. This type of research, by focusing on the nuances and complexity of the processes that are at stake,

offers a more comprehensive and richer understanding of the interactions and relationships that are established in these contexts.

Following this same line of reasoning, the authors Sousa and Santos (2020) highlight that this methodological perspective enables a deeper understanding of the meanings that individuals attribute to their personal experiences and experiences. This understanding is particularly pertinent and appropriate when it comes to research that encompasses both pedagogical practices and training processes. In addition, this approach is able to provide valuable insights into how experiences shape the learning and training of the subjects involved.

Regarding the methods used to carry out the research, it was decided to implement a literature review that was chosen as the methodological strategy. This choice was made due to its important contribution to the organization and to the in-depth analysis of knowledge that has already been previously generated on the subject in question.

As mentioned by Pereira et al. in 2018, the literature review is an essential and indispensable instrument in the elaboration of the theoretical framework of an academic work. This process is capable of enabling the identification of several concepts, different approaches and also gaps that are present in the existing literature on the subject in question. In this way, the review not only contributes to a deeper understanding of the subject, but also to the direction of future research in the area.

In addition, Sousa and Santos (2020) emphasize that this type of procedure facilitates not only the structuring, but also the interpretation of a variety of distinct theoretical perspectives, which, in turn, contributes significantly to the formation of analyses that are considered consistent and robust in the scope of qualitative research. The investigation carried out consisted of the detailed evaluation of a number of more than 15 different sources of a scientific nature, which encompassed a variety of materials, such as articles that were published in journals dedicated to science, works that were presented at relevant academic events, as well as reference works that are significant in the field of education. The variety of sources used throughout the investigative process made it possible to elaborate a robust and coherent theoretical foundation, which proved to be able to support and support the discussions that were presented and developed throughout the course of the study.

In this way, the methodological path that was chosen and implemented played a fundamental role in facilitating the understanding of the contributions that the Maker Culture and the STEAM approach offer. These contributions are significant for the improvement of active learning in the context of Information Technology Education, especially at the Elementary and

High School levels. From this path, it became clearer how these innovative approaches can impact and transform the educational process in these segments.

3 THEORETICAL FOUNDATION

The structure of the theoretical foundation was designed to encompass three interrelated axes, which support the analysis carried out in this research. In the first moment, item 3.1 explores the epistemological foundations of the Maker Culture and the STEAM approach in contemporary education, examining definitions, origins and pedagogical principles that guide these perspectives. Next, item 3.2 is dedicated to active learning and methodologies based on these approaches in the context of Basic Education, focusing on practices that encourage student participation and promote their protagonism. Finally, item 3.3 focuses on the development of competencies in Elementary and High School, mediated by both the Maker Culture and the STEAM approach, emphasizing the cognitive, creative and technological dimensions that are part of the training process.

3.1 EPISTEMOLOGICAL FOUNDATIONS OF THE MAKER CULTURE AND THE STEAM APPROACH IN CONTEMPORARY EDUCATION

In order to understand in depth the epistemological foundations that sustain the Maker Culture and the STEAM approach in contemporary education, it is essential to examine the theoretical premises that underlie them, as well as the conceptual bases that involve them in contemporary education, allowing a deeper reflection on their relevance and use in teaching and learning processes. According to Dias and Mello (2022), from this perspective, the STEAM approach is organized around the connection between different types of knowledge, which leads to the promotion of the integrated development of various skills and competencies, especially in relation to the natural sciences, which are important in this educational context. A more holistic approach like this can be created and developed.

Within the Maker Culture, Lopes et al. (2019) point out that the pillars of this culture are based on the value given to creativity, experimentation, and social responsibility, all directly linked to educational initiatives that aim to offer a comprehensive and broad education of students, which goes beyond academic improvement and also covers social and practical skills. When these methodologies are applied in the school context, there is a significant change in the dynamics of teaching and learning, as the student becomes more protagonist and active in the construction of their knowledge, mobilizing different knowledge and applying it in real learning situations, which enriches the process and favors development.

The interconnection and synergy between Maker Culture and the concept of STEAM become evident in educational practices, especially in the educational context, integrating technology and creativity in a harmonious way. This synthesis is key to achieving more meaningful and dynamic learning in our educational environments. Gomes (2020), highlighting a creative learning modality, highlighted by an augmented reality, significantly expands the opportunities for students to interact with the content included, when mediated by innovative tools and resources, such as augmented reality. While this approach not only broadens the ways students engage, it also contributes to the creation of learning experiences, which are more dynamic and therefore more relevant to the educational process. In this context, Table 1 presents a synthesis of the main epistemological foundations that sustain the Maker Culture and the STEAM approach in contemporary education.

Table 1

Epistemological foundations of the Maker Culture and the STEAM approach in contemporary education

Rationale	Description
Interdisciplinarity	Integration between different areas of knowledge, favoring the articulated construction of knowledge
Learning by doing	Valuing experimentation and practice as central elements of the learning process
Creativity	Stimulating the production of innovative ideas and solutions in educational contexts
Technological integration	Use of digital technologies as mediators of the teaching and learning process
Collaboration	Encouraging collective work and the shared construction of knowledge

Source: Dias and Mello (2022); Lopes et al. (2019); Gomes (2020).

The literature also points to the integration between these approaches and the reinforcement of the motivational and self-efficacy dimensions among students. The STEAM and maker education curricula favor the acquisition of transversal knowledge, while expanding student engagement (Jia; Zhou; Zheng, 2021). This movement demonstrates the importance of teaching practices that consider student participation as a central element of the educational process.

Finally, Machado and Zago (2020) observe that the integration between maker culture, educational robotics, and interdisciplinary practices, such as those developed in science laboratories, contributes to the consolidation of integrated educational proposals, which, in turn, strengthens the understanding that the epistemological bases of maker culture and STEAM are directly linked to the construction of learning environments that value interaction, experimentation and the practical application of knowledge in Basic Education.

3.2 ACTIVE LEARNING AND METHODOLOGIES BASED ON MAKER CULTURE AND STEAM IN BASIC EDUCATION

The research on pedagogical practices based on the Maker Culture and the STEAM approach demonstrates a significant reconfiguration in the teaching dynamics of Basic Education, especially with regard to active learning. In this sense, Izepilovski, Leão and Guedes (2025) state that active methodologies, when associated with the creator of culture, favor a more significant participation of students, as they change the focus of teaching to the construction of knowledge through action, experimentation and the resolution of contextualized problems.

To make these ideas a reality in everyday school life, Blikstein, Valente, and Moura (2020) discuss the incorporation of maker education into the curriculum and highlight the need to integrate theory and practice. They advocate the creation of learning environments that put students at the center of the process, encouraging their participation in the proposed activities and developing skills related to research, creation and the application of knowledge in real situations. Similarly, Lopes (2024) mentions that the introduction of maker culture in socio-educational contexts increases the chances of student participation, by integrating activities that emphasize experimentation and protagonism. These experiences show that active learning is realized when students are engaged in practical and collaborative activities. Based on these contributions, Table 2 presents a synthesis of the main pedagogical practices associated with the Maker Culture and the STEAM approach in promoting active learning.

Table 2

Pedagogical practices based on Maker Culture and STEAM to promote active learning

Pedagogical practice	Description
Project-based learning	Development of projects that articulate different areas of knowledge and involve solving real problems
Hands-on experimentation	Hands-on activities that encourage the construction of prototypes and the testing of ideas
Collaborative learning	Group work aimed at the collective construction of knowledge and the exchange of experiences
Technological integration	Use of digital resources and technological tools as mediators of the learning process
Student protagonism	Active participation of students in the definition, execution and evaluation of activities

Source: Izepilovski, Leão and Guedes (2025); Blikstein, Valente and Moura (2020); Lopes (2024); Santos et al. (2024).

The collaborative aspect of educational practices also emerges as a key element in this scenario. Santos et al. (2024) highlight that collaborative learning, when integrated with the

maker culture, facilitates the co-construction of knowledge, enriching interaction between students and increasing opportunities for participation in the suggested activities. This dynamic helps to create more participatory and interactive learning environments.

Gomes et al. (2024) also point out that active methodologies are closely linked to greater autonomy for both the teacher and the student, as they favor pedagogical approaches that are more flexible and student-focused. When these strategies are combined with the Maker Culture and the STEAM methodology, educational practices are formed that favor the participation, protagonism and involvement of students, contributing to the quality of student learning.

There is no doubt that the dialogue with the Maker Culture and the STEAM approach crosses the school curriculum, integrating the daily life of educators and students, generating an expectation regarding its use with clear and coherent educational purposes in the reality of each school, intending to positively affect the learning dynamics, in search of promising results. Following the reflection that is supported by the guiding documents of this practice, it is observed in the National Policy for Digital Inclusion, which outlines fundamental strategies to improve connectivity in educational institutions, highlighting the need for adequate infrastructure. Article 2, in its axis VI, emphasizes that it is essential "the implementation and integration of connectivity infrastructure for educational purposes, which include universalization of school connectivity to high-speed internet and with adequate equipment for internet access in educational environments" (Brasil, 2023).

This guideline not only aims to ensure that schools have access to modern technologies, but also promotes an ecosystem of digital educational content, which is essential for the training of teachers and students in an increasingly connected world. The implementation of information technology in elementary and secondary education is crucial to ensure an education with possibilities for more knowledge, engaging students in contributing to student protagonism, preparing them for the challenges of the twenty-first century (Brasil, 2023).

According to Moran, Masetto, and Behrens (2022), learning is significantly enhanced when individuals have the opportunity to experience concrete experiences, establish relationships, and strengthen bonds. This process allows students to broaden their understanding of everyday life, connecting reflection to action and integrating theoretical content with practice. Thus, education becomes more meaningful, as students are able to realize the relevance of what they learn in their lives, transforming knowledge into something tangible and applicable. This approach highlights the importance of teaching that goes beyond the mere transmission of information, seeking a real connection with the student's experience and with the learners' inquiries.

3.3 DEVELOPMENT OF COMPETENCIES IN ELEMENTARY AND HIGH SCHOOL MEDIATED BY THE MAKER CULTURE AND STEAM APPROACH

It is evident, through an investigation on the development of skills and competencies in Elementary and High School, mediated by the Maker Culture and the STEAM approach, how different dimensions - cognitive, creative, technological, among others - interact in the educational process. The articulation between the different areas is essential for students to develop in a complete way, which, in turn, enriches their experiences and makes them more meaningful in the current scenario.

As stated by Moreira, Santana, and Torres (2023), maker culture, when integrated into the educational process, considerably improves skills related to the areas of science, technology, engineering, arts, and mathematics. This generates an education that, in an efficient way, responds to the contemporary demands of society and the pressing need for an adequate intertwining of different areas of knowledge. This integration is essential to prepare students for contemporary challenges.

Regarding cognitive skills, the authors Dias and Mello, in 2022, highlight that the STEAM approach plays a significant role in the formation of skills that involve critical analysis and effective problem solving. This occurs, especially, when students are presented with learning opportunities that demand the connection and articulation of diverse knowledge, involving them more intensely in the training process. This procedure is carried out through the inclusion of students in environments that require investigation, careful analysis and the ability to make decisions, which, consequently, enhances the improvement of critical thinking and encourages a holistic understanding of the different contents covered. The sphere that involves creativity and technology appears, in a significant way, being an essential aspect that integrates the structure of this context.

Bacich and Holanda (2020) point out that project-based learning is often associated with the STEAM approach. This methodology provides students with the opportunity to create innovative solutions to problems that actually exist in the world, while simultaneously making use of technological resources in a meaningful and pertinent way. In this context, Table 3 summarizes the main competencies developed from the integration between Maker Culture, STEAM and Information Technology Education.

Table 3

Competencies developed through the Maker Culture and STEAM approach in Basic Education

Type of competence	Description
Cognitive	Development of critical thinking, problem-solving and analytical skills
Creative	Encouragement of the creation of innovative solutions and the expression of ideas in different languages
Digital	Use of digital technologies for production, experimentation and construction of knowledge
Collaborative	Teamwork, communication and collective construction of solutions
Autonomy	Ability to make decisions and conduct one's own learning process

Source: Moreira, Santana and Torres (2023); Dias e Mello (2022); Bacich and Holland (2020); Viana and Costa (2025).

The literary production also points out that such skills and competencies are intrinsically related to the educational demands that define the twenty-first century. Viana and Costa (2025) point out that the maker culture, when integrated into teaching methodologies and approaches, enhances a set of skills that goes beyond the mere understanding and appropriation of academic content, also favoring the development of important skills such as adaptation to new contexts, collaborative work and innovation in different educational scenarios. The integration highlights how the maker culture contributes to students developing a more adaptable and agile profile.

With this, the union of the Maker Culture, the STEAM methodology and Information Technology Education configures a consistent and efficient way to foster the development of varied and broad skills in the context of Elementary and High School. This mix not only enriches the school environment, but also offers students the chance to acquire knowledge that is essential for a complete education. These teaching methodologies, by effectively articulating theoretical and practical knowledge, constitute an educational process that values and encourages the active participation of students. In addition, they favor the collective construction of knowledge, in which everyone collaborates with each other, and encourage the significant use of technologies in the school context, which enriches the learning process (Viana; Costa, 2025).

4 FINAL CONSIDERATIONS

The considerations that this work brought to light point to the emergence of new organizational structures in the teaching of Basic Education, especially with regard to Information Technology, to the extent that the intersection of various pedagogical proposals has contributed to more dynamic and contextualized formative experiences. In this sense, the junction between Maker Culture and the STEAM approach is aligned with contemporary needs,

since both promote educational experiences that place the student at the center of the process and apply knowledge in real situations.

All the objectives that were proposed were successfully achieved. The combination of the selected theoretical frameworks made it possible to achieve the general objective of analyzing how the Maker Culture and the STEAM methodology favor active learning in Information Technology Education for the Elementary and High School levels. Likewise, the specific objectives were achieved by enabling the understanding of the theoretical foundations of these approaches, investigating how the pedagogical practices linked to Maker Culture and STEAM favor active learning and analyzing the implications of the integration of these two approaches for the development of students' cognitive, creative and technological skills.

With regard to item 3.1, it was observed that both the Maker Culture and the STEAM methodology are epistemologically based on interdisciplinarity, experimentation and the value attributed to learning by doing, which makes it possible to overcome teaching practices that are fragmented. With regard to item 3.2, it was observed that the methodologies that are based on these approaches become educational practices that promote the participation, protagonism and active involvement of students, especially through collaborative and problem-oriented initiatives. With regard to item 3.3, it was possible to perceive that the intersection between Maker Culture, STEAM and Information Technology Education is capable of enhancing the development of general competencies, which permeate the cognitive, creative and technological dimensions, to the formative needs of Basic Education.

Based on the results, it is suggested that future investigations should be dedicated to the practice of these strategies in various school contexts, considering the technological infrastructure, teacher training, evaluation practices and curricular organization. Studies that explore the impact of these strategies on student performance and engagement can offer a clearer picture of the opportunities and challenges involved in incorporating these practices into the school routine.

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PSYCHOMETRIC VALIDATION OF A DIAGNOSTIC TRIGONOMETRY TEST APPLIED TO UNIVERSITY STUDENTS

VALIDAÇÃO PSICOMÉTRICA DE UM EXAME DIAGNÓSTICO DE TRIGONOMETRIA APLICADO A ESTUDANTES UNIVERSITÁRIOS

VALIDACIÓN PSICOMÉTRICA DE UN EXAMEN DIAGNÓSTICO DE TRIGONOMETRÍA APLICADO A ESTUDIANTES UNIVERSITARIOS



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ABSTRACT

The present study aimed to analyze the psychometric properties of a diagnostic trigonometry test designed for university students. The study design was quantitative, non-experimental, cross-sectional, and instrumental. A total of 50 higher education students participated, selected through non-probabilistic purposive sampling. The instrument consisted of 10 dichotomous items (1 = correct, 0 = incorrect) assessing trigonometric functions, identities, and triangle solving. The difficulty index (p), corrected point-biserial correlation (r_{pb}), and Cronbach's alpha coefficient (α) were calculated. The results indicated acceptable reliability ($\alpha = 0.748$). Item analysis showed that most items had moderate difficulty and adequate discrimination; however, Item 8 showed virtually no discrimination ($r_{pb} = 0.001$), while Items 3 and 7 presented low discrimination. It is concluded that the instrument has satisfactory psychometric properties as a diagnostic tool, although it requires revision of three specific items to improve its technical quality. The findings provide useful empirical evidence for decision-making in introductory university-level trigonometry instruction.

Keywords: Psychometric Validation. Diagnostic Test. Trigonometry. Higher Education. Item Analysis.

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RESUMO

O presente estudo teve como objetivo analisar as propriedades psicométricas de um exame diagnóstico de trigonometria elaborado para estudantes universitários. O desenho do estudo foi quantitativo, não experimental, transversal e de natureza instrumental. Participaram 50 estudantes do ensino superior selecionados por amostragem não probabilística intencional. O instrumento foi composto por 10 itens dicotômicos (1 = correto, 0 = incorreto) que avaliaram conteúdos de funções trigonométricas, identidades e resolução de triângulos. Foram calculados o índice de dificuldade (p), a correlação ponto-bisserial corrigida ($r_{p\beta}$) e o coeficiente alfa de Cronbach (α). Os resultados indicaram uma confiabilidade aceitável ($\alpha = 0,748$). A análise dos itens revelou que a maioria apresentou dificuldade moderada e discriminação adequada; entretanto, o Item 8 apresentou discriminação praticamente nula ($r_{p\beta} = 0,001$), enquanto os Itens 3 e 7 apresentaram baixa discriminação. Conclui-se que o instrumento possui propriedades psicométricas satisfatórias como ferramenta diagnóstica, embora necessite da revisão de três itens específicos para aprimorar sua qualidade técnica. Os achados fornecem evidências empíricas úteis para a tomada de decisão no ensino inicial de trigonometria no ensino superior.

Palavras-chave: Validação Psicométrica. Exame Diagnóstico. Trigonometria. Ensino Superior. Análise de Itens.

RESUMEN

El presente estudio tuvo como objetivo analizar las propiedades psicométricas de un examen diagnóstico de trigonometría diseñado para estudiantes universitarios. El diseño fue cuantitativo, no experimental, transversal y de tipo instrumental. Participaron 50 estudiantes de nivel superior seleccionados mediante muestreo no probabilístico intencional. El instrumento estuvo compuesto por 10 ítems dicotómicos (1 = correcto, 0 = incorrecto) que evaluaron contenidos de funciones trigonométricas, identidades y resolución de triángulos. Se calcularon el índice de dificultad (p), la correlación punto-biserial corregida (r_p^b) y el coeficiente alfa de Cronbach (α). Los resultados indicaron una confiabilidad aceptable ($\alpha = 0.748$). El análisis de ítems reveló que la mayoría presentó dificultad moderada y adecuada discriminación; sin embargo, el Ítem 8 mostró discriminación prácticamente nula ($r_p^b = 0.001$), mientras que los Ítems 3 y 7 presentaron discriminación baja. Se concluye que el instrumento posee propiedades psicométricas satisfactorias como herramienta diagnóstica, aunque requiere revisión de tres ítems específicos para mejorar su calidad técnica. Los hallazgos ofrecen evidencia empírica útil para la toma de decisiones en la enseñanza inicial de la trigonometría universitaria.

Palabras clave: Validación Psicométrica. Examen Diagnóstico. Trigonometría. Educación Universitaria. Análisis de Ítems.

1 INTRODUCTION

Diagnostic assessment is a fundamental practice in higher education, particularly in disciplines with highly structured and sequential content such as mathematics. In the university environment, the prior knowledge with which students enter exact science courses determines, to a large extent, their academic trajectory and their probability of success (Ausubel et al., 1983). Trigonometry, as an area of mathematical knowledge, represents one of the indispensable conceptual bridges between high school education and university-level studies in engineering, architecture, physics, and computer science, among others.

The difficulty that university students face in learning trigonometry has been widely documented in the specialized literature. Research carried out in Latin American contexts indicates that concepts such as sine, cosine and tangent functions, trigonometric identities and the resolution of triangles represent significant cognitive obstacles for a considerable proportion of new students (Buendía & Montiel, 2011; Gamboa Araya & Ballesterero Alfaro, 2010). These findings reveal that deficiencies in trigonometry at university entrance represent a widespread problem that requires systematic and rigorous diagnosis. These obstacles are not limited to initial academic performance, but also have a negative impact on the achievement of mathematical competencies essential for subsequent professional performance, in such a way that they are projected on performance in subsequent courses in calculus, analytical geometry, and physics (Orhun, 2001).

In this scenario, the design and validation of accurate and technically sound diagnostic assessment instruments acquire strategic relevance. A quality diagnostic instrument allows teachers to accurately identify their students' conceptual gaps, make informed pedagogical decisions, and design focused didactic interventions (Ravela et al., 2017). In this sense, Castillo Márquez et al. (2025a) highlight that the application of diagnostic tests at the beginning of the school year is an essential practice to make knowledge gaps in mathematics visible. Along the same lines, Castillo Márquez et al. (2025b) documented that new students entering the bachelor's degree in mathematics presented diagnostic averages of only 4.2 out of 10 in arithmetic and basic algebra, which shows that mathematical deficiencies at university admission constitute a structural problem that demands valid and reliable diagnostic instruments as a starting point for pedagogical intervention.

However, for a diagnostic test to reliably fulfill this function, it must undergo a rigorous validation process that includes the analysis of its psychometric properties.

Classical psychometrics provides robust tools to evaluate the technical quality of educational instruments. Among the most commonly used indicators in the analysis of

dichotomous response exams are the difficulty index (p), which expresses the proportion of examinees who correctly answer an item, and the discrimination index, usually operationalized by the corrected point-biserial correlation (r_{pb}), which reflects the ability of the item to differentiate between students with greater and lesser mastery of the construct evaluated (Martínez Arias et al., 2006; Muñiz, 2010). Likewise, the reliability of the instrument, understood as the consistency of the scores across the items, is usually estimated using Cronbach's alpha coefficient (Cronbach, 1951).

Cronbach's alpha coefficient is the most widely used internal consistency statistic in educational and psychological research (Frías-Navarro & Pascual Soler, 2012). According to the criteria proposed by George and Mallery (2003), values of $\alpha \geq 0.70$ are considered acceptable for diagnostic and research instruments. However, it is important to contextualize this parameter according to the purpose of the instrument: in high-impact evaluations, such as professional certification exams, values above 0.90 are required, while in training and diagnostic instruments, more moderate thresholds are technically justifiable (Morales Vallejo, 2007).

Item analysis, on the other hand, allows the identification of items that do not contribute to the measurement of the construct of interest or that have deficient technical characteristics. An item with r_{pb} close to zero indicates that there is no relationship between the response to that item and the total score of the test, which suggests that the item measures something different from the rest of the instrument or that it presents problems of ambiguity in its wording (Martínez Arias et al., 2006). Similarly, items with an extreme difficulty index – very easy or difficult – offer little diagnostic information and reduce the variance of the scores, negatively affecting the internal consistency of the instrument (Muñiz, 2010).

Despite the recognized importance of psychometric validation, in university teaching practice it is common for diagnostic tests to be developed and applied without having been subjected to this process, which compromises their usefulness and the interpretation of their results. This gap between everyday evaluation practice and recommended technical standards is a relevant methodological problem, whose attention contributes to improving the quality of the data that guide pedagogical decisions (American Educational Research Association [AERA], American Psychological Association [APA], & National Council on Measurement in Education [NCME], 2014).

In this context, the present study aimed to analyze the psychometric properties of a trigonometry diagnostic test designed for university students, by calculating the difficulty index, the discrimination index and Cronbach's alpha reliability coefficient. The findings reported seek

to provide empirical evidence that guides decision-making on the use, revision or improvement of the instrument in university mathematics teaching contexts.

2 METHOD

2.1 RESEARCH DESIGN

The study followed a quantitative approach, with a non-experimental design, cross-sectional scope and instrumental type, in accordance with the classification proposed by Montero and León (2007) for studies aimed at the development and validation of measurement instruments in psychology and education. This type of design is appropriate when the central purpose of the study is to analyze the psychometric properties of a test or scale, without manipulation of variables or random assignment of participants.

2.2 PARTICIPANTS

The sample was made up of 50 first-semester students in the area of Basic Sciences and Engineering. The inclusion criteria were as follows: to be officially enrolled in the institution during the school year in which the study was carried out, to study for the first time the level or subject of trigonometry or related area, and to express voluntary availability to participate. Students with previous trigonometry courses at the higher level were excluded, as well as those who did not complete the instrument in at least 80% of its items. The sampling was non-probabilistic of an intentional type, since accessible academic groups that met the established criteria were selected.

2.3 INSTRUMENT

A diagnostic trigonometry test was applied consisting of 10 dichotomous items, with answer options coded as 1 (correct) and 0 (incorrect). The items evaluated the following contents: angles and their measurements in degrees and radians, trigonometric functions sine, cosine and tangent, fundamental trigonometric identities, and resolution of right and oblique triangles. The total score of the instrument ranges from 0 to 10 points, with one point corresponding to each correct answer. The format of the items was multiple choice, designed to be answered in approximately 10 to 15 minutes.

2.4 PROCEDURE

The instrument was applied in person during the first semester, August-September 2025. Prior to the administration of the review, participants were informed about the objectives of the

study and the voluntary and confidential nature of their participation, ensuring the anonymity of the responses. All participants signed their consent at the time of answering the diagnostic test, in accordance with the guidelines of the Code of Ethics of the American Psychological Association (2017). The data were kept in a protected file and used exclusively for academic and research purposes.

2.5 DATA ANALYSIS

Descriptive statistics of the total score (mean, standard deviation, minimum, maximum and median) were calculated. For the item analysis, the following were obtained: the difficulty index (p), defined as the proportion of participants who answered each item correctly with respect to the number of those who answered it; and the corrected point-biserial correlation (r_{pb}), which expresses the relationship between the score on the item and the total score of the test excluding that item. Reliability was estimated using Cronbach's alpha coefficient (α). The items with omissions were analyzed based on the valid cases available for each item. All analyses were performed with the jamovi statistical package, version 2.4 (The jamovi Project, 2023).

3 RESULTS

3.1 ITEM ANALYSIS

Table 1 presents the psychometric analysis of each item of the diagnostic test. The results show that Item 1 turned out to be the easiest item in the test ($p = 0.820$), classified as an easy item according to the criteria of Muñiz (2010), although with good discrimination ($r_{pb} = 0.533$). Item 2 presented the highest level of difficulty ($p = 0.360$), placing it in the difficult category, and obtained the highest point-biserial correlation of the instrument ($r_{pb} = 0.709$), which indicates an excellent discriminative capacity. Items 3 and 7 showed low discrimination ($r_{pb} = 0.290$ and 0.257 , respectively), which suggests that these items have limitations in differentiating between students with greater and lesser trigonometric proficiency. Item 8 represented the most critical case of the instrument, with a practically zero point-biserial correlation ($r_{pb} = 0.001$), which indicates that this item does not discriminate between the performance levels of the examinees and, therefore, should be reviewed in its wording, answer options or correction key, or eliminated from the instrument. Items 4, 7, 9 and 10 presented omitted responses from some students, with between one and four participants who did not respond to each of these items.

Table 1

Psychometric analysis of the items of the trigonometry diagnostic test

Item	p	Difficulty Level	rpb	Level discrimination of	Decision
1	0.820	Very easy	0.533	Good	Store
2	0.360	Difficult	0.709	Excellent	Store
3	0.540	Moderate	0.290	Low	Review
4a	0.413	Moderate	0.656	Very good	Store
5	0.680	Moderate	0.440	Good	Store
6	0.460	Moderate	0.478	Good	Store
7a	0.500	Moderate	0.257	Low	Review
8	0.640	Moderate	0.001	Does not discriminate	Delete
9a	0.438	Moderate	0.462	Good	Store
10a	0.429	Moderate	0.464	Good	Store

Grade. p = difficulty index; rpb = point-biserial correlation corrected. Criteria: $p < 0.30$ = very difficult; $0.30-0.50$ = difficult; $0.51-0.70$ = moderate; $0.71-0.90$ = easy; > 0.90 = very easy. Discrimination: $rpb < 0.20$ = unacceptable; $0.20-0.29$ = low; $0.30-0.39$ = acceptable; ≥ 0.40 = good to excellent (Muñiz, 2010). a Items with omitted answers.

3.2 INSTRUMENT RELIABILITY

The reliability of the diagnostic test, estimated using Cronbach's alpha coefficient, was $\alpha = 0.748$. According to the criteria established by George and Mallery (2003), this value corresponds to acceptable reliability. This result indicates that the items of the instrument show an adequate level of internal consistency, that is, that together they tend to measure the same underlying construct: the mastery of basic contents of university trigonometry. In the context of diagnostic and training instruments whose purpose is not to make high-impact decisions on individuals, but rather to identify strengths and areas of opportunity as a group, a coefficient of this magnitude is considered technically sufficient (Morales Vallejo, 2007).

3.3 DESCRIPTIVE STATISTICS OF THE TOTAL SCORE

The descriptive statistics of the total score of the 50 participants are presented in Table 2. The mean scores were $M = 5.20$ ($SD = 2.73$), with a range ranging from 1 to 10 points, and a median of 5.0. These results indicate that, on average, students answered half of the items of the diagnostic test correctly, with a considerable dispersion between subjects. The breadth of the range (9 points) and the value of the standard deviation suggest a remarkable heterogeneity in the level of trigonometric proficiency of the sample, which is consistent with the diagnostic

nature of the instrument and with the diversity of previous academic trajectories of first-year university students.

Table 2

Descriptive statistics of total score on the trigonometry diagnostic test (N = 50)

M	OF	Min.	Max.	Medium
5.20	2.73	1	10	5.0

Note. M = mean; SD = standard deviation; Min. = minimum score; Max. = maximum score. Maximum possible score = 10. N = 50.

4 DISCUSSION

The present study analyzed the psychometric properties of a trigonometry diagnostic test applied to 50 university students. The results obtained offer empirical evidence on the technical quality of the instrument and allow the formulation of precise recommendations for its improvement and pedagogical use.

In relation to reliability, the Cronbach's alpha coefficient obtained ($\alpha = 0.748$) is within the acceptable range according to the criteria of George and Mallery (2003), and is consistent with the values reported in similar studies of validation of mathematics tests at a higher level. It should be noted that the interpretation of the alpha must consider the purpose of the instrument. Unlike professional certification exams, which require reliability coefficients equal to or greater than 0.90 due to their high-impact nature (AERA et al., 2014), a diagnostic instrument whose objective is to offer guidance to the teacher on the group level of their students can be considered technically adequate with values of $\alpha > 0.70$ (Morales Vallejo, 2007). In this sense, the results suggest that the diagnostic test analyzed has sufficient internal consistency for the use for which it is intended.

The analysis of items revealed a differentiated picture regarding the technical quality of the items. Most of the items presented moderate difficulty indices (p between 0.413 and 0.640) and point-biserial correlations greater than 0.40, which indicates an adequate discriminative capacity. These results are favorable from the perspective of the classical theory of tests, since items with moderate difficulty and good discrimination are those that maximize diagnostic information and the variance of scores (Muñiz, 2010). Item 2 was particularly informative, combining a high level of difficulty ($p = 0.360$) with the highest discriminative correlation of the instrument ($r_{pb} = 0.709$), which makes it a high technical quality reagent.

However, three items deserve special attention. Items 3 and 7 showed low discrimination ($r_{pb} = 0.290$ and 0.257 , respectively), which may be due to various causes: ambiguity in the

wording, non-functional response options, or that the content evaluated in these items does not sufficiently correspond to the general construct of the instrument (Martínez Arias et al., 2006). It is recommended to review the formulation of these items, submit the statements and alternatives to expert judgment and, if possible, pilot them again after their reformulation. The most critical case is that of Item 8, whose practically zero point-biserial correlation ($r_{pb} = 0.001$) indicates that the performance in this item is independent of the general performance in the test. This finding suggests that the item could be measuring a concept outside the central construct, present errors in the correction key, contain ambiguous wording, or be evaluating content that is not consistent with the rest of the instrument. Its elimination or substantive reformulation is recommended before a new application.

Regarding the items with omissions (Items 4, 7, 9 and 10), although the number of missing responses was small (between one and four participants per item), this phenomenon constitutes a methodological limitation that deserves consideration. The absence of an answer may reflect perceived difficulty, lack of time, ambiguity of the statement or simply carelessness of the examinee (Muñiz, 2010). In future applications, it would be advisable to implement strategies to reduce lost data, such as explicitly indicating that each item is answered, even if you are not completely sure of the answer.

The study has some aspects that should be considered when interpreting its results. First, the sample size ($N = 50$), although it allowed the analysis to be carried out, could be expanded in future research to strengthen the stability of the estimates of the parameters of the items, as suggested by standards of classical psychometric analysis (Martínez Arias et al., 2006). Second, the use of non-probability sampling offers a valuable insight into the institutional context analyzed, although it would be advisable to complement it with other types of sampling to favor a greater generalization of the findings. Finally, the instrument was examined from the classical theory of tests, which provides a solid basis, and opens the possibility of incorporating more advanced approaches, such as item response theory, in subsequent studies to enrich the analysis.

Based on these considerations, the following lines of future research are proposed: to expand the sample to a minimum of 200 participants from different institutions to obtain more robust and generalizable psychometric estimates; Perform a confirmatory factor analysis to evaluate the dimensionality of the instrument and verify if the items are grouped into factors that correspond to the evaluated contents.

From the pedagogical point of view, the findings of this study have direct implications for university teaching practice. The heterogeneity observed in the scores ($M = 5.20$; $SD = 2.73$;

range: 1–10) reflects substantial differences in students' level of trigonometric readiness upon entering college. This result is consistent with what was reported by Castillo Márquez et al. (2025), who documented that new university students in engineering at the Autonomous University of Nayarit obtained only 48.6% of correct answers in a trigonometry diagnostic instrument, evidencing generalized deficiencies that compromise performance in exact science courses. This variability justifies the design of differentiated teaching strategies that cater to both students with deficient mastery —particularly in the contents associated with the most difficult items— and those with advanced mastery. The diagnostic exam, once the problematic items have been refined, can become a valid and reliable tool for making informed pedagogical decisions at the beginning of the course, contributing to reducing learning gaps from the first weeks of the school year.

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ACTIVE METHODOLOGIES IN BASIC EDUCATION: THE ECOLOGICAL TRAIL AS A STRATEGY FOR MEDIATING LEARNING IN ENVIRONMENTAL EDUCATION

METODOLOGIAS ATIVAS NA EDUCAÇÃO BÁSICA: A TRILHA ECOLÓGICA COMO ESTRATÉGIA DE MEDIAÇÃO DA APRENDIZAGEM EM EDUCAÇÃO AMBIENTAL

METODOLOGÍAS ACTIVAS EN LA EDUCACIÓN BÁSICA: LA RUTA ECOLÓGICA COMO ESTRATEGIA DE MEDIACIÓN DEL APRENDIZAJE EN EDUCACIÓN AMBIENTAL



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ABSTRACT

Active methodologies have stood out in Basic Education for promoting student protagonism and the meaningful construction of knowledge. This article, derived from a master's dissertation, analyzes the application of an ecological trail game as a tool for mediating learning in fifth-grade classes of Elementary Education in three public schools in the municipality of São Sebastião da Boa Vista (PA), involving 205 students. The research, with a qualitative approach and a descriptive and exploratory nature, used participant observation,

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recorded through a systematic monitoring checklist of students' interactions during the activity. Structured based on the municipality's map, the game problematizes local socio-environmental challenges, with an emphasis on water conservation for human consumption, articulating skills outlined in the Brazilian National Common Curricular Base (BNCC). The results show high student engagement, expansion of critical reflection, and strengthening of environmental awareness, as well as interdisciplinary integration among different curricular components. It is concluded that the ecological trail constitutes an effective teaching resource in mediating the teaching-learning process, contributing to the development of critical individuals and to the strengthening of contextualized practices in Science Education.

Keywords: Active Methodologies. Ecological Trail. Environmental Education.

RESUMO

As metodologias ativas têm se destacado na Educação Básica por promoverem o protagonismo discente e a construção significativa do conhecimento. Este artigo, recorte de uma dissertação de mestrado, analisa a aplicação de um jogo de trilha ecológica como instrumento de mediação da aprendizagem em turmas de quinto ano do Ensino Fundamental de três escolas públicas do município de São Sebastião da Boa Vista (PA), envolvendo 205 estudantes. A pesquisa, de abordagem qualitativa, caráter descritivo e exploratório, utilizou a observação participante, registrada em lista de acompanhamento de registro sistemático das interações dos alunos durante a aplicação da atividade. Estruturado a partir do mapa do município, o jogo problematiza desafios socioambientais locais, com ênfase na conservação da água para consumo humano, articulando habilidades previstas na Base Nacional Comum Curricular (BNCC). Os resultados evidenciam elevado engajamento discente, ampliação da reflexão crítica e fortalecimento da consciência ambiental, além da integração interdisciplinar entre diferentes componentes curriculares. Conclui-se que a trilha ecológica constitui recurso didático eficaz na mediação do processo de ensino-aprendizagem, contribuindo para a formação de sujeitos críticos e para o fortalecimento de práticas contextualizadas na Educação em Ciências.

Palavras-chave: Metodologias Ativas. Trilha Ecológica. Educação Ambiental.

RESUMEN

Las metodologías activas se han destacado en la Educación Básica por promover el protagonismo estudiantil y la construcción significativa del conocimiento. Este artículo, recorte de una disertación de maestría, analiza la aplicación de un juego de ruta ecológica como instrumento de mediación del aprendizaje en clases de quinto grado de la Educación Primaria de tres escuelas públicas del municipio de São Sebastião da Boa Vista (PA), involucrando a 205 estudiantes. La investigación, de enfoque cualitativo y de carácter descriptivo y exploratorio, utilizó la observación participante, registrada mediante una lista de seguimiento sistemático de las interacciones de los estudiantes durante la aplicación de la actividad. Estructurado a partir del mapa del municipio, el juego problematiza desafíos socioambientales locales, con énfasis en la conservación del agua para el consumo humano, articulando habilidades previstas en la Base Nacional Común Curricular (BNCC). Los resultados evidencian un alto nivel de participación estudiantil, ampliación de la reflexión crítica y fortalecimiento de la conciencia ambiental, además de la integración interdisciplinaria entre diferentes componentes curriculares. Se concluye que la ruta ecológica constituye un recurso didáctico eficaz en la mediación del proceso de enseñanza-aprendizaje, contribuyendo a la formación de sujetos críticos y al fortalecimiento de prácticas contextualizadas en la Educación en Ciencias.

Palabras clave: Metodologías Activas. Ruta Ecológica. Educación Ambiental.

1 INTRODUCTION

Contemporary education faces the challenge of overcoming practices centered on the transmission of content, seeking strategies that promote the active participation of students and the meaningful construction of knowledge. In this context, active methodologies are consolidated as pedagogical approaches that value student protagonism, problem solving, and the articulation between theory and practice, favoring contextualized learning in Basic Education (Lafuente; Barbosa, 2017).

Among the possibilities of operationalization of these methodologies, pedagogical games stand out, which, by integrating playfulness and educational intentionality, expand the forms of learning mediation (Silva; Costa, 2023). When planned in a structured way, such resources contribute not only to cognitive development, but also to socio-emotional dimensions, such as cooperation, argumentation, respect for rules and critical thinking, fundamental aspects for the integral formation of the student.

In the context of Environmental Education and Science Teaching, the adoption of contextualized pedagogical practices is even more necessary, especially in territories that experience daily socio-environmental challenges. Problems related to the inadequate disposal of solid waste and the quality of water for human consumption require educational approaches that stimulate reflection and enable the student to have a more comprehensive and critical understanding of his or her role in the world (Freire, 2000), awakening values focused on sustainability and socio-environmental responsibility. In view of this scenario, the following question arises: how can the application of an ecological trail, based on active methodologies, contribute to the mediation of learning and to the formation of critical subjects in the context of Basic Education?

To answer this problem, this article, excerpted from a master's thesis, analyzes the application of an ecological trail developed from the map of the municipality of São Sebastião da Boa Vista, in the state of Pará. The course of the game includes the three schools participating in the research and ends at the municipal dump, proposing the problematization of local environmental issues. The proposal, of an interdisciplinary nature and aligned with the skills of the National Common Curricular Base (BNCC), seeks to highlight the potential of the game as an instrument of mediation of learning and as a formative strategy capable of contributing to the construction of critical and active subjects in the environment in which they live.

With everything, this work aimed to analyze the application of the ecological trail game, based on active methodologies, as an instrument of learning mediation in fifth grade classes of

Elementary School in schools in the municipality of São Sebastião da Boa Vista (PA), with emphasis on Environmental Education and awareness for the conservation of water intended for human consumption.

2 THEORETICAL FRAMEWORK

The theoretical framework of this study articulates active methodologies, playfulness and Environmental Education as foundations for a pedagogical practice centered on student protagonism. It is based on the understanding that the student is an active subject in the construction of knowledge, mediated by interactive and contextualized strategies. In this sense, pedagogical games emerge as mediation instruments that favor meaningful learning. In addition, Environmental Education, integrated with these approaches, contributes to the formation of values and to the construction of a critical and contextualized socio-environmental awareness.

2.1 ACTIVE METHODOLOGIES IN BASIC EDUCATION AND THE CENTRALITY OF THE STUDENT

Active methodologies are configured as pedagogical approaches that shift the focus from teaching centered on the teacher's exposure to practices that promote the effective participation of the student in the construction of knowledge. These methodologies stimulate research, the problematization of reality, collaboration and the development of autonomy, favoring more meaningful, critical and lasting learning (Lafuente; Barbosa, 2017).

In Basic Education, its adoption contributes to the strengthening of cognitive, social and emotional skills, since the student ceases to assume a passive role and starts to act as a subject of the educational process. From this perspective, the teacher assumes the role of mediator and problematizer of learning (Freire, 1996). By engaging in contextualized problem situations, students develop argumentation, decision-making, cooperation, and critical thinking skills, which are fundamental aspects for their comprehensive education (Silva *et al.*, 2025).

The National Common Curriculum Base (BNCC) reinforces this perspective by emphasizing the development of general competencies that articulate knowledge, skills, attitudes, and values (Brasil, 2018). In this sense, practices based on active methodologies dialogue directly with the national curriculum guidelines by promoting student protagonism, interdisciplinarity and contextualized learning.

2.2 PEDAGOGICAL GAMES, PLAYFULNESS AND MEDIATION OF LEARNING

Pedagogical games are didactic resources that articulate playfulness and educational intentionality, enabling the teaching-learning process to occur in a dynamic and interactive way. When planned with clear objectives and aligned with the curriculum, games go beyond the merely recreational character and assume a mediating function in the construction of knowledge.

For Vygotsky (2010), the game plays a central role in child development, as it contributes to behavioral self-control, expands social interactions and favors the internalization of norms and meanings, exerting a significant influence on the formation of the child's personality.

Playfulness favors student engagement, motivation and active participation, creating an environment conducive to learning. In addition, the games stimulate the development of socio-emotional skills, such as cooperation, respect for rules, conflict resolution and healthy competitiveness, articulating cognitive and affective dimensions (Barbalho; Soares; Gomes, 2023).

In the context of Elementary School, the trail game is presented as a didactic strategy capable of organizing content in a sequential path, integrating challenges, questions and problem situations. Its structure allows working on different curricular components in an interdisciplinary way, promoting the simultaneous mobilization of skills provided for in the BNCC, such as reading and textual interpretation, logical reasoning, data analysis, understanding of natural phenomena and cooperative participation.

In this way, the game is configured as an instrument of mediation of learning, in which the teacher assumes the role of guiding the process, stimulating reflections and deepening discussions that emerge from the ludic dynamics (Cândido; Pereira, 2026).

2.3 ENVIRONMENTAL EDUCATION, CONTEXTUALIZATION AND FORMATION OF VALUES

Environmental Education, as a transversal formative dimension, aims to promote the construction of knowledge, values and attitudes aimed at sustainability and socio-environmental responsibility. In Basic Education, its effectiveness is directly related to the contextualization of pedagogical practices, especially when they dialogue with the reality experienced by students, enabling them to rethink their relationship with nature and the territory in which they live. This process involves the dialogue of knowledge and the valorization of local knowledge, guiding the construction of perspectives aimed at a sustainable future (Leff, 2012).

In Amazonian contexts, marked by intense relations between society and nature, the problematization of issues such as the inadequate disposal of solid waste and the quality of

water for human consumption becomes essential for the formation of critical and conscious subjects. According to Freire (1996), the human being is an unfinished subject, in a constant process of formation, capable of transforming reality through reflective action.

The approach to these themes through active methodologies favors awareness and broadens the understanding of the interdependencies between human actions and environmental balance. The integration between Environmental Education and pedagogical games enhances the educational process by allowing students to experience, in a symbolic and reflective way, situations that represent real challenges in the territory.

By walking an ecological trail built from the map of the municipality, students recognize their geographical space as a field of collective responsibility, strengthening values such as care, respect for the environment and social commitment. In this sense, Campos, Severino-Filho and Araujo (2025, p. 218), when dialoguing with the knowledge of native peoples, highlight the need to "[...] to rebuild another future, where education is not just instruction, but listening, bonding and transformation".

Thus, the articulation between active methodologies, playfulness and Environmental Education contributes to an education that goes beyond the content dimension, promoting meaningful learning, interdisciplinarity and ethical, social and environmental development of students.

3 METHODOLOGY

The present study derives from an excerpt from the master's dissertation developed within the scope of the Graduate Program in the National Network for the Teaching of Environmental Sciences (PROFCIAMB-UFPa), class 2022. The research was submitted to the Research Ethics Committee, and was approved according to Opinion No. 6,161,356.

The research is characterized as a study with a qualitative approach, as it seeks to understand the contributions of the ecological trail game as an instrument of mediation of learning from the actions and relationships of students (Minayo, 2002), considering their interactions, perceptions and experiences in the school context. As for the objectives, it is a descriptive and exploratory investigation, since it analyzes a pedagogical practice applied in a real teaching situation (Minayo, 2002).

The study was developed in three public schools in the municipality of São Sebastião da Boa Vista, in the state of Pará, involving 11 classes of the fifth year of Elementary School, in the morning and afternoon shifts, totaling 205 students. The choice of institutions was justified by

their insertion in the urban context of the municipality and by the relevance of local socio-environmental problems for the development of the pedagogical proposal.

As a methodological procedure, a pedagogical game of the ecological trail type was elaborated and applied, structured from the map of the municipality. The course of the game includes the three participating schools and presents, along the trail, problem situations related to the socio-environmental challenges experienced daily by the population, symbolically ending in the municipal dump. This configuration was constituted as a didactic strategy to promote the critical problematization of local environmental issues.

It is also noteworthy that the trail game is part of the "Ecological Chest", an educational product from the dissertation. The resource was personalized with the "Turminha Cristal", an authorial creation of the researcher. In addition, the narratives and statements were elaborated with vocabulary characteristic of the Pará region, valuing the local culture and promoting the sociocultural contextualization of the educational process. The game was planned with rules, challenges and interdisciplinary activities, aligned with the skills of the National Common Curricular Base (BNCC), with an emphasis on environmental conservation and the quality of water intended for human consumption.

The application took place in previously planned pedagogical moments, under the mediation of the teacher-researcher, favoring the active participation of the students. For data collection, participant observation was used, recorded in a previously prepared follow-up list (Kauark; Mornings; Medeiros, 2010), and the systematic recording of students' interactions, speeches and behaviors during the development of playful activity (Minayo, 2002). As a complementary instrument, photographic records were made, adopting due ethical care regarding anonymity and preservation of the identity of the participants. These procedures allowed us to gather evidence about student engagement, active participation and manifestations related to learning and environmental awareness.

The data were analyzed qualitatively, through the identification of recurrences, evidences and meanings present in the interactions observed and in the records produced. The interpretation was carried out in the light of the theoretical framework that underlies the active methodologies, the pedagogical games and the Environmental Education, seeking to understand the potential of the trail game as a didactic resource and its viability as a learning mediation strategy in the context of Basic Education.

4 RESULTS AND DISCUSSIONS

The application of the ecological trail game in the fifth grade classes of Elementary School showed significant results in terms of student involvement and the consolidation of learning. Structured from the map of the municipality of São Sebastião da Boa Vista (Figure 1), the game led the students through a route that portrays environmental problems faced daily by the local community, culminating in the city's garbage dump. This territorial organization of the activity favored the contextualization of the contents and enabled the students to recognize their own geographical space as a scenario for reflection and critical analysis, projecting possibilities for building a more sustainable future (Silva; Raggi, 2019).

Figure 1

Ecological Trail Game



Source: Zelinda Rodrigues (2024).

During the development of the activity, there was wide acceptance by the students. The students demonstrated concentration, enthusiasm and active participation, getting involved in the proposed discussions and relating the situations presented in the game to experiences lived in their daily lives (Figure 2). The playful dynamics favored interaction among the participants, the control of emotions and the strengthening of dialogue and argumentation, stimulating collaborative work (Silva; Costa, 2023). Such aspects evidence the contribution of the game to meaningful learning, by articulating experience, reflection and collective construction of knowledge.

Figure 2*Application of the Game in the three schools*

Source: Zelinda Rodrigues (2024).

With regard to interdisciplinarity, the ecological track demonstrated alignment with skills provided for in the National Common Curricular Base (BNCC). The activity contemplated the ability EF35EF03, by promoting participation in games that involve strategies, rules and cooperation; the ability EF05LP09, by stimulating the reading, interpretation and discussion of problem situations; the ability EF05MA09, by mobilizing logical reasoning in the resolution of challenges; and EF05CI04 and EF05CI05 skills, when addressing content related to environmental conservation, the water cycle, and the impacts of human actions on natural resources (Brasil, 2018). This articulation shows that the game goes beyond the recreational character, configuring itself as a pedagogical instrument capable of integrating different areas of knowledge in a contextualized way.

Another relevant aspect refers to the emotional and social dimensions observed during the application. The learning took place in a playful, relaxed and pleasant way, marked by positive emotions, cooperative spirit and healthy competitiveness. These characteristics contributed to the creation of a favorable environment for learning, in which students felt motivated to participate and express their opinions. According to Vygotsky (2010), the game constitutes a privileged space for the development of higher psychological functions, by articulating learning and development through social interaction.

The ecological trail also proved to be a significant instrument in the formation of values and in the construction of critical consciousness. When faced with local environmental problems, students began to reflect on their own attitudes and on the collective responsibility in preserving water and the environment, expanding their understanding of the interrelations between society and nature (Leff, 2012). The discussions showed a deeper understanding of

the consequences of inadequate waste disposal and water waste, as well as its direct relationship with the quality of water intended for human consumption.

Thus, the results indicate that the game constitutes an effective didactic resource in the mediation of the teaching and learning process, contributing both to the cognitive development and to the ethical and socio-environmental formation of the students. In addition to favoring the teacher's pedagogical practice, the ecological trail demonstrated potential as an interdisciplinary strategy capable of promoting curricular integration and strengthening the formation of critical and active subjects in the environment in which they live.

5 CONCLUSION

The present study analyzed the application of the ecological trail as an instrument of learning mediation in the context of active methodologies, involving classes of the fifth year of Elementary School of three schools in the municipality of São Sebastião da Boa Vista, in the state of Pará. By returning to the question that guided this investigation, about the potential of the trail game as a strategy for mediating learning in Environmental Education, the results indicate that the proposal proved to be pertinent and effective in the context investigated.

The implementation of the game showed that playful and territorially contextualized pedagogical resources favor student engagement, active participation and the construction of meaningful learning. By going through the map of the municipality and problematizing local environmental situations, especially related to the improper disposal of solid waste and the quality of water for human consumption, the ecological trail contributed to the expansion of the students' environmental awareness. Contextualization proved to be a central element for sensitization, allowing students to recognize their own reality as a space of collective responsibility and the possibility of social transformation.

The proposal also demonstrated consistent interdisciplinary potential by articulating skills provided for in the National Common Curriculum Base (BNCC), integrating components of Physical Education, Portuguese Language, Mathematics and Natural Sciences. Such integration reinforces the viability of the game as a pedagogical strategy aligned with the national curriculum guidelines and the contemporary demands of Environmental Education, which defend contextualized, investigative and socially referenced approaches.

In addition to the cognitive dimensions, the strengthening of socio-emotional aspects was observed, such as cooperation, respect for rules, argumentation and critical thinking. The playful environment, marked by positive emotions and constant interaction, favored the construction of

values and the development of more conscious attitudes towards the environmental problems discussed.

It is concluded, therefore, that the ecological trail is configured as an effective and viable didactic resource in Basic Education, constituting itself as an instrument of pedagogical mediation capable of articulating playfulness, interdisciplinarity and problematization of the local reality. By integrating active methodologies and Environmental Education, the proposal contributes to the formation of critical, reflective students committed to sustainability.

As an implication for the area of Environmental Education, the relevance of investing in pedagogical practices that value the territory, the sociocultural reality of the students and curricular integration is highlighted. It is also recommended the expansion of research that investigates contextualized methodologies in the Amazon region, considering its socio-environmental specificities, to strengthen educational proposals that dialogue with local realities and promote a socially committed scientific education.

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NEUROSCIENCE AND TEACHER TRAINING: CONTRIBUTIONS TO TEACHING AND LEARNING

NEUROCIÊNCIA E FORMAÇÃO DOCENTE: CONTRIBUIÇÕES PARA O ENSINO E APRENDIZAGEM

NEUROCIENCIA Y FORMACIÓN DEL PROFESORADO: CONTRIBUCIONES A LA ENSEÑANZA Y EL APRENDIZAJE



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ABSTRACT

Given the contemporary challenges in education and the need for pedagogical practices based on scientific evidence, understanding how development and learning processes occur has been a major challenge. In this sense, Neuroscience presents its advances, contributing significantly to education. It is based on the premise that learning involves the integration of cognitive, emotional, and biological processes, with learning resulting from brain function articulated with attention, memory, emotion, and executive functions—central aspects for teaching and learning. Therefore, this study aims to analyze the contributions of neuroscience to the teaching and learning process, focusing on teacher training courses (initial training - Bachelor's Degree in Pedagogy). It is a qualitative research study, developed through an analytical-integrative approach, in which content analysis of articles, books, and legal documents, such as CNE/CP Resolution No. 4/2024 and the Pedagogical Projects of the Courses, was carried out. Thus, a sample of two public universities (University of Brasília – UnB, and Federal University of Piauí – UFPI) was presented. The analysis concludes that the systematic integration of Neuroscience and Education is indispensable for improving pedagogical practices and promoting reflective, inclusive, and evidence-based teacher training. However, the analyzed course plans revealed that these institutions do not offer a specific Neuroscience course as a curricular component. Nevertheless, the courses include some subjects that have relationships, similarities, or complementary content to the knowledge addressed by Neuroscience.

Keywords: Education. Neuroscience. Pedagogical Practices.

RESUMO

Diante dos desafios contemporâneos da educação, e da necessidade de práticas pedagógicas baseadas em evidências científicas, conhecer como ocorrem os processos de

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desenvolvimento e de aprendizagem, tem sido um grande desafio. Nesse sentido, a Neurociência apresenta seus avanços, contribuindo de forma expressiva para a educação. Parte-se do pressuposto de que aprender envolve a integração entre processos cognitivos, emocionais e biológicos, sendo a aprendizagem resultado do funcionamento cerebral articulado à atenção, memória, emoção e funções executivas, aspectos centrais para o ensinar e o aprender. Nesse sentido, este estudo objetiva analisar as contribuições da neurociência no processo de ensino e aprendizagem, com foco nos cursos de formação docente (formação inicial - Licenciatura em Pedagogia). Trata sobre uma pesquisa qualitativa, desenvolvida por meio de um estudo analítico-integrativo, em que foi realizada a análise de conteúdo de artigos, livros e documentos legais, como a Resolução CNE/CP nº 4/2024 e os Projetos Pedagógicos dos Cursos. Assim, tem-se uma amostra de duas Universidades Públicas (Universidade de Brasília – UnB, e Universidade Federal do Piauí – UFPI). A partir das análises conclui-se que a integração sistematizada entre Neurociência e Educação é indispensável para qualificar práticas pedagógicas e promover uma formação docente reflexiva, inclusiva e fundamentada em evidências. No entanto, constatou-se a partir dos planos de cursos analisados, que essas instituições investigadas não ofertam uma disciplina específica para a área de Neurociência, como um componente curricular. Todavia, os cursos possuem algumas disciplinas que têm relações, semelhanças ou conteúdos complementares aos conhecimentos trabalhados pela Neurociência.

Palavras-chave: Educação. Neurociências. Práticas Pedagógicas.

RESUMEN

Ante los desafíos contemporáneos en educación y la necesidad de prácticas pedagógicas basadas en evidencia científica, comprender cómo se producen los procesos de desarrollo y aprendizaje ha sido un reto fundamental. En este sentido, la neurociencia presenta sus avances, contribuyendo significativamente a la educación. Se basa en la premisa de que el aprendizaje implica la integración de procesos cognitivos, emocionales y biológicos, resultando de la función cerebral articulada con la atención, la memoria, la emoción y las funciones ejecutivas, aspectos centrales para la enseñanza y el aprendizaje. Por lo tanto, este estudio tiene como objetivo analizar las contribuciones de la neurociencia al proceso de enseñanza y aprendizaje, centrándose en los cursos de formación docente (formación inicial - Licenciatura en Pedagogía). Se trata de un estudio de investigación cualitativa, desarrollado mediante un enfoque analítico-integrador, en el que se realizó un análisis de contenido de artículos, libros y documentos legales, como la Resolución N° 4/2024 del CNE/CP y los Proyectos Pedagógicos de los Cursos. Así, se presentó una muestra de dos universidades públicas (Universidad de Brasília – UnB, y Universidad Federal de Piauí – UFPI). El análisis concluye que la integración sistemática de la neurociencia y la educación es indispensable para mejorar las prácticas pedagógicas y promover una formación docente reflexiva, inclusiva y basada en la evidencia. Sin embargo, los planes de estudio analizados revelaron que estas instituciones no ofrecen un curso específico de neurociencia como componente curricular. No obstante, los cursos incluyen algunas asignaturas que guardan relación, similitud o complementan el contenido de los conocimientos que abarca la neurociencia.

Palabras clave: Educación. Neurociencia. Prácticas Pedagógicas.

1 INTRODUCTION

Contemporary education faces significant challenges with regard to the construction of pedagogical practices that recognize diversity as a constitutive element of the teaching and learning process. In this context, it is essential to understand that the act of educating goes beyond the simple transmission of content, requiring an approach that considers the multiple dimensions of human development (Mantoan, 2015; Sassaki, 2019; Relvas, 2016). For the understanding of this understanding by teachers, Neuroscience stands out, considering that its advances have contributed significantly to the learning processes, considering that learning involves brain functioning and the integration of cognitive functions such as attention, memory, perception, emotion and executive functions, all directly related to teaching and learning (Guerra, 2011).

In this context, this study recognizes the need for teachers to seek knowledge of Neuroscience in their initial and continuing education. It is known that this knowledge allows a more scientific approach to the teaching-learning process, as it is understood that the integration between Neuroscience and Education becomes fundamental for the development of these processes. However, as Guerra (2011, p. 2-3) points out, "neuroscience can inform education, but not explain or provide prescriptions, recipes that guarantee results; it can, however, make the work of the educator more meaningful and efficient".

Based on this understanding, it is considered that teachers need to seek knowledge in neuroscience, in view of the need to integrate neuroscientific knowledge with pedagogical practices, enabling greater reach in relation to the teaching and learning processes of students in all areas of knowledge, since "The act of learning is a modification of behavior that involves the mind (abstract concept that involves thinking, emotions/feelings) and the brain (physical organ responsible for biological functions)". It is noteworthy that the knowledge of Neuroscience is based on what is called "brain science and education as the science of teaching and learning" (Relvas, 2016, p. 199).

From this reflection emerges the question: How should teachers have access to Neuroscience knowledge? The answer to this question points to the need for such knowledge to be discussed and worked on during initial and continuing teacher training in teaching degree courses. Therefore, it is essential to rethink teacher training in Brazil, according to the contemporaneity of knowledge, so that the teacher is contemplated in meeting social demands among other knowledge such as that in the area of Neuroscience, considering it necessary to include this knowledge in the curricula of Teaching Degrees.

Thus, knowing how the development and learning processes occur has been a great challenge. In this sense, it is necessary to recognize the necessary integration of Neuroscience with Education, which will make it possible to advance in this knowledge, providing better understanding and quality to the teaching and learning processes in these areas. By knowing the relationship between learning and the brain, based on its cognitive functions, the teacher will be able to better develop his pedagogical work by basing his practice on scientific evidence. Thus, this study aims to analyze the contributions of Neuroscience in the teaching and learning process, focusing on teacher training. It is understood that the curricula of Pedagogy courses and teaching degrees in general need to include disciplines that prepare future teachers in relation to neuroscientific knowledge, enabling the understanding of how learning occurs in the students' brains and favoring better planning and development of pedagogical practices (Grossi; Borja, 2016).

To this end, a qualitative research was developed, of an analytical-integrative nature (Minayo, 2014; Souza; Silva; Carvalho, 2017), based on authors such as Damásio (2012), Cosenza and Guerra (2011) and Antunes (2011), who highlight the relationship between emotion, cognition and learning, highlighting the importance of pedagogical practices that respect people's singularities. In the research, content analysis was used, based on Bardin (2016) and Ferreira and Loguecio (2014), who consider this analysis as a

[...] an instrument for the interpretative exploration of documents of various natures, vectored by techniques that, in a coordinated manner, aim to organize and systematize units of their content in order to extract from them nuclei of meaning from which the main themes and concepts are harvested and meanings are captured. (Ferreira; Loguecio, 2014, p. 35)

When developing the study through the qualitative approach, the integrative review was used, which, according to Vosgerau and Romanowski (2014, p. 179), enabled the analysis of the results found in journal databases, providing conditions to form groupings and regroupings of the similarities found in the texts, in order to "[...] answer the central question of proposed research", that is, what are the contributions of neuroscience to teaching and learning in the context of teacher training? It is considered that the integrative review was presented as a methodological resource that enabled the systematization of the scientific knowledge theoretically developed in the analyzed texts, as well as the identification of new perspectives for future research, as stated by Botelho (et al., 2011). Thus, research of different methodologies and approaches was analyzed, prioritizing works with a qualitative approach.

Initially, inclusion and exclusion criteria were established, delimiting types of research,

languages and thematic relevance, which guided the selection of material. A systematic search of academic productions books, scientific articles, dissertations and theses was carried out in databases such as SciELO, Google Scholar and institutional repositories. As exclusion criteria, repeated materials, publications without scientific rigor, unreliable websites, Wikipedia, ongoing research, among others, were not used. The stages of identification, screening, eligibility and inclusion of the studies were followed: identification through the initial survey in the selected databases; screening with exclusion of duplicate texts from the reading of titles and abstracts; eligibility upon complete reading to verify alignment with the research problem; and, finally, the inclusion of texts that met all the defined criteria, composing the corpus of integrative analysis. The analysis of the institutional documents (Pedagogical Project of the Pedagogy Course) of the two investigated institutions – University of Brasília (UnB) and Federal University of Piauí (UFPI) – was also carried out, which enabled the development of this text in sections that deal with the foundations and contributions of neuroscience to teaching and learning, from the perspectives of different theorists, researchers in the area; the analysis of the Institutional Development Projects (PDI), based on the curriculum of the initial training courses of the Pedagogy course of the public institutions mentioned.

2 FUNDAMENTALS OF NEUROSCIENCE

Neuroscience, as an interdisciplinary field, is dedicated to the study of the nervous system and its relationships with human behavior, learning, and development (Lent, 2017). Its advances have enabled a deeper understanding of cognitive, emotional and social processes, contributing significantly to the educational field, by showing how the brain processes information, builds knowledge and responds to environmental stimuli. In this way, neuroscience expands the possibilities of reflection on contemporary pedagogical practices (Cosenza; Guerra, 2011). One of the central concepts of this field is brain plasticity, which refers to the brain's ability to reorganize its structures and functions in response to lived experiences (Relvas, 2016; Lent, 2017). This characteristic indicates that learning is not a static process, but dynamic and continuous, being strongly influenced by the interactions of the subject with the environment. Thus, knowledge is not simply transmitted, but built from experience, interaction and social mediation.

In this sense, environments rich in cognitive, social, and emotional stimuli favor the formation and strengthening of neural connections, contributing to the development of complex skills, such as critical thinking, problem-solving, and self-regulation (Cosenza; Guerra, 2011). On the other hand, contexts marked by prolonged stress, absence of stimuli or impoverished

relationships can negatively impact brain functioning, interfering in learning and development processes (Damásio, 2012).

The neuroscientific literature also highlights the close relationship between cognition and emotion. As Damásio (2012) argues, emotional processes are inseparable from cognitive processes, playing a fundamental role in decision-making, memory and learning. This perspective breaks with traditional conceptions that dissociated reason and emotion, reinforcing the need for pedagogical practices that consider the subject in its entirety.

Another relevant aspect refers to the importance of social interactions in the construction of knowledge. The human brain is essentially social, being shaped by the relationships established throughout life. In this context, language, pedagogical mediation and the bond between teacher and student play a central role in the learning process (Vygotsky, 2007). Learning, therefore, occurs in contexts of interaction, in which the subject culturally appropriates knowledge.

In addition, contemporary studies show the relevance of executive functions, such as working memory, inhibitory control, and cognitive flexibility, in the development of learning (Diamond, 2013). These skills are fundamental for planning, the organization of thought and the regulation of behavior, and are directly influenced by educational experiences. Thus, pedagogical practices that stimulate these functions contribute to the formation of more autonomous and critical subjects.

However, it is important to highlight that the approximation between neuroscience and education must occur in a critical and reasoned way. As Howard-Jones (2014) warns, the inadequate interpretation of neuroscientific concepts can lead to the dissemination of neuromyths⁶, which simplify or distort concepts about the functioning of the brain. Thus, understanding the foundations of neuroscience implies recognizing the complexity of learning and development processes, as well as the importance of experiences, emotions, and social interactions in the construction of knowledge. This understanding is essential for the elaboration of more effective, critical pedagogical practices aligned with the demands of contemporary education.

2.1 EMOTION, COGNITION AND LEARNING

Furthermore, if emotion, cognition and learning are dimensions that do not operate in a dissociated way, but rather constitute a system integrated in brain functioning, this perspective

⁶ Neuromyths - are mistaken information about neuroscientific discoveries, misinterpreted and that acquire a new meaning. They cause several educational losses, such as the use of pedagogical practices without scientific proof, in addition to the waste of resources in activities without a significant return in terms of learning.

breaks with traditional conceptions that separated reason and emotion, by demonstrating that emotional processes exert a direct influence on attention, memory, decision-making and, consequently, on learning.

According to Damásio (2012), emotions play a fundamental role in the regulation of behavior and in the construction of knowledge, acting as somatic markers that guide the individual's choices and responses to experiences. In this sense, emotionally significant experiences tend to be more easily stored and retrieved, which highlights the importance of affective involvement in the learning process.

Corroborating this perspective, Cosenza and Guerra (2011) highlight that learning is favored in contexts in which the individual feels safe, motivated and emotionally engaged. Positive emotions, such as interest, curiosity, and enthusiasm, contribute to increased attention and motivation, facilitating memory consolidation. On the other hand, negative emotions, such as fear, anxiety, and excessive stress, can compromise cognitive performance, making it difficult to assimilate new content.

In the context of academic learning, the educational environment plays a central role in the mediation of emotional experiences. Teachers who understand the relationship between emotion and learning are able to create pedagogical strategies that are more sensitive to the needs of students, promoting a classroom climate that favors student engagement, participation and the construction of knowledge. Thus, the bond established between teacher and student becomes a fundamental element for the educational process. Studies in the area of Neuroscience point out that brain structures, such as the amygdala and the hippocampus, perform complementary functions in learning. While the amygdala is related to the processing of emotions, the hippocampus is directly involved in memory formation and consolidation (Lent, 2017). The interaction between these structures shows that emotionally relevant experiences tend to be more easily memorized, reinforcing the idea that emotion and cognition are inseparable.

Another piece of data to consider refers to the performance of emotions in the self-regulation of learning. According to Diamond (2013), executive functions are working memory and cognitive flexibility that are directly related to the individual's ability to manage their emotions and behaviors based on cognitive demands. In this way, the development of these skills contributes to more autonomous and effective learning. From an educational point of view, this implies recognizing that teaching is not restricted to the transmission of content, but involves the creation of physical and psychological conditions, adaptation of environments and spaces that favor the emotional and cognitive development of students. In this sense, pedagogical

practices that value listening, dialogue, empathy and active participation tend to promote more meaningful learning (Vygotsky, 2007).

To this end, it is considered relevant to incorporate neuroscience knowledge into education, which is developed critically by teachers, so that they avoid neuromyths that may hinder the correct and effective application of this knowledge. Howard-Jones (2014) warns of the risk of oversimplification and misinterpretations, which can lead to the adoption of pedagogical practices based on these neuromyths. Thus, understanding the relationship between emotion, cognition and learning implies recognizing the educational process as complex, dynamic and deeply influenced by emotional experiences. This understanding, together with the teacher/mediator's understanding of the process of integral development of students, contributes to the construction of more effective, sensitive pedagogical practices aligned with the demands of contemporary education, enabling a better performance of the teacher.

2.1.1 Neurosciences: executive functions and learning

According to Diamond (2013), executive functions constitute a set of high-order cognitive skills, responsible for the control, regulation and organization of human behavior, and are fundamental for learning processes. These functions allow the educator to plan actions, maintain attentional focus, control impulses, solve problems and adapt to different situations, playing a central action in academic performance, contributing to the construction of complex competencies. These executive functions can be organized into three main components: working memory – the ability to hold and manipulate information for a short period. Essential for activities such as reading, problem-solving, and understanding instructions; inhibitory control – related to the ability to inhibit impulsive responses and stay focused on specific goals; and cognitive flexibility - the ability to switch between different tasks or perspectives, adapting to new demands.

In the field of Neuroscience, these functions are associated with the prefrontal cortex (a region of the brain responsible for planning, decision-making, and behavior regulation). These functions develop gradually, being highly influenced by experiences. In this sense, it is essential that students seek educational environments that stimulate complex competencies (Lent, 2017). Studies indicate, like Cosenza; Guerra (2011), that executive functions are closely related to learning processes, since they directly influence attention, the organization of thought and the ability to solve problems. Students with well-developed executive functions tend to have

greater autonomy, better academic performance, and a greater ability to deal with cognitive challenges.

Another relevant issue refers to the relationship between executive functions and emotional regulation. As Damásio (2012) and Diamond (2013) point out, the ability to control impulses and manage emotions is directly associated with the functioning of cognitive skills. From the educational point of view, it is relevant to understand the execution of executive functions, which implies recognizing that the teaching and learning process must go beyond the transmission of content, incorporating strategies that favor the development of these skills. Pedagogical practices that stimulate problem solving, critical thinking, task organization, and self-regulation contribute significantly to the strengthening of executive functions (Vygotsky, 2007).

In this context, the teacher needs to act as a mediator of the teaching and learning process, favoring the construction of knowledge and knowledge in a way that promotes meaningful learning⁷. In relation to knowledge, Tardif (2002) states that teaching knowledge is built in practice/in execution activities, which reinforces the need for training that includes updated scientific knowledge about cognitive functioning, made possible by the study and understanding of Neuroscience.

By planning pedagogical interventions that consider the development of executive functions, the teacher/mediator of the learning process favors the construction of knowledge in a more significant way. As Tardif (2002) points out, teaching knowledge is built in practice, which reinforces the need for training that includes up-to-date scientific knowledge about cognitive functioning. However, it is important to emphasize that the application of neuroscience knowledge in education must occur in a critical and reasoned way. The teacher's care in seeking specific knowledge in this area is emphasized, avoiding what authors such as Dekker (et al., 2012) highlight, who evidence the presence of neuromyths in the educational context, and the fact that these compromise the effectiveness of pedagogical practices, which reinforces the need for teachers to learn about neuroscience, and it is essential that teacher training policies be developed that contemplate this area.

Thus, understanding executive functions in the context of learning implies recognizing the complexity of cognitive development and the importance of teachers' knowledge of neuroscience so that they can develop intentional pedagogical practices, and become capable of promoting not only the acquisition of content, but the development of essential skills for the

⁷ Meaningful learning is a theory proposed by David Paul Ausubel, stating that it is not done through memorization, accumulation of information, but by incorporating new content, information to existing cognitive structures.

construction of autonomy and critical thinking. This understanding reinforces the need for teacher training based on scientific evidence, aligned with the demands of contemporary education, as well as the use of disciplines in training courses focused on neuroscience and the teaching and learning process.

3 CONTRIBUTIONS OF NEUROSCIENCE TO TEACHING AND LEARNING: THEORETICAL PERSPECTIVES ON TEACHER TRAINING IN PEDAGOGY

The Brazilian legislation that deals with the initial training of teachers (licentiates) is undergoing significant changes, with a strong emphasis on the inclusion of scientific evidence, which opens space for neuroscience applied to education. In this study, Resolution No. 4, of May 29, 2024, of the National Council of Education (CNE), which defines the National Curriculum Guidelines (DCNs) for the initial training of basic education teachers, stands out. However, it is observed that there is no precise orientation for the development of a curriculum focused on neuroscience, through specific disciplines:

Paragraph 2 - The exercise of teaching is understood as an educational action, based on the conduction of intentional and methodical pedagogical processes, which are based on knowledge and concepts specific to teaching and the specificities of different areas of knowledge, including the mastery and management of contents and methodologies, different languages, technologies, scientific evidence and innovations.

Neuroscience emerges as an interdisciplinary field, dedicated to the study of the nervous system integrated with man's behavioral relations (ontological⁸), involving learning and cognitive development. According to Lent (2017), the human brain has remarkable neural plasticity, which consists of the ability to modify its connections and restructure new experiences, enabling the development of cognitive, emotional, and social skills. It is observed that it is in early childhood (a period from birth to 6 (six) years of age) that maturation, adequate stimulation, affective bonding, meaningful experiences, and direct influence on the formation of the neurological bases of learning occur, which does not limit these capacities in other phases of human development (Relvas, 2022). In this way, this knowledge contributes to teachers being able, during their training, to understand and apply Neuroscience for the development and quality of interactions, in a specific way, family and school, which determines the strengthening of functions such as attention, memory, language and self-regulation. Scholars corroborate with

⁸ The term is related to ontology, from the Greek *ontos*, which means "to be" and *logos*, which means "study". The word designates the field of metaphysics that studies the nature of existence and reality itself. Ontology studies the nature of being and the relationship between mind and body (dic. Online).

information about the need to seek knowledge of Neuroscience, such as Damásio (2012), who states that studies on the understanding of brain functioning are knowledge that allows teachers to get closer, in a more concrete way, to educational needs. However, this knowledge can be misinterpreted if it is not in the context of a teacher training course, both initial and in continuing education.

This process of intermediation, in which the teacher recognizes himself as a mediator of the teaching and learning process, enables his performance in class and the expansion/adaptation of Neuroscience to the students' learning, respecting their maturation rhythms and expanding the possibilities of learning, regardless of the age of their student. Therefore, Neuroscience and Education are areas that, when integrated, will enable improvements in pedagogical practices, providing scientific subsidies that enable critical guidance on how the teacher can develop interventions in a more humanized and effective way. Thus, integrating neuroscientific knowledge into pedagogical practices represents a great advance, in view of the integral development of the human being in its affective, psychological, cognitive, social dimensions, among others, enabling school inclusion.

In this sense, it is necessary for the teacher to know the nature/differences and singularities of the student as a human being. Antunes (2011, p. 15) warns the teacher about the danger of standardizing "the billions of neurons and synapses" ignoring "the essence of the human being, his extraordinary uniqueness". Knowledge about Neuroscience enables teachers to develop in their classes the possibilities that this integration with education offers. It is considered that they will be able to develop new practices in a differentiated way, providing opportunities for better quality teaching and learning. Pedagogical practices need to be based on research, evidence, integrating cognitive and socio-emotional aspects.

Sá, Narciso and Fumiã (2020), state that through brain imaging and analysis of electrical signals, it is possible to study how brain injuries or changes affect cognition, allowing a better understanding of the mechanisms that support learning. Recognizing neuroscience enables the teacher's actions to be more inclusive, which seeks to involve the student in its entirety, in its psychological, cognitive, behavioral and learning dimensions.

Knowledge of neuroscience implies recognizing that "the learning of formal knowledge depends on the formation of new long-term memories and the expansion of existing memories" (Lima, 2017, p. 6), in this way effective, meaningful learning, which starts from the consolidation of knowledge, occurs from memory processes. In this sense, the education professional needs knowledge of Neuroscience, for the elaboration of their academic and professional activities, to contribute effectively to the teaching and learning process, considering that, according to

Cosenza and Guerra, (2011, p. 76),

[...] Neuroscience has shown that cognitive and emotional processes are deeply intertwined in the functioning of the brain and has made it evident that emotions are important for the most appropriate behavior for survival to be selected at important moments in the lives of individuals.

Likewise, it is from the understanding of the need to integrate teacher education/training with Neuroscience that the teaching process can be expanded, providing the teacher with the opportunity to develop more inclusive, innovative and diversified practices, favoring student learning in all its dimensions. Thus, there is a context of transformations that have occurred in the educational field, which are mainly caused by the globalization of the economy and the productive restructuring of capital, which imposes reflections on the role of the teacher in contemporary times, facing numerous difficulties in relation to their practices, educational innovation and especially in combining these factors with human formation, political, cultural and social.

It is relevant to highlight the initial and continuing education of the teachers who are present, related to the personal and professional development of these subjects, as well as to their knowledge and knowledge (Nóvoa, 1992; Tardif, 2002). These processes contribute to the theoretical-methodological discussions based on the construction of concepts related to initial and continuing education, making it necessary to understand the educational institution as a space for the construction and training of teachers, for the improvement of pedagogical practice. In terms of training and professional practice, what characterizes the mediator teacher is the recognition not as the owner of knowledge (the mastery of a discipline), but as a facilitator/mediator of a set of knowledge, which can be called teaching knowledge (Tardif, 2002). The author also considers that in terms of training and professional practice, knowledge integrated with the practices related to teaching is necessary. In this sense, the teacher's job will imply a "know-how" that can provide opportunities for learning the knowledge/contents that are present in the curricular guidelines, in addition to others. In this sense, it is considered essential that teachers acquire neuroscientific knowledge, and that these are considered "teaching knowledge" present in the curriculum of teacher training courses (Tardif, 2002).

For Giroux (1992), teacher training needs to be structured in such a way that students/future teachers can have learning built from autonomy in the formulation and resolution of problems about the current reality, the principles underlying different pedagogical methods, the themes and investigative procedures and the educational theories, in a way that is contextualized to the reality in which they are inserted, to the educational institution in which

he/she studies and/or works. In this direction, it is necessary to seek teacher training processes in which schools are conceived as essential institutions for the development of a truly critical, inclusive and creative democracy in the process of activities that seek the knowledge of Neuroscience, and also for the training of teachers who recognize themselves as intellectuals who integrate reflection and practice at the service of education in general and the teaching and learning of the specific knowledge of each discipline. Thus, initial and continuing education will enable the construction of professional identity in a reflective and critical way (Giroux, 1997).

3.1 TEACHER TRAINING BASED ON NEUROSCIENTIFIC EVIDENCE

The relationship between science and education should not be understood as a direct and linear application of neuroscientific knowledge to pedagogical practice. As Tokuhamas-Espinosa (2011, p. 6) argues, "Mind, Brain, and Education Science is an interdisciplinary field that combines neuroscience, psychology, and education to better understand learning, recognizing that none of these areas, in isolation, is capable of explaining it."

In this sense, teacher training cannot be restricted to the transmission of traditional pedagogical content, but must contemplate the understanding of brain functioning, the biological bases of learning and the relationship between cognition, emotion and behavior. As highlighted by Cosenza and Guerra (2011), knowing how the brain learns enables the teacher to plan more effective pedagogical interventions, aligned with the needs of students and the natural learning processes. Understood as a continuous and reflective process, Imbernón (2011) highlights that continuing education is essential for teachers to be able to keep up with social and scientific changes, developing skills that allow them to act in a critical and innovative way.

The teacher is a professional who has diverse knowledge. For this reason, this knowledge is part of the multiplicity of his work, which as a professional who works in different situations needs to act in a differentiated way, mobilizing different theories, methodologies, skills. As stated by Tardif (2011, p. 118) "The knowledge of teachers is plural, heterogeneous, because it involves, in the very exercise of work, very diverse knowledge and know-how, coming from varied sources and, probably, of a different nature". For the author, teaching knowledge is built in practice, being the result of the articulation between theoretical and practical knowledge.

In view of this interrelation, this process leads to the concept of reflective teacher, proposed by Schön (2000), in which it is necessary that this theoretical-practical relationship be carried out from praxis (action-reflection-action, reflection on and in practice). The reflective teacher capable of analyzing his practice, questioning his actions and reconstructing his pedagogical strategies based on critical reflection, by incorporating knowledge from

neuroscience, this teacher expands his ability to understand the learning processes and to develop his reflections from this knowledge - enabling more effective interventions. This reflection based on neuroscience enables a guiding knowledge of the reflected practice. Therefore, training based on neuroscientific evidence implies recognizing the importance of emotional dimensions in the educational process.

As Damásio (2012) argues, emotion and cognition are inseparable, and it is essential that the teacher understands how emotional factors influence learning. In this sense, pedagogical practices that promote emotional safety, motivation, and engagement tend to favor academic performance. The sociocultural perspective of learning also contributes to the understanding of teacher training. Vygotsky (2007) highlights that knowledge is constructed through social interactions, and pedagogical mediation is a central element in this process.

3.2 INTEGRATION OF NEUROSCIENCE INTO TEACHING AND LEARNING: BUILDING PEDAGOGICAL PRAXIS

The integration between the areas of Neuroscience and Education is an expanding field, marked by significant possibilities, but also by theoretical and methodological challenges, which requires inserting in an institutionalized way the disciplines focused on the learning of neurosciences, their advances in relation to learning processes, their transposition to the educational context, among other issues that require a critical and reasoned approach, avoiding simplifications and misinterpretations (Howard-Jones, 2014). It is noteworthy that this integration requires the teacher to understand Imbernón's (2011) perspective on teaching being a dynamic practice in constant transformation, influenced by social, political and technological changes. In this context, critical reflection becomes essential for teachers to adapt to new demands and reorganize their performance in the face of contemporary challenges.

Zeichner (1993) emphasizes that critical reflection must go beyond individual experience, assuming a social and collective dimension. Thus, teachers need to analyze not only their practices in the classroom, but also the mission of educational institutions in maintaining or overcoming social inequalities, expanding the scope of reflection and linking it to the ethical commitment of the teaching profession. Alarcão (2018) states that reflecting on practice contributes to the consolidation of the teacher's professional identity.

In this study, we have the understanding of Nóvoa (1992) when he states that teacher training should be understood as a continuous process, in which critical reflection occupies a central position. For the author, professional development is directly related to the need for teachers to be able to analyze their practice, identify limitations and envision possibilities for

innovation, making reflection an essential element for teacher autonomy and emancipation, so that this practice is transformed into praxis. Perrenoud (2000) corroborates these statements when arguing about the teacher's professional competence, considering that it goes beyond the application of pedagogical techniques, involving the ability to make informed decisions in complex contexts. According to the author, this competence is developed through a constant reflective posture, which allows the teacher to interpret and respond critically to educational demands. Tardif (2011, 2022) reinforces that teaching knowledge is built in practice, and critical reflection is indispensable to make it conscious and organized.

In this sense, the reflective/critical practice enables the transformation of experience into pedagogical knowledge, contributing to the strengthening of professional identity and to the social recognition of teaching. In this sense, it is reinforced that Neuroscience needs to be present in this process of teacher learning about the understanding and influence of brain anatomical substrates and their mechanisms, such as the neurophysiological mechanisms of behavior, for a greater understanding of the causes of students' non-learning, being able to create the conditions that make it possible to overcome learning difficulties. Bearing in mind that one of the biggest concerns of the contemporary teacher is how to enable the student to learn effectively. Neuroscience offers contributions, enhancing the teacher's action, enabling from this knowledge to understand how to act in their praxis, based on evidence about the singularities of students, recognizing them as a unique and capable human being, developing a better understanding of the structure of the brain, considering that "The teacher's function is to enhance the brains in the classroom" (Relvas, 2017, p.1). From Neuroscience, it is understood that there are no people who do not learn, in the understanding that at a scientific level, the brain develops and changes throughout life (Carvalho, 2016). This understanding enables the teacher to seek ways to mediate this learning with teaching/mediation that effectively meets the student's capacity.

4 NEUROSCIENCE IN THE CONTEXT OF TEACHER TRAINING IN PEDAGOGY

Given the importance of Neuroscience and its contributions to the teaching and learning process of children, it is relevant to analyze the role of this knowledge in the context of the Pedagogical Project of the Pedagogy Course. From the point of view of scientific evidence, it can be said that the study of Neuroscience is essential for the training of Pedagogy teachers, as it provides the biological basis of how the brain learns and how knowledge is built. The evidence found in theoretical research has shown that neuroscience allows educators to deepen their knowledge, being able to create and adopt more effective pedagogical strategies.

In other words, knowledge about brain development allows the understanding of the functioning of emotions, creativity and memory, which helps to improve didactic transposition, focusing on attention, concentration, curiosity and interaction.

In this sense, with a view to offering better training to educators of children, shouldn't the curriculum of Pedagogy courses present Neuroscience as an indispensable component? And what about the main legislation and official documents that deal with the training of these educators, do such documentation contemplate the knowledge provided by neuroscience?

It is worth highlighting the emphasis made in this study, on the legislation and determinations regarding initial training in teaching degree courses, updated through Resolution CNE/CP No. 4 of May 29, 2024, which provides for the National Curriculum Guidelines for Initial Training at Higher Education for Teaching Professionals in Basic School Education. In its Article 1, paragraph 1, the Resolution presents its objectives by highlighting the importance of:

[...] promote the advancement of public education policies, in line with the goals of the National Education Plan - PNE, manifesting organicity between its Institutional Development Plan - PDI, its Institutional Pedagogical Project - PPI and its Course Pedagogical Project - PPC. (Brazil, CNE/CP Resolution No. 4, 2024).

Article 2, paragraph 1, of the Resolution determines that:

The initial training of teaching professionals referred to in the **caput** must ensure a broad and contextualized understanding of school education, aiming to ensure the production and dissemination of knowledge in a given area and participation in the elaboration and implementation of the pedagogical proposal of Basic Education institutions, with **the purpose of guaranteeing the rights and objectives of learning and development of students**, the democratic management of the school and education systems and the institutional evaluation processes aimed at the continuous improvement of the quality of the educational offer. (Brazil, CNE/CP Resolution No. 4, 2024 – emphasis added).

According to the article, when it emphasizes the rights and objectives of learning and development of students, tacitly, the legislation assumes the responsibility of offering teacher training based on neuroeducation. This training needs to promote the understanding of how the brain learns, reacts to stimuli and develops skills. To this end, it should present a proposal for theoretical and methodological training based on scientific evidence, deepening knowledge about the cognitive and emotional development of children, and studies on attention, memory and brain plasticity applied to teaching. This statement becomes even clearer in § 3 of the same Article 2, when it determines that the training of Basic Education teaching professionals shall:

[...] to consider the **integrality of the subject in formation** and of the educational phenomenon itself, articulating the scientific, aesthetic, technical and ethical-political dimensions inherent to the pedagogical processes. And this requires an education that, while assuming the responsibility of respecting the integrality of the student, teacher in training, offers subsidies so that this subject can understand, scientifically, not only the teaching process, but also how the child's brain works and learns.

Paragraph 2 of the same article warns again about:

the understanding of the exercise of teaching as an educational action, based on the conduction of intentional and methodical pedagogical processes, which **are based on knowledge and concepts specific to teaching and the specificities of different areas of knowledge**, including the mastery and management of contents and methodologies, different languages, technologies, scientific evidence and innovations. (Brazil, CNE/CP Resolution No. 4, 2024 – emphasis added).

From this understanding, the thought of Santos and Coutinho (2024, p. 26) stands out, "Neuroscience is a vast and interdisciplinary field that studies the nervous system, including the brain, spinal cord, and nerves". This interdisciplinary aspect deserves to be highlighted when thinking about neuroscience applied to education, since this study intends to demonstrate that the legislation itself requires that teacher training has access to knowledge and concepts from different areas of knowledge.

The need for this knowledge is understood when it is observed that the analysis of studies on neuroscience demonstrates that the teacher must understand how the nervous system works, which has repercussions on learning about: brain plasticity (the brain's ability to adapt and reorganize itself throughout life in response to experiences, injuries or environmental changes); functional modularity (the way the brain is organized into specialized modules that are responsible for specific functions, such as vision, hearing, movement, language, emotion, memory, among others); synaptic plasticity (that synapses can be strengthened or weakened based on neuronal activity, a fundamental process for learning and memory); and neural hierarchy (that the brain is organized into different levels of processing, from individual neurons to distributed neural networks, which work in an integrated way to produce behavior and cognition); among other knowledge.

In Article 4, Paragraph II, Resolution No. 4, highlights that Pedagogy and Teaching Degree Courses must present:

[...] solid training that provides knowledge of the epistemological, technical and ethical-political foundations of the sciences of education and learning and that allows the future professional of teaching to develop the skills of analysis and reflection on educational

practices and on the progression and processes of learning and the constant improvement of their work skills.

To know about the progression and learning processes, according to the cited article, the teacher in training needs to study about human development. Without knowledge in this area, there is no way to understand children's learning as a subjective and multifaceted process. Based on the above, the analysis of the Pedagogical Projects of the Pedagogy courses of the University of Brasília (UnB) and the Federal University of Piauí (UFPI) is presented, selected, having the following criteria: being federal public universities located in the cities of residence and work of the researchers (Brasília/DF and Teresina/PI). The following table is observed:

Table 1

Survey of Disciplines that Work on Neuroscience-Related Contents

UNIVERSITIES	MANDATORY CURRICULAR COMPONENTS THAT INCLUDE KNOWLEDGE OF NEUROSCIENCE/C.H
FEDERAL UNIVERSITY OF PIAUÍ – UFPI	Educational Psychology I – 60h Educational Psychology II – 60h Fundamentals of Early Childhood Education – 60h Fundamentals of Special Education – 60h Didactics of Early Childhood Education – 60h Body language and movement – 60h
FEDERAL UNIVERSITY OF BRASÍLIA - UNB	Educational Psychology - 60h Childhood, Children and Education - 60h Inclusive Education - 60h Early Childhood Education - 60h

Source: PPCs of UFPI and UnB, 2026.

In relation to the picture, it is observed that the discipline of Educational Psychology is present in the Project of the two institutions, and at UFPI there is a broader workload - 120 hours developed in two moments I and II. **Educational Psychology I** at UFPI, presents the following work proposal: "SUMMARY: Psychological science; Psychology and Education; constitution of subjectivity; subjectivity and transversal themes" (PPC Pedagogy/UFPI, 2018, p. 81); as for **Educational Psychology II** – "SUMMARY: Human development and school learning. Theories of development and learning. Cross-cutting themes in Educational Psychology" (PPC Pedagogy/UFPI, 20218, p. 85).

This discipline **Educational Psychology**, common to both courses, is presented in the Pedagogical Political Project of the Pedagogy Course – Daytime at UnB, with a workload of 60 hours and the following Proposal:

Summary: Studies that articulate Psychology with Education. Main theories of Psychology, their implications and foundation for the analysis of teaching/learning

processes. Conceptions of human development in its relationship with educational processes. Processes of subjectivation in contemporary societies and in the scenario of Brazilian education (PPC Pedagogia/UnB, 2018, p. 66-67).

In view of the above, in the table, it is observed that only the discipline Educational Psychology has the same name, and the others are correlated and that allow the teacher to work neuroscientific knowledge in a random way, without a proven systematization, even enabling the incidence of "neuromyths". It is noteworthy that when searching for knowledge related to Neuroscience in the Pedagogical Projects of the Pedagogy Courses of the two institutions, it was not found, in a specific way, the teaching on this theme in the disciplines present in the analysis framework, although the syllabuses allow the teacher to insert the knowledge of Neuroscience. A direct approach to the study of Neuroscience was also searched by means of keywords, as well as in the references in the syllabus of each discipline, but none of these references dealt specifically with the subject.

As for the disciplines related to Early Childhood Education, the UFPI curriculum brings the disciplines **Fundamentals of Early Childhood Education** (60 h) and **Didactics of Early Childhood Education** (60 h), while UnB brings the discipline **Early Childhood Education** (60 h) and **Childhood, Child and Education** (60 h).

At UFPI, the discipline **Fundamentals of Early Childhood Education** has the following syllabus: Early childhood education: historical, legal and pedagogical aspects. Child development: moral, cognitive, affective and motor aspects. Drawing, game and toy in Early Childhood Education. In the discipline **Didactics of Early Childhood Education**, the syllabus presents the following contents: Caring and Educating, Interactions and Play: the role of the teacher in early childhood education. Curriculum: Fields of Experience and areas of knowledge – Languages, Human Sciences, Mathematics and Natural Sciences. Organization of pedagogical work in Early Childhood Education: objectives, contents, methodologies, evaluation and practices. In these disciplines, it is observed that, only when dealing with child development in its cognitive, affective and motor aspects, in the discipline **Fundamentals of Early Childhood Education**, there is a concern with deepening the discussion about how the child develops.

At UnB, the **Early Childhood Education discipline** has the following syllabus: Public policies, history and foundations of early childhood education. The quality of early childhood education. The inseparability between caring and educating. Pedagogical proposal, Curriculum and the multiple languages of the child, monitoring and evaluation of the pedagogical process. Pedagogical Documentation. Management and inclusion. In other words, the discipline does

not deal with knowledge related to the study of the human brain and any other related to Neuroscience.

Also at UnB, the discipline Childhood, Child and Education has the following syllabus: Study on the historical, sociological and psychological conceptions of childhood and child. Culture and understanding of the uniqueness of the subjects of learning. The relationship between the processes of learning and human development in a cultural-historical perspective. The meaning of meaningful learning experiences in infants and children: between psychomotor and language aspects. Imagination and fantasies, the false dichotomy of caring-educating and the concept of fields of experience. Inclusion Processes in Early Childhood Education: challenges and perspectives. The experience of the Early Education Program. In this discipline, the presence of contents related to Neuroscience is observed, such as: the study of psychological conceptions of childhood and child, the uniqueness of the subjects of learning, the meaning of significant learning experiences in babies and children, among others.

UFPI also brings the discipline **Language body and movement**, whose menu explores the themes: the process of human development: body, gestures and movements. The relationship between culture, body and movement. Body culture: games, dances, fights and sports. Body activities at school. This discipline deals with psychomotor aspects that are also explored in neuroscience.

And, finally, with regard to Special and Inclusive Education, UFPI brings the discipline **Fundamentals of Special Education** (60 h) and UnB brings the discipline **Inclusive Education** (60 h). The UFPI discipline has the following syllabus: Principles of special and inclusive education. Historical foundations. Legislation and general structure. The special education student. Current perspectives of care. Disability/abilities/potentialities. Socio-educational inclusion. At UnB, the syllabus of the Inclusive Education discipline has as themes: Reflection on education, school and the other with disabilities, considering the historical, socio-political and cultural scope, aiming to understand and problematize the concept of inclusive education. Legal foundation on educational policies in this context, in order to foster educational premises, programs and support systems for people with disabilities, recognized from the sphere of human rights. Characterization of different alterities and teacher training of education professionals and their role in the face of diversity and difference. Study of the interdisciplinary aspects between the fields of health and education. In these two disciplines, in a diluted way, some knowledge inherent to Neuroscience is explored when dealing with the development of neurodivergent children, seeking to bring the discussion to the fields of health and education.

5 FINAL CONSIDERATIONS

This brief analysis demonstrates that, although contemporary studies recognize the relevance of Neuroscience in the curricula of teacher training courses, there is still no discipline that effectively works with this knowledge, integrating Neuroscience with teaching and learning. In view of the gap evidenced in the curricular matrices and in the syllabus of the disciplines of the Pedagogy courses analyzed, it is necessary to include a discipline directly focused on Neuroscience.

Knowledge of Neuroscience becomes fundamental, since it enables teachers to know the functioning of the brain and its influence on the teaching and learning process. As already highlighted, by unraveling how the brain learns, neuroscience allows educators to create more effective, personalized, and inclusive pedagogical strategies. It transforms teaching practice by basing teaching on neurological functioning (attention, memory, emotion), helping to overcome learning difficulties and optimize student engagement.

Understanding brain plasticity and that the brain is moldable enables the teacher to believe in the development potential of all students, reinforcing their role as a mediator. By highlighting the role of emotions (limbic system/amygdala) in motivation and knowledge retention, the educator begins to recognize that positive emotions facilitate learning, while excessive stress blocks it. In other words, the analysis developed in this study allowed us to understand that the articulation between Neuroscience and Education promotes the improvement of teaching and learning, enabling the mediation of the teacher in these processes, in a conscious way and based on scientific evidence. In this sense, it is considered that this study will promote reflections/discussions on the role of Neuroscience in the context of teacher training courses. The results of the analysis of the documents show that Neuroscience is not included as a curricular component. However, the courses have some disciplines that have relationships, similarities or complementary contents to the knowledge worked by Neuroscience.

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SOCIAL INCLUSION IN THE SCHOOL ENVIRONMENT THROUGH FOOTBALL: A LITERATURE REVIEW

INCLUSÃO SOCIAL NO AMBIENTE ESCOLAR POR MEIO DO FUTEBOL: UMA REVISÃO BIBLIOGRÁFICA

INCLUSIÓN SOCIAL EN EL ENTORNO ESCOLAR A TRAVÉS DEL FÚTBOL: UNA REVISIÓN BIBLIOGRÁFICA



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ABSTRACT

Football is a significant means of social inclusion within the sports context, especially for young people living in peripheral areas and urban centers. Cruz (2003) This article aimed to analyze school football as a tool for social inclusion. The methodology used was a Bibliographic Review, which according to Gil (2008) is a type of research based on the analysis of already published works, mainly scientific articles and books, with the objective of identifying the most relevant works for the research, examining the positions and conclusions of other authors. It was discussed how football, as a cultural phenomenon and a sport of great popularity, can contribute to the integration of students from different backgrounds, skills, and social contexts, promoting values such as respect, cooperation, and solidarity. Also addressed are the obstacles to inclusion, such as competitive culture, gender stereotypes, and structural limitations, in addition to proposals for more inclusive pedagogical practices. It is concluded that, with proper training, infrastructure, and ethical commitment, school football can be an important tool for building a more just, democratic, and inclusive school.

Keywords: School Football. Social Inclusion. Physical Education. Pedagogical Practices. Diversity.

RESUMO

O futebol é um meio significativo de inclusão social no âmbito esportivo, especialmente para os jovens que vivem em áreas periféricas e centros urbanos. Cruz (2003) Este artigo teve como objetivo analisar o futebol escolar como ferramenta de inclusão social. A metodologia utilizada foi de Revisão Bibliográfica, que segundo Gil (2008) é um tipo de pesquisa baseada na análise de trabalhos já publicados principalmente artigos científicos e livros com o objetivo de identificar os trabalhos mais pertinentes para a pesquisa, examinando as posições e conclusões de outros autores. Discutiu-se como o futebol, enquanto fenômeno cultural e esporte de grande popularidade, pode contribuir para a integração de estudantes de diferentes origens, habilidades e contextos sociais, promovendo valores como respeito, cooperação e

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solidariedade. Também são abordados os obstáculos para a inclusão, como a cultura competitiva, estereótipos de gênero e limitações estruturais, além de propostas para práticas pedagógicas mais inclusivas. Conclui-se que, com formação adequada, infraestrutura e compromisso ético, o futebol escolar pode ser um importante instrumento para a construção de uma escola mais justa, democrática e inclusiva.

Palavras-chave: Futebol Escolar. Inclusão Social. Educação Física. Práticas Pedagógicas. Diversidade.

RESUMEN

El fútbol es un medio significativo de inclusión social en el ámbito deportivo, especialmente para jóvenes que viven en zonas periféricas y centros urbanos. Cruz (2003) Este artículo analizó el fútbol escolar como herramienta para la inclusión social. La metodología empleada fue una revisión bibliográfica, que, según Gil (2008), es un tipo de investigación basada en el análisis de trabajos ya publicados, principalmente artículos científicos y libros, con el objetivo de identificar las obras más relevantes para la investigación, examinando las posturas y conclusiones de otros autores. Se discutió cómo el fútbol, como fenómeno cultural y deporte muy popular, puede contribuir a la integración de estudiantes de diferentes orígenes, capacidades y contextos sociales, promoviendo valores como el respeto, la cooperación y la solidaridad. También se abordaron los obstáculos a la inclusión, como la cultura competitiva, los estereotipos de género y las limitaciones estructurales, además de proponer prácticas pedagógicas más inclusivas. Se concluyó que, con una formación adecuada, infraestructura y un compromiso ético, el fútbol escolar puede ser un instrumento importante para construir una escuela más justa, democrática e inclusiva.

Palabras clave: Fútbol Escolar. Inclusión Social. Educación Física. Prácticas Pedagógicas. Diversidad.

1 INTRODUCTION

Social inclusion refers to a set of measures that aim to prevent the exclusion of people from the benefits of living in society. Currently, exclusion can be caused by several factors, including: social environment, educational level, age group, disabilities, gender, religion, and racial prejudices (Amaral; Burity, 2006). Mafra (2007) suggests that social inclusion is the integral participation of the individual in various aspects of life, such as economy, culture, politics, religion and the environment, even if he or she has been previously excluded for some social reason.

Social exclusion represents a great challenge in today's societies, where there are barriers that limit the population's access to basic and mandatory rights, such as education, health, leisure and social participation. According to data from the IBGE (2023), in Brazil, on average 20% of the population is living in a situation of social vulnerability, and thus faces several difficulties, directly and negatively impacting the integral development of individuals.

Thus, it is essential to carry out public policy programs so that the promotion of social inclusion is a reality for the population, mainly due to its importance in education and sports as essential tools for changes to occur and finally social transformation (Amaral; Burity, 2006).

Soccer, and sport in general, plays a fundamental role in Brazilian culture, being considered a means of integration and health promotion. The World Health Organization (WHO, 2020) emphasizes that physical activity is essential to prevent chronic diseases, improve mental health, and strengthen social bonds. However, access to these practices is not guaranteed for everyone, and it is necessary to implement inclusive strategies that ensure the full participation of children and young people in school and community environments (Darido; Rangel, 2019).

Football is a significant means of social inclusion in the sports field, especially for young people living in peripheral areas and urban centres. Cruz (2003) states that the practice of soccer makes these young people feel valued and integrated into society, which reinforces their sense of belonging. Cavalli (2007) states in a study that the interaction of children and adolescents with sports produces significant and rewarding changes in communities lacking opportunities.

In addition to improving health and reducing stress, sport is a cultural expression and a disciplinary factor that helps in social learning, teaching how to deal with victories and defeats, to accept differences and to recognize limits and abilities (Rocha, 2004). Health and physical education professionals consider sport an effective means of promoting social inclusion, contributing to the dissemination of ethical and moral goals and values.

In Brazil, famous worldwide for soccer, this modality attracts a lot, especially among children and young people who dream of pursuing a career in the sport in search of better living conditions for themselves and their families (Rodrigues et al., 2016). According to Lima (2014), soccer has established itself as an effective tool for social protection and rescue, keeping children and adolescents away from the streets and guiding them to more positive paths.

In this scenario, the school plays a fundamental role as a space for the construction of citizenship, and it is necessary to promote pedagogical practices that combat social inequalities and value cultural diversity. Physical Education, through soccer, has the ability to significantly assist in the inclusion of students in conditions of social vulnerability, with disabilities or who face socialization difficulties (Daolio, 2002; Betti; Zuliani, 2002).

However, in order to avoid risks of exclusion, such as valuing performance rather than participation and reproducing gender stereotypes (Kunz, 1994), it is necessary that sports activities in schools be carried out with an intentional pedagogical approach. The teacher acts as a mediator of these interactions, encouraging active participation and respect for diversity.

Considering the above, this article aims to analyze school soccer as an instrument of social inclusion, highlighting its possibilities, limitations and the obstacles that educators face.

2 METHODOLOGY

This study is a Literature Review which, according to Gil (2008), is a type of research based on the analysis of already published works, mainly scientific articles and books, with the objective of identifying the most pertinent works for research, examining the positions and conclusions of other authors. The search was carried out in the SciELO, Google Scholar, LILACS, CAPES, SUCUPIRA databases using the following descriptors: "school soccer", "social inclusion", "Physical Education and inclusion", "sport and social vulnerability".

The selection criteria included:

- Articles published from 2000 to 2024;
- Texts accessible in full;
- Articles, dissertations and official documents that dealt with soccer in the school environment and its connection with social inclusion;
- Texts written in Portuguese.

Research that addressed soccer only in competitive or commercial contexts, with no direct connection to school physical education or social inclusion, was discarded.

After screening titles, abstracts and complete reading, 35 studies were found and only 17 were used for analysis and categorization of the themes, highlighting the pedagogical, social and cultural benefits of school soccer, in addition to the challenges faced in teaching practice.

3 RESULTS AND DISCUSSION

3.1 SOCCER'S PEDAGOGICAL POTENTIAL FOR SOCIAL INCLUSION

Soccer is a sport that exerts great fascination and cultural influence, especially in the Brazilian context, where it is considered a national identity element. Its presence in the school environment goes beyond the simple recreational character, configuring itself as a powerful pedagogical tool capable of promoting social inclusion and the integral development of students.

The popularity of soccer allows it to be a democratic instrument, accessible to children and young people from different socioeconomic realities, which facilitates the integration and participation of historically excluded groups. Cruz (2003) emphasizes that soccer practitioners, especially those living in peripheries or vulnerable urban areas, when encouraged, feel valued and recognized, which strengthens their sense of belonging and self-esteem.

In the pedagogical sphere, school soccer enables the learning of fundamental motor skills, such as coordination, balance and agility, contributing to the physical development of students. However, its impact transcends the bodily aspect: the rules of the game and collective dynamics promote essential social skills, such as cooperation, respect for norms, solidarity, empathy and discipline (Darido; Rangel, 2019).

In addition, soccer stimulates the development of emotional skills, by requiring students to learn to deal with success and failure, frustration and overcoming, promoting resilience and emotional regulation. These experiences are essential for the formation of critical and autonomous subjects, prepared to face social and personal challenges (Cavalli, 2007).

Another important aspect is football's ability to be adapted to different audiences and contexts. The practice can be modified to meet the specific needs of students with disabilities, ensuring the full and effective participation of these students. This methodological flexibility makes soccer an inclusive modality, which values diversity and promotes equity (Gorgatti; Costa, 2013).

Soccer, therefore, is not just a physical activity, but a pedagogical space rich in possibilities for the promotion of social inclusion, cultural integration and the construction of democratic values. When conducted with pedagogical intentionality and social sensitivity, it

becomes a transformative instrument, capable of contributing to the formation of a fairer, more welcoming school committed to the integral development of all students.

Soccer, due to its universal popularity and practical simplicity, is a sport that naturally attracts the attention of students, especially in contexts marked by social vulnerability. Its insertion in the school curriculum goes far beyond the practice of physical activity: it becomes a space for social, cultural and affective learning.

Through soccer, it is possible to promote socialization among students of different backgrounds and abilities, providing an environment in which diversity is experienced and valued.

According to Darido and Rangel (2005), when well conducted, soccer stimulates fundamental values such as cooperation, mutual respect, solidarity and autonomy, promoting the construction of social bonds and the strengthening of the sense of belonging. This is especially relevant for students in vulnerable situations, who often face processes of exclusion in their communities and at school.

Soccer contributes to the integral development of students by integrating physical aspects — such as motor coordination, endurance and agility — with emotional and social development. The experience of the rules of the game, the need to act in a team and the management of emotions in the face of success and failure are powerful pedagogical elements for the formation of character and citizenship (Cavalli, 2007).

In addition, the modality stands out for its accessibility. Unlike sports that require expensive equipment or complex infrastructure, soccer can be played in varied spaces and with simple materials, which makes it a democratic tool for inclusion. This characteristic enhances its social function, especially in public schools and poor communities, where resources are limited.

Another aspect that reinforces the importance of school soccer is its cultural dimension. As a social phenomenon, soccer carries symbols, stories, and identities that are important to the social group. Daolio (2002) emphasizes that soccer should be understood as a cultural manifestation that directly influences the formation of the subjects, being a privileged channel for dialogue between the school and the sociocultural reality of the students.

In this way, school soccer not only promotes physical activity, but works as a space for social inclusion, learning and appreciation of cultural diversity, contributing to the construction of a more democratic and plural school.

3.2 CHALLENGES AND LIMITATIONS IN THE PRACTICE OF INCLUSIVE SCHOOL SOCCER

Although school soccer has recognized pedagogical and social potential for inclusion, its practical implementation faces several challenges that can compromise the effectiveness of this instrument. One of the main obstacles is related to the traditionally competitive and exclusionary sports culture, which values victory and technical performance to the detriment of the participation and inclusion of all students.

This competitive paradigm, still very present in schools, can lead to the exclusion of students with lower motor skills, who feel unmotivated or even rejected during activities. The preference for more skilled students ends up reinforcing inequalities, hindering the construction of an inclusive and welcoming environment (Kunz, 1994).

In addition, gender stereotypes are persistent barriers in the practice of school soccer. The association of soccer with the male universe makes it difficult for girls to engage, who often face resistance or prejudice to participate in classes. This scenario reinforces gender inequalities and limits the scope of social inclusion in the school environment (Santos; Barbosa, 2022).

Another significant challenge lies in teacher training. Many Physical Education educators do not have specific preparation to deal with the diversity of needs and abilities present in classes, especially in relation to the inclusion of students with disabilities or developmental disorders. The absence of adequate training makes it difficult to adapt practices and create strategies that guarantee access and full participation of all students (Almeida; Rocha, 2023).

Insufficient infrastructure and a lack of adapted material resources are other limiting factors. Many public schools face difficulties in offering adequate spaces, accessible equipment and pedagogical materials that enable the implementation of inclusive and diversified activities (Lima, 2014).

In addition to structural issues, there is also the risk of reproducing, within the school environment, the inequalities and prejudices present in society, such as racial discrimination, social exclusion and economic marginalization. Without a critical and intentional action by the teacher, sports practices can inadvertently strengthen these inequalities, becoming a space of exclusion instead of inclusion (Lima, 2014).

Therefore, overcoming these challenges requires a multifaceted approach, which involves continuing education for teachers, investment in infrastructure and resources, review of pedagogical practices, and the development of a school culture that values diversity, participation, and solidarity.

Despite the clear benefits of school soccer, there are numerous challenges for its practice to be effective as a genuine instrument of social inclusion. The first of these is the traditionally competitive culture that permeates the sport, where technical performance is often valued to the detriment of participation and inclusion (Kunz, 1994). This logic can lead to the exclusion of students with less ability, low motor coordination, or who simply do not adapt to the competitive profile, creating climates of segregation within classes.

Another crucial challenge refers to the gender stereotypes present in school sports practices. Football is still perceived by many as a male sport, which limits girls' participation and engagement. This perception reinforces gender inequalities and makes it difficult to build an inclusive and egalitarian environment (Santos; Barbosa, 2022).

In addition, teacher training represents a significant obstacle. Many educators do not receive adequate preparation to deal with the diversity of the classroom, which includes students with physical disabilities, cognitive disabilities, and multiple special educational needs. The lack of training to adapt classes and make practices accessible limits the full participation of these students, compromising the social function of sport (Almeida; Rocha, 2023).

Insufficient school infrastructure also limits the possibilities for diverse and inclusive practices. Inadequate spaces, absence of adapted materials and specific equipment make it difficult to implement methodologies that contemplate all students, especially in low-income public schools.

Another delicate point is the possible reproduction, within the school environment, of the social and cultural inequalities present in society. Without a critical and intentional action by the teacher, sports practices can reinforce prejudices, exclusions and inequalities, instead of promoting them to overcome and include them (Lima, 2014).

Therefore, for school football to fulfill its inclusive potential, it is necessary to overcome these challenges through teacher training, investment in infrastructure and a pedagogical culture based on respect for diversity and valuing everyone's participation.

3.3 THE ROLE OF THE PHYSICAL EDUCATION TEACHER IN PROMOTING INCLUSION THROUGH SCHOOL SOCCER

The Physical Education teacher plays a central role in the mediation of school sports practices, being the main agent responsible for the effectiveness of social inclusion through soccer. Its performance goes beyond the transmission of techniques and rules, encompassing the development of pedagogical, ethical and social skills that promote equitable participation and the appreciation of diversity among students (Darido; Rangel, 2019).

Teacher training is essential for them to recognize and respect individual differences, promoting adaptations in activities to contemplate students with disabilities, motor difficulties, developmental disorders or different socioeconomic realities. Almeida and Rocha (2023) highlight that preparing for inclusion requires an interdisciplinary and reflective approach, which combines theoretical, practical, and ethical knowledge.

In addition, the teacher acts as a mediator of interpersonal relationships and the emotional climate of the class, creating a welcoming environment that favors dialogue, cooperation, and mutual respect. This mediation is essential for school soccer to stop being just a competition and become a space for social and emotional learning, where all students can feel valued and motivated to participate (Cavalli, 2007).

Another important aspect is the teacher's ability to integrate soccer with pedagogical proposals that transcend physical practice, promoting critical reflection on topics such as citizenship, cultural diversity, gender equality and combating prejudice. This approach expands the impact of sport, contributing to the formation of conscious and socially engaged subjects (Santos; Barbosa, 2022).

The teacher's work also involves collaborative work with the school community, families and other education and health professionals, strengthening support networks that expand the possibilities of inclusion and development of students. Intersectoral programs, such as the School Health Program (PSE), exemplify the importance of this articulation to enhance the effects of pedagogical actions (BRASIL, 2022).

Finally, the Physical Education teacher must be an agent of social transformation, committed to the construction of an inclusive and democratic school. This implies an ethical and political commitment, which is reflected in the constant search for professional updating, pedagogical innovation, and the promotion of practices that value diversity and guarantee the right to participation of all students in school soccer.

The Physical Education teacher is the main agent responsible for the transformation of school sports practices into truly inclusive spaces. To this end, their training must go beyond the technical knowledge of sport, also covering pedagogical, social and ethical skills, which enable them to mediate differences and promote mutual respect (Almeida; Rocha, 2023).

It is the role of the educator to adapt sports activities to the individual and collective needs of students, promoting the modification of rules, the use of cooperative games and strategies that encourage the participation of all, regardless of skill level, gender, physical condition or social origin. These adaptations not only facilitate inclusion, but also value diversity as an enriching element of the educational process (Darido; Rangel, 2005).

In addition, the teacher must be an agent of change in the school, promoting awareness of social and cultural issues, combating prejudices and stereotypes, and building a welcoming and safe environment for all. The teacher's performance goes beyond the walls of the court; He is an educator committed to the integral formation of students and to the construction of a democratic and inclusive school culture.

Articulation with families and the community is also essential to expand the impact of inclusive sports practices. The involvement of the various actors contributes to strengthening the students' sense of belonging, promoting positive social values and ensuring the continuity of actions beyond the school space.

Therefore, the role of the Physical Education teacher is strategic and multifaceted, requiring continuing education, social sensitivity and the ability to innovate and adapt practices, ensuring that school soccer is an effective tool for inclusion and human development.

4 CONCLUSION

The analysis carried out in this article reinforces the importance of school soccer as a valuable tool for the promotion of social inclusion in the educational environment. By offering an accessible, culturally significant practice rich in pedagogical possibilities, soccer can be a powerful means to integrate students from different backgrounds, abilities, and socioeconomic contexts, contributing to integral and citizen education.

However, the realization of this potential requires a careful and intentional approach, which goes beyond the simple competitive and technical aspect of the sport. The challenges identified, such as the persistence of the exclusionary culture, gender stereotypes, insufficient teacher training and structural limitations, are real barriers that require joint efforts by educators, managers and public policy makers.

The role of the Physical Education teacher is central to this process, as it is up to him to mediate sports practices, adapt them to the needs of students, create welcoming environments and promote values such as respect, solidarity and cooperation. Their continued training, ethical commitment and collaborative work with the school community are fundamental to ensure that school football is, in fact, a space for inclusion and social transformation.

In addition, the articulation between school, family and community emerges as a strategic element to expand the impact of inclusive practices, strengthening social bonds and expanding opportunities for student participation and development.

Finally, this article points to the need for educational policies that encourage and support the adoption of inclusive pedagogical practices in school sports, with investments in

infrastructure, training and adequate materials. Thus, it will be possible to build a fairer, more democratic school committed to equity, in which school football effectively contributes to overcoming inequalities and promoting the well-being and quality of life of all students.

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VIOLENCE AGAINST TEACHERS IN THE SCHOOL CONTEXT: A CRITICAL ANALYSIS OF AGGRESSIONS, MORAL HARASSMENT, AND THE ABSENCE OF INSTITUTIONAL PROTECTION POLICIES

VIOLÊNCIA CONTRA PROFESSORES NO CONTEXTO ESCOLAR: UMA ANÁLISE CRÍTICA DAS AGRESSÕES, DO ASSÉDIO MORAL E DA AUSÊNCIA DE POLÍTICAS INSTITUCIONAIS DE PROTEÇÃO

VIOLENCIA CONTRA PROFESORES EN EL CONTEXTO ESCOLAR: UN ANÁLISIS CRÍTICO DE LAS AGRESIONES, EL ACOSO MORAL Y LA AUSENCIA DE POLÍTICAS INSTITUCIONALES DE PROTECCIÓN



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ABSTRACT

The contemporary Brazilian school presents a scenario marked by the increase in episodes of violence directed against teachers, involving physical aggression, verbal offenses, digital attacks, and ongoing practices of moral harassment. The choice of this topic is justified by the need to make visible a problem that compromises professionals' health, the quality of education, and the social legitimacy of the teaching profession in the country. This study analyzes the manifestations of violence against teachers in the school context, focusing on aggressions, moral harassment, and the absence of institutional protection policies. The methodology adopts a qualitative, exploratory approach, based on a bibliographic review of scientific publications, institutional reports, and technical materials published in national sources between 2022 and 2025. The results indicate a high prevalence of situations involving censorship, intimidation, and direct violence, articulated with the fragility of formal reporting channels and institutional omission regarding the issue. The conclusions recognize the urgency of structured public policies for teacher protection, linked to the valorization of the teaching profession, occupational health, and the strengthening of ties between school, family, and community.

Keywords: Violence Against Teachers. Moral Harassment. Teacher Protection. Educational Policies.

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RESUMO

A escola brasileira contemporânea apresenta cenário marcado pela ampliação dos episódios de violência dirigidos contra professores, que envolvem agressões físicas, ofensas verbais, ataques digitais e práticas continuadas de assédio moral. A escolha do tema justifica-se pela necessidade de tornar visível um problema que compromete a saúde dos profissionais, a qualidade do ensino e a legitimidade social do magistério no país. Este estudo analisa as manifestações da violência contra professores no contexto escolar, com foco nas agressões, no assédio moral e na ausência de políticas institucionais de proteção. A metodologia adota abordagem qualitativa, de natureza exploratória, com base em pesquisa bibliográfica em produções científicas, relatórios institucionais e materiais técnicos publicados em fontes nacionais entre 2022 e 2025. Os resultados apontam alta prevalência de situações de censura, intimidação e violência direta, articuladas à fragilidade dos canais formais de denúncia e à omissão institucional sobre o tema. As conclusões reconhecem a urgência de políticas públicas estruturadas de proteção docente, articuladas à valorização do magistério, à saúde ocupacional e ao fortalecimento dos vínculos entre escola, família e comunidade.

Palavras-chave: Violência Contra Professores. Assédio Moral. Proteção Docente. Políticas Educacionais.

RESUMEN

La escuela brasileña contemporánea presenta un escenario marcado por el aumento de los episodios de violencia dirigidos contra los profesores, que incluyen agresiones físicas, ofensas verbales, ataques digitales y prácticas continuadas de acoso moral. La elección del tema se justifica por la necesidad de visibilizar un problema que compromete la salud de los profesionales, la calidad de la enseñanza y la legitimidad social del magisterio en el país. Este estudio analiza las manifestaciones de la violencia contra los profesores en el contexto escolar, con énfasis en las agresiones, el acoso moral y la ausencia de políticas institucionales de protección. La metodología adopta un enfoque cualitativo, de carácter exploratorio, basado en una revisión bibliográfica de producciones científicas, informes institucionales y materiales técnicos publicados en fuentes nacionales entre 2022 y 2025. Los resultados señalan una alta prevalencia de situaciones de censura, intimidación y violencia directa, articuladas con la fragilidad de los canales formales de denuncia y la omisión institucional frente al tema. Las conclusiones reconocen la urgencia de políticas públicas estructuradas de protección docente, articuladas con la valorización del magisterio, la salud ocupacional y el fortalecimiento de los vínculos entre escuela, familia y comunidad.

Palabras clave: Violencia contra Profesores. Acoso Moral. Protección Docente. Políticas Educativas.

1 INTRODUCTION

Violence against teachers is a phenomenon of increasing proportions in the daily life of Brazilian schools, manifesting itself in physical aggression, verbal offenses, threats, digital persecution and continued practices of moral harassment. The educational environment, historically recognized as a space for citizenship formation and symbolic mediation, has been crossed by episodes that compromise the integrity of professionals and the quality of the education offered. The discussion on the theme demands systematic attention, since it involves institutional, political, social and cultural dimensions that overlap in the contemporary school routine.

The intensity of the problem gains worrying contours when confronted with recent data on teacher health. According to Arrais et al. (2025, p. 14), "violence against teachers in Brazilian basic education has acquired an epidemic character, articulating daily aggressions, digital attacks, and institutional silencing". The formulation reveals a structural dimension of the phenomenon, which goes beyond isolated episodes and requires an integrated analysis of the conditions that sustain the reproduction of violence in the contemporary Brazilian school space.

The specialized literature has recorded the cumulative effects of aggression on the physical and psychological integrity of professionals. Assis et al. (2023, p. 27) argue that "the impacts of violence at school produce deep marks on teachers, with repercussions on mental health and career permanence". The finding broadens the scope of the debate by recognizing that the problem not only compromises the immediate daily life of educational institutions, but also projects medium and long-term effects on the sustainability of teaching as a socially recognized profession.

The omission of institutional protection policies is a structural aggravation of the problem faced by Brazilian teachers. Formal reporting channels do not exist in a significant part of the education networks, and the existing ones have operational limitations that discourage the recording of episodes. According to CNTE-CUT (2025, p. 6), "violence against teachers constitutes a silent epidemic that threatens public education and requires an articulated response from the government, schools and society". The formulation recognizes the urgency of coordinated responses among multiple institutional actors.

The scenario described is articulated with broader cultural transformations, which include ideological polarization, the diffusion of discourses disqualifying the teaching profession and the expansion of the use of social networks as a space for individualized attacks. Teachers who address topics considered sensitive become frequent targets of digital harassment campaigns, with direct effects on the pedagogical freedom and emotional health of professionals. The

intersection between face-to-face violence and virtual violence requires an integrated analytical approach, capable of capturing the complexity of contemporary manifestations of the phenomenon.

The research problem that guides this study is formulated as follows: how do aggressions against teachers, moral harassment practices and the absence of institutional protection policies configure the contemporary scenario of violence in the Brazilian school context? The question articulates three interdependent axes that produce cumulative effects on basic education professionals and on the quality of teaching, providing an analytical framework for the discussion proposed in the subsequent sections of this article.

The relevance of the study lies in the confluence between growing data on teacher violence, theoretical gaps on institutional responses to the phenomenon and practical demands from educational managers for structured guidance. The research seeks to contribute to the densification of the academic debate by gathering scattered evidence in recent sources, offering subsidies to public policy makers, school managers, education researchers, representative unions and civil society organizations interested in building safer and more protective school environments.

The general objective is to critically analyze the manifestations of violence against teachers in the Brazilian school context, focusing on aggression, moral harassment and the absence of institutional protection policies. The specific objectives include: characterizing the main forms of violence directed against teachers in the recent literature; to identify the effects of aggression and moral harassment on the health and professional permanence of teachers; describe the weaknesses of institutional responses to the problem; to point out guidelines that can guide public policies for teacher protection in public and private education networks.

The work is organized into five main sections, namely, this introduction, which presents the theme, the problem, the justification and the objectives; the theoretical framework, which brings together conceptual foundations on school violence, moral harassment and teacher protection; the methodology, which describes the qualitative approach of a bibliographic nature adopted; the results and the discussion, which articulate findings from the literature with the formulated objectives; and the final considerations, which summarize the contributions of the study and indicate directions for further research in the contemporary Brazilian educational field.

2 THEORETICAL FRAMEWORK

Understanding violence against teachers in the school context requires an approximation with a broad theoretical field, which encompasses violence as a social phenomenon, the

specificities of the educational environment, the manifestations of moral harassment in labor relations and institutional responses to episodes of aggression. Recent literature recognizes that the theme mobilizes multiple analytical layers, articulating sociological, legal, psychological, and pedagogical perspectives around an object whose complexity challenges reductionist approaches or monocausal explanations.

School violence is a broad conceptual category, which encompasses physical, symbolic, verbal and digital manifestations that occur in or near educational institutions. The specialized literature distinguishes between violence practiced among students, violence practiced by students against teachers and institutional violence reproduced by the school structures themselves. Each of these modalities has its own logics of production and reproduction, requiring specific approaches. The recognition of this plurality is a starting point for a qualified analysis of the phenomenon in its contemporary complexity.

Violence directed against teachers deserves autonomous analytical treatment within the field of studies on school violence. Lima (2023, p. 9) states that "teachers face situations of aggressiveness from students on a daily basis that compromise the pedagogical exercise and the emotional health of professionals". The formulation points to a practical dimension that is often underestimated in broader analyses on the subject, which privilege peer violence or institutional violence without recognizing the specificity of the attacks directed at the professionals responsible for mediating daily educational processes.

The category of moral harassment offers a relevant analytical framework to examine part of the manifestations of violence against teachers. The concept describes repeated and abusive conducts that humiliate, harass, or isolate the professional, compromising their dignity and psychic integrity. In the school environment, moral harassment can come from managers, colleagues, students or families, configuring a complex web of silent aggressions that are reproduced for long periods without institutional recognition. The literature records that the diffuse nature of moral harassment makes it difficult to identify it and the consequent activation of protection mechanisms

The perspective of institutional silencing deepens the understanding of the conditions that sustain the reproduction of violence against teachers. The National Observatory of Violence Against Educators (2024a, p. 5) records that "ninety percent of educators report having experienced situations of censorship or harassment in their recent professional careers." The magnitude of the data exposes the structural dimension of the phenomenon, sustained by organizational cultures that discourage complaints, by the fragility of formal protection channels and by the cultural devaluation of teaching as a professional category.

The analysis of contemporary manifestations of the phenomenon requires approximation with the digital dimension of aggressions. The National Observatory of Violence Against Educators (2024b, p. 11) argues that "the new forms of censorship and harassment of educators in Brazil articulate face-to-face and virtual dimensions, with coordinated campaigns on social networks that expand the reach of offenses." The finding repositions the debate by recognizing that the internet works as an expanded space for the production and dissemination of attacks against teachers, with effects on professional reputation and mental health.

The category of adverse childhood experiences contributes to the interpretative analysis of episodes of violence committed by students against teachers. Children and adolescents exposed to family and community contexts crossed by violence tend to reproduce, in the school environment, interactive patterns marked by aggressiveness. This recognition does not exempt the perpetrators from the conducts, but situates the problem in a broader horizon, which articulates socioeconomic conditions, family dynamics and institutional responses. The integration of these dimensions offers a robust interpretative framework for the design of educational policies sensitive to the complexity of the phenomenon.

The literature on teachers' occupational health is directly linked to the debate on school violence. Lima (2023, p. 14) adds that "the daily challenges faced by teachers in the face of violence generate continuous wear and tear and impact their permanence in teaching". The formulation reinforces the perception that the effects of aggression go beyond specific episodes and produce cumulative consequences on the professional trajectory of teachers, with impacts on absenteeism, sick leave, and dropout rates in Brazilian education networks.

The critical perspective adds a sociological dimension to the debate by recognizing that violence against teachers is linked to broader cultural transformations. The erosion of pedagogical authority, ideological polarization, the diffusion of discourses disqualifying teaching and the expansion of the use of social networks reconfigure the symbolic conditions in which contemporary teaching is exercised. The National Observatory of Violence Against Educators (2024a, p. 9) reinforces that "ideological censorship is linked to professional harassment and produces a hostile environment for pedagogical exercise in public and private schools". The formulation broadens the analytical scope by recognizing that violence against teachers is part of broader disputes about the meaning of education and the social role of the school in contemporary Brazilian society.

The discussion on teacher protection is linked to the field of human rights, by recognizing that education professionals are a category that deserves specific protection in the face of occupational risks associated with the exercise of their function. International conventions and

national guidelines recognize the dignity of teaching work and the obligation of States to ensure adequate conditions for professional practice. The distance between these regulations and the reality of Brazilian schools is a practical challenge for managers and formulators of educational policies committed to the effective transformation of the conditions of teaching work in the coming decades.

The theoretical synthesis undertaken in this section shows convergence among authors regarding the multifactorial character of violence against teachers, which articulates broad social conditions, contemporary cultural dynamics, institutional weaknesses and inadequate responses of school structures. The conceptual bases gathered support the analysis undertaken in the following sections of this article, while providing criteria for critical evaluation of ongoing educational policies and for the formulation of proposals that address the structural causes of the problem. The recognition of this complexity is a starting point for a qualified discussion on the possible ways to transform the Brazilian school reality in terms of the protection of professionals.

3 METHODOLOGY

The present research is characterized as qualitative, an option justified by the interpretative nature of the object investigated, which involves phenomena that are difficult to measure directly statistically, such as moral harassment, manifestations of symbolic violence and institutional responses to episodes of aggression directed against teachers. The qualitative approach allows for an analytical deepening in documentary sources, with logical rigor in the construction of inferences and attention to the contextual nuances of the problem.

As for its nature, it is classified as basic research, aimed at expanding theoretical knowledge about violence against teachers in the Brazilian school context, without immediate application to a specific institutional context. In relation to the objectives, it is configured as exploratory research, a modality appropriate to themes that require an initial systematized approach, mapping of related concepts and identification of gaps for further studies. The option for this design responds to the complexity of the object investigated.

The technical procedure adopted consists of bibliographic research, with survey, critical reading and synthesis of scientific productions, institutional reports and technical materials published in national journals, academic repositories and specialized databases. Rodrigues (2023) recognizes that the partnership between school and family depends on qualified channels of interlocution, a contribution that guided the construction of the analytical categories

mobilized in this study, particularly regarding institutional responses to the episodes of violence recorded.

The study population consists of the set of academic and technical productions available on violence against teachers, teacher moral harassment, and protection policies, published in Portuguese between 2022 and 2025. The sample, selected by intentional criteria, brings together thirteen sources considered relevant for their thematic topicality, adherence to the research framework and conceptual consistency, including scientific journals, specialized books, institutional reports and technical articles on the problem investigated.

The inclusion criteria included adherence to the central theme, recent time frame, availability of full access to the text and clarity in the methodological formulation of the sources. Materials without identification of authorship, duplicate publications and merely opinionated texts were excluded. The precise definition of the criteria ensures transparency in the selection process and replicability of the analytical pathway, as recommended by the methodological literature specialized in documentary research applied to the human sciences.

The data collection techniques involved searching academic databases, prior reading of abstracts, filing of the selected sources and thematic organization of the contents into analytical categories. Seffner, Klein, and Vargas (2024) record that tensions between schools, families, and religious institutions reveal fragility in institutional communication channels, a perspective that guided the definition of the analytical axes related to schools' responses to episodes of violence involving the community outside the institutions.

The research instruments used included standardized reading sheets, containing identification of the source, conceptual synthesis, relevant citations, analytical observations, and correlations with other materials. The cards worked as a cognitive organization device, allowing information to be retrieved with agility during the writing of the analytical sections and ensuring traceability of the ideas mobilized throughout the argumentative process. Standardization contributed to reducing biases in the systematization of the findings consulted.

The data analysis procedures adopted the thematic content analysis technique, with the identification of recurrent categories in the sources consulted. The established categories include manifestations of violence against teachers, dynamics of moral harassment, weaknesses in institutional responses and implications for teacher health. The thematic analysis allowed us to recognize convergences and divergences between authors, sustaining the critical discussion undertaken in the subsequent sections of this scientific article.

Silva (2024) argues that the mental health of teachers is a central dimension to understand the cumulative effects of adverse teaching conditions, an approach that inspired the

integrated treatment of the sources selected in the present study. The comparative reading of the productions allowed us to identify permanences and transformations in the conceptions on the subject throughout the time frame, strengthening the interpretative consistency of the analysis undertaken in the following sections of this academic work.

Ethical aspects received attention even in bibliographic research, with rigorous respect for copyright, correct identification of sources, fidelity in citations and absence of adulteration of original ideas. Ethical care extended to the treatment of the sensitive issues addressed, particularly those related to violence and teacher illness, with responsible language and the absence of reductionism that could stigmatize Brazilian professionals, students, families or school institutions.

Table 1

Academic References and Their Contributions to Research

Author	Title	Year	Contributions
VIOLENCE against public school teachers and professional burnout	Violence against public school teachers and professional burnout	2022	It analyzes the effects of violence in the public school system on the professional exhaustion of teachers.
ASSIS, Simone Gonçalves de; CONSTANTINO, Patricia; AVANCI, Joviana Quintes; NJAINE, Kathie	Impacts of violence at school: a dialogue with teachers	2023	It explores the impacts of school violence through dialogues with teachers.
LIMA, Ednelza Marreiros de	The challenges faced by teachers in the face of the daily violence and aggressiveness of students	2023	It discusses teachers' daily challenges in the face of student violence and aggressiveness.
RODRIGUES, Welita Alves Araújo	School and family: a necessary partnership for the school success of every child	2023	It emphasizes the school-family partnership as essential for school success.
TAVARES, et al.	Mental health, illness and teaching work	2023	It addresses mental health and illness in the context of teaching work.
TEDE PUCRS	Communication between the school and the family: a critical analysis	2023	It performs a critical analysis of the communication between school and family.
Teacher illness and the impacts on the quality of teaching: a look	Teacher illness and the impacts on the quality of teaching: a look	2023	It examines the impacts of teacher illness on the quality of teaching.
NATIONAL OBSERVATORY OF VIOLENCE AGAINST EDUCATORS	New data on censorship and harassment of educators in Brazil	2024	It presents new data on censorship and harassment against Brazilian educators.
NATIONAL OBSERVATORY OF VIOLENCE AGAINST EDUCATORS	2024 Report: 90% of educators report censorship or harassment	2024	It reports that 90% of educators face censorship or harassment in 2024.
SEFFNER, Fernando; KLEIN, Carin; VARGAS, Juliana Ribeiro de	Schools, families and religious institutions: tensions and resistance	2024	It analyzes tensions between schools, families and religious institutions.
SILVA, from Fares	Teachers' education and mental health: a systematic review of the literature	2024	It conducts a systematic review on teacher education and mental health.

"EPIDEMIC" of violence in Brazilian schools and the effects on the health of survivors	"Epidemic" of violence in Brazilian schools and the effects on the health of survivors: a perspective based on adverse childhood experiences	2024	It discusses the "epidemic" of school violence and its effects on the health of survivors.
ARRAIS, Tadeu Alencar; et al.	Reasons for the epidemic of violence against teachers in Brazilian basic education	2025	It investigates the reasons for the epidemic of violence against elementary school teachers.
CNTE-CUT	Violence against teachers: the silent epidemic that threatens public education	2025	It denounces violence against teachers as a threat to public education.

Source: Author's own elaboration (2026)

The chart chronologically organizes references on school violence, teacher mental health, and school-family relations since 2022, revealing a growing attention to these critical issues in Brazilian education, with contributions that map impacts, challenges, and tensions, subsidizing integrated analyses for public policies and future research in pedagogy and educational management.

4 RESULTS AND DISCUSSION

The analysis of the selected sources showed significant convergence regarding the expansion of manifestations of violence against teachers and the fragility of institutional responses to the problem. The findings were organized into four analytical axes, described below.

4.1 PREVALENCE AND FORMS OF VIOLENCE AGAINST TEACHERS

The materials analyzed recorded a significant increase in episodes of violence directed against teachers in Brazilian schools in recent years. The study published in *Ciência & Saúde Coletiva* (2022) identified that violence against public school teachers was directly correlated with professional burnout, generating absenteeism, sick leave, and abandonment of the teaching career. The interpretation of these findings indicates that the problem is a structural phenomenon, with cumulative effects on the permanence of professionals in contemporary Brazilian public teaching.

The analysis of the contemporary manifestations of the phenomenon revealed an expansion of the forms of aggression. The article published in *Ciência & Saúde Coletiva* (2024) described the epidemic character of violence in Brazilian schools and the effects on the health of survivors, linking adverse childhood experiences to the reproduction of patterns of aggressiveness in the school environment. The comparative reading of these findings supports a convergent interpretation with the theoretical framework by recognizing the multifactorial

complexity of the problem, which articulates individual, family, community and institutional dimensions.

4.2 EFFECTS ON MENTAL HEALTH AND PROFESSIONAL RETENTION

The second axis gathered evidence on the effects of aggression on the mental health of teachers. Tavares et al. (2023) recorded that teaching work devoid of institutional protection generates continuous suffering, affecting psychic well-being and the ability to sustain pedagogical practice over prolonged horizons. The interpretation of these findings is close to the theoretical framework by recognizing that violence functions as a structuring element of occupational illness in the contemporary Brazilian teaching category.

The study published by the Newscience Publ Magazine (2023-2024) identified that teacher illness produced direct impacts on the quality of teaching, with increased absenteeism rates and reduced capacity for consistent pedagogical planning. A critical reading of these data reveals that the problem is not restricted to the individual sphere of the affected professionals, but has consequences for the functioning of educational institutions and for the learning of Brazilian students enrolled in the country's public and private networks.

The articulated interpretation of the sources revealed that the effects of the aggressions transcend the moment of the episodes and are prolonged through persistent clinical conditions. The literature analyzed pointed to a high prevalence of disorders such as depression, anxiety, and burnout syndrome among teachers exposed to repeated situations of violence. A comparative reading of these findings supports the thesis that teacher protection is an urgent public health agenda, with implications for education systems and the collective health of the school population.

4.3 FRAGILITY OF INSTITUTIONAL RESPONSES

The third axis focused on the weaknesses of institutional responses to episodes of violence. The study conducted by Tede PUCRS (2023) recorded that communication between school and family has structural gaps that make it difficult to properly deal with situations of tension and conflict. The interpretation of these findings is close to the theoretical framework by confirming that communicational weaknesses reduce the institutional capacity to prevent and respond to episodes of aggression involving students, teachers and families.

The analysis compared with the previous literature indicated consistency between the findings regarding institutional omission. The sources converged on the finding that a considerable portion of Brazilian schools deal with episodes of violence through informal

strategies, without systematic registration and without activating formal reporting channels. The articulated interpretation of these materials supports the hypothesis that the institutional invisibility of the problem is a structuring factor in the reproduction of the phenomenon in public and private schools in the national territory.

The perspective of future policies reinforces the need for formal protocols for preventing, recording and confronting violence against teachers. The literature analyzed suggested that isolated initiatives produced modest results, while structured strategies, articulated between education networks, unions, guardianship councils and bodies of the justice system, presented more consistent effects on the reduction of episodes and on the recovery of affected professionals. The outlook indicates a promising direction for educational managers committed to teacher protection.

4.4 ARTICULATION BETWEEN VIOLENCE, MORAL HARASSMENT AND IDEOLOGICAL CENSORSHIP

The fourth axis articulated the previous findings around the interfaces between physical violence, moral harassment and ideological censorship. Silva (2024), in a systematic review conducted by the PRISMA method, identified that the weakening of institutional ties and cumulative overload function as the main vectors of teacher illness. A comparative reading of these findings reinforces the perception that moral harassment is part of a broad repertoire of practices that compromise the professional integrity of contemporary Brazilian educators.

The literature analyzed pointed to a consistent correlation between episodes of ideological censorship and situations of moral harassment in schools. Teachers who addressed topics considered sensitive faced professional disqualification campaigns, attacks on social networks, and institutional pressures aimed at silencing their pedagogical practices. The interpretation of these data supports the thesis that violence against teachers is linked to broader cultural and political disputes about the meaning of education in contemporary Brazilian society.

4.5 LIMITATIONS AND IMPLICATIONS OF THE FINDINGS

The findings presented limitations related to the bibliographic nature of the study, which did not allow direct measurement of variables in the field. The comparative reading of the sources offered a robust argumentative basis to support interpretations on the subject. The practical implications of the results are aimed at three main audiences. For school managers, the literature analyzed pointed to the need for formal protocols for teacher protection. For

educational policy makers, he indicated the relevance of normative frameworks that recognize violence against teachers as a public health problem. For researchers in the area, it signaled the opportunity for empirical investigations that deepen knowledge about the concrete dynamics of the phenomenon in different Brazilian institutional contexts.

The articulated discussion of the four axes confirmed the internal coherence of the findings and their adherence to the mobilized theoretical framework. The sources converged on the perception that the problem demands multidimensional responses, articulating interventions at the individual, organizational, legal and cultural levels. The synthesis of evidence strengthens the central argument of this study, according to which the protection of teachers against violence is an urgent agenda of Brazilian educational public policies, with direct implications on the quality of teaching and on the health of professionals.

The integrated reading of the results allowed us to recognize that the phenomenon of teacher violence articulates broad social conditions, specific school dynamics and persistent institutional weaknesses. The analytical perspective adopted allowed us to glimpse research paths for the empirical deepening of the theme, as will be detailed in the final section of this article.

5 FINAL CONSIDERATIONS

The present study was dedicated to critically analyzing the manifestations of violence against teachers in the Brazilian school context, focusing on aggression, moral harassment and the absence of institutional protection policies. The argumentative path articulated the contextualization of the theme, formulation of the research problem, definition of objectives, theoretical foundation, methodological description and critical analysis of the findings, configuring a trajectory that consistently answered the question initially formulated. The resumption of the problem allows us to recognize that the investigation made a systematic approximation between concepts from the recent literature and practical issues faced by teachers, managers and educational policy makers.

The general objective was met by the articulation of the evidence gathered in the selected sources, which allowed the identification of violence against teachers as a structural and multifactorial phenomenon, sustained by broad cultural conditions, persistent institutional weaknesses and inadequate responses of school structures. The integrated reading of the materials showed that physical aggressions, verbal offenses, digital attacks and continued practices of moral harassment make up a repertoire of manifestations that reinforce each other,

producing cumulative effects on the health of professionals and on the quality of education offered in contemporary Brazilian public and private networks.

Specific objectives were also contemplated throughout the argumentation. The characterization of the main forms of violence directed against teachers revealed a wide range of manifestations, which encompasses physical, verbal, symbolic and digital dimensions articulated in contemporary school daily life. The identification of the effects of aggression and moral harassment on the health and professional permanence of teachers showed a high prevalence of mental illness, with repercussions on absenteeism, sick leave and abandonment rates in the Brazilian education networks. The description of the weaknesses of institutional responses pointed to a set of practical and symbolic barriers that hinder the structuring of formal protection policies. The indication of guidelines for public policies brought together consistent suggestions aimed at the articulation between education networks, unions, guardianship councils and bodies of the Brazilian justice system.

The synthesis of the main results points out that violence against Brazilian teachers is a phenomenon of amplified proportions, with roots in contemporary cultural transformations and structural weaknesses of educational institutions. The materials analyzed converged on the finding that the problem produces cumulative effects on the health of professionals and on the quality of teaching. The institutional omission amplifies this scenario by leaving teachers exposed without adequate protection, compromising the sustainability of teaching as a socially recognized profession and reducing the attractiveness of the teaching career for the new generations of Brazilian educators.

The interpretation of the findings allows us to recognize that coping with violence against teachers requires multidimensional responses. Initiatives aimed exclusively at the individual level, such as isolated psychological care programs, produce limited effects when disconnected from transformations in the structural conditions of school work. The literature analyzed suggests that effective responses articulate individual, organizational, legal and cultural dimensions, with systematic investment in protection protocols, occupational health, continuing education of managers and strategies to strengthen the bonds between school, family and community.

The relationship between the results and the initial propositions of the study reveals robust argumentative coherence. The guiding question found a consistent answer in the evidence gathered, which confirmed the articulation between physical aggression, moral harassment and the absence of institutional policies as structuring factors in the contemporary scenario of violence against teachers. The articulation between the three axes supports a

theoretical proposition relevant to the educational field, which recognizes the complexity of the phenomenon and the need for equally complex responses to the challenges identified throughout the research carried out in this academic investigation.

The contributions of the study to the area of education are situated on different levels. On the theoretical level, the research offers an articulated synthesis of recent productions, contributing to the intensification of the debate on teacher violence, moral harassment and protection policies. On the practical level, it provides subsidies for school managers who seek to structure formal protocols for prevention, registration and coping with episodes of aggression. At the level of public policies, it signals paths for formulators interested in ensuring consistent normative frameworks for the protection of professionals in contemporary Brazilian basic education.

The research also contributes to the debate on the social recognition of teaching. The evidence gathered demonstrates that violence against teachers is linked to the cultural devaluation of the profession, with effects on the attractiveness of the career and on the permanence of professionals in practice. The critical reading of this dynamic supports the defense of broad policies of teacher appreciation, which consider salary dimensions, working conditions, protection against aggression and symbolic recognition of the profession as a fundamental activity for the functioning of contemporary societies and for the formation of future generations.

The research offers subsidies for the debate on the relationship between school, family and community. The evidence gathered shows that part of the tensions observed in the school routine stems from weaknesses in the institutional communication channels, with effects on the ability of schools to prevent and respond to episodes of aggression. The critical reading of this dynamic supports the defense of structured strategies to strengthen community bonds, which recognize education as a shared responsibility among multiple social actors and which promote qualified dialogue between educational institutions and those responsible for Brazilian students.

Other promising directions involve examining the impact of digital technologies on the reproduction of violence against teachers. The intensification of the use of social networks has reconfigured the relationships between education professionals, students, families and society, creating new modalities of virtual attack and expanding the reach of offenses directed at teachers. Specific investigations on this topic would have practical relevance for managers who face daily dilemmas about how to protect professionals exposed to digital harassment campaigns. Research on training strategies aimed at preventing school violence, on conflict

mediation models and on mental health programs for educators is also among the future agendas pertinent to the field.

Research focused on the analysis of Brazilian educational policies from the perspective of teacher protection can offer relevant contributions to the debate. The investigation on the effectiveness of existing institutional protocols, on the costs of institutional omission and on the alternatives to articulate internal instances of schools with organs of the justice system is a promising agenda for the field of educational policy and management. Studies on international experiences of protection of education professionals, adapted to Brazilian conditions, can also provide subsidies for the design of more consistent public policies in the medium term.

The final reflection on the impact of this work recognizes that the theme of violence against teachers transcends the strict limits of education and dialogues with broader questions about the meaning of work, about mental health in the care professions and about the social recognition of activities that are fundamental for the cohesion of contemporary societies. The reduction of teacher aggression implies a review of cultural paradigms about the profession, making room for healthier, safer and more sustainable institutional arrangements. The strengthening of teacher protection, in turn, expresses the recognition that education is a shared responsibility between school institutions, families, public authorities and organized civil society.

The survey reinforces the perception that the protection of teaching is a long-term strategic investment, with measurable returns in educational quality, reduction of absenteeism, retention of qualified professionals and consolidation of mature school cultures. The articulation between formal protocols, consistent normative frameworks, and strategies to strengthen institutional ties configures a conceptual triad capable of guiding practical initiatives in different contexts. The relevance of this articulation is amplified in the face of contemporary transformations, marked by cultural polarization, the acceleration of digital interactions, and the emergence of new modalities of attack directed at Brazilian basic education professionals.

The intellectual trajectory covered in this study confirms that the confrontation of violence against teachers is not reduced to punctual responses to specific episodes, but requires a structural review of the cultural, institutional and legal conditions in which teaching is exercised in the country. Teachers who work in protected environments, with formal reporting channels, institutional support and adequate social recognition, exercise the profession with superior quality, preserving physical and mental health and building sustainable trajectories. The reduction of teacher violence, in this perspective, is no longer just an operational response to specific problems and starts to represent the affirmation of humanist principles that sustain the

dignity of educational work and the right of professionals to the safe exercise of their daily activities.

The consolidation of these practices requires institutional persistence, political coherence and continuous willingness to review habits consolidated in the Brazilian education networks. Educational systems that choose this path reap benefits in pedagogical quality, organizational health, and social legitimacy. The research, by gathering and articulating evidence on this trajectory, offers a modest but consistent contribution to the academic debate and to Brazilian educational practice, hoping to stimulate new studies and initiatives that deepen knowledge on the subject and expand its impact on public policies aimed at teacher protection and the valorization of teaching as a socially recognized profession.

The proposed reflection invites researchers, managers, teachers, families and policymakers to recognize that quality education depends on objective conditions for the safe exercise of teaching. The invisibility of teacher violence represents a collective challenge, which requires a shared commitment to the protection of the professionals who sustain the functioning of Brazilian schools on a daily basis. The present investigation hopes to contribute to make visible part of this reality, providing analytical subsidies for the public debate on the possible ways of transforming education in the country and for the social recognition of the work of those who dedicate their lives to the formation of new generations in environments that deserve to be effectively protected by consistent public policies.

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USING THE CIDEPE CHART AS A TEACHING TOOL FOR LEARNING TRIGONOMETRY

UTILIZANDO O QUADRO CIDEPE COMO FERRAMENTA DIDÁTICA PARA APRENDIZAGEM DE TRIGONOMETRIA

UTILIZACIÓN DE LA TABLA CIDEPE COMO HERRAMIENTA DIDÁCTICA PARA EL APRENDIZAJE DE LA TRIGONOMETRÍA



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ABSTRACT

The research was motivated by the need to overcome traditional and fragmented teaching of trigonometry, which prioritizes algebraic and static geometric approaches, hindering students' conceptual understanding. The main objective was to promote a more dynamic and intuitive learning process by employing the CIDEPE Board as a didactic tool, combined with historical contextualization and active student participation. The methodology was based on explanatory research and action research, using quantitative and qualitative questionnaires, as well as group activities with the didactic material, which represents the trigonometric cycle with a movable diameter. The results indicated a high level of student satisfaction, particularly regarding positive self-perception of learning and the deepening of essential details, such as determining quadrants. It is concluded that the success of the proposal is due not only to the material resource but also to the historical and interactive teaching approach, corroborating previous research in the field.

Keywords: Trigonometry Teaching. Manipulable Didactic Material. CIDEPE Framework. Active Learning. Critical Mathematics Education.

RESUMO

A motivação da pesquisa reside na necessidade de superar o ensino tradicional e discretizado da trigonometria, que prioriza abordagens algébricas e geométricas estáticas, dificultando a compreensão dos conceitos. O objetivo central foi promover uma aprendizagem mais dinâmica e intuitiva, utilizando o Quadro CIDEPE como ferramenta didática, aliado à contextualização histórica e à participação ativa dos estudantes. A metodologia baseou-se na pesquisa explicativa e na pesquisa-ação, aplicando questionários quanti-qualitativos e organizando atividades em grupo com o material didático, que representa o ciclo trigonométrico com um diâmetro móvel. Os resultados indicaram elevado grau de satisfação entre os aprendizes, com

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destaque para a percepção positiva sobre a própria aprendizagem e o aprofundamento de detalhes essenciais, como a determinação de quadrantes. Conclui-se que o sucesso da proposta não se deve apenas ao recurso material, mas também à condução do processo histórico e interativo, corroborando pesquisas da área.

Palavras-chave: Ensino de Trigonometria. Material Didático Manipulável. Quadro CIDEPE. Aprendizagem Ativa. Educação Matemática Crítica.

RESUMEN

La motivación de esta investigación radica en la necesidad de superar la enseñanza tradicional y fragmentada de la trigonometría, que prioriza los enfoques algebraicos y geométricos estáticos, dificultando la comprensión de los conceptos. El objetivo central fue promover una experiencia de aprendizaje más dinámica e intuitiva, utilizando el Marco CIDEPE como herramienta didáctica, combinada con la contextualización histórica y la participación activa del alumnado. La metodología se basó en la investigación explicativa y la investigación-acción, aplicando cuestionarios cuantitativos y cualitativos y organizando actividades grupales con el material didáctico, que representa el círculo trigonométrico con diámetro móvil. Los resultados indicaron un alto grado de satisfacción entre el alumnado, destacando la percepción positiva de su propio aprendizaje y la profundización de detalles esenciales, como la determinación de los cuadrantes. Se concluye que el éxito de la propuesta se debe no solo al recurso material, sino también a la conducción del proceso histórico e interactivo, que corrobora la investigación en el área.

Palabras clave: Enseñanza de la Trigonometría. Material Didáctico Manipulable. Marco CIDEPE. Aprendizaje Activo. Educación Matemática Crítica.

1 INTRODUCTION

In order for the learning of mathematics to transcend mere technique, it is essential that the educational process facilitates the understanding of concepts in their entirety, considering their need for scientific development, their applications in everyday life and their historical role in the evolution of humanity. From the perspective of **Critical Mathematics Education (CME)**, teaching should not be neutral; it should promote autonomy and dialogue, allowing the student to understand how mathematics can format reality (SKOVSMOSE, 2001). However, trigonometry content is often developed in a discretized and static way, prioritizing purely geometric or algebraic approaches that make it difficult to perceive its dynamic nature.

In this context, Belonsi et al. (2017) proposed a paradigm shift, focusing on trigonometric concepts in a more intuitive way through didactic tools, respecting the individual learning time of each subject. In contrast to most textbooks that excessively emphasize algebraic formalism, an approach centered on **the manipulable didactic material CIDEPE** is sought here. This proposal is in line with the vision of Silva (2013), who defends teaching through practical activities, games and software, ensuring that the deepening of the content occurs in a meaningful and age-appropriate way.

The incorporation of these resources aims to transform the classroom into an **investigation scenario**, where students cease to be passive receptors to become protagonists in the construction of knowledge. For CME, this change in posture is crucial for the development of a critical citizenship (SKOVSMOSE, 2008). Thus, the use of historical context, as suggested by Ferreira, Araújo and Sakon (2016), acts as a powerful tool to humanize the discipline, facilitating the transition between the properties of the right triangle and the trigonometric cycle.

Although Mendes (1997) emphasizes that the use of history does not solve all the obstacles to learning, he recognizes its potential to minimize them, evidencing the social value of mathematics. Baroni, Teixeira and Nobre (2004) corroborate this view, stating that such a methodology meets various educational needs and strengthens the presence of mathematics in the classroom. In addition, Xavier, Tenório and Tenório (2015) highlight that methods enriched by technological resources and manipulable surpass traditional teaching, demonstrating that the effectiveness of learning should be measured by qualitative and not just quantitative criteria.

Thus, the present work is based on the motivation of learners through history and direct experimentation with the CIDEPE framework. The objective is that, by appropriating this material, students develop not only technical skills, but also the ability to critically reflect on the knowledge they are building.

2 METHODOLOGY

The methodology of this work is based on an interpretative and dialogical perspective (GIL, 2008), understanding that the teaching-learning process is a collective construction where "content-method-teaching-learning have corroborative actions" and require the active involvement of all subjects. In line with the precepts of **Critical Mathematics Education (CME)**, the research assumes the character of **Action Research**, as proposed by Thiollent (1996), aiming not only to describe reality, but to produce knowledge that promotes the transformation of educational practices and the social reality of the classroom.

To transcend the traditional model of information transmission, the approach was structured to create an **investigation scenario**. Unlike paradigm exercises (focused only on correct answers), this scenario seeks the development of reflective skills through the exploration of trigonometric concepts. The research is also classified as explanatory, as it seeks to identify the factors that arouse the interest and autonomy of learners in dealing with mathematics.

The methodological path was divided into four fundamental moments, designed to promote student protagonism:

- I. **Contextualization and Demystification:** Initially, a material was delivered that associates trigonometry with historical elements and curiosities, such as the "shadow function", seeking to humanize knowledge and demonstrate its evolution as a response to human needs.
- II. **Historical-Visual Dialogue:** Through visual resources and dialogued explanation, the genesis of trigonometry and the role of the subjects who developed it were discussed, avoiding the presentation of mathematics as a ready-made and unquestionable knowledge.
- III. **Presentation of the Research Object:** The CIDEPE trigonometric table **was introduced**, a manipulable material that represents the trigonometric cycle with a movable diameter. At this time, the material was presented not only as a calculation tool, but as a support for the investigation of metric relationships and functions.
- IV. **Collective Investigation in Groups:** The students were organized into groups to handle the CIDEPE board. This stage aimed to stimulate cooperation and dialogue between peers, allowing students to build tables of values and scatter plots autonomously.

Data collection occurred through a quantitative-qualitative questionnaire that sought to capture both the appropriation of technical concepts and the degree of satisfaction and perception of students about their own learning. According to EMC, the evaluation was not

limited to the technical accuracy, but valued critical interventions, such as the doubts that arose about the determination of quadrants in remarkable arcs, which shows an investigative posture and attentive to the essential details of knowledge.

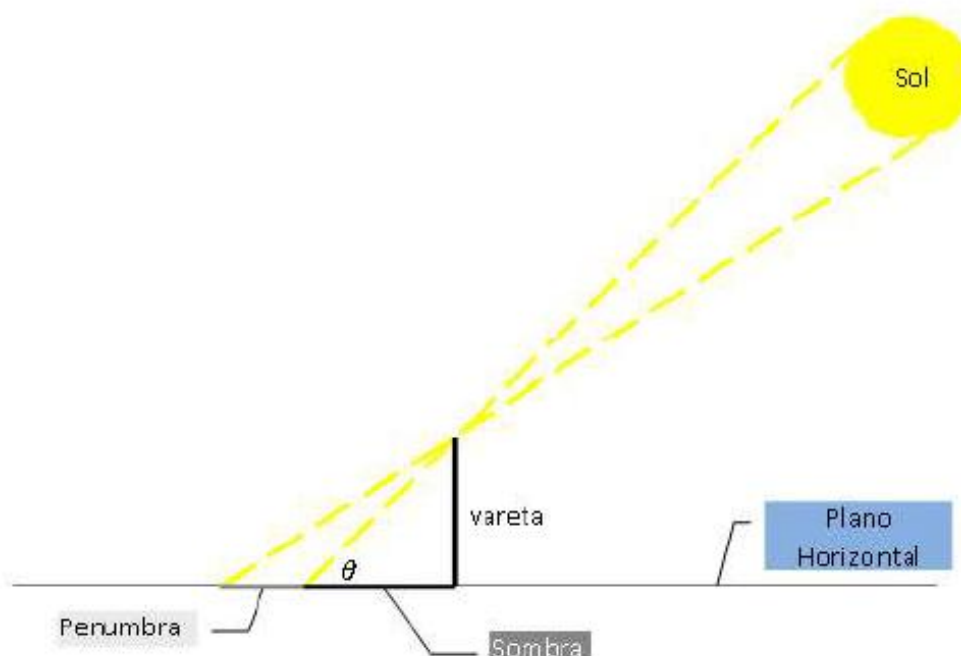
Thus, the proposed methodology sought to treat the study of trigonometric functions in such a way that the learner could be the protagonist of his process, respecting his particularities and learning times.

3 DEVELOPMENTS AND RESULTS

In addition to a historical survey presented in a dialogued way to the participants, the manipulable part of the activity was developed in four moments. The first occurred with the delivery of the material containing an introduction with history and curiosities about trigonometry, as an example: the curiosity of the tangent function or shadow function when it was associated with the shadows projected by a vertical rod, Fig. 1. and, some activities on the content to be solved at the end of the activity with the use of the CIDEPE trigonometric table. In a second moment, the history of trigonometry was exposed in more detail through an explanation using the visual resource.

Figure 1

Illustration of a shadow and penumbra formation from the sun's rays



Source: Authors.

Thus, during the explanation, a historical survey of the origins of trigonometry was

addressed, as well as the first subjects who entered the field of study and development of trigonometry.

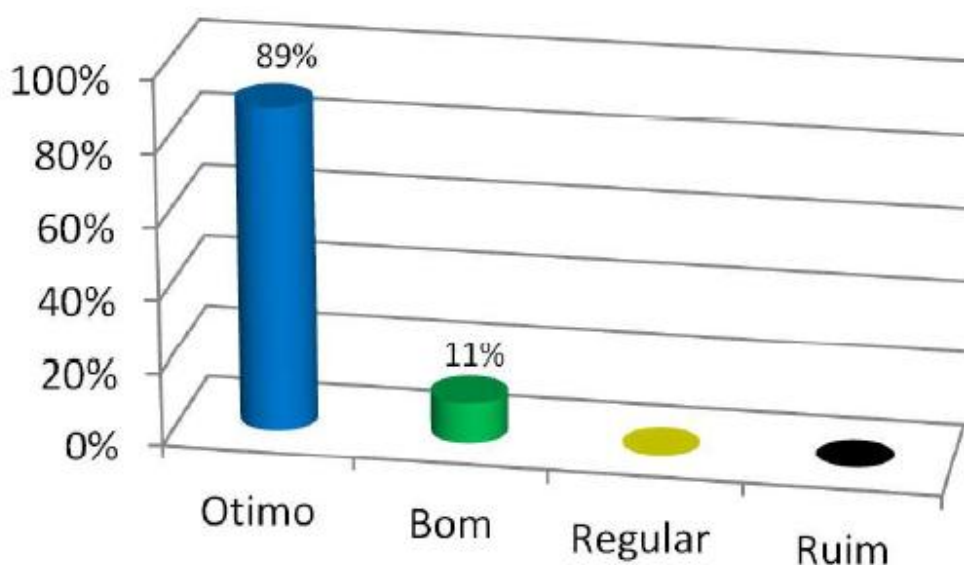
Thirdly, the CIDEPE trigonometric table was presented, as well as its use and its functional potential in the learning of trigonometry contents. Finally, in the fourth moment, the students were divided into groups, each receiving a CIDEPE board, aiming at the development of skills and competencies necessary to obtain the desired objectives.

The CIDEPE trigonometric table is a didactic material that has a representation of a trigonometric cycle to which a movable diameter is attached. More details about the material can be found on the website of the company Cidepe. (CIDEPE, 2018).

Among its functions, we can list those related to the study of measurements; metric relations in the right triangle, Pythagorean theorem, trigonometric relations in the right triangle (sine, cosine, and tangent), trigonometric relations in the circumference (sine, cosine, and tangent), etc. With the application of the proposal, it was possible to collect, from an activity questionnaire, information about the perception of the learners regarding the methodology used. Fig. 2 shows the results of perception and satisfaction on the part of the learners regarding the activity developed.

Figure 2

Results of the self-assessment regarding learning



Source: Authors.

From Fig. 2 it is possible to perceive a degree of satisfaction on the part of the learners with respect to the proposed activity, a very satisfactory degree of acceptance of the proposal is observed, considering that there was no attribution of regular or very bad answers on the part of the participants. The non-conceptualization of the activity as regular, combined with the low

percentage of good concepts, leads to the inference that such activity produced the expected qualitative objectives.

It is worth highlighting the intervention of one of the learners regarding his observation in the treatment of the study of the quadrants in the trigonometric cycle. At this moment, this subject questioned about the determination of the quadrant of the arcs of 0° , 90° , 180° , 270° , 360° , which evidences the potential of the tool to divert the subjects' attention to the details that are generally essential elements for the quality of learning, as learning presupposes the development of competencies about a certain content as a whole.

It is also worth noting that, according to the analysis of the results obtained from the evaluation questionnaire, it was possible to identify an ease of understanding regarding the identification of the shape of the graph of the sine, cosine and tangent functions, since the evaluation form contained elements to determine the values of these functions in the different angular values: 00, 300, 450, 600, 1200, 1500, 1800, 2100, 2250, 2400, 2700, 3000, 3150, 3300 and finally 3600. Enabling the construction of the table of values and, consequently, the construction of a scatter diagram, on graph paper.

At the end of this construction, the apprentices concluded, each one in their own time and, respecting their learning particularities, the form of the graphic representation of sine and cosine. Hence, it was perceived that such elements could be treated as functions, since a correspondence between two sets could be associated with them, one being the set of arcs or angles (domain) and the other the set of real numbers (counterrange), so that such association enjoyed the fundamental properties of function. Evidencing a way of treating the study of trigonometric functions that corroborate with the facilitation of learning through a manipulation material capable of inserting the learner as the protagonist of his learning.

4 FINAL CONSIDERATIONS

First, it is worth mentioning that the apprentices, during and after the work carried out, reported comments about the activity and the didactic material used. According to them, the CIDEPE trigonometric table allowed greater interactivity between the content and the students, thus making its understanding more accessible. Such was the interest in this form of approach that the existence of the painting on a smaller and lighter scale was inquired, in order to facilitate its use in an individualized way.

The analysis of the results allows us to affirm that the central objectives of this research were fully achieved, managing to overcome the traditional and static teaching of trigonometry in favor of a dynamic and intuitive learning. The transformation of the classroom into an

investigation scenario allowed students to leave the posture of passive receptors to become protagonists in the construction of knowledge, respecting their rhythms and individual particularities.

The **Action Research methodology** proved to be effective in integrating the use of the **CIDEPE trigonometric table** with historical contextualization, promoting a dialogical environment where the content was not presented as an absolute truth, but as a human construction. The high degree of satisfaction of the learners and the absence of negative evaluations corroborate that the practical and manipulable approach enhances the interest and natural assimilation of the concepts.

From EMC's point of view, it is imperative to highlight that the success of the proposal did not reside only in the material resource, but in the ability to arouse critical reflection. Evidence of this was the autonomy of the subjects when questioning essential details, such as the determination of quadrants in remarkable arcs, which demonstrates the development of competencies that go beyond mere technical execution. The transition from physical experimentation with the moving diameter to the construction of tables and scatter plots on graph paper facilitated the understanding of trigonometric functions as dynamic and real relations.

In short, this work reaffirms that the use of manipulable materials, when mediated by a historical and interactive conduction, strengthens the presence of mathematics in the classroom and meets the various educational needs. It is concluded that the methodology applied not only facilitated technical learning, but also fostered autonomy and critical citizenship, fundamental pillars for the student to understand mathematics as a tool capable of formatting and interpreting reality.

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PEDAGOGY OF OBEDIENCE: RELIGION AND WORK IN NINETEENTH-CENTURY READING BOOKS

PEDAGOGIA DA OBEDIÊNCIA: RELIGIÃO E TRABALHO NOS LIVROS DE LEITURA OITOCENTISTAS

PEDAGOGÍA DE LA OBEDIENCIA: RELIGIÓN Y TRABAJO EN LOS LIBROS DE LECTURA DEL SIGLO XIX



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Cleidiane Morais¹

ABSTRACT

This article analyzes the relationship between reading instruction, religion, and work in primary education in Ceará, Brazil, during the second half of the 19th century. Its main sources are the school textbooks used at the time, especially the reading books by Abílio Cesar Borges and the "Facílmo Method" by Emílio Achilles Monteverde. It argues that these printed materials, far from being limited to literacy, functioned as instruments for disseminating a Catholic Christian morality articulated within a project of social discipline. Through fables, short stories, maxims, and images, these books instilled values such as obedience, resignation, fear, charity, and the valorization of work, contributing to the formation of docile, economically useful individuals adjusted to the prevailing order. The study shows that reading was conceived not as an autonomous practice or one geared towards pleasure, but as a means of internalizing moral and religious norms, frequently based on a pedagogy of fear and guilt. In this context, religion and work appear as complementary pillars in the construction of an ethic aimed at maintaining social hierarchy, especially with regard to the poor, for whom primary education was intended to train a disciplined and obedient workforce. At the same time, the role of the Church and the educated elites in legitimizing this order stands out, as well as the use of school textbooks as vehicles for a civilizing project that sought to reconcile progress, faith, and social control.

Keywords: Reading Instruction. Catholic Religion. School Textbooks. Work and Social Discipline.

RESUMO

Este artigo analisa a relação entre o ensino da leitura, a religião e o trabalho na instrução primária no Ceará, na segunda metade do século XIX, tomando como principais fontes os manuais escolares utilizados à época, especialmente os livros de leitura de Abílio Cesar Borges e o *Método Facílmo* de Emílio Achilles Monteverde. Argumenta-se que tais impressos, longe de se limitarem à alfabetização, funcionaram como instrumentos de difusão de uma moral cristã católica articulada a um projeto de disciplinamento social. Por meio de fábulas, historietas, máximas e imagens, esses livros inculcavam valores como obediência, resignação, temor, caridade e valorização do trabalho, contribuindo para a formação de sujeitos dóceis,

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economicamente úteis e ajustados à ordem vigente. O estudo evidencia que a leitura era concebida não como prática autônoma ou voltada ao prazer, mas como meio de internalização de normas morais e religiosas, frequentemente baseadas em uma pedagogia do medo e da culpa. Nesse contexto, religião e trabalho aparecem como pilares complementares na construção de uma ética voltada à manutenção da hierarquia social, especialmente no que se refere às camadas pobres, para as quais a instrução primária destinava-se à formação de mão de obra disciplinada e obediente. Ao mesmo tempo, destaca-se o papel da Igreja e das elites letradas na legitimação dessa ordem, bem como o uso dos manuais escolares como veículos de um projeto civilizador que buscava conciliar progresso, fé e controle social.

Palavras-chave: Ensino da Leitura. Religião Católica. Manuais Escolares. Trabalho e Disciplinamento Social.

RESUMEN

Este artículo analiza la relación entre la enseñanza de la lectura, la religión y el trabajo en la educación primaria en Ceará, Brasil, durante la segunda mitad del siglo XIX. Sus principales fuentes son los libros de texto escolares de la época, especialmente los libros de lectura de Abílio César Borges y el "Método Facílmo" de Emílio Achilles Monteverde. Se argumenta que estos materiales impresos, lejos de limitarse a la alfabetización, funcionaban como instrumentos para difundir una moral cristiana católica articulada dentro de un proyecto de disciplina social. Mediante fábulas, cuentos, máximas e imágenes, estos libros inculcaban valores como la obediencia, la resignación, el temor, la caridad y la valoración del trabajo, contribuyendo a la formación de individuos dóciles, económicamente útiles y adaptados al orden imperante. El estudio muestra que la lectura se concebía no como una práctica autónoma ni orientada al placer, sino como un medio para interiorizar normas morales y religiosas, frecuentemente basadas en una pedagogía del miedo y la culpa. En este contexto, religión y trabajo se presentan como pilares complementarios en la construcción de una ética orientada a mantener la jerarquía social, especialmente en lo que respecta a los pobres, para quienes la educación primaria tenía como objetivo formar una fuerza laboral disciplinada y obediente. Al mismo tiempo, se destaca el papel de la Iglesia y las élites letradas en la legitimación de este orden, así como el uso de los libros de texto como vehículos de un proyecto civilizador que buscaba conciliar progreso, fe y control social.

Palabras clave: Enseñanza de la Lectura. Religión Católica. Libros de Texto. Trabajo y Disciplina Social.

1 INTRODUCTION

With the image of a child on his knees and hands folded in prayer, the first lesson of the "Second Book of Reading", entitled "Love of God", by Abílio Cesar Borges, a compendium used in primary classes in Ceará, already indicates the religious character of the printed material, in which elements of Christian doctrine and the Old and New Testaments are combined with the lessons, seeming to want to look at childhood from its earliest years of life. Presenting the values with which the "childhood of the people" would be instructed, this period of the subject's life constituted the main means by which the ideas of the Baron of Macaúbas would sound satisfactory, especially to the political elites. After all, Abílio proposed with his enterprise to present the ways in which a people would be "regenerated", which involved obedience to the constituted authorities.

If one wants to improve a people, to regenerate or perfect it, the only way to achieve this is to give the people's childhood, in little books at the level of their intellectual powers, the holy doctrines of morals and religion, of reason, virtue and order: and it is only in school that this can be done, and under the direction of teachers worthy of such a great task.²

The growth of the book trade in the second half of the nineteenth century, especially with the attempts to expand the reading and consumer public, gave rise, in an increasingly incisive way, to a school literature that proposed to continue to call religion as a way of pacifying differences, taking faith as a defining dimension of that order through sacred writing. For this, the book par excellence would no longer be the Bible, at least in its direct materiality as in the eighteenth century, nor only religious books. School textbooks, especially reading books, although they pointed out some changes, such as the insertion of a teaching that excelled in intuition as opposed to methods based on decoration, assumed an important role in the elaboration of the cult of progress allied to religion, as seen in the previous topic of this chapter.

In those days, to the book market, there was the challenge of making available to the reading public books that met the demand for the dissemination of literacy and, along with it, the values defended as patents of the civilization that the enlightened class wished to build. The collection of reading books by Abílio Cesar Borges seemed to meet such demands. In all his materiality, Abílio seemed to unite different tastes and interests. Catholic values and the methods considered more modern by the intellectual elites for the dissemination of education would dialogue "harmoniously" in order to establish the participation of such forces in the state

² BORGES, Abílio Cesar. **Second Reading Book for use by Brazilian schools**. Rio de Janeiro: Francisco Alves, New Correct Edition, Improved and Enlarged, 1869, Introduction, p. XV.

of affairs at the time, especially with regard to the necessary changes in public education that were already present in European countries and in the United States.

Literacy and civilization appeared in the knowledge to be acquired as part of the repertoire of an erudite culture that was intended to be achieved. Along with the improvement and fluency or even the insertion of readers in the world of letters, a set of prescriptions was placed almost to a high degree as the ultimate purpose. The plots of the stories and fables revealed their character of reading directed not to entertainment, in an unpretentious or pleasurable way, but to an extremely religious culture to be printed, based on fear and punishment as part of what the wealthier layers took as progress and civilization.³

In relation to their contents, the plots of the stories and fables seemed to meet, through pedagogy and methods, the daily life of the classes. Elaborated from what can be called a pedagogy of fear, fear and awareness of guilt, in the public scene, the Bahian physician and educator Abílio Cesar Borges fiercely criticized the use of physical punishment in official instruction⁴. However, the pedagogy contained in his books ended up reaffirming a model of education in which punishment and punishment constituted the main means of correction. Such pedagogy was mixed and merged with the Catholic virtues of the books of moral theology, the lives of the saints, and sacred history, all elaborated from the book par excellence, the Bible.

In the anecdotes and fables, earthly situations were mixed with biblical stories as if they wished, according to the Catholic tradition, let us say their teachings, to affirm that the consequences of their acts would also be, just as they were in the biblical past: hunger, suffering, diseases, public humiliation. Although he does not specify whether the punishments by the teachers should be of all kinds, including the physical, most of the stories and fables had a tragic end or disastrous consequences for the characters who despised the warnings and advice of their parents and teachers, as they told the lessons that brought scenes of death and illness from his "Second Book of Reading for use in Brazilian schools".⁵

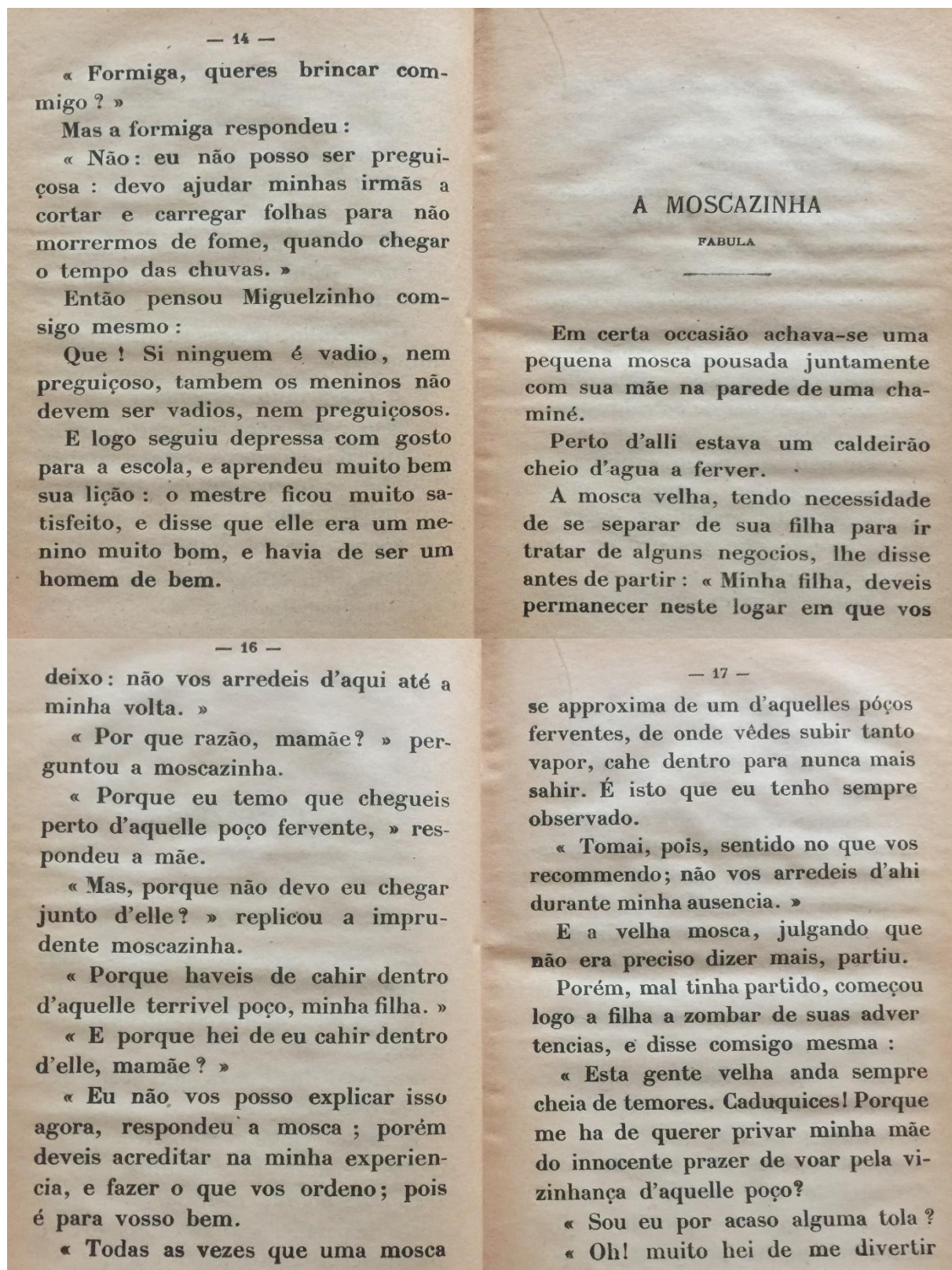
³ For countless primary school children, this erudite religious culture was taught in a "purely oral" way, to the extent that the scarcity of books did not allow everyone to have possession of the printed matter. At most, only the teachers and a few would have to share the copies in class. Not to mention that they spent weeks writing on stones, for lack of leaves.

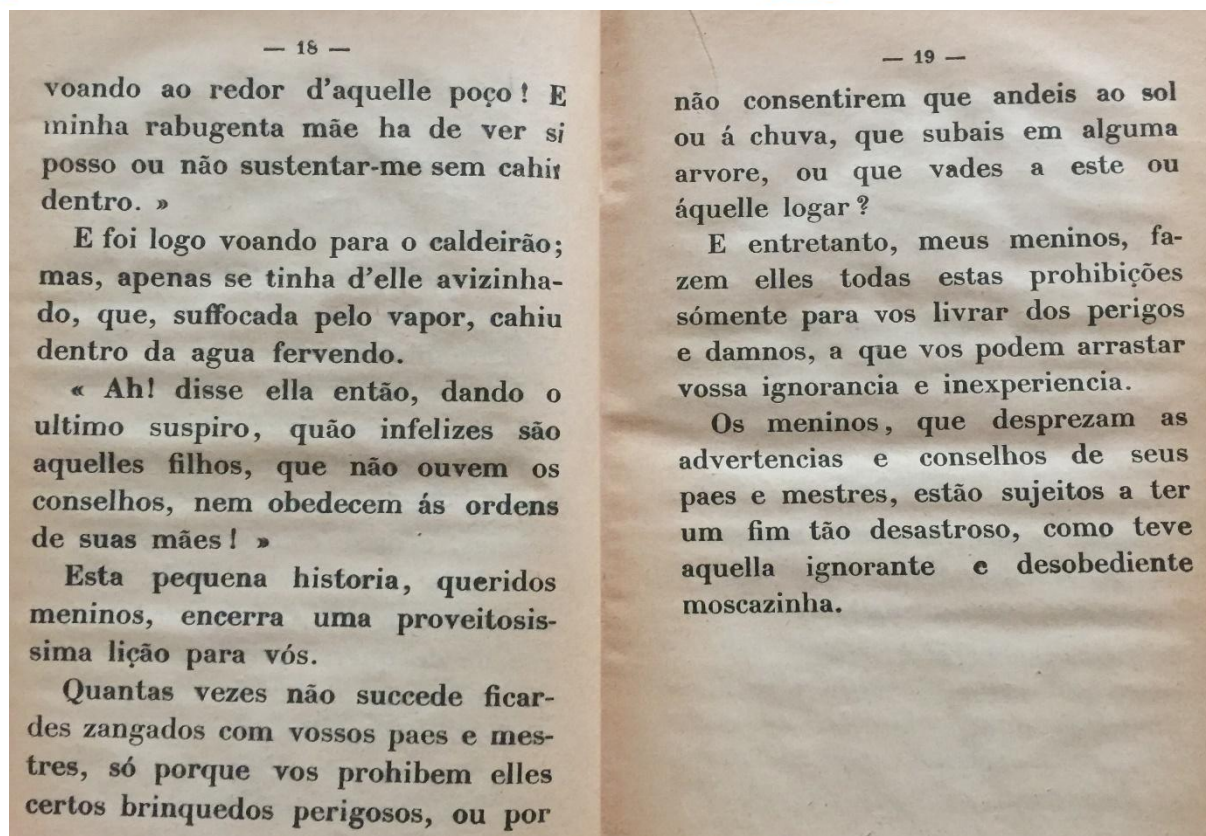
⁴ In this scenario, the Ginásio Baiano (1858) and the Colégio Abílio (1871) were the first educational establishments to advertise against the palmatoria. In Bahia and other provinces of the Empire, documents circulated such as the writing "Twenty years of propaganda against the use of the paddle and other demeaning means in the teaching of youth", authored by Abílio Cesar Borges himself, extracted from O Globo and published by Tipografia Cinco de Março in 1876. In the "war on the palmatoria" movement, the Baron of Macaúbas [Abílio Cesar Borges] even sent a copy of this printed matter to the newspaper Cearense. Source: BORGES, Abílio Cesar. **Study plan and statutes of the Colégio Abílio founded in the Court of the Empire**. Rio de Janeiro: Tipografia do Imperial Instituto Artístico, 1872; BORGES, Abílio Cesar. **Twenty-two years of propaganda in favor of the elevation of studies in Brazil (Fragments published in the Jornal do Comercio in 1880)**. Brussels: Typography and Lithography E. Guyot, 1884; BORGES, Abílio Cesar. Twenty years of propaganda against the use of the paddle and other demeaning means in the teaching of youth (extracted from O Globo). Rio de Janeiro: Tipografia Cinco de Março, 1876; Cearense, 1876, n. 45, p. 2, 4 col.

⁵ BORGES, Abílio Cesar. **Second Reading Book for use by Brazilian schools**. Rio de Janeiro: Francisco Alves, Nova Edição correct, melhorda e enlarged, 1869, Fábula: "Moscazinha", p. 15.

Figure 1

Story from the Second Reading Book by Abílio Cesar Borges





Source: BORGES, Abílio Cesar. Second Reading Book for use by Brazilian schools. Rio de Janeiro: Francisco Alves, Nova Edição correct, melhorda e enlarged, 1869, Fábula: "Moscazinha", p. 15.

With the growth in the production of school textbooks, even though it would emerge as an enterprise that would generate great profits only in the late nineteenth and early twentieth years, especially with specialized bookstores, such as Francisco Alves, "the Church's acculturation effort will continue to bring into play all forms of culture, the printed sheet, writing, singing, music",⁶ as seen in the hymns and prayers conveyed in the reading books of Abílio Cesar Borges. In these manuals, one can see a lithograph, "the aesthetic devices",⁷ proper to the eyes of the children, with images of their family daily life, of games, fairy tales, always in the sense of drawing their attention, explaining and reinforcing what was defended in the content of the texts, placing them in a universe full of duties, acceptable behaviors and directions that could not be contested.

Such a structure of the compendia denounced the character with which the teaching of reading was transmitted to religion, even with the growth of books intended "exclusively" for the learning of how to read, if the main purpose with which they were elaborated was observed.

⁶ ROCHE, Daniel. **The people of Paris**: essay on popular culture in the eighteenth century. São Paulo: University of São Paulo Press, 2004, p. 290.

⁷ DUTRA, Eliana de Freitas; MOLLIER, Jean-Yves (ed.). **Politics, nation and edition**: the place of printed matter in the construction of political life in Brazil, Europe and the Americas in the eighteenth-twentieth century. São Paulo: Annablume, 2006, p. (INTRODUCTION).

The truth of this teaching, that is, the methods, the pedagogy and the forms of reading, could only be elaborated from Catholic Christian doctrine, from the elements of its theology and morals, as they had long been, that is, "by analogy to the dogmatics of the church itself".⁸ At this point, images, more than accompanying the texts or acting as aesthetic devices, making books even more expensive, would play a primary role: they would explain or even direct the forms of reading. In the pictures that represented children with folded hands in prayer or when they brought mothers reading to their children, it was not only religion that should be cultivated within the home, but reading itself as a practice sometimes individual and silent, sometimes elevated to faith, or collective, presided over by the mother and bringing together the members of the family, depending on day-to-day situations.

The reading to be made of the images contained in the school manuals would be further reinforced by the picture of the crucified Christ, an item of first necessity in the inventories of furniture and utensils, without which it would be impossible, as many teachers claimed, to continue with their work. Wishing to insert a sacred language in the classroom environment, through this board, it was believed that children would easily read, even those who did not yet know how to recognize the letters and join the syllables. The image would remind us that Christ died on the cross to redeem the sins of those who believe in him, and therefore, in return, they must be obedient and follow his commandments, as pointed out in the reading manuals.

Through fables and short stories, the litany to be memorized was no longer that of the liturgy, but the understanding that one should live [this in the lessons to be taken for life] with the biblical stories, not only because the Catholic religion was rooted in nineteenth-century society,⁹ but because the lessons made it clear that, if they wanted to live in abundance, By the order of work, or to have some success, the way would be to walk in the dictates of Catholic evangelical morality, taking such lessons as practice even of the most ordinary issues of everyday life.

In such a scenario, in Abilio's reading books, the coexistence between religion, faith and fiction affected and, sometimes, merged with the narratives of the subjects' real lives, because

⁸ BOTO, Carlota. **The world in writing**: uses and customs of Portuguese school reading in the nineteenth century. Coimbra: Separata da Revista de História das ideias, Vol. 20. Faculty of Letters, 1999, p. 249.

⁹ In this case, the presence of Catholicism obeys various orders, either through the Padroado, as a force that was not restricted to the religious dimension, or through instruction in sacred things, as they would need them in the most diverse situations, including as the main requirement to become a primary school teacher. In the Professional Capacity Exams, for example, the tests brought excerpts from books such as the "History of Simon of Nantua or Merchant of Fairs", by Laurent Jussieu, and Iris Classic, in order to present to the candidates messages that brought "rules of civility", behaviors, virtues, "moral improvement". He was asked to speak on the "necessity of religion in general and the advantage of Catholicism." Source: CEARÁ. Provincial Government, Primary Public Instruction, Ceará, 1864. Available: APEC. Background: Public Instruction, Correspondence, Topical Date: Ceará, Chronicle Date: 1864. BR CEAPEC IP CO EXM 01 03 (142) CX 70.

the readers, as they read, were called to bring their own history as a way of self-control of their actions, as proclaimed by the sacred book, to whom many felt that he was the only reliable support on which an explanation for earthly things could be obtained.

In the period prior to the publication of the "Second Book of Reading" by Abílio Cesar Borges, the book "Easy Method to learn to read both the round and the handwritten letter in the shortest possible time", authored by Emílio Achilles Monteverde, had been circulating since 1861 in Ceará.¹⁰ Composed of knowledge intended more for the teaching of Christian doctrine than even for learning to read, those interested could acquire it at Joaquim José de Oliveira's bookstore and at Mr. Villar's Typography and House, as advertised in the "Cearense" in June 1861 to March 1862 uninterruptedly. In this Typography, numerous other productions for public and private schools were on sale, such as "Moral Lessons", a title present in the inventory of books existing in Joaquim José de Oliveira's bookstore, in 1872,¹¹ "Duties of Man", by Silvio P., "Bom Homem", by Ricardo, and many others considered, throughout the nineteenth century, *bestsellers* in the school production market.¹²

Depending on the page that was opened, one could easily confuse the "Método Fácil" (Easy Method), printed with a wide circulation in the provinces of the Empire, as seen in newspaper advertisements and in the correspondence of the Public Instruction of Ceará, with a religious compendium, because in its sixteenth edition, published by the Livraria Central de Gomes de Carvalho, in Lisbon, after the explanations about diphthongs, came the "Advice to youth",¹³ then the "Summary of Christian doctrine" and the "Gift to childhood or manual of sacred history adorned with 100 beautiful prints representing the main events referred to in the old and new testaments". In this part, the "morals of the Christian religion", the "main duties of boys", the "maxims, sentences and moral thoughts", and the "useful rules to observe in life" were emphasized.¹⁴

¹⁰ In the ad in question, the author's name is not published, only the title of the work.

¹¹ Inventory of Angélica Alexandrina de Oliveira, Orphan Registry, Fortaleza/CE, Package 33, process 16, 1870, Public Archive of the State of Ceará – APEC.

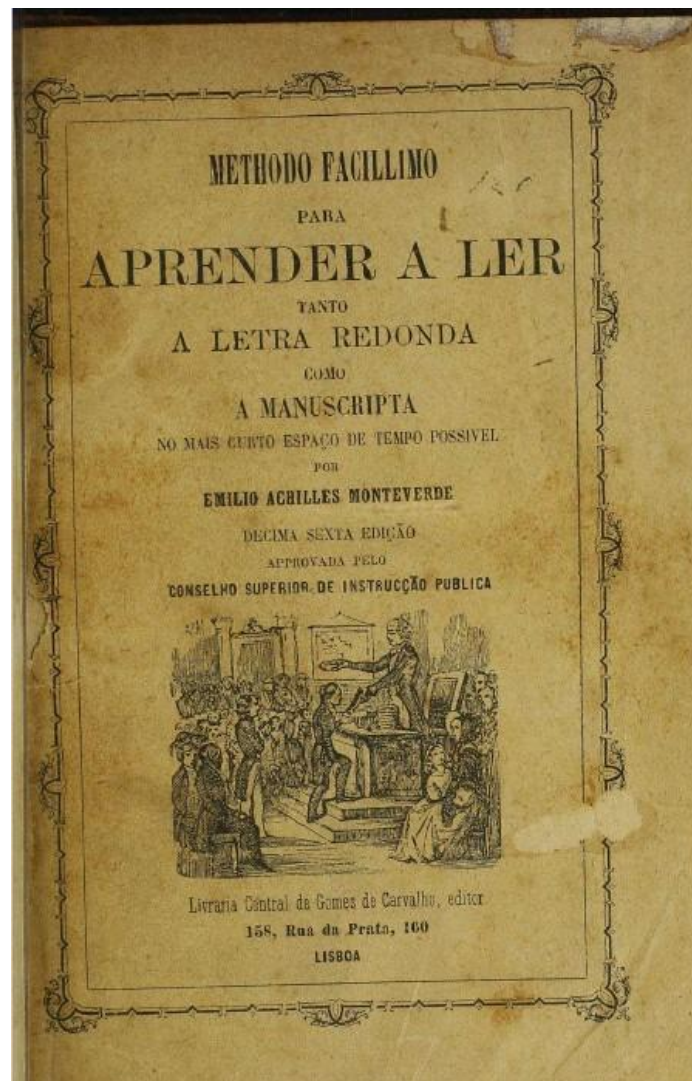
¹² Cearense, 25 jun. 1861, n. 1452, Announcements, p. 4, 4 col.

¹³ MONTEVERDE, Emilio Achilles. **Very easy method to learn to read both round and handwritten letters**. Lisbon: Livraria Central de Gomes de Carvalho, [18--], p. 45.

¹⁴ MONTEVERDE, Emilio Achilles. **Very easy method to learn to read both round and handwritten letters**. Lisbon: Livraria Central de Gomes de Carvalho, [18--].

Figure 2

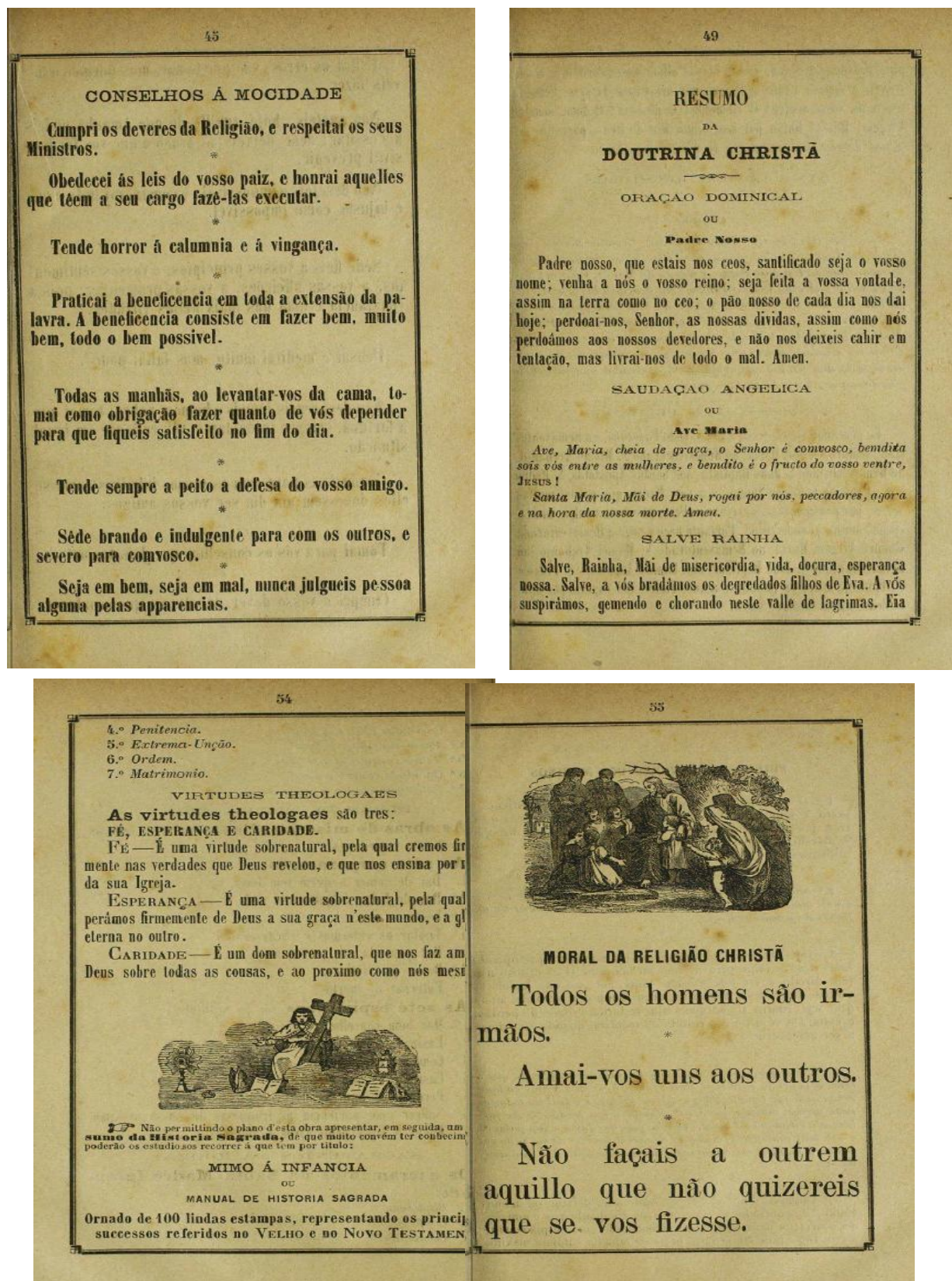
Cover of the book *Methodo Facillimo para aprender a ler*, by Achilles Monteverde



Source: MONTEVERDE, Emilio Achilles. Very easy method to learn to read to read both round and handwritten letters. Lisbon: Livraria Central de Gomes de Carvalho, [18--].

Figure 3

Book *Methodo Facilimo para aprender a ler*, by Achilles Monteverde



Source: MONTEVERDE, Emilio Achilles. Very easy method to learn to read to read both round and handwritten letters. Lisbon: Livraria Central de Gomes de Carvalho, [18--], p. 45, 49, 54, 55.

The "Easy Method" presented religious subjects in the form of instructions, directions and sentences, always alternating between content strictly related to the reading of the code and many others ranging from religion to Portuguese inventions. In such parts, no relationship was established with the teaching of writing, unless the student already had certain skills, which he would use for his improvement. It followed the format of the reading books of that period, a kind of small encyclopedia that, even presenting itself as a book to teach reading, religion gained prestige space.

The lessons and teachings placed the reader in an atmosphere not only of literacy, in the sense of marking the need to be instructed in the teachings that make up the different types of knowledge of the primary curriculum, but of a series of prescriptions that sought to make one elaborate a control of oneself, of one's room, of one's domestic space, as well as the "control of some over the other",¹⁵ creating a guilty conscience, where reason [the rational] would discern between the practice of what would be "adequate", as well as the feeling of guilt when incurring in what they judged to be mistakes.

At that time, the debates around the change of political regime, the development of industry and the need for free labor gave rise, at the same time, to the need to identify the State as an institution capable of building and maintaining a school that formed souls prepared for work. The "Catechisms of Agriculture" figured together with the "Catechisms of Christian Doctrine" and the compendia intended for the teaching of reading, as the most indispensable books for primary education,¹⁶ as they would make children lovers of religion and work. Thus, for a good part of the nineteenth century, education was focused on the formation of the worker, obedient, economical and lover of the homeland. In Ceará, the teachers would instill "a taste and sympathy for the study of the main source of wealth" of the Province: agriculture, as they stated in response to the circulars accompanied by a reasonable number of catechisms referring to this knowledge,¹⁷ in 1862. Therefore, we see an education that, above all, would minimally develop elementary knowledge in order to make them, first, aware of their duties.

¹⁵ BOTO, Carlota. **The world in writing**: uses and customs of Portuguese school reading in the nineteenth century. Coimbra: Separata da Revista de História das ideias, Vol. 20. Faculty of Letters, 1999, p. 246 and 247.

¹⁶ CEARÁ. Provincial Government, Primary Public Instruction, Aquiraz, 1867. Available: APEC. Background: Public Instruction, Correspondence, Topical Date: Aquiraz, Chronicle Date: 1867. BR CEAPEC IP PP CO RE 13 01 (53 and 54). CX 52.

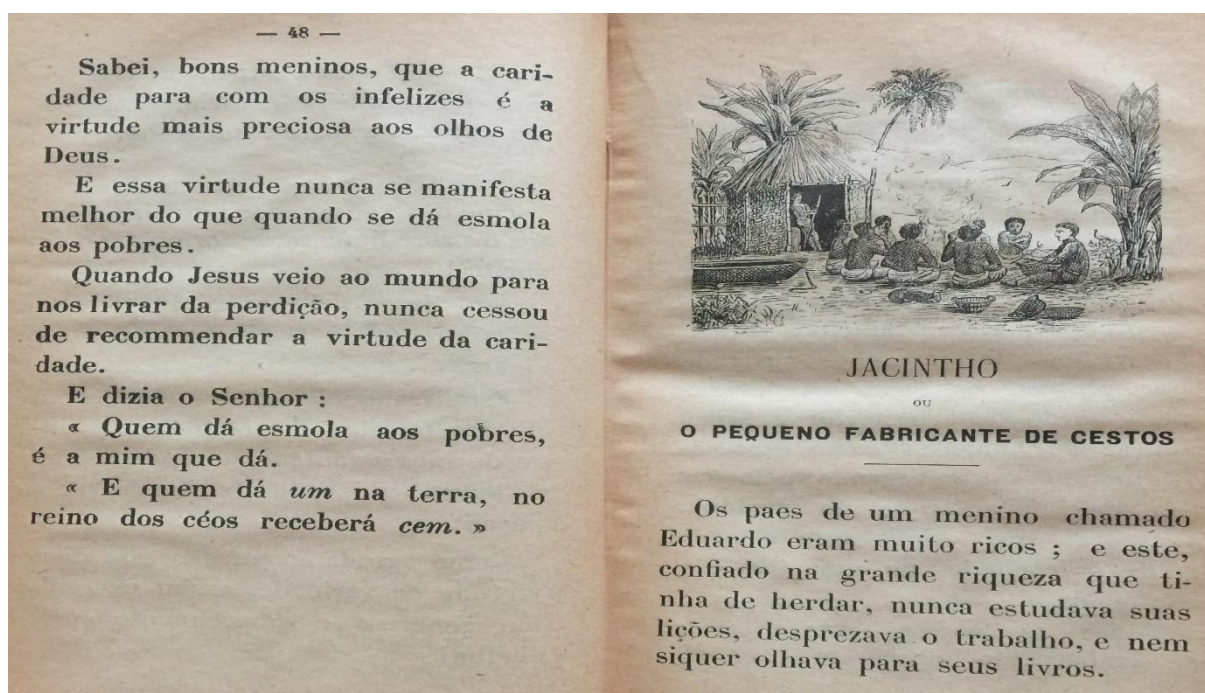
¹⁷ CEARÁ. Provincial Government, Primary Public Instruction, Fortaleza, 1862. Available: APEC. Background: Public Instruction, Correspondence, Topical Date: Fortaleza, Chronicle Date: 1862. BR CEAPE IP PP CO RE 07 02 (113). CX 51 / CEARÁ. Provincial Government, Primary Public Education, Soure, 18. Available: APEC. Background: Public Instruction, Correspondence, Topic Date: Soure, Chronicle Date: 1862. BR CEAPEC IP PP CO RE 05 01 (68). CX 50.

Learning to read, in order to first understand orders and commandments, aspects that would contribute to the maintenance of social order.¹⁸

The investigation of the printed books intended for the teaching of reading, which, together with the diocesan catechisms, often composed the only books present in primary classes, allows us to conclude that the school in Ceará, in the second half of the nineteenth century, in fact, is more moralizing and regulating than focused on the formation of some trade. Although work began to occupy more space as the discussions around the changes that were believed to be necessary in the primary curriculum gained greater strength, especially in the last decade of the century, the contents of the printed materials used in primary education already brought prominently, since the beginning of the 1860s, the exaltation of work as being of the order that "civilizes and at the same time constitutes a reward".¹⁹ In the anecdotes, fables and maxims "the duty of work"²⁰ and religion is remembered in all the daily situations of the characters.

Figure 4

Story present in the *Second Reading Book* by Abílio Cesar Borges



¹⁸ OSAKABE, Haquira. The world of writing. In: ABREU, Márcia (org.). **Readings in Brazil**: commemorative anthology by the 10th Cole. Campinas, São Paulo: Mercado de letras, 1995, p. 19.

¹⁹ ROCHE, Daniel. **The people of Paris**: essay on popular culture in the eighteenth century. São Paulo: Editora da Universidade de São Paulo, 2004, p. 352.

²⁰ GEREMEK, Bronislaw. **The sons of Cain**: vagabonds and misérables in European Literature (1400-1700). São Paulo: Companhia das Letras, 1995, p. 290.

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Pelo contrario o pequeno Jacintho, que vivia na vizinhança de Eduardo, era um menino bastante pobre, porém muito diligente e industrioso; e tinha uma grande habilidade para fazer cestos.

Um dia, enquanto Eduardo estava pescando á beira do mar, e Jacintho se occupava em cortar cipós para fazer cestos, foram ambos agarrados por piratas, os quaes os levaram para bordo de seu navio, e faziam tenção de vendel-os como escravos.

Quando iam navegando pelo mar em fóra, levantou-se um medonho temporal, que atirou com o navio sobre os rochedos de uma ilha desconhecida.

Todas as pessoas que estavam na embarcação morreram, excepto

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desejosos de possuir um cesto como aquelle.

Jacintho foi logo conduzido para uma linda cabana, cercada de arvores fructíferas, onde podia viver tranquillamente e á sua vontade no meio da abundancia de tudo; e alli passava os dias inteiros a fazer cestos.

Eduardo foi tambem chamado para fazer um cesto; mas era tão estúpido, preguiçoso e ignorante, que os negros não tiveram paciencia para atural-o; deram-lhe uma grande surra, e de certo o teriam matado, si Jacintho não se tivesse apresentado pedindo e rogando muito para lhe pouparem a vida.

Cedendo aos pedidos de Jacintho os negros não mataram Eduardo; porém despiram-no de todas as suas

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aquelles dous meninos, os quaes, como por milagre, chegaram a uma terra habitada por negros selvagens.

Então Jacintho pensou que poderia agradar áquelles barbaros, trabalhando e fazendo alguns bonitos cestos: assim, tomou seu canivete, cortou alguns cipós e os trançou, fazendo um bello cesto.

Muitos dos negros, homens, mulheres e meninos, vendo Jacintho occupado em fazer o cesto, chegaram-se para perto, e ficaram attentos ao redor d'elle, olhando com grande curiosidade como elle trabalhava, e cantava alegremente.

Quando o cesto foi acabado, deu-o Jacintho de presente ao principal, ou chefe da terra; e todos ficaram

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finas roupas, que deram áquelle; obrigando Eduardo a vestir a roupa grossa e remendada de Jacintho.

Além d'isto fizeram de Eduardo o criado de Jacintho; e o serviço que este dava a seu criado era somente cortar cipós para cestos.

Por esta pequena historia, meus caros meninos, bem vêdes que em toda a parte os meninos trabalhadores e industriosos estão certos de achar quem os estime e proteja, enquanto os preguiçosos e ignorantes passam uma vida miseravel, desprezados de todos.

Source: BORGES, Abílio Cesar. Second Reading Book for use by Brazilian schools. Rio de Janeiro: Francisco Alves, Nova Edição correct, melhorda e enlarged, 1869, p. 49, 50, 51.

In this way, in the "Very Easy Method", work and the economy would be directly related to freedom and independence: 'let us therefore preserve our freedom and our independence. Let us be industrious and free; let us be economical and independent'.²¹ It should be noted that,

²¹ MONTEVERDE, Emilio Achilles. **Very easy method to learn to read to read both round and handwritten letters.** Lisbon: Livraria Central de Gomes de Carvalho, [18--], p. 145.

in manuals intended for the teaching of reading, such as Monteverde's dictum, as well as the collection authored by Professor Abílio, slavery appears little. There is, in fact, a certain silence in relation to the slave labor system when discussing labor. By way of religion, the dependence to which these textbooks referred was that of the poor and free strata, especially for the possession of the land they did not have. The students were left with the understanding of relations of dependence as a means of doing "charity", an aspect seen as part of the very "natural" structure of the order of things, as stated in the "Fourth Book of Reading" by Abílio Cesar Borges:

Love the poor above all things; for below father and mother, brothers and sisters, it is the poor who need you most. By second family; I have shut neither the door nor the heart nor the purse; give them something to do, if you can, because work does not dishonor a man and they keep him better than almsgiving. Giving something to do is more and better than giving money; it is the charity of charities.²²

Work appeared as the "remedy" against both vices and misery. One of the main duties of the boys was to be "charitable with the poor and needy",²³ because "the existence of these unfortunates depended solely on the charity of their fellow men",²⁴ as established in the part "Mimo à infância ou manual de história sagrada adorned with 100 beautiful prints, representing the main events referred to in the old and new testaments", in the "Método Fácil". In this book, assistance actions were a subject dealt with in the religious contents. As a measure of salvation of the soul, the assistance activity was much more associated with work than with almsgiving. In addition to the chances of salvation of the soul being greater, as was believed, granting work to the poor layers was fundamental to the discipline and obedience necessary for the capitalist society of the nineteenth century.

Used as an instrument for the elaboration of such consensus, in the "maxims" still present in the aforementioned book, "work brought with it comforts, abundance and consideration".²⁵ At this point, a question becomes fundamental: how to make the majority of primary school children believe that, through work, they would live in abundance if their parents spent their entire lives working and, even so, when they managed to buy their books it was with a lot of effort and sacrifice?

²² BORGES, Abílio Cesar Borges. **Fourth Reading Book for use by Brazilian schools**. Rio de Janeiro: Francisco Alves, New Edition, part: Healthy Councils (Visconde de Castilho), p. 138.

²³ MONTEVERDE, Emilio Achilles. **Very easy method to learn to read to read both round and handwritten letters**. Lisbon: Livraria Central de Gomes de Carvalho, [18--], p. 57.

²⁴ MONTEVERDE, Emilio Achilles. **Very easy method to learn to read to read both round and handwritten letters**. Lisbon: Livraria Central de Gomes de Carvalho, [18--], p. 57.

²⁵ MONTEVERDE, Emilio Achilles. **Very easy method to learn to read to read both round and handwritten letters**. Lisbon: Livraria Central de Gomes de Carvalho, [18--], p. 141.

In the press, at that time, among the issues on the agenda, was the need to regulate, together with religion and work, the poor and free population. On March 3, 1872, the "Tribuna Católica", a religious, literary and news periodical that came out every Sunday under the auspices of the diocesan bishop, published an article about Public Instruction, based on a rhetoric that stood out for "divine providence":

It cannot be denied that common instruction has the apparent advantage of forming, by contact, the habit of equality between the great and the small, between the rich and the poor, and of establishing on this basis the fraternity that promotes liberty; but experience has shown that this system has not been achieved. If not to establish license and anarchy in society; for the little ones, like the great ones in school, want to be so also in the jobs of the state without the same qualification, and they apply themselves to politics instead of applying themselves to work, for which Providence has destined²⁶ them. [...] And all must apply themselves to politics, because it was this that Providence destined them to, and not to work? The direction of society belongs to everyone, and not to the few to whom God has given wisdom for this?!²⁷

Here, the analyses of Anne-Marie Chartier and Jean Hébrard fit. Although discussing the discourses about reading and writing between 1880 and 1980, it is appropriate to appropriate it to the context of Ceará, specifically directing it to instruction. At the end of the nineteenth century, the Church would have to deal more and more with "a long crisis that engenders simultaneously the secularization of school and the State, the rupture of traditional balances (evolution of customs, de-Christianization, generalized schooling, etc.)"²⁸ At that time, the ecclesiastical elites and the employees of Public Instruction themselves, many of whom were Catholics, argued that attempts to control education/schooling seemed not only a right of the Church, but its duty.²⁹

For the ecclesiastical elites, the poor strata had their importance in the development and progress of society, at the time, through their labor, constituting, more than anything else, "a set of labor force, potential or real",³⁰ sometimes inside, sometimes set aside, waiting to be taken when the need demanded it. Here, Catholic religious thought was sustained, as it had been for a long time, under the aegis, as Bronislaw Geremek said, of "work as a duty of the poor and the

²⁶ "The people of Ceará reap what they sowed". Tribuna Católica, 3 mar. 1872, Tribuna Catholica Section, n. 25, p. 1, 2 col.

²⁷ "The people of Ceará reap what they sowed". Tribuna Católica, 3 mar. 1872, Tribuna Catholica Section, n. 25, p. 1, 4 col.

²⁸ CHARTIER, Anne-Marie and HÉBRARD, Jean. **Discourses on Reading 1880-1980**. São Paulo: Editora Ática, 1995, p. 23.

²⁹ Ibid., p. 22.

³⁰ BRESCIANI, Maria Stella. **London and Paris in the nineteenth century: the spectacle of poverty**. São Paulo: Brasiliense, 1994, p. 88.

foundation of their status".³¹ This poor and free population made up a kind of "wealth of the nation".³² Their place in the social sphere would be associated not only with their condition of poverty, bringing together the full extent of dependence within the economic system and material deprivation, but because the "providence", by which the "natural law" is understood, would have made them "small" destined to the function of working. Thus, under the principle of a certain rearrangement imposed by the "celestial force", these individuals would be outside politics or even the administrative dimension of society.

It can be seen that the "Catholic Tribune" sought to present justifications for the positions that the subjects would occupy in the social and political sphere. An education legitimized by "divine providence" itself, with the Church being the institution capable of directing individuals to their roles in the social composition. The exercise of politics through public office was exclusively the responsibility of the elite. Under this logic, it can be concluded that secondary education and, later, higher education was intended for the training of future leaders of the political-administrative structure, while primary education, to which the less economically favored classes were directed, would form the necessary labor force for free labor. For the aforementioned sheet, the transgression of this "natural law"³³ would lead to "anarchy", which, in its religious discourse, gains a "negative" connotation, but which, in practice, meant much more a fear of the population's capacity for rebellion which, although it did not lead to major ruptures, could bother and put on the agenda the privileges and the maintenance of a vertical order. which the dominant strata sought to resize, within social relations, in their favor.

The diffusion of education to the poor could represent a threat to the more favored classes who, by exploiting mainly their labor, maintained the privileges of a small portion of the population. The fear was that access to letters would awaken to freedom and independence. In the enlightened media, the defense that the lights should be brought to all segments of the population, including the poorest, brought with it a complexity that involved political and religious forces and diverse interests. For several members of the enlightened and ruling class in the Province, allowing everyone to receive education, while being on the same level of access to cultural assets, was the same as implementing "anarchy", as previously stated. To conceive that the son of a tailor, farmer or worker had time available to dedicate himself to reading a book, or that he had his studies continued after primary school, would bring disorder in the

³¹ GEREMEK, Bronislaw. **History of misery and charity in Europe**. Lisbon: Terramar, 1986, p. 277.

³² BRESCIANI, Maria Stella. **London and Paris in the nineteenth century: the spectacle of poverty**. São Paulo: Brasiliense, 1994, p. 88.

³³ Ibid., p. 88 and 89.

hierarchy of organization of nineteenth-century society, given that "reading and studying is an 'ornament' of the traditionally cultured classes".³⁴

Allowing the poor, who spent their entire lives in toil, to leave the condition of dependence, starting to accumulate some capital, whether financial or cultural, would make the small ones want to "equal" the "big", and, therefore, not only the "debasement" of the³⁵ wealthier layers would happen, as in the words of Amaral Lapa, but the disorder and agitation in the social structure itself. Given that those who "Providence" had designated as those who should maintain, through their labor force, the bases of the State, were "breaking" with such logic. The "Catholic Tribune", at that time, did not take long to publish in its pages criticism of the theory of social equality or socialist democracy, under discussion in Europe. For the Catholic Church, as reiterated by Amaral Lapa, "it was necessary to make believe that the class struggle with the consequent equality of the latter, a prerogative of socialist theory, was definitely an aberration".³⁶ For the ecclesiastical elites, it was unacceptable to "lower the upper classes to the level of the lower classes [...], or the elevation of the latter to the top of the former",³⁷ as it would lead to "disharmony of uses, customs, education and life and the consequent social confusion".³⁸

Education, as the newspaper "Tribuna Católica" argued, was "inserted in the world of representations that distinguished social groups".³⁹ It distinguished in such a way that it demarcated places and functions within the social hierarchy, including some and excluding others. For the poor classes, work would not be a guarantee for abundance, on the contrary, although they lived by the sweat of their arms, and all the members of the family came to perform some activity, these were barely enough to guarantee the daily needs, so that others could not be met when they set aside amounts for the purchase of school books or any other material intended for the instruction of their children. The civilizing discourse of the men of politics and letters, often inflamed by the prism of religion, painted a future far from the reach of the simple people. The "Promised Land" and the "Heavenly Jerusalem" presented in the school textbooks of morals and religion were far from the "horizon of expectations"⁴⁰ of the majority of the population.

³⁴ CAVALLO, Guglielmo. Between volume and codex: reading in the Roman world. *In: História da leitura no mundo ocidental*. CAVALLO, Guglielmo and CHARTIER, Roger (ed.). São Paulo: Editora Ática, vol. I, 2002, p. 76.

³⁵ LAPA, José Roberto do Amaral. **The excluded**: contribution to the history of poverty in Brazil (1850-1930). Campinas, SP: Unicamp Press; São Paulo, SP: Editora da USP, 2008, p. 46.

³⁶ Ibidem.

³⁷ Ibidem.

³⁸ Ibidem.

³⁹ CAVALLO, Guglielmo. Between volume and codex: reading in the Roman world. *In: História da leitura no mundo ocidental*. CAVALLO, Guglielmo and CHARTIER, Roger (ed.). São Paulo: Editora Ática, vol. I, 2002, p. 77.

⁴⁰ KOSELLECK, Reinhart. **Futuro passado**: contribuição à semântica dos tempos históricos. Rio de Janeiro: Contraponto: Ed. PUC-Rio, 2006. In this period, the idea of progress broadened this horizon, it was not only the Church that determined the futures.

As instruments for the implementation of political projects, school books sought, especially for their content, to appease or even pacify the different social conditions at that time, spreading a "consensual morality"⁴¹ – as in the words of Aníbal Bragança. Allied to the value system of Catholic Christian doctrine, this consensus served in the cult of progress, dedicating to the church part of what could be elected as vehicles for the construction of the famous modernization, expressed in the search for "uniformization and homogenization of different cultures and social realities, while strengthening national sentiment".⁴²

In such a scenario, in elementary public education the majority of children lived at the expense of a state that, in order to maintain the privileges and interests of the wealthy classes, subjected them, as a component of the poor segments that they were part of, to a control and ordering that crossed the most diverse daily situations, supported by discourses ranging from the religious to the police. The logic, therefore, would be to make the country adjust itself in order to respond to the interests of the capitalist world with the new demands driven by the emergence of industrialization and the need for labor for free labor. Thus, it was necessary to maintain order internally by disciplining and "civilizing" the various social segments, especially the uneducated, dissolving the conflicts that would contest the maintenance of dependence and marginality in which the majority found themselves, whether due to the slave order, private property, or limited access to education. The Imperial State should, the wealthy layers thought, follow the changes of the so-called "civilized" countries, which, at that time, served as a reference for what was most modern in the most diverse fields, especially in the new economic relations that sustained the Western capitalist world, namely the growth of trade at the international level obeying a transatlantic movement of the most varied goods.

Primary education, at that time, as a cultural asset, was not left out of this circuit, either because of the circulation of school printed materials, especially between Rio de Janeiro, Lisbon and France, given a more commercial character; or by the adoption of measures that organized formal education in these countries, as a reference to equip public primary education in the Empire of Brazil. This dimension of education, therefore, would serve as a means to appease the growth of violence that, according to the ruling classes, came from the poor segments of the Province, so fond of vices and crimes. It would collaborate in the construction of a civilized and hegemonic state, imprinting among the various segments the acceptance of relations that

⁴¹ BRAGANÇA, Aníbal. The transmission of knowledge, education and the publication of school books. In: DUTRA, Eliana de Freitas and MOLLIER, Jean Yves (ed.). **Politics, nation and edition**: the place of printed matter in the construction of political life, Brazil, Europe and the Americas in the eighteenth-twentieth centuries. São Paulo: Annablume, 2006, p. 558.

⁴² Ibidem.

conceived the ruling class as the one able to direct the course of the country, as being part of the divine will and the forces that made up nineteenth-century society.

The fact is that this order was justified in school and religious literature itself (catechisms, books of sacred history and liturgy) as something natural, as if these rearrangements were part of the social organization itself in order to maintain balance and well-being. In the education of the poor, they formed a universe of reading that sought to justify poverty and social order.

At that time, it was possible to find in reading manuals elements for the daily use of the subjects, such as prayers and songs, sentences and instructions, always based on the relationship with the time of work activities inside and outside the home. These productions seemed to want to function like religious books, especially those of liturgy, prepared for the daily services, composed of guidelines on how to proceed in the daily tasks, always organized in favor of the dimension of faith. Due to these characteristics, reading books should increasingly be present in the domestic space, organizing the actions of the subjects. The contents referring to activities in agriculture, in the countryside, directed to peasants and merchants, bring indications that such books were prepared to be read even during rest hours, or even in the work environment, acting as a moment of formation, directing actions to achieve greater "success" in their trades.

Prayers and songs intended for the family space should, if not be sung, at least pronounced upon waking up and before going to sleep. Thus, reading books followed a specific order, that of self-control and training for work. Due to the content, the authors' desire was that its reading would be done when daily activities were finished and at the beginning of the morning, emphasizing, when it came to domestic activities, the figure of the girl, as presented in the "Third Book of Reading for use in Brazilian schools", by Abílio Cesar Borges.

Christian Girl Hymn in the Morning

Girl wakes up! It takes hours to get you up.
Study examples in the small insect.
Leave your bed with serene tensions;
And your work begins again joyfully.⁴³

Hymn to be sung at night

Girl, say, your work today |
Was it with patience and zeal finished?
If it is so, then, in the pillow the forehead
He leans over, and sleeps without fear of thorns.⁴⁴

⁴³ BORGES, Abílio Cesar. **Third Reading Book for use by Brazilian schools**. Rio de Janeiro: Francisco Alves, Nova Edição reformada e melhor, 1890, p. 220.

⁴⁴ BORGES, Abílio Cesar. **Third Reading Book for use by Brazilian schools**. Rio de Janeiro: Francisco Alves, Nova Edição reformada e melhor, 1890, p. 221.

Fairy tales and anecdotes brought a repertoire of insertion in the world of reading so that, already in childhood, the future worker was formed, first with the activities carried out in the domestic space, with the time to wake up and go to bed, always as a function, especially among the poorest, of the activities to be carried out the next day. With advancing age, tasks in the religious space such as the "mass assistant or acolyte" came⁴⁵ to be done concomitantly with the chores in the home space.

Such schedules seemed, in the logic of civilization contained in school textbooks, not only aspects of organization to start daily tasks each day, but the most effective way to maintain the health of the body, fortune and intelligence, as discussed in the text "The science of the good man Ricardo or means of acquiring fortune", extracted from the work of Benjamin Franklin, entitled "The science of the Good Man Ricardo" present in the "Easy Method", by Achilles Monteverde.⁴⁶ The health of the worker's body would be maintained by going to bed and waking up early to start work activities. The regulation of their daily lives would pass through the control of time, an aspect in which reading books played a defining role, because their contents spoke of the time of progress, of the pace by which not only material abundance would be achieved, but physical health, which in the lives of the poorest would remove boredom, vice and misery, as well as the time of daily life, that spent to provide for daily needs.

As the end of the Empire approached, the need for labor for free labor increasingly gave rise to the demand to create in school books, but also in what circulated as knowledge, "a new disciplinary practice that would take into account the sanitation of the worker",⁴⁷ who, because it came, according to belief, from "a social class devoid of good habits, he would naturally be prone to infirmities of body and mind."⁴⁸ The healthy body would come from the daily exercise of work. Thus, the education propagated by the textbooks would first pass through the body, with the formation of the sanitized and healthy subject able to compose the necessary labor force at that time. The childhood to be built was always looking at the formation of the future adult.

The behaviors considered "ideal" were elaborated in the lessons, based on "a given recurrence to the past" through the biblical text, which would be experienced in the order of the present, aiming at the same time, in primary education, the formation of the character of the adult man, the future worker, the future housewife. The subject [the characters] to whom the

⁴⁵ BORGES, Abílio Cesar. **Second Reading Book for use by Brazilian schools**. Rio de Janeiro: Francisco Alves, Nova Edição correct, melhora e aumento (New correct edition, improved and enlarged), 1869, p. 85.

⁴⁶ MONTEVERDE, Emilio Achilles. **Very easy method to learn to read to read both round and handwritten letters**. Lisbon: Livraria Central de Gomes de Carvalho, [18--], p. 140.

⁴⁷ LOBO, Lilia Ferreira. **The infamous of history**: poor, slaves and disabled in Brazil. Rio de Janeiro: Lamparina, 2008, p. 236.

⁴⁸ Ibidem.

short stories referred was virtuous, subordinate, subject to an order that was not his own, for freedom and independence, but that of the boss, that of the social conditionings elaborated for the maintenance of privileges and order.

A set of rules was imposed on them early together with the dimension of faith, which occupied a prestigious place in all the materiality of these books. "There was practically a combination of religious prescriptions and a work ethic that seemed to be desired to compose the society of the future."⁴⁹ When it is necessary to carry out some work in the space of the home or in the church, play, or any other occupation that was not aimed at the fulfillment of some duty, should be left aside. One should "sacrifice pleasures to the fulfillment of duties", as Abílio Cesar Borges said in his "Second Book of Reading".⁵⁰ From an early age, the greatest maxim was that this time should be occupied with work, otherwise they would become vagrants and lazy. "Work should be your only distraction."⁵¹ For the poorest, the order of work would be to meet the expectations of their present, of the needs of each day.

The activities in the domestic space, even those in the recesses of the world of the home, such as the organization of the room, of items of private use, and those developed to manage one's own budget and possible sustenance, or those carried out in Catholic rituals, such as the mass, brought up in the plots of the stories, seemed to meet the educational proposal of primary education at that time. What could be, in the eyes of the most inattentive historian, by reading the school textbooks of the nineteenth century, another question related to the daily life of the subjects, with the activities that each member exercised as a matter proper to the functioning and organization of the family, if thought of in a larger field, will reveal an intimate correlation between literacy, discipline, work, savings and budget.

The "advice to youth" in the "Easy Method" constantly insisted on economy and savings. The absence of money could cause a lack of probity. Thus, the need to save was also related to the maintenance of order, since in the lives of the poorest, precision would lead to dishonesty, as was constantly stated in the sessions of the Provincial Assemblies. For these subjects, work would be "the origin of happiness, and the safest, in addition to being an essential condition for the health and vigor of the body",⁵² as said in the story "The farmer and his children or the fruits of labor", in the "Third Book of Reading of Abilio":

⁴⁹ BOTO, Carlota. **The world in writing**: uses and customs of Portuguese school reading in the nineteenth century. Coimbra: Separata da Revista de História das ideias, Vol. 20. Faculty of Letters, 1999, p. 250.

⁵⁰ BORGES, Abílio Cesar. **Second Reading Book for use by Brazilian schools**. Rio de Janeiro: Francisco Alves, Nova Edição correct, melhorda e enlarged, 1869, p. 107

⁵¹ PERROT, Michelle. **Those excluded from history**: workers, women, prisoners. São Paulo: Paz e Terra, 2020, p. 304.

⁵² BORGES, Abílio Cesar. **Third Reading Book for use by Brazilian schools**. Rio de Janeiro: Francisco Alves, Nova Edição reformada e melhor, 1890, p. 181.

Moreover, work is a duty for man. 'You shall eat your bread kneaded by the sweat of your brow,' said God, alluding to the necessity that every man has to work, so as not to pass through the humiliation of asking." It is evident, however, that the sedentary worker, who works without bodily effort and with less fatigue, the man who works with the spirit and with the pen, but in a way that is useful to society, also fulfill the divine law, even if sweat does not deny their foreheads.⁵³

The naturalization of the misery of the poorest through the biblical text took place without any parsimony in the manuals aimed at learning to read. The work that generated fatigue and tiredness, like the tasks in the fields, followed the same order of justification through the sacred scripture, insofar as in the stories it is said that work was a man's duty and bread should be obtained with the sweat of his own brow.⁵⁴ By observing such a law, the subjects would make their own happiness, since they had fulfilled the divine precept and obtained the approval of their own conscience, as well as that of others.⁵⁵ Achilles Monteverde did not refrain from selecting the fables, stories and entries that dealt with work and divine providence.

Therefore he who is industrious should not fear misery, for hunger passes through the door of the diligent man, without daring to enter his house. Nor will justice penetrate it, because labor pays debts, when idleness increases them.⁵⁶

Let us work incessantly from morning until night, since we do not know if we will be able to do it the next day. That is why the Good Man Ricardo says with good reason: 'it is better to have one today than two tomorrow. – Save what to eat and do not keep what to do'.⁵⁷

I seem to hear people ask me: and is it not lawful to have a few moments of leisure? But I will answer with what the Good Man Richard says: Let us use our time well, if we want to have the right to rest; And let us not waste an hour, since we cannot count on a single minute.⁵⁸

The expectations of the future, always based on the present situation, filled the poor people with anguish, who, for the most part, lived in dependence on both the holders of privileges and the celestial forces, the only support to whom something should be expected, as

⁵³ BORGES, Abílio Cesar. **Third Reading Book for use by Brazilian schools**. Rio de Janeiro: Francisco Alves, Nova Edição reformada e melhor, 1890, p. 181.

⁵⁴ BORGES, Abílio Cesar. **Third Reading Book for use by Brazilian schools**. Rio de Janeiro: Francisco Alves, Nova Edição reformada e melhor, 1890, p. 181.

⁵⁵ BORGES, Abílio Cesar. **Third Reading Book for use by Brazilian schools**. Rio de Janeiro: Francisco Alves, Nova Edição reformada e melhor, 1890, p. 182.

⁵⁶ MONTEVERDE, Emilio Achilles. **Very easy method to learn to read to read both round and handwritten letters**. Lisbon: Livraria Central de Gomes de Carvalho, [18--], p. 140.

⁵⁷ MONTEVERDE, Emilio Achilles. **Very easy method to learn to read to read both round and handwritten letters**. Lisbon: Livraria Central de Gomes de Carvalho, [18--], p. 141.

⁵⁸ MONTEVERDE, Emilio Achilles. **Very easy method to learn to read to read both round and handwritten letters**. Lisbon: Livraria Central de Gomes de Carvalho, [18--], p. 141.

they often stated in their daily lives. Providence was used in these stories, such as those written by Visconde de Castilho, as a justification for maintaining a certain state of passivity, since the anguish and constant concern in the lives of the neediest classes could lead to transgression, riots and thefts. It was, therefore, a school literature, whose Catholic evangelical doctrine and morals brought gratitude, as a virtue that, in the lives of the poor, would act against discontent, uprising.

In the universe of religious manuals and reading books, clergy and laity should tread with caution. The Church, fearful of the different interpretations that the laity could make of the reading of books and legislating on what could be read in different classes and social positions, sought to maintain its values and dogmas present in the lives of the subjects. The ambiguous character of the biblical message, which could, depending on reading, both "teach subservience and justify rebellion",⁵⁹ worried priests, intellectuals and politicians, as they believed that such passages could favor the idea of freedom and independence, as in the parts relating to the advent of a so-called "Promised Land". "The Gospel message could not give the oppressed a code to judge their oppressors."⁶⁰

In other times, publications of this kind would perhaps have been less necessary, for there is no lack of very pious and orthodox writers who thought it expedient to place in the hands of the simple and ignorant people the sacred volume in which the secrets of God are contained, and in which the great Augustine confessed that there were more things that he did not know than those that he understood. Neither Bossuet nor Fenelon, said the celebrated Lamennais (before his apostasy), ever thought of vulgarizing the holy books, and with all who read them or who studied them more carefully? But they knew perfectly well the most pernicious abuse that their reading can make, and indeed has done in all ages the passions of men, and the fanaticism of heterodox sects, there being no error so absurd and monstrous that it has not been intended to be justified by the authority of Scripture.⁶¹ [Emphasis added]

Certainly, the fear was that the understandings that were made of these books would lead to the understanding that reading could be an act of transgression and resistance. In this movement, a latent issue arose to which all the others would converge: to control the understanding that would escape the dictates of Catholic morality, of faith, that would inquire, and make subject to discussion what had been imposed by the various forces, including the Church, as dogma and religious teaching. It is no coincidence that, in "Sacred History", by José

⁵⁹ COSTA, Emília Viotti da. **Crowns of glory, tears of blood**: the rebellion of the slaves of Demerara in 1823. São Paulo: Companhia das Letras, 1998, p. 29.

⁶⁰ Ibid., p. 31.

⁶¹ ROQUETE, José Ignacio. **Sacred History of the Old and New Testaments Enriched with notes and moral reflections, for the instruction and sanctification of the faithful**, Pariz: V^a J.-P. Aillaud, Guillard and Co., [n.d.], 10th ed. t. 1, p. VI.

Ignacio Roquete, advice is conveyed "about the dispositions with which they should read the word of God, if they wanted its reading to benefit them".⁶² The "transgression of reading" was feared,⁶³ that, based on their codes of understanding the world, they would make their own reading, including its reality linked to their social conditions.

"Providing for oneself in silence, seeking not to satisfy one's curiosity and neither to argue or criticize"⁶⁴ was what was expected of the subjects. They could seek in the teachings coming from the sacred scriptures "only the meaning elaborated by the Church herself".⁶⁵ It was necessary, therefore, to instruct them before reading in the printed materials. In this scenario, the early years would constitute a time of preparation for children so that, before reading and studying the book, "they would already be used to listening to them, and impregnated with their spirit".⁶⁶ With a predominance of a rhetoric of language based on virtues, on the explanation of earthly deeds through religion, with an extremely moralizing tone, in the short story "Passarinhos", by Viscount of Castilho, in the *Fourth Book of Reading*, by Abílio Cesar Borges, the order of things related to work and sustenance was already established: the poor had to show solidarity with each other in the face of their conditions of precision and wait peacefully for the celestial assistance.

What is it to give free rein to care? God never opens his own out of his hands. Divine love has secrets that we barely take care of. Let us believe, hope, love and go on peacefully on our way."⁶⁷ If I die before you, you will be the father of my children; if you die before I, I will be the father of yours; and if we both die before they are of an age that they can support themselves, they will have him who dwells in heaven as their father.⁶⁸

Day and night, a common concern accompanied these men who worked in the fields and supported their wives and several children with the work of their hands: "if I die or fall into bed, sick, what will become of my wife and children?" In the dialogue in question, the wait for better conditions came to mean the fulfillment of the directions designated by the Church for the life

⁶² ROQUETE, José Ignacio. **Sacred History of the Old and New Testaments Enriched with notes and moral reflections, for the instruction and sanctification of the faithful**, Pariz: V^a J.-P. Aillaud, Guillard and Co., [n.d.], 10th ed. t. 1, p. XIII.

⁶³ BOTO, Carlota. **The world in writing**: uses and customs of Portuguese school reading in the nineteenth century. Coimbra: Separata da Revista de História das ideias, Vol. 20. Faculty of Letters, 1999, p. 249.

⁶⁴ JULIA, Dominique. Readings and counter-reform. In: CAVALLO, Guglielmo; CHARTIER, Roger (ed.). **History of reading in the Western world**, vol. 2. Editora Ática, 1999, p. 90.

⁶⁵ JULIA, Dominique. Readings and counter-reform. In: CAVALLO, Guglielmo; CHARTIER, Roger (ed.). **History of reading in the Western world**, vol. 2. Editora Ática, 1999, p. 90.

⁶⁶ Ibidem.

⁶⁷ BORGES, Abílio Cesar. **Fourth Reading Book for use by Brazilian schools**. Rio de Janeiro; Francisco Alves, New Edition, part: The birds (history) of Visconde de Castilho, p. 187.

⁶⁸ BORGES, Abílio Cesar. **Fourth Reading Book for use by Brazilian schools**. Rio de Janeiro; Francisco Alves, New Edition, part: The birds (history) of Visconde de Castilho, p. 187.

of the faithful. In the education of the poor, there was a concern to make the relationship between poverty and a future expectation fed by resignation and gratitude more and more intimate, having to be content with the goods they had, even if they were only their labor power, as also said in the story entitled "Resignation of a mother", by Antônio Feliciano de Castilho, present in the "Fourth Book of Reading" by Abílio: "Daughter, in much to possess is not what happiness is set, but in waiting and loving much".⁶⁹

Attentive to these allegations conveyed in school textbooks, there is a split or even aggravation that makes us ask: and did things turn out as the illustrated segments so well desired, in this case, the authors of school textbooks? When the balance seemed to tip in favor, at least in the field of ideas, of the messages conveyed in books, the investigation allowed us to glimpse another path. In this, the actions of the poor will be a kind of frontier in which one will try daily to "make destiny retreat".⁷⁰ Continuing, it is in the next chapter that we start to weave this plot.

2 FINAL CONSIDERATIONS

The analysis of the reading books used in primary education in Ceará in the second half of the nineteenth century allows us to understand that the teaching of reading was deeply articulated with the moral, religious and disciplinary formation of the subjects. More than instruments for literacy, school textbooks were devices for the dissemination of Catholic values, social order, and legitimization of the hierarchies that structured nineteenth-century society. In its pages, learning to read meant, above all, learning to obey, to work, to resign oneself and to recognize social differences as natural.

The manuals of Abílio Cesar Borges and Achilles Monteverde show that elementary public education was conceived as part of a civilizing project aimed especially at the poor and free layers of the population. In this project, religion, work and discipline appeared inseparably. The anecdotes, fables, prayers, maxims and hymns present in these printed materials sought to shape behaviors, control sensibilities and produce useful subjects for the social and economic order in consolidation. Childhood was taken as a privileged space for intervention, since, through it, it would be possible to form the obedient worker, the resigned Christian and the citizen submissive to the constituted authorities.

It was also observed that the discourses present in these books were articulated with the broader transformations experienced by the Empire of Brazil in the second half of the nineteenth

⁶⁹ BORGES, Abílio Cesar. **Fourth Reading Book for use by Brazilian schools**. Rio de Janeiro; Francisco Alves, New Edition, part: The birds (history) of Visconde de Castilho, p. 190.

⁷⁰ PERROT, Michelle. **Those excluded from history**: workers, women, prisoners. São Paulo: Paz e Terra, 2020, p. 120.

century. In this context, school forms acted as important instruments for building consensus, spreading an ethic of work, economy, charity and Christian resignation. At the same time that they promised abundance, happiness and moral ascension through work, they naturalized poverty and reaffirmed the dependence of the popular classes.

The Catholic religion occupied a central position in this process. Far from disappearing in the face of the expansion of the publishing market and the proposals for pedagogical modernization, it was re-elaborated and incorporated into the new school printed materials. Thus, reading books took on functions previously attributed to catechisms and other religious works, becoming supports for spiritual and moral formation. The images, biblical texts and edifying narratives continuously reinforced the need for faith, obedience and self-control, seeking to guide not only the school space, but also the family daily life and the most ordinary practices of social life.

However, although the discourses conveyed in these compendiums sought to produce conformity and submission, the very need to insist on themes such as resignation, discipline and obedience reveals tensions and fears present among the political, intellectual and ecclesiastical elites. The fear that education would awaken desires for equality, freedom and social ascension permeated the debates on education and schooling. Reading, in this sense, carried an ambiguous dimension: it could serve both the control and the possibility of questioning the current order.

In this way, the school books analyzed allow us to understand nineteenth-century public education beyond a simple literacy policy. They show the school as a space for the construction of subjectivities, the regulation of conducts and the dissemination of political and religious projects. At the same time, they reveal the limits, contradictions and disputes that marked the efforts to form the popular strata in imperial Ceará. It is precisely in this terrain of tensions between discipline and resistance, conformation and lived experience, that the daily practices of poor subjects are inscribed in the face of the civilizing projects elaborated by the elites, an issue that will be deepened in the following chapter.

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THE TEACHING OF SOLID GEOMETRY FROM THE PERSPECTIVE OF AMAZONIAN CONTEXTUALIZATION: A KIT OF MANIPULATIVE AND DIGITAL ACTIVITIES FOR ELEMENTARY EDUCATION

O ENSINO DE GEOMETRIA ESPACIAL SOB A ÓTICA DA CONTEXTUALIZAÇÃO AMAZÔNICA: UM KIT DE ATIVIDADES MANIPULATIVAS E DIGITAIS PARA O ENSINO FUNDAMENTAL

LA ENSEÑANZA DE LA GEOMETRÍA ESPACIAL DESDE LA PERSPECTIVA DE LA CONTEXTUALIZACIÓN AMAZÓNICA: UN KIT DE ACTIVIDADES MANIPULATIVAS Y DIGITALES PARA LA EDUCACIÓN PRIMARIA



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ABSTRACT

This article presents a proposal for pedagogical intervention in the teaching of Solid Geometry for the 8th grade of Elementary Education through a kit of manipulative and digital activities. The initiative arises from the need to address students' recurring difficulties with three-dimensional concepts, as identified by the Amazonas Learning Verification Assessment (AVAM). The kit, composed of ten activities, integrates low-cost concrete resources and digital tools accessible through QR Codes, promoting active learning contextualized to the Amazonian reality. Grounded in Van Hiele's Theory of Geometric Thinking Levels and Ausubel's Theory of Meaningful Learning, the material seeks to develop visualization skills, logical reasoning, and geometric argumentation, in alignment with the National Common Curricular Base (BNCC). Although the educational product has not been empirically applied, its theoretical and methodological design offers an innovative and adaptable resource for educators, with the potential to transform the teaching of Solid Geometry, making it more dynamic, inclusive, and meaningful for students in the region. Regional contextualization is a central pillar, connecting geometric solids to elements of everyday Amazonian life in order to create meaningful learning anchors. This work aims to contribute to improving students' performance in external assessments and to inspire the development of analogous teaching materials.

Keywords: Solid Geometry. Elementary Education. Amazonian Contextualization. Manipulative Materials. Digital Technologies.

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RESUMO

Este artigo apresenta uma proposta de intervenção pedagógica para o ensino de Geometria Espacial no 8º ano do Ensino Fundamental, por meio de um kit de atividades manipulativas e digitais. A iniciativa surge da necessidade de abordar as dificuldades recorrentes dos estudantes em conceitos tridimensionais, conforme identificado pela Avaliação de Verificação da Aprendizagem do Amazonas (AVAM). O kit, composto por dez atividades, integra recursos concretos de baixo custo e ferramentas digitais acessíveis via QR Codes, promovendo uma aprendizagem ativa e contextualizada à realidade amazônica. Fundamentado na Teoria dos Níveis de Pensamento Geométrico de Van Hiele e na Teoria da Aprendizagem Significativa de Ausubel, o material busca desenvolver habilidades de visualização, raciocínio lógico e argumentação geométrica, alinhado à Base Nacional Comum Curricular (BNCC). Embora o produto educacional não tenha sido aplicado empiricamente, sua concepção teórica e metodológica oferece um recurso inovador e adaptável para educadores, com potencial para transformar o ensino de Geometria Espacial, tornando-o mais dinâmico, inclusivo e significativo para os estudantes da região. A contextualização regional é um pilar central, conectando sólidos geométricos a elementos do cotidiano amazônico, visando criar âncoras de aprendizagem significativas. Este trabalho visa contribuir para a melhoria do desempenho dos estudantes em avaliações externas e inspirar o desenvolvimento de materiais didáticos análogos.

Palavras-chave: Geometria Espacial. Ensino Fundamental. Contextualização Amazônica. Materiais Manipulativos. Tecnologias Digitais.

RESUMEN

Este artículo presenta una propuesta de intervención pedagógica para la enseñanza de la Geometría Espacial en el 8.º grado de la Educación Primaria, mediante un kit de actividades manipulativas y digitales. La iniciativa surge de la necesidad de abordar las dificultades recurrentes de los estudiantes en conceptos tridimensionales, según lo identificado por la Evaluación de Verificación del Aprendizaje del Amazonas (AVAM). El kit, compuesto por diez actividades, integra recursos concretos de bajo costo y herramientas digitales accesibles mediante códigos QR, promoviendo un aprendizaje activo y contextualizado a la realidad amazónica. Fundamentado en la Teoría de los Niveles de Pensamiento Geométrico de Van Hiele y en la Teoría del Aprendizaje Significativo de Ausubel, el material busca desarrollar habilidades de visualización, razonamiento lógico y argumentación geométrica, en consonancia con la Base Nacional Común Curricular (BNCC). Aunque el producto educativo no ha sido aplicado empíricamente, su concepción teórica y metodológica ofrece un recurso innovador y adaptable para los educadores, con potencial para transformar la enseñanza de la Geometría Espacial, haciéndola más dinámica, inclusiva y significativa para los estudiantes de la región. La contextualización regional constituye un pilar central, conectando los sólidos geométricos con elementos de la vida cotidiana amazónica con el fin de crear anclajes de aprendizaje significativos. Este trabajo busca contribuir a la mejora del desempeño de los estudiantes en evaluaciones externas e inspirar el desarrollo de materiales didáticos análogos.

Palabras clave: Geometría Espacial. Educación Primaria. Contextualización Amazónica. Materiales Manipulativos. Tecnologías Digitales.

1 INTRODUCTION

The teaching of Spatial Geometry in Elementary School represents a significant challenge for educators and students, often marked by abstract approaches that hinder understanding and engagement. In the Amazonian context, this complexity is accentuated by the need for contextualization that dialogues with the sociocultural reality of the students,

making learning more meaningful and relevant (Educational Product, p. 1) (Nunes, 2024). This article proposes to present and discuss a Kit of Manipulative and Digital Activities for Elementary School, entitled "The Teaching of Spatial Geometry from the Perspective of Amazonian Contextualization", developed for the 8th grade of Elementary School. The main objective is to offer Mathematics teachers a set of didactic materials that enable the teaching of Spatial Geometry in a playful, practical and interactive way, overcoming the recurring difficulties identified in assessments such as the Amazonas Learning Verification Assessment (AVAM) (Amazonas, 2020-2023).

The genesis of this educational product lies in the analysis of the AVAM descriptors, which, as of 2020, revealed gaps in students' understanding of specific geometric topics (D01 to D07). In response to this demand, the kit was designed with ten activities that integrate low-cost concrete resources, such as cardboard and toothpicks, and digital tools accessible via QR Codes, which lead to simulations and three-dimensional representations. This approach aims to promote active learning, the development of visualization skills, logical reasoning, and geometric argumentation, in line with the guidelines of the National Common Curriculum Base (BNCC, 2018) (BNCC, 2018).

Although the kit was not applied in the classroom in the present study, configuring itself as a theoretical-methodological proposal, its construction and analysis are based on consolidated theoretical references and aligned with the demands observed in state schools in the municipality of Manaus, in the state of Amazonas. Regional contextualization is a fundamental pillar, seeking to connect geometric solids to elements of Amazonian daily life, such as riverside stilts and straw hats, to create meaningful learning anchors (Ausubel, 2003). The guiding question that guided the research was: how can the contextualization of Mathematics problem questions, related to the daily life and sociocultural reality of students, contribute to meaningful learning and the development of students' critical reasoning? This article will detail the theoretical foundation, the methodology of product development, the characteristics of the activity kit, and the final considerations about its potential impact on the teaching of Spatial Geometry in the Amazon region.

2 THEORETICAL FRAMEWORK

The teaching of Spatial Geometry is a fundamental axis for the development of students' geometric, spatial and critical thinking. Understanding the shapes, sizes, positions, and properties of objects in space is essential not only for advancement in other areas of mathematics, but also for the interpretation of the physical world and for solving everyday problems (Lorenzato, 2006, p. 75). Historically, geometry has been a pillar of mathematics education, contributing to the development of superior cognitive skills, such as visualization, analysis, and deduction.

According to the National Common Curricular Base (BNCC, 2018), skills related to this field include the interpretation and representation of three-dimensional shapes, the association of solids with their flattening (EF06MA17) and the recognition of orthogonal views (EF09MA17). Such competencies aim to stimulate problem solving, argumentation, and the construction of increasingly abstract geometric reasoning (BNCC, 2018). However, the inherent complexity of geometric abstraction, combined with the lack of adequate and contextualized didactic resources, often results in learning difficulties and lack of interest on the part of students (Smole; Diniz, 2001, p. 15).

It is in this scenario that the theoretical foundation becomes crucial, providing the basis for the development of effective and innovative pedagogical practices. This theoretical framework will explore the main approaches that underpin the activity kit proposal, including Van Hiele's Theory, Ausubel's Meaningful Learning, Ethnomathematics, and the use of Manipulative Materials and Digital Technologies, all interconnected by the need for Amazonian contextualization.

Van Hiele's Theory and the Development of Geometric Thinking

Van Hiele's (1986) theory of levels is widely recognized for explaining how students evolve in their geometric understanding, going through five levels of development:

- Level 0 – Visualization (the student recognizes figures by their global appearance, without considering properties);
- Level 1 – Analysis (the student identifies properties of the figures, such as parallel sides, angles and measurements);
- Level 2 – Informal Deduction (the student can relate properties and justify conclusions);
- Level 3 – Formal Deduction (the student understands the role of definitions, axioms and theorems, building formal proofs);
- Level 4 – Rigor (the student is able to work with different axiomatic systems and non-

Euclidean geometries) (Van Hiele, 1986, p. 12-15).

This progression underpins the sequential organization of the activities proposed in this kit, aiming to lead the 8th grade student to move between the levels of Visualization, Analysis and Informal Deduction. According to Usiskin (1982), the progression through these levels is characterized by a fixed order, where the student cannot skip steps, because each level builds the vocabulary and the network of relationships necessary for the next (Usiskin, 1982, p. 4).

The importance of respecting this sequence is crucial to avoid gaps in learning and frustration on the part of students. In the context of the 8th grade, the transition from Level 1 (Analysis) to Level 2 (Informal Deduction) is critical, as it requires the student to stop seeing the properties in isolation and start to understand the logical interconnections between them, building small deductive chains. Barrera Mora and Reyes Rodríguez (2013) emphasize that each level has its own language and its own symbols, and communication between teacher and student is only effective if both are operating at the same level (Barrera Mora; Reyes Rodríguez, 2013, p. 3).

Oliveira and Leivas (2017) emphasize that visualization and geometric representation are skills that should be stimulated from an early age, as the lack of mastery over spatial geometry in Elementary School directly reflects on performance in later stages (Oliveira; Leivas, 2017, p. 12). The manipulation of concrete objects and the exploration of two- and three-dimensional representations are essential for the development of these skills. The use of dynamic geometry software, such as GeoGebra, combined with Van Hiele's theory, allows the student to experience "dynamic visualization", facilitating the transition between two-dimensional and three-dimensional (Almeida, 2023, p. 5). This technological approach, when well planned, can speed up the passage through the levels, making geometric concepts more accessible and concrete for students.

The importance of activities that promote interaction and reflection is highlighted by Clements and Sarama (2009), who argue that the development of geometric thinking is not automatic, but rather the result of carefully planned learning experiences (Clements; Sarama, 2009, p. 10). The proposed activity kit, by integrating manipulative materials and digital resources, seeks to offer an environment rich in opportunities for students to explore, conjecture and validate their findings, facilitating the transition between Van Hiele levels. The teacher's mediation, in this process, is fundamental to guide students, propose questions and stimulate mathematical communication, transforming the classroom into a space for the collective construction of geometric knowledge (Ponte; Serrazina; Guimarães, 2005, p. 30).

Van Hiele (1986) also proposed five phases of learning that guide instruction at each level: Information, where the teacher presents the new topic; Directed orientation, with structured activities to explore the theme; Explicitness, where students express their findings; Free guidance, with more complex problems that require investigation; and Integration, where students synthesize the knowledge acquired. The structure of this activity kit was designed to respect these phases, promoting a gradual and conscious transition between the levels of geometric thinking.

2.1 AUSUBEL'S MEANINGFUL LEARNING IN MATHEMATICS

The theoretical foundation of this product is also based on Ausubel's (2003) theory of meaningful learning, which emphasizes the importance of connecting new knowledge to students' previous knowledge (Ausubel, 2003, p. 2). For David Ausubel, meaningful learning occurs when new information is anchored in relevant concepts already existing in the learner's cognitive structure, the so-called subsumers. Unlike machine learning, where new knowledge is stored in an arbitrary and literal way, in meaningful learning there is an interaction between the new and the already existing, resulting in a modification of both (Ausubel, 2003, p. 3). This interaction is essential for the construction of lasting and applicable knowledge.

Huf et al. (2024) point out that, in mathematics teaching, the adoption of the Theory of Meaningful Learning (SAT) requires the teacher to identify this prior knowledge so that the new learning is not merely mechanical or memoristic (Huf et al., 2024, p. 2). The relevance of the material to be learned and the student's predisposition to learn are crucial factors for meaningful learning to occur. Katia (2018) adds that the teaching of mathematics should be a process of dialogical construction, supported by the principles of meaningful learning, where the student is the protagonist of his own learning (Katia, 2018, p. 3).

The use of "prior organizers", introductory materials that serve as a bridge between what the student knows and what he should learn, is an effective strategy to promote this anchoring (Ausubel, 2003, p. 6). Ausubel distinguishes two main types of prior organizers: expository, which presents general and comprehensive concepts before introducing details, and comparative, which integrates new ideas with similar concepts already existing in the learner's cognitive structure (Ausubel, 2003, p. 7). In the case of spatial geometry, the activity kit acts as a prior organizer, providing concrete experiences that facilitate the assimilation of abstract concepts of volume, surface area, and properties of geometric solids (Damian; Kaiber, 2025, p. 15).

Manipulating physical models and visualizing digital representations allow students to build a solid foundation of knowledge before delving into formulas and calculations. Active interaction with didactic material, whether concrete or digital, is a catalyst for the formation of subsumers, as it provides direct experiences that facilitate the assimilation of complex concepts (Moreira, 2011, p. 54). In this way, the activity kit is not just a resource, but a mediator between the student's previous knowledge and the new geometric concepts, making learning a dynamic and participatory process.

In addition, meaningful learning in mathematics is enhanced when the proposed problems are relevant to the students' lives, connecting school content to their daily lives and culture (D'Ambrosio, 2019). Amazonian contextualization, therefore, is not only a backdrop, but an intrinsic element in the promotion of meaningful learning, as it allows students to see the usefulness and applicability of geometric concepts in their own environment. This approach is aligned with both the BNCC guidelines and current research recommendations, reinforcing the importance of Spatial Geometry teaching based on active methodologies and innovative resources, with a specific focus on overcoming the difficulties mapped by large-scale evaluations of the state of Amazonas. The Theory of Meaningful Learning, by emphasizing the importance of the interaction between new knowledge and the preexisting cognitive structure, offers a robust framework for the development of didactic materials that truly promote the understanding and retention of learning.

2.2 ETHNOMATHEMATICS AND THE AMAZONIAN REALITY

The Ethnomathematics Program, proposed by Ubiratan D'Ambrosio (2019), argues that mathematics is a cultural response to the needs of survival and transcendence (D'Ambrosio, 2019, p. 1). He argues that mathematics is not a universal and apolitical knowledge, but rather a set of knowledge and practices developed by different cultures to deal with their realities and needs (D'Ambrosio, 2009, p. 16). In the Amazon, the traditional knowledge of riverside and indigenous communities offers a vast field for the contextualization of teaching, allowing mathematics to be perceived as an integral part of local life and culture.

Pessoa et al. (2026) highlight that ethnomathematics in the region should not be seen only as a cultural curiosity, but as a tool for social justice and sustainability, valuing local practices as legitimate forms of mathematical knowledge (Pessoa et al., 2026, p. 1). The inclusion of this knowledge in the school curriculum contributes to the appreciation of the cultural identity of students and to the construction of a more equitable and relevant education. Mathematics, in this context, ceases to be an imposed and abstract knowledge to become a

tool for empowerment and understanding of the world. Ethnomathematics, by recognizing and valuing the ways of thinking and doing mathematics present in local cultures, promotes a more inclusive and democratic education (D'Ambrosio, 2009, p. 20). In the Amazonian context, this means integrating the practices of counting, measuring, classifying, and spatial organization of riverside, indigenous, and extractive communities, such as the construction of housing, river navigation, basket-making, and traditional agriculture, with the formal teaching of geometry (Silva; Bezerra, 2025, p. 15). This integration not only makes math more accessible and interesting for students, but also strengthens their cultural identity and sense of belonging.

In addition, ethnomathematics in the Amazon can be a powerful tool for environmental education, by exploring the relationship between traditional mathematical knowledge and the sustainability of local ecosystems. For example, the understanding of geometric shapes present in nature, such as the structure of leaves, flowers and fruits, or the growth patterns of plants and animals, can be used to teach geometric concepts in a contextualized and interdisciplinary way (Silva; Bezerra, 2025, p. 18). The analysis of the construction techniques of canoes, stilts and fishing traps, which involve complex geometric principles, offers a unique opportunity for students to apply mathematics in real and meaningful situations. This approach not only enriches the learning of geometry, but also promotes the appreciation of ancestral knowledge and awareness of the importance of environmental preservation in the region (D'Ambrosio, 2019, p. 25). Ethnomathematics, therefore, transcends the mere application of mathematical concepts, transforming itself into an instrument of cultural dialogue and the construction of a more relevant and transformative education for Amazonian students.

Valuing local knowledge and building a more meaningful curriculum are crucial aspects of ethnomathematics. By recognizing that different cultures develop their own forms of mathematics, teaching can become more inclusive and respectful of students' cultural diversity (Gerdes, 2010, p. 45). This is particularly relevant in the Amazon, where the cultural richness of indigenous and riverine communities offers a vast repertoire of mathematical knowledge that can be explored in the classroom. The inclusion of this knowledge in the curriculum not only makes mathematics more accessible and interesting, but also strengthens the cultural identity of students and promotes a sense of belonging (D'Ambrosio, 2009, p. 20). Ethnomathematics, in this sense, is not only a methodology, but an educational philosophy that seeks to value local knowledge and build a more meaningful and contextualized curriculum.

Another point to be considered is the intrinsic relationship between ethnomathematics and environmental education in the Amazon. The mathematics present in the practices of sustainable management of natural resources, in the social organization of communities and in

the interpretation of natural phenomena can be explored to develop a critical environmental awareness in students (Silva; Bezerra, 2025, p. 20). By studying, for example, the geometric patterns of fishing nets or the ways of building houses that adapt to the flooding regime of rivers, students not only learn geometry, but also understand ancestral wisdom and the importance of sustainability for the region. This interdisciplinary approach, which connects mathematics to ecology and local culture, is essential to form citizens who are aware of and engaged with the preservation of the Amazon biome (D'Ambrosio, 2019, p. 35). Ethnomathematics, therefore, presents itself as a path to a more holistic education, which integrates scientific knowledge with traditional knowledge, promoting a deeper and more respectful understanding of the world.

Finally, ethnomathematics offers a perspective for building a mathematics curriculum that is truly relevant to Amazonian students. Instead of importing pedagogical models from other realities, ethnomathematics proposes that the curriculum be built from the experiences and knowledge of the students themselves, making learning more meaningful and engaging (Gerdes, 2010, p. 50). This implies a flexible curriculum, which adapts to the particularities of each community, recognizing and valuing their forms of knowledge. Ethnomathematics, therefore, is not only a pedagogical approach, but a commitment to equity and cultural relevance in mathematics education, especially in contexts of diversity such as the Amazon (D'Ambrosio, 2009, p. 22). Ethnomathematics, therefore, is not only a tool for teaching geometry, but an approach that aims to transform education, making it more just, equitable, and aligned with the needs and aspirations of Amazonian communities (D'Ambrosio, 2019, p. 40).

The connection between geometric solids and elements such as riverside stilts, the shape of canoes, local handicrafts (straw hats, basketry) or even the architecture of traditional houses allows students to perceive mathematics as something alive and present in their territory. This "multicultural" approach in mathematics teaching favors engagement and the construction of a positive identity in relation to the discipline (Vieira, 2008, p. 148). In addition, by exploring ethnomathematics, students develop critical thinking about the origin and application of mathematical knowledge, recognizing the diversity of ways of thinking and solving problems. Filho and Nicot (2020) emphasize the importance of using forest elements in the production of methodological resources for the teaching of Science and Mathematics in the Amazonian context, promoting an education that dialogues with the local reality (Filho; Nicot, 2020, p. 1- 2). Ethnomathematics, therefore, is not only a methodology, but an educational philosophy that seeks to value local knowledge and build a more meaningful and contextualized curriculum.

In this sense, ethnomathematics acts as a bridge between formal and informal knowledge, allowing students to recognize mathematics in their own experiences and, from there, build a deeper understanding of abstract concepts (D'Ambrosio, 2019, p. 30).

Valuing traditional knowledge does not mean replacing academic mathematics, but rather enriching it, making it more relevant and accessible to students in the Amazon. Magalhães' (2025) research on mathematics education in the Western Amazon highlights the importance of rescuing manipulable materials and pedagogical practices that consider the local reality, especially in times of digital restriction (Magalhães, 2025, p. 5). This perspective reinforces the need for education that is sensitive to the cultural and environmental particularities of the region, promoting education that is truly transformative and that contributes to the sustainable development of Amazonian communities. The integration of ethnomathematics into the curriculum is not limited to isolated examples, but seeks a restructuring that allows students to develop a more holistic and critical view of mathematics, recognizing it as a humanly and culturally situated construction (Gerdes, 2010, p. 45). This approach contributes to demystifying mathematics as a distant and abstract discipline, making it an integral part of the identity and cultural heritage of Amazonian students.

2.3 MANIPULATIVE MATERIALS AND DIGITAL TECHNOLOGIES IN THE TEACHING OF SPATIAL GEOMETRY

The use of manipulative materials and digital technologies in the teaching of spatial geometry is a crucial component for overcoming learning difficulties and for promoting a deeper and more lasting understanding of concepts (Nunes, 2024). Manipulative materials, such as logic blocks, geometric solids to assemble, or even everyday objects, allow students to physically interact with shapes, exploring their properties, relationships, and transformations in a concrete way (Smole; Diniz, 2001, p. 25). This tactile and visual interaction is fundamental for the development of spatial thinking, especially in the early levels of Van Hiele's theory, where visualization and analysis of figures are predominant.

According to Lorenzato (2006), the use of concrete materials in mathematics class is not an end in itself, but a means for the student to construct knowledge, moving from the concrete to the abstract in a significant way (Lorenzato, 2006, p. 80). The playfulness inherent in these materials stimulates student engagement, making learning more pleasurable and less intimidating. In the Amazonian context, the creation of low-cost materials, using local resources, not only makes the proposal more accessible, but also reinforces the contextualization and appreciation of the community's knowledge (Filho; Nicot, 2020, p. 3). The construction of models

of geometric solids from elements of nature or recyclable materials, for example, can be an activity rich in meaning and learning.

Digital technologies, in turn, complement manipulative materials by offering new possibilities for visualization and interaction with geometric concepts. Dynamic geometry software, such as GeoGebra, augmented reality applications, and interactive platforms allow students to explore three-dimensional shapes from different angles, perform rotations, translations, and visualize planes dynamically (Almeida, 2023, p. 7). This virtual manipulation capacity enriches the learning experience, facilitating the understanding of concepts that would be difficult to visualize only in two-dimensional representations. The integration of QR Codes in the activity kit, directing to these digital resources, is a strategy that seeks to unite the best of both worlds: the concreteness of the manipulable material and the interactivity of the technology.

However, the mere presence of manipulative materials or digital technologies does not guarantee meaningful learning. It is essential that the teacher acts as a mediator, planning activities that stimulate the students' exploration, discussion and critical reflection (Ponte; Serrazina; Guimarães, 2005, p. 35). The continuing education of teachers for the effective use of these resources is, therefore, a crucial aspect for the success of innovative pedagogical proposals. The ability to adapt activities to the needs and realities of students, to propose challenges appropriate to different levels of geometric thinking and to promote interaction among students are essential skills for the contemporary educator (Scolaro, 2018, p. 40).

Additionally, it is important to consider the challenges of infrastructure and access to technology in many regions of the Amazon. In these contexts, the prioritization of low-cost materials and the use of digital technologies that can be accessed offline or with low connectivity become even more relevant (Magalhães, 2025, p. 8). The activity kit, by combining concrete and accessible digital resources, seeks to be a solution adaptable to different realities, ensuring that pedagogical innovation is not a privilege of a few, but an opportunity for all students. The combination of manipulative materials and digital technologies, when well planned and mediated, has the potential to transform the teaching of Spatial Geometry, making it more dynamic, interactive and, above all, meaningful for Elementary School students. In addition, the integration of these tools must be accompanied by a critical reflection on their use, preventing them from becoming mere substitutes for traditional pedagogical practices without adding value to learning (Valente, 2011, p. 45). The continuing education of teachers is, therefore, an essential pillar for the potential of these resources to be fully explored, ensuring that technology and manipulative materials are used as instruments of pedagogical mediation and not as ends in themselves (Moran, 2015, p. 60). This perspective emphasizes the importance of careful

planning and constant evaluation of pedagogical practices , aiming to improve the teaching-learning process of spatial geometry. Furthermore, the integration of digital technologies, such as GeoGebra, is not limited only to the visualization of three-dimensional objects, but also allows the construction of interactive models, the exploration of geometric properties in a dynamic way, and the resolution of complex problems that would be unfeasible with traditional methods (Almeida, 2023, p. 10). The possibility of virtually manipulating geometric objects, rotating them, flattening them and observing their transformations in real time, contributes significantly to the development of spatial perception and abstract reasoning of students. However, it is crucial that the use of these technologies is intentional and pedagogical, preventing them from becoming mere entertainment tools without a clear educational purpose (Moran, 2015, p. 65). Training teachers in the competent and critical use of these tools is therefore an essential investment to ensure that technology is a catalyst for learning rather than an obstacle.

Another relevant aspect is the ability of digital technologies to promote collaboration and communication among students. Online platforms and virtual learning environments can be used for students to share their findings, discuss problem-solving strategies, and build knowledge collectively (Valente, 2011, p. 50). This collaborative approach, coupled with the manipulation of concrete and digital objects, creates a rich and diverse learning environment where students are encouraged to explore, experiment, and build their own understanding of geometric concepts. The combination of manipulative materials and digital technologies, therefore, is not only a strategy to make the teaching of spatial geometry more interesting, but a pedagogical approach that aims to develop cognitive, social, and emotional skills essential for the twenty-first century (Scolaro, 2018, p. 45).

In addition, ethnomathematics offers a path to the decolonization of the curriculum, by questioning the hegemony of a single form of mathematical knowledge and opening space for the plurality of knowledges (Knijnik, 2012, p. 78). By recognizing that different cultures have developed their own ways of quantifying, measuring, and organizing space, students are encouraged to value their own cultural heritages and to understand mathematics as a diverse and ever-evolving human construct. This perspective is particularly relevant in the Amazon, where cultural diversity is a striking feature and where the imposition of external educational models can lead to alienation and disinterest. Ethnomathematics, therefore, is not only a pedagogical strategy, but an ethical and political commitment to a fairer, more inclusive, and contextualized education (D'Ambrosio, 2019, p. 35).

Studies such as those by Ferreira, Gomes, and Silva (2022) highlight that the use of manipulative and digital materials contributes to making learning more meaningful, as it brings

the student closer to concrete experiences of everyday life (Ferreira; Gomes; Silva, 2022, p. 112). The manipulation of concrete objects allows students to explore abstract concepts in a tactile and visual way, building a deeper and more lasting understanding. Lorenzato (1995) and Scolaro (2008) reinforce that the use of manipulable materials enhances learning by enabling students to build deeper cognitive relationships between two-dimensional and three-dimensional representations (Lorenzato, 1995, p. 8; Scolaro, 2008, p. 6). Lorenzato states that the mathematics teaching laboratory should be a space for experimentation, where manipulable material serves as a mediator between intuitive and formal thinking (Lorenzato, 1995, p. 8). Scolaro adds that the handling of physical objects allows the student to "feel" the geometric properties, something that the mere observation of drawings on the blackboard does not provide (Scolaro, 2008, p. 6).

Interaction with these materials develops spatial perception, visualization skills, and logical reasoning, essential skills for geometry. In addition, the playfulness present in games and activities with manipulable materials contributes significantly to student engagement, transforming learning into a pleasurable and motivating experience (Dantas, 2026, p. 35). The combination of different types of materials, such as logic blocks, geoplanes, dismountable geometric solids, and puzzles, allows us to approach the concepts of geometry from multiple perspectives, taking into account the different ways students learn (Cardoso, 2020, p. 255). The diversity of resources stimulates creativity, collaboration and problem-solving, crucial elements for the development of robust mathematical thinking.

In addition to manipulative materials, contemporary research indicates that the incorporation of digital resources, such as augmented reality (AR) and 3D modeling, can enhance spatial understanding (Silva; Andrade, 2025). These resources dialogue with the competencies of the BNCC by favoring active learning and promoting the integration between mathematical and technological knowledge (BNCC, 2018). Silva and Andrade (2025) argue that AR allows the overlay of virtual models on the real world, facilitating the understanding of orthogonal views and complex planning (Silva; Andrade, 2025, p. 55). The ability to rotate, zoom and interact with three-dimensional objects in a virtual environment enriches the learning experience and caters to students' different cognitive styles.

However, in the context of the state of Amazonas, where there are rural, riverside and indigenous communities without access to the internet or with limited connectivity, it is essential to consider viable pedagogical alternatives. In these places, the use of concrete materials, playful activities and everyday resources are elements that make up the proposed activity kit, ensuring accessibility and cultural relevance (Filho; Nicot, 2020, p. 1-2). Valuing local resources

and adapting pedagogical strategies to infrastructure conditions are crucial to promote equity in access to mathematics education. In addition, the inclusion of elements of local culture in teaching materials not only makes learning more meaningful, but also strengthens the cultural identity of students (D'Ambrosio, 2019).

Borba et al. (2014) warn that technology alone does not guarantee learning; it must be inserted in a pedagogical design that stimulates reflection, collaboration and the construction of meaning (Borba; Scucuglia; Gadanidis, 2014, p. 10). The mere introduction of digital tools without a clear pedagogical proposal and without the proper training of teachers can result in superficial and ineffective use. Therefore, the harmonious integration between the physical and the digital, adapted to local realities and based on sound pedagogical principles, is the key to effective and inclusive spatial geometry teaching. The combination of manipulative materials and digital resources, as proposed in this kit, offers a flexible approach that can be adjusted to the different realities of infrastructure and connectivity, maximizing students' learning potential. It is essential, however, that teachers receive adequate training to use these resources effectively, understanding not only the technical functioning, but also the pedagogical potential of each tool (Mendes; Silva, 2021, p. 45). The continuing education of educators is a determining factor for the success of the implementation of innovative methodologies, ensuring that technology is an ally in the teaching-learning process and not an obstacle. In addition, the constant evaluation of the adequacy of materials and pedagogical strategies to the specific context of the classroom allows for continuous adjustments and improvements, ensuring that the kit remains relevant and effective for Amazonian students.

In contexts of low connectivity, such as many regions of the Amazon, priority should be given to low-cost and highly adaptable solutions. Traditional manipulative materials, such as those proposed in this kit, prove to be valuable tools, as they do not depend on electricity or internet access, ensuring the continuity of learning in any scenario (Cardoso, 2020, p.

255). Cardoso's (2020) research highlights that the use of concrete materials, even in environments with limited resources, can promote deeper and more lasting learning, especially for geometric concepts that require visualization and manipulation (Cardoso, 2020, p. 255). The simplicity and ubiquity of these materials make them ideal for the Amazonian reality, where technological infrastructure is still a challenge.

On the other hand, the integration of digital technologies, even if in a one-off or offline way, can complement and enrich the experience. The use of QR Codes that direct to explanatory videos or 3D simulations preloaded on mobile devices (when available) can offer a differential, as long as access is facilitated and technology does not become an obstacle. The

key is the complementarity between analog and digital, where each resource is used to maximize its potential, without overloading existing infrastructure or excluding students with limited access (Silva; Pereira; Mikuska, 2025, p. 3). The training of teachers for the pedagogical use of these tools, both concrete and digital, is an essential pillar for the success of the proposal, ensuring that technology is a tool at the service of learning and not an end in itself (Borba; Scucuglia; Gadanidis, 2014, p. 10).

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3 METHODOLOGY

The methodology adopted in the construction of the educational product is based on principles of active learning, exploring manipulative and digital resources as a strategy to favor the understanding of geometric concepts. The process of creating the didactic kit occurred in stages articulated between bibliographic research, pedagogical planning and practical elaboration of materials (Educational Product, p. 1).

In the first stage, a bibliographic research was carried out in order to identify theoretical references and successful experiences in the teaching of Spatial Geometry with concrete and

digital materials. This review highlighted the importance of integrating active methodologies and technological resources, corroborating authors such as Borba, Scucuglia and Gadanidis (2014), who highlight the role of digital technologies in the reconfiguration of teaching and learning in Mathematics (Borba; Scucuglia, Gadanidis, 2014). At the same time, the results of the AVAM were analyzed, which pointed out the most critical Geometry descriptors, directing the focus of the product to these specific learning needs (Amazonas, 2020-2023).

In the second stage, the pedagogical planning was elaborated in line with the BNCC skills for Elementary School II and the AVAM descriptors. Objectives were defined such as recognizing properties of geometric solids, relating planes to three-dimensional figures, and developing spatial perception through experimentation. The sequence of ten activities was progressively organized according to the levels of Van Hiele (1986), starting with visual recognition activities, passing through property analysis and culminating in challenges that promote informal deduction and problem solving (Van Hiele, 1996)

The selection of solids for the cuttable flattening included cube, parallelepiped, prisms, pyramids and cylinder, whose didactic relevance is widely recognized (Nunes; Ponte, 2019), and that allow for an integrated approach to the descriptors identified as critical (Nunes; Ponte, 2019). The integration of digital resources via QR Codes aimed to expand the possibilities of exploration and meet different learning styles.

The third stage consisted of the practical elaboration of the materials that make up the kit, including: physical materials (cuttable plans, prototypes of the games and structures for practical activities); digital resources (multimedia content and QR Codes for 3D simulations); and supporting documentation (Teacher Guidelines Manual and the Geometer's Logbook, an instrument designed for reflective registration of the student) (Educational Product, p. 1).

Finally, the product underwent a theoretical and instructional design validation, ensuring its pedagogical coherence and configuring it as a complete tool ready for future pilot application, directly aimed at the needs of the Amazonian context. It should be noted that, as the kit was not applied, the focus was on its conception and theoretical validation, based on the demands diagnosed by the AVAM and the curricular references.

4 RESULTS AND DISCUSSIONS

The main result of this work is the development of the "Kit of Manipulative and Digital Activities for the Teaching of Solid Planning: Exploring Spatial Forms in the 8th Grade of Elementary School". This educational product was conceived as a response to the persistent difficulties of 8th grade students in Spatial Geometry, as evidenced by the critical descriptors of

the Amazonas Learning Verification Assessment (AVAM) (Amazonas, 2020-2023). The proposal aims to transform traditional teaching, often abstract and decontextualized, into an active, playful and meaningful learning experience, especially adapted to the Amazonian reality.

The kit consists of ten carefully designed activities, which integrate low-cost materials and digital resources, seeking a pedagogical progression aligned with the Van Hiele Levels. The activities are:

- **Cutable Solid Planes:** Allows the construction and manipulation of solids, understanding the relationship between two-dimensional and three-dimensional shapes.
- **Solid Bingo:** Game that encourages the recognition of solids by their properties, working on the levels of visualization and analysis.
- **Geometric Memory:** Associates images of solids to their planes, promoting the fixation of concepts.
- **QR Codes with Digital Resources (AR Solids):** Integrates technology for 3D visualization and dynamic exploration of plans, overcoming access barriers in some regions by allowing the use of local materials as an alternative.
- **Mathematical Escape Room:** Collaborative activity of solving geometry problems, stimulating logical reasoning and cooperation.
- **Maker Station \u2012 Polyhedron Construction:** Uses simple materials to construct polyhedron skeletons, making concepts such as vertices, edges, and faces tangible.
- **Mystery Tactile Box:** Inclusive resource that stimulates spatial perception by touch, catering to different learning styles.
- **Dominoes of Flattenings and Solids:** Reinforces the relationships between two-dimensional and three-dimensional representations.
- **Geometric Treasure Hunt at School:** Investigative activity that applies geometric concepts in real contexts of the school environment.
- **Workshop "Turn a Wrong Planning into a Correct One":** Challenges students to identify and correct errors in planning, developing critical thinking.

Each activity was designed to promote meaningful learning, according to Ausubel (Ausubel, 2003), by connecting geometric concepts to elements of Amazonian daily life. For example, the association of a rectangular prism with a riverside stilt house or a cone with a straw hat (Educational Product, p. 1). This contextualization, inspired by the principles of Ethnomathematics, D'Ambrosio (2019) and Pessoa (2026), aims to create learning anchors that facilitate the understanding of abstract concepts based on cultural and visual references familiar

to students from Manaus. The integration of manipulative and digital resources, as highlighted by Ferreira, Gomes and Silva (2022) and Silva and Andrade (2025), enhances spatial understanding and student engagement.

Although the kit was not applied empirically in this phase of the study, its theoretical and methodological conception represents a significant advance. The Teacher Guidance Manual and the Geometra Logbook are essential components that provide support for implementation, planning of classes aligned with the BNCC, and formative assessment. The manual suggests the active mediation of the teacher, the formation of heterogeneous groups and inclusive adaptations, ensuring that the kit is flexible and adaptable to the different school realities (Educational Product, p. 1).

For the future validation of the efficacy and pedagogical impact of the kit, a multidimensional evaluation protocol of mixed nature (qualitative and quantitative) is proposed. This protocol includes three main axes:

- Learning Assessment: Application of pre-test and post-test with questions aligned with the descriptors of the AVAM and skills of the BNCC, complemented by the analysis of the students' productions (solids assembled, corrected planning, records in the Logbook).
- Usability and Engagement Assessment: Student perception questionnaires (Likert scales and open-ended questions) and systematic classroom observation to record indicators of engagement, participation, and collaboration.
- Evaluation of Teaching Practice and Material Adequacy: Semi-structured interviews or focus groups with teachers to collect feedback on ease of use, adequacy to class time, and feasibility of pedagogical management, as well as suggestions for improvement (Educational Product, p. 1).

The triangulation of the data obtained by these instruments will allow a robust analysis of the effectiveness of the kit in overcoming learning difficulties, its motivational and didactic potential, and its feasibility of implementation in real contexts. Thus, the kit is configured as a promising tool for the teaching of Spatial Geometry, with a clear plan for its empirical validation and continuous improvement.

5 FINAL CONSIDERATIONS

This work culminates in the presentation of an innovative educational product, the "Kit of Manipulative and Digital Activities for the Teaching of Spatial Geometry from the Perspective of Amazonian Contextualization". Its conception represents an effort to transform the teaching of Spatial Geometry in the 8th grade of Elementary School, addressing the learning gaps identified in diagnostic assessments. The pedagogical proposal of the kit is based on a solid theoretical base, which integrates the stages of development of geometric thinking and the importance of connecting new knowledge with students' previous experiences.

The kit stands out for its contextualized approach, which seeks to bring abstract concepts of geometry closer to the reality experienced by students in the Amazon region. By using cultural elements and local daily life, the material aims not only to facilitate understanding, but also to promote greater engagement and appreciation of mathematics. The combination of low-cost manipulative resources with accessible digital tools demonstrates a practical and adaptable solution to the infrastructure and technology access challenges present in diverse communities.

The structure of the kit, which includes a detailed guide for the teacher and a logbook for students, has been carefully crafted to fully support classroom implementation. This organization allows educators to adapt activities to the specific needs of their classes, promoting inclusive and dynamic teaching. The flexibility of the material and the attention to different learning styles are crucial aspects for the success of the proposal.

Although the empirical application of the kit was not the focus of this step, the transformative potential of the material is evident. It is believed that this educational product can serve as a catalyst for new pedagogical practices, inspiring the development of other didactic resources that consider cultural richness and regional particularities. The path to the validation of its effectiveness and impact on student learning is outlined, and it is hoped that future investigations will confirm the value of this proposal for the teaching of Spatial Geometry in Brazil, especially in the Amazon.

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LEARNING CIRCULAR ECONOMY IN HIGHER EDUCATION: A PEDAGOGICAL MODEL FOCUSED ON SOCIAL IMPACT

APRENDENDO ECONOMIA CIRCULAR NO ENSINO SUPERIOR: UM MODELO PEDAGÓGICO FOCADO NO IMPACTO SOCIAL

APRENDIENDO ECONOMÍA CIRCULAR EN LA EDUCACIÓN SUPERIOR: UN MODELO PEDAGÓGICO CENTRADO EN EL IMPACTO SOCIAL



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ABSTRACT

The circular economy (CE) is a key alternative in the face of current environmental and production-related challenges. Its teaching requires pedagogical approaches that integrate theory, practice, and critical reflection. In this study, a course was designed that not only delivered theoretical content, but also strengthened students' ability to apply the CE as a framework for innovation, sustainability, and responsible decision-making. This university course was based on constructive alignment and participatory action research; it included lectures, guided discussions, collaborative work, and practical activities. The methodology was grounded in constructive alignment, ensuring that each activity and assessment corresponded to the established learning objectives. In addition, the methodology incorporated the use of PLS-SEM, a technique suitable for analyzing complex models based on perceptions through latent constructs derived from the empirical data collected, which made it possible to rigorously evaluate the relationships among the model's variables and provide statistical evidence of their consistency. The authors observed that the course enabled students to connect the principles of social entrepreneurship with solutions to real-world problems, while also highlighting the relevance of social and educational variables as driving factors for integrating CE into higher education. Furthermore, education for social entrepreneurship is supported by learning theories and adaptive technologies that facilitate personalized learning experiences. The findings of this investigation align with these methodologies, since they reside within statistically acceptable parameters, hence reinforcing the validity of the suggested model.

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Keywords: Innovation and Nature. Circular Design. Circular Services and Resources. Social Impact. PLS-SEM.

RESUMO

A economia circular (EC) constitui uma alternativa fundamental diante dos atuais desafios ambientais e produtivos. Seu ensino requer abordagens pedagógicas que integrem teoria, prática e reflexão crítica. Neste estudo, foi elaborado um curso que não apenas transmitiu conteúdos teóricos, mas também fortaleceu a capacidade dos estudantes de aplicar a EC como um referencial para inovação, sustentabilidade e tomada de decisões responsáveis. Este curso universitário baseou-se no alinhamento construtivo e na pesquisa-ação participativa; incluiu aulas, discussões orientadas, trabalho colaborativo e atividades práticas. A metodologia fundamentou-se no alinhamento construtivo, garantindo que cada atividade e avaliação correspondesse aos objetivos de aprendizagem estabelecidos. Além disso, a metodologia incorporou o uso de PLS-SEM, uma técnica adequada para analisar modelos complexos baseados em percepções por meio de construtos latentes derivados dos dados empíricos coletados, o que possibilitou avaliar de forma rigorosa as relações entre as variáveis do modelo e fornecer evidências estatísticas de sua consistência. Os autores observaram que o curso permitiu aos estudantes relacionar os princípios do empreendedorismo social com soluções para problemas do mundo real, ao mesmo tempo em que destacou a relevância das variáveis sociais e educacionais como fatores impulsionadores para integrar a EC ao ensino superior. Além disso, a educação para o empreendedorismo social é sustentada por teorias da aprendizagem e por tecnologias adaptativas que facilitam experiências de aprendizagem personalizadas. Os achados desta investigação estão alinhados com essas metodologias, uma vez que se situam dentro de parâmetros estatisticamente aceitáveis, reforçando, assim, a validade do modelo proposto.

Palavras-chave: Inovação e Natureza. Design Circular. Serviços e Recursos Circulares. Impacto Social. PLS-SEM.

RESUMEN

La economía circular (EC) constituye una alternativa clave frente a los actuales desafíos ambientales y productivos. Su enseñanza requiere enfoques pedagógicos que integren teoría, práctica y reflexión crítica. En esta investigación, se diseñó un curso que no solo transmitía contenidos teóricos, sino que también fortaleció la capacidad de los estudiantes para aplicar la EC como un marco de innovación, sostenibilidad y toma de decisiones responsables. Este curso universitario se basó en el alineamiento constructivo y la investigación-acción participativa; incluyó clases, discusiones guiadas, trabajo colaborativo y actividades prácticas. La metodología se fundamentó en el alineamiento constructivo, garantizando que cada actividad y evaluación correspondiera a los objetivos de aprendizaje establecidos. Por otra parte, la metodología incorpora el uso de PLS-SEM, una técnica adecuada para analizar modelos complejos basados en percepciones mediante constructos latentes derivados de los datos empíricos recopilados, permitió evaluar de manera rigurosa las relaciones entre las variables del modelo y aportar evidencia estadística sobre su consistencia. Los autores observaron que el curso permitió a los estudiantes relacionar los principios del emprendimiento social con soluciones a problemáticas del mundo real, al tiempo que destacó la relevancia de las variables sociales y educativas como factores impulsores para integrar la EC en la educación superior. Además, la educación para el emprendimiento social se sustenta en teorías del aprendizaje y en tecnologías adaptativas que facilitan experiencias de aprendizaje personalizadas. Los hallazgos de esta investigación se alinean con estas metodologías, ya que se sitúan dentro de parámetros estadísticamente aceptables, reforzando así la validez del modelo propuesto.



Palabras clave: Innovación y Naturaleza. Diseño Circular. Servicios y Recursos Circulares. Impacto Social. PLS-SEM.

1 INTRODUCTION

The circular economy (CE) has become established as an essential approach to addressing current environmental and production challenges. Its interdisciplinary nature makes it an ideal field for university education, as it connects theory with practice and fosters critical reflection. With this purpose in mind, an introductory course was designed for students unfamiliar with the concept, structured in dynamic modules that combined lectures, class discussions, and practical activities. The methodology was based on constructive alignment, ensuring that each activity and assessment responded to the stated learning objectives. The central strategy was participatory action research, which promoted collaborative work and constant feedback, allowing students to develop analytical and practical skills. In this way, the course not only conveyed theoretical content but also strengthened the ability to apply the CE as a strategy for innovation and sustainability.

The purpose of the course was to provide a comprehensive overview of the circular economy (CE). Since most students were unfamiliar with this concept, an approach was designed that combined different perspectives and disciplines. The CE was presented as a system that connects environmental, economic, and innovative aspects, highlighting both its theoretical foundations and its practical applications in reducing impacts and using resources efficiently.

The curriculum was structured in 90-minute modules and aimed to address the diverse interests and backgrounds of the students. It began with an introductory lecture, followed by interactive activities, class discussions, and fieldwork to connect theory with practice. The sessions concluded with group reflections that fostered critical thinking about the topic.

The pedagogical strategy was based on the principle of “constructive alignment,” which allowed teaching and assessment activities to be directly linked to learning objectives. A problem-based learning approach was used, with collaborative work and continuous feedback, so that students could apply concepts and improve their proposals throughout the course. The readings included both classic texts and recent critical literature, ensuring a solid and up-to-date foundation.

Finally, all assessments were conducted in class and focused on presentations that demonstrated how students integrated the knowledge they had acquired. In this way, the course not only conveyed content but also fostered analytical, reflective, and practical skills aligned with the interdisciplinary nature of the circular economy.

Teaching students about the Circular Economy is the starting point for activating more robust cognitive processes, which in turn strengthen the social dimension, understood as the

capacity for interaction, commitment, and collective action. This connection extends to a fourth dimension—environmental impact—which allows for the translation of acquired knowledge into tangible circularity practices in academic and community contexts.

2 THEORETICAL FRAMEWORK

2.1 EDUCATIONAL IMPACT

Unlike the study published in 2022, where educational impact was conceived as the result of social and cognitive dimensions, the present model takes educational impact as its central axis. Vallaey (2016), a recognized international authority on University Social Responsibility (USR), proposed a model structured around organizational, cognitive, social, and educational effects. Based on this framework, our previous research, published in “Dilemas contemporáneos: Educación, Políticas y Valores” (Morejón Molina; Espitia; Montalvo-Morales, 2022), analyzed the relationships between these impacts using the PLS-SEM technique. The results demonstrated that organizational and cognitive impacts influence social effects, which, in turn, has a positive and significant effect on educational impact.

This article takes this finding as a starting point, positioning educational impact, previously considered an outcome, as the initial factor that drives cognitive understanding, social interaction, and the development of skills related to the Circular Economy.

From this perspective, the study seeks to integrate the social dimensions identified by Padilla-Rivera et al. (2020) as an essential, but underexplored component of the circular economy, within an educational framework that links learning outcomes with social and cognitive impacts.

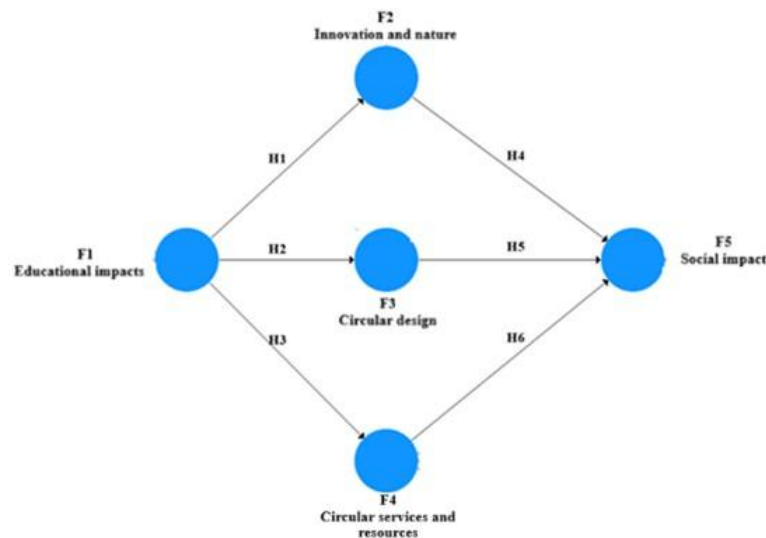
2.2 CONCEPTUAL MODEL/EXPERIMENTAL MODEL

To structure the final conceptual model (Figure 1), the trajectories between the constructs were first defined. Subsequently, the hypothetical relationships between constructs F1, F2, F3, and F4 with F5 were identified, thus formulating the six hypotheses of the study.

Figure 1 shows in greater detail the relationship between the different constructs analyzed, corresponding to the six hypotheses proposed in this research.

Figure 1

Conceptual Model



Source: Prepared by the authors themselves.

2.3 INNOVATION AND NATURE “BIOMÍMESIS”

Several authors have conducted in-depth analyses of different notions of biomimicry and have written extensively on theoretical and philosophical aspects (Riechmann, 2003; Vincent et al., 2006; Benyus, 2012; Dicks, 2015; Blok and Gremmen, 2016). In defining what the word biomimicry designates, current environmental problems tend to be considered the very justification for innovation inspired by natural systems. The natural reference point itself becomes part of the formula for innovating without harming nature. Some of the popular associated definitions are the conscious emulation of the ingenuity of life, or innovation inspired by nature (Benyus, 2012). It is understood as an approach to innovation that seeks sustainable solutions to human challenges by emulating patterns and strategies proven by nature by imitating the functional bases of biological forms, processes and systems to produce sustainable solutions, noted as a rapidly growing discipline that identifies, analyzes, and adapts natural strategies to solve technological problems (Pawlyn, 2011)

The Ellen Machartur Foundation (2022) analyzes various schools of thought, such as cradle-to-cradle design and an economy associated with this research work, which acts with symbiosis and biomimicry and shares different economic ideas.

Benyus (2012) defines biomimicry as the approach that studies nature's best ideas to imitate those designs and processes to solve human problems.

Therefore, considering the information presented, it is possible to propose the following research hypothesis

H1: The educational impact (F1) has a positive influence on innovation and nature (F2).

2.4 CIRCULAR DESIGN

Educational training acts as a lever for the adoption of circular design by equipping students and professionals with the mindset, methods, and tools necessary to consider whole systems rather than mere products. Thus, training processes allow us to transcend the linear 'produce-use-dispose' model towards an approach where materials and products maintain their value for as long as possible, and where design assumes a key role in eliminating waste, circulating materials, and regenerating nature (Ellen MacArthur Foundation, 2019; 2023).

Furthermore, the very concept of circular design demonstrates that design decisions determine what happens to products, materials, and systems when they are no longer useful. Therefore, by integrating circular economy principles at the beginning of the design process, we can make the economy work for people, businesses, and nature. With circular design, we can prevent waste and pollution from the outset. Internal circular design guides help transform companies by connecting strategy, supply chain, and circular design practice as an organizational, not just a technical, lever. Ellen MacArthur Foundation (2021) compiles resources for higher education and includes the Circular Design Guide as a toolkit for teachers and students, justifying the educational/pedagogical component of circular economy and design.

The assessment of circularity in organizations includes considering circularity criteria in product design, such as durability, reliability, modularity, standardization, ease of disassembly, upgradability, refurbishment, remanufacturing, reuse, recycling, energy efficiency, and low consumable consumption.

Issues related to the circularity strategies of the product or service offered have been divided into Circular Design (CD) and Circular Services (CS). It is important to highlight this distinction. Circular Services (CS) include issues related to the circular services offered by the company, while Circular Design (CD) includes issues related to considering circularity criteria in the design of the product or service.

The CE diagnosis focuses on the Business category, followed by Design. Business includes issues of Circular Services, Symbiosis, and Stakeholder Engagement. Design focuses on Circular Design, which is the most considered thematic area along with Circular Services. (Valls-Val et al., 2023)

Cattaneo (2022) takes as its context the transformation of education (F1) into design (F3) and focuses on a comprehensive analysis of degree programs, curricula, methodologies, and the intuitive influence of organizations on the shift towards social design education.

Another example of this circular design theme is the IKEA case, where circular economy goals are translated into product design criteria (durability, repairability, reuse, etc.) that can serve to exemplify circular design principles with a specific company (S-Mahalakshmi et al., 2024).

Thus, the link between educational impact (which develops skills, mindsets and knowledge) and circular design (which requires this change of focus to be implemented) justifies hypothesis H2.

Therefore, considering the information presented, it is possible to propose the following research hypothesis:

H2: The educational impact (F1) has a positive influence on circular design (F3).

2.5 PRODUCT SERVICE SYSTEMS (PSS)

Since the 1990s, Product-Service Systems (PSS) have been considered one of the most effective instruments for driving society toward a circular and resource-efficient economy, and for creating a much-needed resource revolution (Tukker, 2015). One definition of PSS is a mix of tangible products and intangible services designed and combined in such a way that they are jointly capable of satisfying the needs of the end customer (Tukker and Tischner, 2006).

Product Service Systems (PSS) have been integrated into a wider range of scientific fields and geographic regions. Recent literature has reaffirmed the definitions and concepts of PSS established since 2006, improving the understanding of their design and their business and environmental benefits, and identifying key success factors and problems to be addressed. Some of these include product availability, the diversity of services offered, and staff skills. Having control over things, objects, and life itself is one of the attributes most valued by consumers. PSS can limit consumers' freedom of behavior and give the impression that the provider dictates their actions, which can result in less intangible value than competing products (Tukker, 2015).

Product service systems. A product service system consists of a mix of tangible products and intangible services, designed and combined in such a way that, together, they can satisfy the consumer's ultimate needs. This concept rests on two pillars: (i) the functionality or satisfaction that the user wants to achieve is taken as the starting point for business development (instead of product ownership as a way to satisfy the need), (ii) the business

system that provides such functionality is developed with an "undeveloped terrain" mentality, rather than taking existing structures and routines and the company's own position as given and unchangeable (Tukker and Tischner, 2006).

In a product-service system, a company offers access to the product but retains ownership. This is an alternative to the traditional "buy and own" model. It's a way to reduce customer burden, generate profits, and achieve objectives by offering product-oriented services or advice, usage-oriented services (such as leasing, renting, bundling, and pay-per-service), or results-oriented services (including outsourcing and functional services). (Lewandowski, 2016)

Therefore, considering the information presented, it is possible to propose the following research hypothesis:

H3: The educational impact (F1) has a positive influence on circular services and resources (F4).

2.6 CIRCULAR INNOVATION ECOSYSTEM AS A DRIVER OF SOCIAL IMPACT.

Recent literature on the circular economy recognizes that social impact (F5) does not depend on a single factor, but rather on the simultaneous action of several complementary dimensions. In this model, factors F2 (Innovation and Nature), F3 (Circular Design), and F4 (Circular Services and Resources) contribute in a parallel and convergent manner to generating tangible social benefits, especially in contexts where economic, environmental, or technological constraints prevail.

First, F2—Innovation and Nature—provides the bio-inspired and regenerative vision that enables the creation of adaptive and resilient solutions. The integration of nature-based principles, biomimicry, and circular ecosystems fosters strategies capable of restoring local environments and improving community well-being (Konietzko et al., 2021; Bocken et al., 2016). These innovations not only optimize resources but also generate new opportunities for social collaboration and citizen participation through ecological projects, community actions, and environmental restoration practices (Ellen MacArthur Foundation, 2019, 2023).

Secondly, F3—Circular Design—provides the methodological framework for redesigning products, processes, and systems with criteria of durability, reuse, modularity, and regeneration. Circularity-oriented design fosters the creation of accessible and inclusive solutions, such as repairable products, exchange platforms, and community-based resource management systems (Geissdoerfer et al., 2020). These approaches promote equity in access to resources and strengthen social cohesion through collaborative practices, community repair, and the active participation of citizens in circular initiatives (Millar & Hall, 2021).

Finally, F4—Circular Services and Resources—translates the above principles into practical mechanisms that the community can use directly. These services include preventive maintenance, materials banks, product-as-a-service, and servitization (which refers to the transition from selling physical products to providing integrated product–service solutions, where value is created through use rather than ownership), creative reuse, and local exchange networks (Bocken et al., 2016). The presence of these services generates social benefits by increasing resource availability, reducing household costs, promoting circular economy businesses, and creating green jobs locally (Schröder et al., 2020). Furthermore, educational literature demonstrates that participating in these systems strengthens social skills, a sense of community, and the ability to solve socio-environmental problems (Leal-Filho et al., 2021; Ruiz-Mallén & Heras, 2022; Mendoza et al., 2019).

Taken together, factors F2, F3, and F4 contribute simultaneously to social impact (F5) through distinct but complementary paths:

- F2 provides the regenerative and nature-based vision,
- F3 offers the methodological redesign necessary to transform production systems,
- F4 enables these transformations to materialize into services and resources accessible to the community.

This convergence produces measurable social effects, such as greater well-being, community cohesion, citizen participation, social inclusion, reduced inequalities, and the generation of new sustainable economic opportunities. Therefore, social impact does not arise from a single component, but from the integrated work of innovation, design, and circular services, fully aligned with recent empirical evidence.

F5 Social Impact

The F5 social impact of the circular economy is related to improvements in community well-being, the creation of green jobs, and the promotion of more equitable production models (Schröder et al., 2020). The literature emphasizes that circularity generates benefits in social cohesion, environmental justice, and the strengthening of local communities through collaborative practices, community repair, and exchange networks (Millar & Hall, 2021).

In the educational sphere, the implementation of circular strategies promotes the active participation of students in projects with real impact, which increases social awareness, community engagement, and the capacity to solve socio-environmental problems (Leal-Filho et al., 2021; Ruiz-Mallén & Heras, 2022). Furthermore, educational approaches based on circular economy principles have been shown to strengthen institutional sustainability practices and

promote systemic thinking in higher education environments (Mendoza et al., 2019). Taken together, these results show that circular education is not only environmentally relevant but also socially transformative.

Accordingly, the following research hypothesis is stated as follows:

H4: Innovation and nature (F2) have a positive influence on social impact (F5). H5: Circular design (F3) has a positive influence on social impact (F5).

H6: Circular services and resources (F4) have a positive influence on the social impact (F5).

3 METHOTODLOGY

Padilla-Rivera, Russo-Garrido, and Merveille (2020) argue that the social component is insufficiently represented in circular economy research, despite being an essential catalyst for behavioral change and community transformation. This study highlights the importance of social and educational factors as drivers of integrating circularity principles within academia.

Table 1 shows that the composite reliability values and Dijkstra–Henseler's rho coefficient exceed 0.7, supporting the observations (Hair et al., 2017). Hair et al. (2017) recommended utilizing the AVE index and external factor loadings to assess convergent validity. The AVE for each construct exceeds 0.5 and the outer loadings are above 0.7, indicating adequate convergent validity (Hair et al., 2021).

Table 1

Construct, Reliability and Validity

Construct.	Cronbach alpha	Dijkstra- Henseler rho	CRI	AVE
F1 Educational	0.727	0.849	0.816	0.598
F2 Innovation and nature	0.903	0.910	0.939	0.837
F3 Circular design	0.962	0.963	0.981	0.963
F4 Circular services and resources	0.756	0.755	0.864	0.683
F5 Social impact	0.896	0.896	0.935	0.828

Source: Prepared by the authors themselves.

Discriminant validity analysis, shown in Table 3, assures that a construct does not measure others. The square root of the AVE for each construct must be bigger than its correlation with other constructs, according to Fornell and Larcker (1981). This criterion is met since bold diagonal values are higher than associated values.

Table 2

Discriminant Validity (Fornell-Larcker Criterion)

Construct	F1	F2	F3	F4	F5
F1 Educational	0.773				
F2 Innovation and nature	0.765	0.915			
F3 Circular design	0.342	0.295	0.982		
F4 Circular services and resources	0.603	0.616	0.635	0.826	
F5 Social impact	0.470	0.467	0.577	0.778	0.910

Source: Prepared by the authors themselves.

The Heterotrait–Monotrait Ratio (HTMT) criterion was used as a robust approach to assess discriminant validity among the constructs (Table 2). According to Henseler et al., (2015), HTMT values should be below 0.85 (strict criterion) or 0.90 (more liberal criterion) to establish discriminant validity. In this study, all values are below these limits, which reaffirms the discriminant validity between the constructs analyzed.

Table 3

Discriminant Validity (Heterotrait-Monotrait Ratio HTMT)

Construct	F1	F2	F3	F4	F5
F1 Educational					
F2 Innovation and nature	0.747				
F3 Circular design	0.360	0.314			
F4 Circular services and resources	0.726	0.742	0.745		
F5 Social impact	0.547	0.519	0.620	0.901	

Source: Prepared by the authors themselves.

4 RESULTS AND DISCUSSIONS

Table 4 shows the results obtained from the structural model estimation. The analysis reveals that five of the six hypotheses were confirmed. Educational impact (F1) has a positive and notable influence on innovation and nature (F2), circular design (F3), and circular services and resources (F4).

Similarly, innovation and nature (F2) exert a positive and significant effect on social impact (F5) ($\beta = 0.464$, $p < 0.001$). In contrast, circular design (F3) does not show a significant influence on social impact (F5), while circular services and resources (F4) have only a marginal effect ($p = 0.038$). In summary, these findings indicate that educational projects indirectly contribute to social outcomes through innovation and circular practices, demonstrating that the educational component is key to the model.

Table 4

Effect of projects and environmental aspects on environmental impact assessment

Hypothesis	(β)path coef	Confidence Interval 95%	Effect Size f^2	T Statistics	p value	Hypothesis
H1: The educational impact (F1) has a positive influence on innovation and nature (F2).	0.765	(0.961 - 2.336)	1.412	17.777	0.000	supported
H2: The educational impact (F1) has a positive influence on circular design (F3).	0.342	(0.034 - 0.357)	0.132	3.463	0.000	supported
H3: The educational impact (F1) has a positive influence on circular services and resources (F4).	0.603	(0.375 - 0.968)	0.573	11.257	0.000	supported
H4: Innovation and nature (F2) has a positive influence on the social impact (F5).	0.464	(0.000 - 0.049)	0.000	8.266	0.000	supported
H5: Circular design (F3) has a positive influence on the social impact (F5).	0.002	(0.002 - 0.122)	0.030	0.029	0.488	not supported
H6: Circular services and resources (F4) have a positive influence on social impact (F5).	0.140	(0.188 - 0.945)	0.488	1.778	0.038	supported

Source: Prepared by the authors themselves.

Table 5 displays the findings for the endogenous constructs: F2 Innovation and Nature, F3 Circular Design, F4 Circular Services and Resources, and F5 Social Impact. R^2 values span from 0 to 1, where elevated values signify enhanced predictive capability for the endogenous variables. No universal thresholds exist; however, values of 0.75, 0.50, and 0.25 are commonly interpreted as substantial, moderate, and weak, respectively (Hair et al., 2021). The coefficients of determination in this model are moderate, with R^2 values ranging from 0.111 to 0.608.

Q^2 values related to predictive relevance were derived through the blindfolding procedure; Positive Q^2 values suggest that the model possesses predictive capability for a specific construct. Table 6 indicates that all Q^2 values exceed zero, ranging from 0.105 to 0.496, thereby affirming the model's predictive capability for endogenous constructs (Stone, 1974)

Table 5

Constructs

	Q2 (=1-SSE/SSO)	Original sample (R²)
F1 Educational		
F2 Innovation and nature	0.473	0.582
F3 Circular design	0.105	0.111
F4 Circular services and resources	0.219	0.360
F5 Social impact	0.496	0.608

Source: Prepared by the authors themselves.

The overall model fit, as presented in Table 6, was evaluated using the SRMR of the saturated model, resulting in a value of 0.144. This value, while surpassing the conservative threshold of 0.08 recommended for simple models, is still deemed acceptable given the model's complexity and the number of parameters estimated.

The discrepancy measures ($d_{ULS} = 2.176$ and $d_G = 1.112$) fall within their 99% bootstrap confidence intervals ($HI99 = 0.506$ and 0.477 , respectively), thereby confirming the model's internal consistency.

Hair et al. (2021) indicate that in complex PLS-SEM models, SRMR values marginally exceeding 0.10 may still be deemed acceptable, contingent upon the corroboration of other discrepancy measures that affirm the model's robustness.

Table 6

Global model fit indices (Saturated model).

	SRMR	d_{ULS}	d_G
Saturated model	0.144	2.176	1.112

Source: Prepared by the authors themselves.

Note: SRMR = Standardized Root Mean Square Residual; d_{ULS} = Squared Euclidean distance; d_G = Geodesic distance. Values were obtained from the saturated model to assess global fit, where lower values indicate a better model fit (Hair et al., 2021).

Within the proposed conceptual model, circular design (F3) cannot be understood as an autonomous determinant of social impact (F5). Its contribution is embedded in a systemic architecture formed by innovation inspired by nature (F2) and by circular services and resources

(F4). Consequently, social impact emerges from the interaction and alignment of these dimensions, which operate simultaneously as an ecosystem rather than as isolated variables.

Although the relationship between innovation and nature (F2) and social impact (F5) was not statistically significant, this finding can be interpreted thru the theoretical framework of Vanaga and Blumberga (2015), who characterize biomimicry as the first steps in developing bio-inspired ideas. This initial creative approach encourages students to observe and imitate nature's functional principles, thereby forming the basis of circular design.

At this formative stage, biomimicry exercises rarely translate into tangible social actions, as they involve processes of individual understanding and creative exploration. This creativity demands advanced cognitive skills, such as abstraction and systems thinking, which are not developed in introductory courses.

The absence of a substantial effect can be ascribed to the temporal and practical divergence between the ideation phase (innovation and nature) and the generation of observable social impacts. In this sense, biomimicry serves as an inspiring starting point, but not yet as a consolidated social practice.

This finding is consistent with Padilla-Rivera et al. (2020), who state that the social dimension of the circular economy represents the greatest challenge to its operationalization, as it requires converting sustainable concepts into collective and institutional behaviors. In conclusion, the absence of validation for H4 signifies a natural stage of maturity in circular learning, wherein nature-inspired creative thinking has yet to be fully realized in the social domain, despite being a crucial prerequisite for its future advancement

5 CONCLUSIONS

From the discussions and results presented, the following conclusions were drawn, with a new approach:

- 1) The primary feature of the employed technique is that the course not only conveyed academic content but also enabled students to connect the essential principles of social entrepreneurship with the solutions of real-world issues. It emphasized the significance of social and educational variables as catalysts for incorporating circularity ideas into academia, fostering analytical and practical abilities to enhance innovation and sustainability.
- 2) The suggested methodology employs PLS-SEM, suitable for analyzing intricate models grounded in perceptions, utilizing latent constructs produced from the gathered empirical data.

- 3) Previous research concluded that education for social entrepreneurship is grounded in learning theories and the implementation of adaptive technologies that facilitate tailored learning experiences. These methodologies consider factors such as learning preferences, feedback mechanisms, cognitive load, and student motivation. The findings of this investigation align with these methodologies, since they reside within statistically acceptable parameters, hence reinforcing the validity of the suggested model.
- 4) The technique can be enhanced by including surveys of teachers, administrators, business professionals, and the community, as the primary weakness of this research is that it solely involved a very small sample of kids.

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PLAYING, LIVING TOGETHER AND RESPECTING: PLAYFUL PEDAGOGICAL STRATEGIES IN CHILDREN'S SEXUAL EDUCATION AS AN INSTRUMENT FOR SOCIALIZATION AND PROTECTION OF RIGHTS

BRINCAR, CONVIVER E RESPEITAR: ESTRATÉGIAS LÚDICO-PEDAGÓGICAS NA EDUCAÇÃO SEXUAL INFANTIL COMO INSTRUMENTO DE SOCIALIZAÇÃO E PROTEÇÃO DE DIREITOS

JUGAR, CONVIVIR Y RESPETAR: ESTRATEGIAS LÚDICO-PEDAGÓGICAS EN LA EDUCACIÓN SEXUAL INFANTIL COMO INSTRUMENTO PARA LA SOCIALIZACIÓN Y LA PROTECCIÓN DE LOS DERECHOS



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ABSTRACT

Sex education in early childhood has become a highly relevant topic in contemporary educational contexts, especially in light of challenges related to child protection and the development of individuals aware of their rights. This article aims to analyze the role of playful pedagogical strategies in the development of early childhood sex education, considering their contribution to socialization, autonomy building, and violence prevention. The study adopts a qualitative, bibliographic approach, grounded in theoretical frameworks from the sociology of childhood, education, and public policies for child protection. It is based on the assumption that sex education, when properly adapted to children's developmental stages, goes beyond biological aspects and encompasses emotional, social, and cultural dimensions, fostering respect for one's own body and for others. In this context, play emerges as an essential pedagogical tool, enabling meaningful and accessible learning processes for children. Furthermore, the articulation between sex education and the defense of children's rights proves to be crucial in addressing child sexual abuse, particularly in cases where violence occurs within the family environment. The study also engages with concepts from the sociology of childhood, which recognizes children as active social agents, and with Pierre Bourdieu's notion of habitus, explaining how social dispositions shape behaviors and perceptions from early life. The findings indicate that the integration of playful methodologies into sex education enhances emotional development, strengthens social bonds, and promotes a culture of protection. It is concluded that early childhood sex education, when guided by sensitive and well-structured pedagogical approaches, is an indispensable tool for the comprehensive development of children and for the promotion of a more just and conscious society.

Keywords: Early Childhood Sex Education. Playfulness. Sociology of Childhood. Habitus. Children's Rights.

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RESUMO

A educação sexual na primeira infância constitui-se como uma temática de grande relevância no contexto educacional contemporâneo, especialmente diante dos desafios relacionados à proteção integral da criança e à formação de sujeitos conscientes de seus direitos. Este artigo tem como objetivo analisar o papel das estratégias lúdico-pedagógicas no desenvolvimento da educação sexual infantil, considerando sua contribuição para a socialização, construção da autonomia e prevenção de violências. A pesquisa fundamenta-se em uma abordagem qualitativa, de natureza bibliográfica, ancorada em autores da sociologia da infância, da educação e das políticas públicas de proteção à criança. Parte-se do pressuposto de que a educação sexual, quando desenvolvida de forma adequada à faixa etária, ultrapassa a dimensão biológica e incorpora aspectos emocionais, sociais e culturais, promovendo o respeito ao próprio corpo e ao outro. Nesse sentido, o brincar emerge como ferramenta pedagógica essencial, possibilitando a construção de conhecimentos de forma significativa e acessível às crianças. Além disso, a articulação entre educação sexual e defesa de direitos revela-se fundamental no enfrentamento da violência sexual infantil, sobretudo em contextos em que o abuso ocorre no ambiente familiar. O estudo também dialoga com conceitos da sociologia da infância, que compreende a criança como sujeito ativo, e com a noção de *habitus*, proposta por Pierre Bourdieu, para explicar como disposições sociais influenciam práticas e percepções desde a infância. Os resultados apontam que a inserção de práticas lúdicas no ensino da sexualidade contribui para o desenvolvimento emocional, para o fortalecimento de vínculos e para a construção de uma cultura de proteção. Conclui-se que a educação sexual infantil, mediada por abordagens pedagógicas sensíveis e estruturadas, é uma ferramenta indispensável para a formação integral da criança e para a promoção de uma sociedade mais justa e consciente.

Palavras-chave: Educação Sexual Infantil. Ludicidade. Sociologia da Infância. *Habitus*. Direitos da Criança.

RESUMEN

La educación sexual en la primera infancia se ha convertido en un tema de gran relevancia en los contextos educativos contemporáneos, especialmente ante los desafíos relacionados con la protección infantil y el desarrollo de individuos conscientes de sus derechos. Este artículo analiza el papel de las estrategias pedagógicas lúdicas en el desarrollo de la educación sexual en la primera infancia, considerando su contribución a la socialización, la construcción de la autonomía y la prevención de la violencia. El estudio adopta un enfoque cualitativo y bibliográfico, fundamentado en marcos teóricos de la sociología de la infancia, la educación y las políticas públicas de protección infantil. Se basa en la premisa de que la educación sexual, cuando se adapta adecuadamente a las etapas de desarrollo infantil, trasciende los aspectos biológicos y abarca dimensiones emocionales, sociales y culturales, fomentando el respeto por el propio cuerpo y por los demás. En este contexto, el juego emerge como una herramienta pedagógica esencial, que posibilita procesos de aprendizaje significativos y accesibles para los niños. Además, la articulación entre la educación sexual y la defensa de los derechos de la infancia resulta crucial para abordar el abuso sexual infantil, particularmente en casos de violencia intrafamiliar. El estudio también aborda conceptos de la sociología de la infancia, que reconoce a los niños como agentes sociales activos, y la noción de *habitus* de Pierre Bourdieu, que explica cómo las disposiciones sociales moldean los comportamientos y las percepciones desde la primera infancia. Los hallazgos indican que la integración de metodologías lúdicas en la educación sexual potencia el desarrollo emocional, fortalece los vínculos sociales y promueve una cultura de protección. Se concluye que la educación sexual en la primera infancia, guiada por enfoques pedagógicos sensibles y bien estructurados, es una herramienta indispensable para el desarrollo integral de los niños y para la promoción de una sociedad más

justa y consciente.

Palabras clave: Educación Sexual en la Primera Infancia. Juego. Sociología de la Infancia. Habitus. Derechos de la Infancia.

1 INTRODUCTION

Sex education in early childhood has gained prominence in contemporary academic and educational debates, especially in view of the need to promote the integral development of the child in its multiple dimensions. Far from being restricted to biological aspects, sex education involves emotional, social and cultural issues, contributing to the formation of individuals who are more aware of themselves and of the other. In this sense, addressing this theme from the first years of life becomes fundamental for the construction of relationships based on respect, autonomy and human dignity.

Historically, child sexuality has been marked by silencing and taboos, and is often neglected in the family and school context. Such a scenario contributed to the perpetuation of misinformation and to the vulnerability of children in the face of situations of violence and abuse. Currently, however, there is a movement of resignification of this field, recognizing the importance of treating the theme in an age-appropriate way, with accessible language and a sensitive pedagogical approach.

The school, in this context, assumes a central role as a space for socialization and construction of knowledge. It is in this environment that the child expands his experiences and establishes relationships with different subjects, and is also a privileged place for the development of educational practices aimed at sex education. Thus, it is up to the school institution not only to transmit content, but also to promote values such as respect, empathy and recognition of one's own limits.

At the same time, the family plays an essential role in this process, being the first nucleus of the child's socialization. The articulation between school and family is, therefore, indispensable for sex education to occur in a continuous, coherent and effective way. When there is dialogue and alignment between these spaces, children's ability to protect and guide is significantly increased.

One of the main challenges in addressing child sex education lies in the resistance of educators and guardians, often influenced by cultural or religious beliefs or by the lack of adequate training. This resistance can result in the omission of the theme or in inappropriate approaches, compromising the educational and preventive potential of this practice.

In this sense, playful-pedagogical strategies are presented as effective alternatives for the approach to sexuality in childhood. Play, as the child's own language, enables the construction of knowledge in a natural, meaningful and contextualized way. Through games, stories, and interactive activities, it is possible to work on concepts such as body, limits, consent, and respect.

In addition, the use of play contributes to the emotional and social development of children, favoring the expression of feelings and the construction of bonds. This aspect is especially relevant when considering that many situations of violence are not verbalized directly by children, but can be expressed through behaviors and games.

Sex education is also directly related to the defense of children's rights, especially with regard to protection against violence. By knowing their body and understanding their rights, the child becomes more capable of identifying risk situations and seeking help. Thus, sex education is an important instrument for prevention and promotion of citizenship.

From a theoretical point of view, this study dialogues with the sociology of childhood, which recognizes the child as an active subject and producer of culture, breaking with adult-centric views. In addition, Pierre Bourdieu's concept of habitus is used to understand how social experiences influence the formation of dispositions and practices from childhood.

In view of this scenario, this article aims to analyze the role of playful-pedagogical strategies in children's sex education, considering their contribution to the integral development of the child and to the promotion of a culture of respect and protection. Thus, it seeks to contribute to the advancement of academic discussions and to the qualification of educational practices in this field.

2 THEORETICAL FRAMEWORK

2.1 SEX EDUCATION IN EARLY CHILDHOOD AND ITS FORMATIVE ROLE

Sex education in early childhood should be understood as an essential formative process for the integral development of the child, involving biological, emotional, social and cultural dimensions. Recent studies highlight that the appropriate approach to sexuality from the first years of life contributes to the construction of identity, autonomy and body awareness. In this sense, sex education should not be treated as an isolated content, but as an integral part of pedagogical practices aimed at the formation of critical subjects who are aware of their rights. In addition, when worked on in a continuous and contextualized way, it favors the construction of healthier and more respectful relationships from childhood (BRASIL, 2017).

The absence of dialogue about sexuality is still one of the main obstacles to the healthy development of children, especially in contexts marked by taboos and misinformation. Recent research points out that silence around the topic can generate insecurity, fear and difficulty in expression, compromising emotional and social development. In this way, the insertion of sex education in the school environment becomes essential to break down these barriers and promote a welcoming and informative learning space. This approach also contributes to the

naturalization of the theme, reducing prejudice and expanding access to knowledge (UNESCO, 2018).

Another relevant aspect concerns the role of sex education in the prevention of violence, especially child sexual abuse. Recent data show that children who receive adequate guidance about their bodies and their limits have a greater ability to identify risk situations and seek help. In this context, sex education acts as a protection tool, strengthening the child's autonomy and emotional security. In addition, it contributes to the development of communicative skills that allow expressing discomfort and denouncing situations of violence (WHO, 2020).

The implementation of sex education in the school context is supported by contemporary educational guidelines that value the integral development of the student. The National Common Curriculum Base, for example, emphasizes competencies related to self-care, empathy, and respect, which dialogue directly with the objectives of sex education. Although it does not explicitly address the theme as a discipline, the BNCC opens space for interdisciplinary approaches that integrate the theme into the school routine, promoting a broader and more meaningful education (BRASIL, 2017).

Finally, sex education in childhood should be understood as a fundamental right of the child, directly related to their dignity and healthy development. Recent literature reinforces that ensuring access to adequate information about the body, emotions, and social relationships is a way to promote citizenship from the first years of life. Thus, the responsibility for its implementation must be shared between school, family, and society, from a perspective of integral protection and human development (UNICEF, 2021).

2.2 PLAYFUL-PEDAGOGICAL APPROACHES AS A TEACHING AND PREVENTION STRATEGY

Playful-pedagogical approaches play a fundamental role in the teaching-learning process in early childhood education, especially when it comes to complex content such as sex education. Playing is recognized as the child's main form of expression, and it is through it that he interprets the world, constructs meanings and develops cognitive and social skills. In this context, play presents itself as an effective strategy to mediate knowledge, making learning more meaningful and accessible to children (Kishimoto, 2020).

In the context of sex education, the use of playful activities allows addressing topics such as the body, limits and respect in a natural and age-appropriate way. Recent studies indicate that methodologies based on games, stories and dynamics favor the active participation of children, creating a safe environment for dialogue and the construction of knowledge. This

approach contributes to reducing the embarrassment associated with the theme and enables more effective learning, based on experience and interaction (Silva; Souza, 2021).

In addition, playing plays an important role in the emotional development of children, functioning as a means of expressing feelings and experiences. Contemporary research indicates that, through play, children are able to externalize situations that they are often unable to verbalize, which can help educators identify signs of vulnerability or violence. In this way, play is also configured as a tool for sensitive listening and welcoming in the school environment (Oliveira; Costa, 2022).

Another relevant aspect is the relationship between playfulness and violence prevention. Recent literature shows that playful pedagogical practices contribute to the teaching of fundamental concepts such as consent, privacy and respect for the body. These contents, when worked in an integrated way with the children's daily lives, strengthen their ability to recognize inappropriate situations and act safely. Thus, play not only teaches, but also protects (Santos; Silva; Souza, 2020).

Finally, it is highlighted that the effectiveness of playful strategies is directly related to the training of educators. Recent studies highlight the importance of teacher training for the conscious and intentional use of play as a pedagogical tool. It is essential that teachers understand the potential of these methodologies and know how to apply them appropriately, ensuring that playing is used as a learning and development tool, and not just as a recreational activity (Rodrigues; Almeida, 2023).

2.3 CHILDHOOD, HABITUS AND SOCIAL CONSTRUCTION OF THE CHILD

The sociology of contemporary childhood proposes an understanding of the child as an active subject in the construction of his social reality, breaking with traditional views that placed him only as a passive receiver of norms and values. This perspective recognizes that children interpret, resignify and transform the world around them, producing culture and establishing their own social relations. In this way, childhood is no longer seen as a merely preparatory phase and is understood as a social category with its own characteristics (Sarmiento, 2020).

Childhood, in this context, is understood as a social and historical construction, which varies according to cultural, economic and political factors. Recent studies reinforce that there is not a single way of experiencing childhood, but multiple experiences that reflect the social conditions in which children are inserted. This understanding broadens the view of the child and contributes to the development of more inclusive educational practices that are sensitive to different realities (Qvortrup, 2021).

The concept of habitus, developed by Pierre Bourdieu, also contributes to the understanding of the social formation of the child, by explaining how dispositions, values and behaviors are incorporated from childhood. The habitus is formed from the experiences lived in different spaces of socialization, such as family and school, influencing the way individuals perceive and act in the world. This process often occurs unconsciously, but it has a significant impact on the individual's social trajectory (Bourdieu, 2020).

In the educational field, habitus can contribute both to the reproduction and to the transformation of social inequalities. Recent studies indicate that the school, by valuing certain cultural standards, can reinforce existing inequalities. However, it also has the potential to promote change, as long as it adopts inclusive and critical pedagogical practices, capable of recognizing and valuing the diversity of students' experiences (Nogueira; Nogueira, 2021).

Finally, the articulation between sociology of childhood, habitus and sex education allows us to understand the child as a subject of rights and protagonist of the educational process. By recognizing their capacity for participation and knowledge construction, it becomes possible to develop more effective and humanized pedagogical practices. This approach contributes to the formation of individuals who are more aware, critical, and prepared to act in society in an active and responsible way (Corsaro, 2022).

3 METHODOLOGY

The present study adopts the explanatory research method, as it is an investigation that seeks to understand and explain the causes, structural factors and implications of sexual violence against children and adolescents. As Lakatos and Marconi (2003) say, explanatory research aims to record, analyze and interpret facts, identifying their causes, in order to expand generalizations, structure theoretical models and generate hypotheses based on logical deductions. Such an approach requires greater theoretical depth, synthesis and critical reflection on the object of study, which is appropriate in view of the complexity of the phenomenon of child sexual violence. The explanatory method research will be addressed:

Explanatory research records facts, analyzes them, interprets them, and identifies their causes. This practice aims to broaden generalizations, define broader laws, structure and define theoretical models, relate hypotheses to a more unitary view of the universe or productive scope in general, and generate hypotheses or ideas by virtue of logical deduction (Lakatos and Marconi, 2003, p. 25).

Explanatory research requires greater investment in synthesis, theorization and reflection from the object of study.

This study uses the deductive method as a method of approach, assuming that if all premises are true, consequently the conclusion must be true. According to Lakatos and Marconi (2003), all the information or factual content of the conclusion must already be, at least implicitly, in the premises. Deductive arguments are either right or wrong, or the premises fully support the conclusions or do not, if the logic is reversed.

Regarding the methodological aspects, this article used bibliographic research. In this way, it is characterized by being;

[...] Prepared from already published material, consisting mainly of: books, magazines, publications in journals and scientific articles, newspapers, bulletins, monographs, dissertations, theses, cartographic material, internet, with the objective of putting the researcher in direct contact with all material already written on the subject of research. In the bibliographic research, it is important for the researcher to verify the veracity of the data obtained, observing the possible inconsistencies or contradictions that the works may present (Prodanov; Freitas, 2013, p. 54).

Furthermore, considering the subjects in their own terms, it is necessary to speak of a cultural contextualization, a dialectical study, because:

[...] For dialectics, things are not analyzed as fixed objects, but in movement: no thing is always in the process of being transformed, developing; the end of one process is always the beginning of another" (Lakatos and Marconi, 1991, p. 75).

To this end, considering this as a careful investigation with the application of critical evaluation and synthesis of selected information, evidence related to the specific theme addressed in this work was synthesized. Thus, the research for this study consisted of the use of books, academic articles and secondary data related to the theme, with a theoretical and qualitative approach.

Gil (2002) points out that bibliographic research is developed based on material already prepared, consisting mainly of books and scientific articles. As Lakatos and Marconi (2003) testify, the bibliographic research is a general overview of the main works already carried out, which are important because they are able to provide current and relevant data related to the theme.

Documentary research was also used, which, as Gil (2002) points out, makes use of materials that have not yet received an analytical treatment, or that can still be reworked according to the objects of the research. It is also a descriptive research that has as its primary objective the description of the characteristics of a certain population or phenomenon or, then, the establishment of relationships between variables.

Thus, the present research qualitative, theoretical and explanatory in nature, based on the critical analysis and synthesis of selected evidence on sexual violence against children and adolescents. The study was based on the use of books, academic articles and secondary data related to the theme, seeking to contribute to the in-depth understanding of the phenomenon and to the strengthening of strategies for the prevention, protection and confrontation of child sexual violence.

4 RESULTS AND DISCUSSION

The analysis of the theoretical data shows that sex education in early childhood, when applied in a structured and appropriate way, has significant impacts on the integral development of the child. Recent studies show that children who have access to information about their own bodies and limits from an early age demonstrate greater autonomy, emotional security, and communication skills in situations of discomfort. This result reinforces the idea that sex education is not limited to the informative field, but acts directly in the formation of subjects who are more aware and prepared for healthy social interactions (UNESCO, 2018).

It is also observed that the use of playful-pedagogical strategies significantly enhances the effectiveness of child sex education. Play, as a learning tool, facilitates the assimilation of content considered sensitive, allowing the child to understand concepts such as respect, privacy and consent in a natural way. Recent literature shows that pedagogical environments that incorporate play have greater student engagement and better results in the learning process, especially in early childhood education (Kishmoto, 2020).

Another relevant point identified in the analysis is the direct relationship between sex education and the prevention of violence, especially child sexual abuse. Recent data indicate that most cases of violence occur in family environments or close to the child, which reinforces the importance of educational mechanisms that strengthen their ability to identify and react. In this sense, sex education acts as an essential preventive strategy, contributing to the reduction of child vulnerability (WHO, 2016).

In addition, the studies analyzed show that the emotional development of children is directly influenced by the educational practices adopted in the school environment. The playful approach to sexuality contributes to the expression of feelings, strengthening self-esteem and building bonds of trust with educators. These factors are fundamental for the child to feel safe to share experiences and doubts, creating an environment conducive to learning and protection (Oliveira; Costa, 2022).

The discussion also reveals that teacher training is one of the main challenges for the effectiveness of sex education in childhood. Many educators still feel insecure or unprepared to address the topic, which can compromise the quality of pedagogical practices. Recent studies highlight the need for continuing education, focusing on appropriate methodologies and the development of socio-emotional skills, ensuring that educators act safely and consciously (Rodrigues; Almeida, 2023).

Another important aspect refers to the influence of the sociocultural context on the way sex education is understood and applied. The concept of habitus allows us to understand how internalized values and beliefs influence both educational practices and the receptivity of families in relation to the theme. This demonstrates that the implementation of sex education requires not only pedagogical changes, but also broader cultural transformations (Bourdieu, 2020).

The analysis also shows that family participation is a determining factor for the success of children's sex education. When there is alignment between school and family, the child receives more consistent and safe guidance, strengthening the learning process. On the other hand, the absence of this dialogue can generate conflicts and hinder the consolidation of knowledge acquired in the school environment, highlighting the need for integrated actions (UNICEF, 2021).

Finally, the results indicate that sex education mediated by playful practices and based on sociological approaches contributes to the formation of a culture of respect and protection in childhood. By recognizing the child as an active subject and promoting their participation in the educational process, the transformative potential of education is expanded. In this way, the articulation between theory and practice is essential for the construction of more effective educational policies aligned with contemporary needs (Corsaro, 2022).

5 CONCLUSION

Sex education in early childhood is revealed, throughout this study, as an essential element for the integral formation of the child, overcoming reductionist conceptions that limit it to the biological field. When considering emotional, social, and cultural dimensions, it is observed that its approach contributes significantly to the development of autonomy, body awareness, and the ability to establish relationships based on mutual respect. Thus, sex education should be understood as a structuring part of the educational process, especially in the first years of life.

The analysis developed throughout the article showed that the playful-pedagogical strategies play a central role in the effectiveness of this process. Play, as a language of childhood, enables the construction of knowledge in a meaningful way, facilitating the approach of topics considered sensitive. In addition, play contributes to the emotional and social development of children, strengthening bonds and promoting a safe environment for the expression of feelings and doubts.

Another relevant point refers to the potential of sex education as an instrument for preventing violence, especially child sexual abuse. By knowing their own body, understanding limits and developing communication skills, the child becomes better able to identify risk situations and seek help. In this sense, sex education is consolidated as a protection tool, aligned with the principle of guaranteeing rights and promoting the dignity of the child.

The discussion also allowed us to understand the importance of the sociology of childhood and the concept of habitus in the analysis of educational practices. By recognizing the child as an active subject and producer of culture, the understanding of his or her role in the learning process is expanded. Likewise, habitus shows how social dispositions influence behaviors and perceptions from childhood, reinforcing the need for critical and inclusive pedagogical practices.

However, there are still significant challenges to the effective implementation of sexuality education in childhood, especially with regard to teacher training and sociocultural resistance. The lack of preparation of educators and the taboos present in society can compromise the development of adequate pedagogical practices. Thus, it is essential to invest in continuing education and public policies that encourage debate and inclusion of the topic in the school environment.

Finally, it is concluded that child sex education, when mediated by playful approaches and based on solid theoretical bases, is an indispensable instrument for the formation of individuals who are more aware, autonomous and prepared for life in society. Its effectiveness depends on the articulation between school, family and public policies, being an essential path for the construction of a more just, safe and respectful society.

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SPECIAL EDUCATION AND ITS ROLE IN THE CONTEMPORARY SCENARIO

EDUCAÇÃO ESPECIAL E SEU PAPEL NO CENÁRIO CONTEMPORÂNEO

LA EDUCACIÓN ESPECIAL Y SU PAPEL EN EL ESCENARIO CONTEMPORÁNEO



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ABSTRACT

Considering the challenges of school inclusion for students with disabilities in Brazil, this article aims to understand the role of contemporary Special Education, highlighting barriers and pathways toward equitable inclusion. The objective is to analyze how public policies and inclusive pedagogical practices can contribute to accessible and welcoming school environments. To this end, a literature review was conducted in the CAPES Digital Library of Theses and Dissertations (BDTD), with works defended between 2019 and 2023. A total of 221 studies were identified, of which 17 were selected for meeting criteria of thematic relevance, timeliness, and contribution to the field. Thus, advances are observed, but also persistent challenges in inclusion policies: gaps in teacher training, obstacles in the implementation of inclusive pedagogical practices, and the permanence of attitudinal, structural, and curricular barriers. The data highlight the importance of listening to students, teachers, and families as an indispensable step toward building truly inclusive school environments. The productions also evidence the strategic role of assistive technologies, intersectional approaches, and intersectoral practices as solutions to everyday challenges. This allows us to conclude that, despite significant legal advances, effective school inclusion remains a trajectory under construction, requiring joint efforts between public policies, ongoing teacher training, and school management to ensure access, permanence, and learning for all students in a democratic, equitable, and plural school.

Keywords: Special Education. School Inclusion. Educational Barriers. Public Policies.

RESUMO

Considerando os desafios da inclusão escolar de estudantes com deficiência no Brasil, este artigo busca compreender o papel da Educação Especial contemporânea, destacando barreiras e caminhos para uma inclusão equitativa. Objetiva-se analisar como políticas públicas e práticas pedagógicas inclusivas podem contribuir para ambientes escolares acessíveis e acolhedores. Para tanto, procedeu-se a uma revisão de literatura na Biblioteca Digital de Teses e Dissertações (BDTD) da CAPES, com trabalhos defendidos entre 2019 e 2023. Foram identificados 221 estudos, dos quais 17 foram selecionados por atenderem a critérios de

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relevância temática, atualidade e contribuição ao campo. Desse modo, observa-se avanços, mas também desafios persistentes nas políticas públicas de inclusão: lacunas na formação de professores, obstáculos na implementação de práticas pedagógicas inclusivas e permanência de barreiras atitudinais, estruturais e curriculares. Os dados ressaltam a importância de escutar estudantes, professores e famílias como passo indispensável para construir ambientes escolares realmente inclusivos. As produções também evidenciam o papel estratégico das tecnologias assistivas, das abordagens interseccionais e das práticas intersetoriais como soluções para os desafios cotidianos. O que permite concluir que, apesar dos avanços legais significativos, a inclusão escolar efetiva ainda é uma trajetória em construção, exigindo esforços conjuntos entre políticas públicas, formação contínua de professores e gestão escolar para garantir o acesso, a permanência e o aprendizado de todos os estudantes em uma escola democrática, equitativa e plural.

Palavras-chave: Educação Especial. Inclusão Escolar. Barreiras Educacionais. Políticas Públicas.

RESUMEN

Considerando los desafíos de la inclusión escolar de estudiantes con discapacidad en Brasil, este artículo busca comprender el papel de la Educación Especial contemporánea, destacando barreras y caminos hacia una inclusión equitativa. Tiene como finalidad analizar cómo las políticas públicas y las prácticas pedagógicas inclusivas pueden contribuir a ambientes escolares accesibles y acogedores. Para ello, se procedió a una revisión de literatura en la Biblioteca Digital de Tesis y Disertaciones (BDTD) de la CAPES, con trabajos defendidos entre 2019 y 2023. Se identificaron 221 estudios, de los cuales 17 fueron seleccionados por cumplir criterios de relevancia temática, actualidad y contribución al campo. De esta manera, se observan avances, pero también desafíos persistentes en las políticas públicas de inclusión: lagunas en la formación docente, obstáculos en la implementación de prácticas pedagógicas inclusivas y permanencia de barreras actitudinales, estructurales y curriculares. Los datos resaltan la importancia de escuchar a estudiantes, profesores y familias como paso indispensable para construir ambientes escolares realmente inclusivos. Las producciones también evidencian el papel estratégico de las tecnologías asistivas, los enfoques interseccionales y las prácticas intersectoriales como soluciones a los desafíos cotidianos. Lo que permite concluir que, a pesar de los avances legales significativos, la inclusión escolar efectiva sigue siendo una trayectoria en construcción, que exige esfuerzos conjuntos entre políticas públicas, formación continua de docentes y gestión escolar para garantizar el acceso, la permanencia y el aprendizaje de todos los estudiantes en una escuela democrática, equitativa y plural.

Palabras clave: Educación Especial. Inclusión Escolar. Barreras Educativas. Políticas Públicas.

1 INTRODUCTION

In recent decades, Special Education has gained strength and new meanings in Brazil. Driven by public inclusion policies, the advancement of debates on human rights, and the historical struggle of social movements that defend the rights of people with disabilities, this field has been consolidated as a priority (Amorim, 2019; Azzi, 2019). These advances are supported by legal frameworks such as the Federal Constitution of 1988 (Brasil, 1988), the Law of Guidelines and Bases of National Education – LDB/1996 (Brasil, 1996), the National Policy on Special Education in the Perspective of Inclusive Education (Brasil, 2008) and the Brazilian Law of Inclusion (Brasil, 2015), which reaffirm the right to education as a fundamental right. However, despite legislative achievements, the Brazilian education system still faces structural challenges and a school model that does not fully meet the needs of students with disabilities.

Important gaps persist, especially in specialized educational care, in the initial and continuing training of educators, in the architectural and communicational accessibility of schools, and in the implementation of truly inclusive pedagogical practices (Nalin, 2023). Educational inclusion goes far beyond the enrollment of students with disabilities in regular schools. It demands profound transformations in the ways of teaching, learning, and living together, ensuring the full participation and integral development of all students (Gonçalves, 2019). This change requires facing attitudinal, cultural and institutional barriers that limit the learning and socialization of students who are the target audience of Special Education. This article aims to broaden the dialogue on the role of Special Education in the contemporary educational scenario, based on recent academic productions — mainly theses and dissertations defended between 2019 and 2023. Through a systematic literature review, it seeks to identify the challenges that permeate the implementation of inclusive policies and practices, recognize the advances, and contribute to the construction of a truly democratic, equitable, and sensitive school to the singularities of its students (Rodrigues, 2022; Ivo, 2021).

Reflecting on the role of Special Education today implies valuing diversity as a principle, deconstructing segregating practices still present in institutions, and ensuring active listening to those involved — students, teachers, families, and managers (Kohls, 2019). Academic research plays a crucial role in this process, revealing tensions, pointing out directions, and subsidizing the formulation of more effective and humane public policies, capable of facing the complex challenges of school inclusion (Modelska, 2021; Maciel, 2023). This study aims to analyze how public policies, associated with inclusive pedagogical practices, can contribute to the construction of accessible and welcoming school environments for all students, especially those

with disabilities, identifying advances, challenges and perspectives in the field of contemporary Special Education.

2 THEORETICAL FRAMEWORK

The theoretical framework of this study is organized into three articulated axes that dialogue with the recent literature on Special Education and school inclusion: the legal frameworks and historical achievements that sustain the right to inclusive education, teacher training and inclusive pedagogical practices, and the contemporary challenges in the implementation of public inclusion policies. These axes seek to theoretically contextualize the object of study and identify gaps, contradictions and consensuses relevant to the proposed discussion.

2.1 LEGAL MILESTONES AND HISTORICAL ACHIEVEMENTS

Brazilian legislation has played a crucial role in ensuring the right to quality education for all, especially for students with disabilities (Rodrigues, 2020; Abreu, 2023). Although the process of school inclusion in Brazil has made significant progress over the last few decades (Amorim, 2019), we still face challenges that require a continuous and careful analysis of laws and their practical implementation (Azzi, 2019; Diniz, 2019). Historically, Brazilian education has been marked by exclusionary practices, which often segregated people with disabilities, denying them access to dignified and inclusive education (Azzi, 2019; Gonçalves, 2019). The Federal Constitution of 1988 became an essential milestone in this trajectory by establishing, in its article 205, that education is a universal right and a duty shared between the State and the family (Brasil, 1988). More than reaffirming the importance of education, this article enshrined the principle of equal rights, ensuring that everyone, regardless of their conditions, can enjoy an appropriate educational education (Nussbaum, 2019). The promulgation of the Constitution gave visibility to the inclusion of students with disabilities, consolidating this right (Rodrigues, 2020). However, the realization of school inclusion began to take shape with the implementation of specific public policies, such as the Law of Guidelines and Bases of National Education (Brasil, 1996). This legislation strengthened the idea of inclusive education, highlighting the importance of schools adapting to the diversity of their students (Amorim, 2019).

The LDB was an invitation for the school to become a space where everyone could learn together, overcoming barriers and celebrating differences (Kohls, 2019). As Kohls (2019) states, inclusion should be a permeating principle of all educational practices, ensuring that all students have the opportunity to learn and grow together. With the publication of the National Policy on

Special Education in the Perspective of Inclusive Education, in 2008, new advances were achieved (Brasil, 2008). This policy reaffirmed the commitment to the inclusion of students with disabilities in regular schools, ensuring their rights to access and remain in the school environment (Nalin, 2023). In addition to guiding teacher training, this policy encouraged the creation of adequate conditions for inclusion, such as physical and curricular adaptations in schools (Modelski, 2021). In the same year, Brazil ratified the UN Convention on the Rights of Persons with Disabilities (Brasil, 2008), an international landmark that strengthened national laws, requiring efforts to ensure the full participation of persons with disabilities in society, including access to education (Rodrigues, 2020). However, as Amorim (2019) points out, the existence of legal frameworks, by itself, does not ensure their practical application. Transforming laws into concrete actions is still a challenge that requires continuous investments in teacher training, curricular adaptations and accessible infrastructure.

Educational inclusion in Brazil still faces financial obstacles and institutional resistance in some schools (Nalin, 2023; Azzi, 2019). Structural problems, such as the absence of architectural adaptations and assistive technologies in many institutions, remain significant barriers to the effectiveness of inclusion policies (Diniz, 2019; Gonçalves, 2019). As Diniz (2019) points out, physical and attitudinal barriers are still a challenge that needs to be faced to ensure access to quality education for all. The continuous training of teachers is essential for inclusive pedagogical practices to get off the ground and come to life in everyday school life.

2.2 TEACHER TRAINING AND INCLUSIVE PRACTICES

Teacher training is one of the most important pillars to consolidate Special Education in Brazil. In the context of inclusive education, initial training is essential, but it is continuing education that prepares educators to deal with the daily challenges of inclusive education. The National Common Curriculum Base (BNCC) reinforces the importance of training that goes beyond the technical, sensitizing teachers to the diversity of their students (Lima, 2021). Lopes (2021) argues that this training should include a critical and reflective approach, equipping teachers to meet the different needs of students.

The COVID-19 pandemic has brought additional challenges to the fore. As Modelski (2021) points out, many teachers faced difficulties when adapting to remote teaching, evidencing the digital exclusion of many students with disabilities. These students rely on assistive technologies that were often unavailable. The pandemic has revealed the urgent need to train teachers in technological skills so that they can use accessible pedagogical tools and respond to the demands of inclusive teaching in digital environments. This new reality highlights

the importance of a training curriculum that adapts quickly to social and technological changes, as suggested by Ivo (2021), who emphasizes the need for training that not only informs, but also transforms teaching practice. As Azzi (2019) points out, teacher semi-training is an obstacle to inclusive education. Many teachers do not have access to adequate preparation to work with diversity in the classroom, which makes it difficult to implement inclusive practices (Azzi, 2019; Rodrigues, 2022). In this sense, continuing education should be a permanent process, which offers opportunities for theoretical updating and reflective practice. Mendes (2023) points out that it is essential for teachers to be able to share their experiences and find creative solutions to the challenges they face in everyday school life (Rodrigues, 2022; Azzi, 2019).

Teacher training must also recognize the cultural, social and individual plurality of students. An inclusive education goes beyond meeting the needs of students with disabilities. It encompasses all forms of diversity present in classrooms, such as gender, race, ethnicity, and social class. As Kohls (2019) emphasizes, it is essential that teacher training includes sensitivity to deal with diversity, promoting an environment of respect and welcoming. This sensitivity is indispensable to create respectful and inclusive learning environments (Lima, 2021; Nalin, 2023). Another critical aspect is the collaboration between teachers and other professionals, such as psychologists, speech therapists and occupational therapists. Teamwork enriches pedagogical practices, allowing for a more effective response to the specific needs of students (Rocha, 2022). Interdisciplinary collaboration, as discussed by Rodrigues (2020), is essential for educational strategies to be more comprehensive, involving different knowledge that can contribute to the integral formation of the student.

In addition, teachers need to be up-to-date on the use of ever-evolving educational technologies (Piccolo, 2022). Digital tools and assistive technologies, when applied well, can transform the learning experience and create a more equitable environment for all learners (Nussbaum, 2019; Rocha, 2022). Training in assistive technologies should be an essential component of teacher training, as suggested by Gonçalves (2019), who points out that the lack of knowledge about these tools can lead to the exclusion of students who need specific adaptations. It is essential that teacher training includes the development of socio-emotional skills (Kohls, 2019; Mendes, 2023). Empathy, active listening, and welcoming are essential skills to create an environment where everyone feels valued and respected. Promoting these competencies in teachers is investing in the construction of truly inclusive and humane schools (Nussbaum, 2019). Teacher training should, therefore, integrate emotional and social aspects into the pedagogical curriculum, aiming not only at inclusion in the physical sense, but also with regard to belonging and valuing students' identities.

Teacher training is a crucial element in the construction of effective inclusive education (Azzi, 2019; Kohls, 2019). It must be a continuous and reflective process, which not only informs, but also transforms pedagogical practice in response to contemporary demands (Mendes, 2023; Modelski, 2021). Inclusion should be understood as a principle that encompasses all forms of diversity, placing respect and acceptance as core values in the school environment (Lima, 2021; Nussbaum, 2019). Collaboration between professionals and updating in assistive technologies and innovative methodologies are essential to ensure that all students have access to quality, equitable and inclusive education (Rodrigues, 2020; Gonçalves, 2019).

2.3 CHALLENGES IN THE IMPLEMENTATION OF PUBLIC INCLUSION POLICIES

Despite legal advances and initiatives aimed at inclusion, the reality in Brazilian schools is still marked by significant challenges. The implementation of public inclusion policies faces a series of barriers that make it difficult for students with disabilities to access and remain in the educational system (Amorim, 2019; Nalin, 2023). One of the main obstacles is the lack of adequate financial resources, which directly affects school infrastructure and teacher training (Kohls, 2019; Rodrigues, 2020). According to Gonçalves (2019), many schools do not have the necessary architectural adaptations, such as ramps and adapted bathrooms, which limits the physical access of students with disabilities. This lack of accessibility is not only a physical problem, but also a symbolic one, as it reinforces the exclusion and marginalization of these students in the school environment. In addition, the lack of assistive technologies in many institutions prevents these students from being able to fully enjoy their potential (Rocha, 2022; Piccolo, 2022). The lack of investment in adaptive technologies and in the training of educators to use these tools is one of the factors that contribute to exclusion (Diniz, 2019). The inability to integrate assistive technologies into pedagogical practices can result in an even greater distancing of students with disabilities, limiting their learning and participation in school activities, which is particularly concerning in an increasingly digitized world.

Another significant challenge is the resistance of some institutions and professionals to adopt inclusive practices. Often, school culture is still rooted in traditional practices that do not contemplate diversity (Gonçalves, 2019; Amorim, 2019). This resistance can manifest itself in a variety of ways, from a reluctance to modify curricula to a lack of support from school administration to implement inclusive practices. The lack of awareness and continuing education for educators can result in a hostile environment for students with disabilities, where their specific needs are not recognized (Azzi, 2019).

Teacher training, although crucial, is still not enough to prepare educators to meet diversity. As mentioned earlier, semi-formation is a significant barrier (Azzi, 2019). This issue demands a reassessment of initial and continuing education curricula, so that they are more comprehensive and sensitive to inclusive education issues (Lopes, 2021; Ivo, 2021). Teacher training must go beyond theory, incorporating reflective practices and real experiences that allow educators to develop skills to deal with diversity in the classroom. Mendes (2023) emphasizes that it is essential that teacher training courses include reflective practices and space for teachers to dialogue about their experiences and challenges, promoting a collaborative learning environment. In addition to structural and formative issues, the implementation of public inclusion policies faces the difficulty of articulation between different spheres of government and society. The lack of integrated planning and the mismatch between the federal, state, and municipal spheres can lead to an uneven implementation of inclusion policies (Rodrigues, 2020; Kohls, 2019). This fragmentation makes it difficult to create a cohesive support network that can ensure the effective inclusion of all students in schools (Gonçalves, 2019; Nalin, 2023). The articulation between the various government spheres is crucial for establishing clear guidelines and for there to be a flow of resources and information that favors the implementation of inclusive practices in all educational institutions (Piccolo, 2022). As Amorim (2019) points out, the lack of coordination between the different levels of government can result in policies that do not complement each other, compromising the effectiveness of actions and the promotion of a truly inclusive educational environment.

Another factor that deserves to be highlighted is the importance of involving the school community, including parents and students, in the construction of inclusive practices. Active community participation can strengthen inclusion policies, creating a culture of respect and appreciation for diversity (Nalin, 2023). The awareness and engagement of all actors involved are essential for inclusion to cease to be a mere formality, becoming a reality experienced in everyday school life (Nalin, 2023; Rodrigues, 2020).

The active involvement of teachers, students, parents, and the school community as a whole is essential to create a learning environment that values diversity and promotes equity (Kohls, 2019; Mendes, 2023). When all members of the school community commit to inclusive practices, it is possible to build a culture of respect and appreciation of difference, allowing all students, regardless of their conditions, to feel an integral part of the school (Gonçalves, 2019; Rodrigues, 2020). The active participation of each member of the school community not only strengthens inclusion, but also enriches the educational process, promoting an environment in which diversity is celebrated and respected. In addition, the lack of research and data on the

school inclusion of students with disabilities in Brazil makes it difficult to evaluate public policies and identify their failures (Diniz, 2019; Piccolo, 2022). Studies and research are essential to support the creation and implementation of more effective and inclusive policies (Lima, 2021; Modelski, 2021). Data collection and analysis can provide valuable insights into the needs of students with disabilities and how schools can best serve them (Piccolo, 2022).

It is essential that public inclusion policies be accompanied by constant monitoring and systematic evaluations, in order to ensure their effectiveness and promote adjustments when necessary (Rocha, 2022; Mendes, 2023). The implementation of an evaluation system that considers the specificities of inclusive education can contribute to the improvement of pedagogical practices and the promotion of equity in access to education (Rocha, 2022). Thus, the fight for inclusion must be continuous and collective, involving all segments of society so that a fairer and more egalitarian future can be guaranteed for all students, regardless of their conditions.

3 METHODOLOGY

This study is a qualitative and exploratory literature review, with the purpose of identifying advances, challenges and perspectives of Special Education in the contemporary Brazilian scenario. The qualitative approach was adopted because it allows the interpretative analysis of the selected academic productions, enabling the understanding of the meanings, contexts and tensions that cross the field of school inclusion.

Data collection was carried out in the Digital Library of Theses and Dissertations (BDTD) of the Coordination for the Improvement of Higher Education Personnel (CAPES), considered one of the main bases of Brazilian scientific production in education. The time frame comprised theses and dissertations defended between 2019 and 2023, with a view to capturing the most recent discussions on Special Education, public inclusion policies, and inclusive pedagogical practices in the post-educational reform and post-pandemic context.

The descriptors used in the search were "Special Education", "school inclusion", "public inclusion policies" and "inclusive pedagogical practices", combined by Boolean operators. The initial search resulted in 221 works. From this set, the following inclusion criteria were applied: (a) works that directly addressed Special Education, school inclusion or public policies aimed at people with disabilities; (b) thematic relevance to the object of study; (c) the timeliness of theoretical and methodological discussions; and (d) contribution to the field of Special Education. As exclusion criteria, studies that did not directly address the theme, were repeated, or were unavailable in full were disregarded.

After applying the criteria, 17 studies were selected to compose the corpus of analysis. The analysis of the data occurred through systematic reading and thematic categorization of the findings, organizing them into axes that dialogue with the theoretical framework of the study: legal frameworks and historical achievements, teacher training and inclusive practices, challenges in the implementation of public policies, intersectional and technological perspectives and proposals for effective inclusive education. The organization of the productions in thematic axes sought to highlight not only the recurrences, but also the gaps and tensions present in the field, contributing to a critical and contextualized understanding of the role of Special Education in contemporary Brazil.

4 RESULTS AND DISCUSSIONS

The analysis of the 17 selected works reveals a complex panorama of contemporary Special Education in Brazil. The findings are organized into two central axes that dialogue directly with the theoretical framework: (a) the intersectional and technological perspectives that cross the field and (b) the concrete proposals for the implementation of an inclusive education. These axes synthesize both the advances identified and the persistent challenges that demand articulated action from different social and institutional actors.

4.1 INTERSECTIONAL AND TECHNOLOGICAL PERSPECTIVES FOR SPECIAL EDUCATION

Contemporary Special Education cannot be understood in isolation: it is articulated with issues of gender, race, social class, and territory, which directly interfere in the conditions of access, permanence, and learning of students with disabilities (Piccolo, 2022; Rodrigues, 2022). An intersectional perspective recognizes that the barriers faced by these students are not only physical or curricular, but also structural, related to the historical inequalities that cross the Brazilian educational system (Gonçalves, 2019). Disregarding this dimension implies policies and practices that, although well-intentioned, can reproduce exclusions of another nature.

In this context, assistive technologies emerge not only as accessibility resources, but as instruments of equity. When integrated with intentional pedagogical practices, they allow students with different disabilities to actively participate in the teaching and learning process, overcoming communicational, sensory, and motor barriers (Rocha, 2022; Maciel, 2023). However, the mere availability of equipment does not guarantee inclusion: it is essential that

educators are prepared to use them in a meaningful and contextualized way (Modelska, 2021; Lima, 2021).

The COVID-19 pandemic has sharply highlighted the inequality in access to digital technologies and the gaps in teacher preparation for inclusive remote teaching (Modelska, 2021). Students with disabilities who rely on specific assistive technologies have been especially vulnerable by the abrupt migration to non-accessible digital environments. This scenario reinforces the urgency of pedagogical planning that anticipates and contemplates diversity, and not only reacts to it in crisis situations (Ivo, 2021; Azzi, 2019).

The intersectoral approach is also indispensable: full school inclusion requires the articulation between education, health, social assistance, and culture (Mendes, 2023; Kohls, 2019). When these sectors act in an integrated manner, it is possible to build support networks capable of responding to the complex needs of students with disabilities and their families, contributing to more stable, dignified, and transformative school trajectories (Nalin, 2023; Rodrigues, 2020). The Special Education that is wanted for the twenty-first century is, therefore, one that recognizes the complexity of subjects and contexts and that is committed to an inclusion that goes beyond the walls of the school.

4.2 PROPOSALS FOR EFFECTIVE INCLUSIVE EDUCATION

For school inclusion to be effective, it is necessary that public policies be accompanied by concrete and practical actions that promote real inclusion (Rodrigues, 2020; Nalin, 2023). The concept of inclusion goes beyond simple physical access to schools, involving the transformation of cultures, policies, and practices that ensure the full participation of all students, especially those with disabilities (Rodrigues, 2020; Nalin, 2023). Some of the following proposals can contribute to building an inclusive school environment, providing quality education that respects and values diversity.

Investment in continuing education: It is essential that educational institutions promote continuing education programs that train educators to deal with diversity and inclusion (Azzi, 2019; Gonçalves, 2019). Initial training, while important, is often not enough to prepare teachers for the challenges of inclusion. Workshops, seminars, and study groups can be effective mechanisms to promote the exchange of experiences and professional development (Amorim, 2019; Diniz, 2019). In addition, it is essential that these programs address not only teaching methodologies, but also aspects related to empathy and understanding of the different realities faced by students (Nussbaum, 2019; Rodrigues, 2022). Training must be a continuous and contextualized process, adapting to the needs of the school community (Ivo, 2021).

Curricular adaptations: Schools should be encouraged to make curricular adaptations that consider the different needs of students. This includes the personalization of activities, the use of active methodologies, and the inclusion of diversified teaching materials that meet the specificities of each student (Lima, 2021; Mendes, 2023). Flexibility in the curriculum is an effective strategy that allows all students to engage in the learning process in a meaningful way (Lima, 2021; Mendes, 2023). This approach implies the use of different resources and evaluation formats, as well as the creation of an environment that values the participation and protagonism of students. Curricular adaptations should be seen as an opportunity for pedagogical innovation, promoting not only inclusion, but also the quality of teaching (Azzi, 2019; Gonçalves, 2019).

Accessible infrastructure: It is essential that schools invest in accessible infrastructure, ensuring architectural adaptations and the availability of assistive technologies that allow the full participation of students with disabilities (Rocha, 2022; Maciel, 2023). This includes the creation of physical environments that respect the needs of all students, such as access ramps, adapted bathrooms, and adequate signage (Rocha, 2022; Maciel, 2023). In addition, assistive technology, such as reading software and devices that facilitate communication, must be integrated into everyday school life (Diniz, 2019; Piccolo, 2022). Accessibility should not be seen only as a legal demand, but as an ethical and pedagogical commitment that reflects the value of inclusion in education (Brasil, 2008; Brazil, 2015).

Interdisciplinary collaboration: Teamwork among educators, health professionals, social workers, and other experts is vital for inclusion success (Kohls, 2019; Rodrigues, 2020). Interdisciplinary collaboration can provide more comprehensive support for students, considering their needs in multiple dimensions (Kohls, 2019; Rodrigues, 2020). This integrated approach allows schools to develop individualized support plans, which take into account the particularities of each student and ensure that available resources are used effectively (Rodrigues, 2022). The construction of a support network that involves different areas of knowledge and professional practice is essential to promote inclusive and quality education (Amorim, 2019; Nussbaum, 2019).

Community involvement: Inclusion should be a shared mission for the entire school community. Promoting awareness of the importance of inclusion and involving families, students, and the community in general in discussions about inclusive practices is essential to create a culture of respect and appreciation of diversity (Amorim, 2019; Tomelin, 2023). The active participation of the community can be stimulated through events, lectures, and awareness campaigns, which promote discussion about diversity and inclusion (Amorim, 2019;

Tomelin, 2023). When everyone involved in the educational process feels part of this commitment, the effectiveness of inclusive practices tends to increase, contributing to a more welcoming and respectful school environment (Rodrigues, 2020; Nalin, 2023).

Use of educational technologies: Integrating educational technologies into the teaching-learning process can facilitate inclusion. These tools should be used in a way that promotes accessibility and participation for all students, considering their specific abilities and needs (Diniz, 2019; Piccolo, 2022). The use of digital platforms, applications, and multimedia resources can enrich the educational experience, allowing students to learn in a more interactive and personalized way (Diniz, 2019; Piccolo, 2022). However, it is important that the implementation of these technologies is accompanied by adequate training for educators, ensuring that everyone can fully enjoy the potential that technology offers in the context of inclusion (Modelski, 2021; Maciel, 2023).

Building an effective inclusive education requires a collective commitment and a multifaceted approach that considers the specificities of students and the demands of educators (Rodrigues, 2020; Nussbaum, 2019). The proposals presented reflect the need for a continuous and systematic effort to transform schools into truly inclusive spaces, where all students have the opportunity to develop their potential in an environment of respect and appreciation of diversity. Inclusion should not be seen as a goal to be achieved, but as an ongoing process that requires reflection, adaptation, and innovation on the part of all involved (Kohls, 2019; Rodrigues, 2022). It is essential that public policies are continuously reassessed and adjusted according to emerging needs, ensuring that inclusive education is a reality experienced by all students (Brasil, 2008; Brazil, 2015).

5 CONCLUSION

Contemporary education, especially with regard to Special Education, faces a scenario of challenges and opportunities that reflect the search for inclusion and equity. The strengthening of public policies, supported by legal frameworks, has been fundamental to guarantee the right to education of all students, particularly those with disabilities (Brasil, 2015; Amorim, 2019; Rodrigues, 2020). However, the realization of this right requires more than legislation: it requires a structural transformation in educational practices (Nalin, 2023; Piccolo, 2022). Educational inclusion demands a reassessment of teaching methods and teacher training, promoting an approach that values diversity and respects the uniqueness of each student (Nalin, 2023; Mendes, 2023). The continuous training of educators is essential so that they can adequately meet the needs of a diverse classroom (Azzi, 2019; Gonçalves, 2019).

Mendes, Vilaronga and Zerbato (2014) emphasize that this training should not only train teachers in technical issues, but also develop a sensitivity to the diversity present in classrooms. Ziliotto (2023) complements this view by stating that special education should be designed in an inclusive way, considering the particularities of each student and promoting a learning environment that respects and values diversity.

In addition, assistive technologies emerge as crucial tools to facilitate the learning and integration of students with disabilities, but their implementation must be accompanied by pedagogical strategies that consider cultural and social plurality (Maciel, 2023; Rocha, 2022). Furthermore, school inclusion is not only a responsibility of the educational system, but a commitment that must be shared by the whole society. Building a culture that respects and values diversity depends on the collaboration of schools, families, communities, and governments, working together towards a common goal (Rodrigues, 2022; Tomelin, 2023). The path to a truly inclusive school involves overcoming attitudinal and institutional barriers, ensuring that all students have not only access, but also the opportunity to fully participate in school life (Diniz, 2019; Kohls, 2019). This implies promoting a learning environment that welcomes and values all identities, stimulating collaboration between educators and professionals from different areas.

As stated by Nussbaum (2001, p. 47), "education should be a means of promoting human dignity, allowing all individuals, regardless of their circumstances, to develop their capacities and reach their full potential". Thus, Special Education, by moving towards inclusion, reflects a commitment to building a more just and egalitarian society, where each individual can develop their potential in an environment that celebrates diversity. The challenge is ongoing, but the search for an education that truly serves everyone is a vital step towards strengthening democracy and human rights (Gonçalves, 2019; Azzi, 2019; Mendes, 2023; Piccolo, 2022).

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INTEGRATION OF DIDACTIC AUDIO DESCRIPTION INTO THE SCHOOL CURRICULUM

INTEGRAÇÃO DA AUDIODESCRIÇÃO DIDÁTICA AO CURRÍCULO ESCOLAR

INTEGRACIÓN DE LA DESCRIPCIÓN DE AUDIO DIDÁCTICA EN EL PROGRAMA ESCOLAR



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ABSTRACT

This article aims to discuss the integration of didactic audio description into the school curriculum, justifying the need for its inclusion in the educational context. The objective is to identify the challenges and difficulties that emerge from pedagogical practices during the implementation process of this strategy. This is a bibliographic research, which is based on the academic production developed in the country, especially in the works of Motta (2010) and Mianes (2023), as well as in the current legislation that regulates and guides the use of audio description as a tool for accessibility and inclusion of public students of special education. It is noteworthy that advances have been recorded in Brazil regarding the use of audio description in the school environment, promoting inclusion and equity in learning. However, it is important to highlight that there are still many challenges to be overcome, especially with regard to the initial and continuing training of teachers, in order to promote understanding about the possibilities of curricular flexibility, focusing on pedagogical practices that address the learning diversity of students.

Keywords: Audio-description. Equity in Learning. School Curriculum. Accessibility Tool.

RESUMO

O presente artigo tem como finalidade discutir a integração da audiodescrição didática ao currículo escolar, justificando a necessidade de sua inserção no contexto educacional. O objetivo é identificar os desafios e dificuldades que emergem das práticas pedagógicas durante o processo de implementação dessa estratégia. Trata-se de uma pesquisa bibliográfica, que se baseia na produção acadêmica desenvolvida no país, especialmente nos trabalhos de Motta

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(2010) e Mianes (2023), bem como na legislação vigente que regula e orienta o uso da audiodescrição como ferramenta de acessibilidade e inclusão de estudantes público da educação especial. Ressalta-se que avanços têm sido registrados no Brasil quanto ao uso da audiodescrição no ambiente escolar, promovendo a inclusão e a equidade na aprendizagem. No entanto, é importante destacar que ainda existem muitos desafios a serem superados, especialmente no que se refere à formação inicial e continuada dos docentes, de modo a favorecer a compreensão sobre as possibilidades de flexibilização curricular, com foco em práticas pedagógicas que contemplem a diversidade de aprendizagem dos estudantes.

Palavras-chave: Audiodescrição Didática. Equidade na Aprendizagem. Currículo Escolar. Ferramenta de Acessibilidade.

RESUMEN

Este artículo pretende discutir la integración de la descripción de audio didáctica en el currículo escolar, justificando la necesidad de su inclusión en el contexto educativo. El objetivo es identificar los desafíos y dificultades que surgen de las prácticas pedagógicas durante el proceso de aplicación de esta estrategia. Se trata de una investigación bibliográfica, que se basa en la producción académica desarrollada en el país, especialmente en las obras de Motta (2010) y Mianes (2023), así como en la legislación vigente que regula y orienta el uso de la descripción de audio como herramienta para la accesibilidad e inclusión de estudiantes públicos de educación especial. Cabe señalar que en el Brasil se han registrado avances en cuanto al uso de la descripción de audio en el entorno escolar, promoviendo la inclusión y la equidad en el aprendizaje. Sin embargo, es importante destacar que aún quedan muchos desafíos por superar, especialmente en lo que respecta a la formación inicial y continua de los maestros, a fin de promover la comprensión de las posibilidades de flexibilidad curricular, centrándose en las prácticas pedagógicas que abordan la diversidad de aprendizaje de los estudiantes.

Palabras clave: Descripción de Audio. Equidad en el Aprendizaje. Programa Escolar. Herramienta de Accesibilidad.

1 INTRODUCTION

The guarantee of quality public education is one of the main challenges of Brazilian society, shared by both government institutions and civil society organizations. In the current national context, marked by deep regional, economic and social inequalities, the search for the quality of the education offered must have as its central axis the principle of equal opportunities, regardless of the conditions of students' entry into school.

In the case of public students in special education, it is essential to establish school practices that promote the overcoming of barriers that limit their full participation and learning. In this sense, audio description stands out as a didactic resource capable of collaborating for access to the school curriculum. It is an accessibility tool designed not only to ensure access to content, but also to give visibility to the blind community, contributing to the elimination of obstacles and prejudices.

There are countless authors who seek to conceptualize this tool, and all of them have a common basis. For Lima et al. (2009), audio description should be understood as a regulated description, elaborated in order to build understanding where it did not exist before or was imprecise; A description full of meanings, which preserves the quality and independence of the attributes of both the audio and the description itself. The authors state that this tool constitutes a bridge between the unseen image and the mental image constructed by the person who hears the description (LIMA et al., 2009).

Audio description is also recognized as a right guaranteed by the Brazilian Inclusion Law (LBI), which provides for communicational accessibility to people with disabilities. Article 1 of Law No. 13,146, of July 6, 2015, establishes the Statute of Persons with Disabilities, aimed at guaranteeing and promoting, under equal conditions, the exercise of fundamental rights and freedoms, aiming at social inclusion and the full exercise of citizenship (BRASIL, 2015).

From this perspective, this study justifies the need to integrate didactic audio description into the school curriculum, ensuring that the rights of students with disabilities are effectively respected. Thus, the objective of the research is to identify the challenges and difficulties present in the pedagogical practices that involve the integration of didactic audio description into the school routine.

Researchers such as Motta (2016) and Mianes (2023) have demonstrated, in their studies, the potential of audio description when applied in the school context. The school, in this sense, is configured as a privileged space for the discussion, proposition and implementation of strategies that favor the effective participation of students, enabling them to have more equitable access to curricular content, including textbooks, other text carriers, image materials

— such as videos and photographs — in addition to other elements that make up the process of pedagogical mediation carried out by teachers.

This article is organized into sections: the first presents the introduction; the second describes the methodology; and the third and fourth sections bring together the results and discussions, including a historical account of audio description practices in Brazil and in the world, the presentation of concepts and theoretical foundations that support its use as a tool to access the curriculum, as well as reflections on its possibilities of materialization as a pedagogical resource in the school context. Then, the use of audio description in the promotion of better teaching and learning conditions is problematized. Finally, the final considerations highlight its relevance in guaranteeing rights and in the exercise of citizenship, reaffirming its potential as a viable and powerful resource for school implementation.

In this context, the benefits arising from this research include the possibility of qualifying the educational practice in the school environment and in the education networks, contributing to the consolidation of more inclusive pedagogical practices.

2 METHODOLOGY

2.1 RESEARCH APPROACH

The research presents a qualitative approach, as it seeks to understand the phenomenon of didactic audio description from its conceptual, pedagogical and inclusive dimensions, in the context of teaching practice and the school curriculum. The qualitative approach was chosen because it allows interpreting meanings, perceptions and experiences associated with the use of audio description as a tool for accessibility and pedagogical innovation, valuing the discourse and understanding of the subjects involved.

For Silveira and Córdova (2009, p. 32), "qualitative research is therefore concerned with aspects of reality that cannot be quantified, focusing on the understanding and explanation of the dynamics of social relations". In this study, the focus falls on the pedagogical mediation strategies that incorporate audio description in the school environment.

2.2 TYPE OF RESEARCH

The study is characterized as a descriptive and bibliographic research, with elements of documentary analysis.

Descriptive, as it aims to present and analyze the phenomenon of audio description in its historical, conceptual and pedagogical context, describing its applications in inclusive education and the impacts on the school curriculum.

Bibliographic, because it was developed from the survey, reading and analysis of works, scientific articles, legislation and official documents that deal with audio description, accessibility and school inclusion (such as Motta, 2010; 2016; Mianes, 2023; Alves, 2012; Ferreira-Costa, 2016; and normative documents such as the LDB, the LBI and the BNCC).

Documentary, insofar as it also uses institutional and legal sources that guide pedagogical practice and accessibility in education.

2.3 DATA COLLECTION INSTRUMENT

Data collection occurred through systematized bibliographic research, developed in four stages:

1. Survey of theoretical and normative references — Books, dissertations, articles and legal documents (LDB, LBI, BNCC, NBR 15290, among others) available in academic databases (SciELO, Google Scholar, CAPES Periodicals and institutional repositories) were consulted.
2. Selection of key authors — Authors who directly address audio description and its relationship with accessibility, curriculum and teacher training stood out: Lívia Motta, Mianes, Alves, Vergara-Nunes, Galvão Filho, Minetto and Ferreira-Costa.
3. Organization of the material — The selected works were categorized by thematic axes: audio description and curriculum, audio description as a pedagogical resource and didactic audio description and teacher training.
4. Interpretative analysis — The collected material was read, recorded and analyzed in order to identify convergences and divergences between the references, as well as the main theoretical-methodological foundations on the subject.

2.4 DATA ANALYSIS TECHNIQUE

For the treatment and interpretation of the data, the content analysis proposed by Bardin (2016) was used, which comprises three phases:

1. Pre-analysis – Floating reading and organization of the collected materials, identifying the units of record related to audio description and inclusion.
2. Exploration of the material – Coding and categorization of data according to the defined thematic axes: (a) fundamentals and history of audio description, (b) audio description and inclusive curriculum, and (c) didactic audio description as a teaching practice.
3. Treatment of results and interpretation – Articulation of the categories with the theoretical references and with the Brazilian educational legislation, in order to show how audio

description is integrated into pedagogical practices and contributes to the effectiveness of an inclusive education.

This technique was chosen because it enables the understanding of the meanings and senses emerging from the texts, allowing the correlation of theoretical discourses with educational practices. The theoretical framework in a study comprises a critical and organized analysis of the literature pertinent to the theme, providing a theoretical contextualization and defining the key concepts. It should comprehensively contain previous theories, models, and research, identifying gaps, contradictions, and consensuses in the literature that are important to the focus of the work being developed.

3 RESULTS AND DISCUSSION

The results of the bibliographic and documentary research indicate that audio description (DA) is a fundamental accessibility and communication resource for the democratization of access to information and knowledge, especially for people with visual impairment. According to Motta (2010; 2016), audio description is a modality of intersemiotic translation that transforms visual elements into verbal language, enabling the visually impaired person to fully understand contexts, images, environments and non-verbal expressions.

This function of communicational mediation inserts audio description in the field of assistive technologies, but, according to Mianes (2023), its potential goes beyond the technical field, also assuming a pedagogical and inclusive dimension. By translating the visual into accessible language, DA enables new ways of learning, participating, and producing meanings in the classroom.

In this sense, audio description, when understood as a didactic resource, becomes an integral part of inclusive pedagogical practice, contributing to the development of autonomy, imagination and critical understanding of curricular content by students with or without disabilities.

The documentary analysis shows that the inclusive curriculum, as guided by the Brazilian Law of Inclusion (Law No. 13,146/2015), the LDB (Law No. 9,394/1996) and the National Common Curricular Base (BNCC), must include accessibility strategies and resources that ensure the full participation of all students in educational processes.

In this context, audio description presents itself as a tool that puts into effect the principles of equity and curricular diversity. Alves (2012) reinforces that the curriculum needs to be flexible and accessible, allowing the adaptation of contents, methodologies and assessments according

to the specific needs of students.

Thus, the insertion of audio description in pedagogical practices and didactic materials favors the realization of a curriculum that recognizes differences as an educational potential, and not as a methodological barrier. Ferreira-Costa (2016) emphasizes that inclusion is not restricted to the physical presence of the student, but to effective access to knowledge and culture, which requires the use of accessible languages and sensory mediation resources.

In this way, audio description is consolidated as an inclusive curricular strategy, which expands the reach of content and promotes cognitive justice within the educational process.

The theoretical results indicate that teacher training still represents a central challenge for the implementation of audio description as a pedagogical practice. Although legislation and guiding documents recognize the importance of accessibility, many teachers do not receive specific training on resources such as AD (Vergara-Nunes, 2021).

The discussion of the results demonstrates that didactic audio description is an effective instrument of educational accessibility, which transcends the technical field and is inserted in the pedagogical field of inclusion.

Its adoption requires accessible curriculum planning, qualified teacher training, and institutional commitment to equity.

Although the research has been limited to the theoretical and documentary field, the results suggest the need for future empirical investigations that analyze the impact of audio description on the learning of students with visual impairment, especially in visual disciplines such as arts, sciences and geography.

3.1 AUDIO DESCRIPTION AND CURRICULUM: HISTORY, CONCEPT AND RATIONALE

Lívia Motta (2016) expands the concept of audio description by explaining it as a communicational accessibility resource that favors the understanding of visually impaired people in different types of events through sound information. This resource transforms the visual into verbal, creating greater possibilities of access to culture and information and contributing to cultural, social and school inclusion. In addition to people with visual impairment, audio description also broadens the understanding of subjects with intellectual disabilities, the elderly, people with attention deficit, autistic, dyslexic, among others (Motta, 2016, p. 2).

It is, therefore, a comprehensive definition, which includes aspects related to culture and education. The conversion of images into words is an effective strategy to allow the blind person to "see without seeing". It is in this sense that Franco and Silva (2010, p. 23) state that "[...] Audio description consists of transforming images into words so that key information transmitted

visually does not go unnoticed and can also be accessed by people who are blind or have low vision".

Although different references have sought to conceptualize audio description, they all converge on its primary function: to promote the inclusion of people with disabilities, favoring their participation and functionality in the activities in which they are inserted.

Initially created to facilitate access to dynamic images (films, plays, operas, orchestras and lectures) and still images (photographs, graphs, maps, works of art and museum visits), audio description benefits anyone who needs it. Through this resource, visually impaired subjects attribute meanings to the imagetic world, establish connections and build memories about the events.

Historically, the practice of audio description has always existed intuitively, carried out by friends and family of the person with disabilities. However, the technical and professional recognition of the practice came in 1975, from the postgraduate thesis Master of Arts by Gregory Frazier, at the University of San Francisco. The first experiences developed in the United States, in the following decades, showed positive results and boosted its dissemination in theaters, museums and cinemas. Frazier's meeting with August Coppola facilitated the dissemination of audio description throughout North America.

In 1989, audio description was applied in films at the Cannes Film Festival, expanding rapidly throughout Europe, especially in the United Kingdom, a pioneer in the insertion of the resource on television, through the "Descriptive Video Service" program. The success of this initiative fostered other experiences, such as those of the Canal Network. Currently, England is the country with the largest offer of audio description on television, theaters, museums, and cinemas, followed by Germany, Spain, and the United States (ENAD, 2020, p. 17).

In Spain, the Sonocine system, created in 1991, made it possible for visually impaired people to access audio description of films shown on television, through a radio channel. In 1992, the Audetel Project, coordinated by the Royal National Institute for the Blind, investigated technical requirements for the use of audio description in television stations. As early as 1993, the ONCE Foundation launched the UNE 153020 standard, which established requirements for audio descriptions and the preparation of audio guides.

Currently, communication accessibility is on the global agenda. Countries such as Germany, the United Kingdom, France, Spain, the United States and Uruguay make audio description available in cinemas, theaters, museums, television programs and DVDs. Several film festivals — such as the Pamplona Festival, the Huelva Ibero-American Festival and the Móstoles Festival — incorporate the resource in their sessions. In Spain, TVE was a pioneer in

offering audio description, followed by channels such as Canal Sur and TV3. At the Museum of Audiovisual Arts of Alcira, there is a permanent room with the service.

In the United Kingdom, more than 270 cinemas and some 250 DVDs with audio description are accessible to the public. Most British television channels offer programming with the feature. In Germany, cinemas and the BR channel incorporate audio description, while the *Wie wir leben* Festival in Munich has been using it since 1995. In Australia, the Sydney Film Festival and The Other Film Festival also offer accessible programming.

In Brazil, the public use of audio description occurred for the first time in 2003, during the festival *Assim Vivemos: The International Festival of Films on Disability*, inspired by the German festival *Wie wir leben*. In 2005, the first DVD with audio description in the country was released, *Brothers of Faith*, followed by *Blindness* (2008). That same year, Brazilian television aired its first accessible advertisement, promoted by the Natura brand.

Important festivals, such as the Gramado Film Festival (2007) and the São Paulo International Short Film Festival (2006 and 2007), screened audio-described films. In theater, the play *Andaime* (2007) inaugurated the resource in shows in the country. Subsequently, the production *The Three Audibles* became the first audio-described dance performance, followed by the first audio-described opera in Brazil, *Samson and Delilah*, at the XIII Amazonas Opera Festival (2009).

At the same time, initiatives aimed at the visually impaired public were developed, such as monthly sessions of audio-described films at the Laramara Association (São Paulo) and the Cinema em Palavras project, at the Louis Braille Cultural Center in Campinas. In 2008, the first Brazilian association of audio describers, MIDIACE, was founded, followed by the 1st National Meeting of Audio Describers. In the same period, the first Brazilian website for accessible films, BlindTube, was launched.

Currently, some free-to-air TV channels offer audio description on a second audio channel, making accessible movies and programs available, albeit for a limited workload. Implementation expanded from 2011 onwards, after disputes between people with visual impairments, audio describers, broadcasters and the Ministry of Communications. The initial forecast — of two hours a day and expansion to 100% of the programming in ten years — was reduced to two hours a week in 2011 and four hours a week in 2013 (Motta, 2016, p. 4).

In the country, audio description continues to expand, covering cultural and educational products, events and public services. Of note is the publication of ABNT's NBR 15290, which establishes general guidelines for communicational accessibility on television, including subtitling, audio description, sign language and warning systems, guided by the principles of universal design (ENAD, 2020, p. 21).

In this scenario, Minetto (2008, p. 17) points out that the search for stability generates resistance to inclusive proposals, since they destabilize consolidated conceptions. Ferreira-Costa (2016) adds that such insecurity stems from persistent prejudices and lack of sensitivity to the barriers faced by people with disabilities, demanding collective support to ensure access and social inclusion.

The school, in this context, plays a crucial role. A truly inclusive institution incorporates in its curriculum and in its Pedagogical Political Project contents and methodologies appropriate to the needs of students. As Minetto (2008, p. 32) states, this occurs when the school recognizes the complexity of human relations and understands the school environment as a relational space that forms identities.

When discussing innovation, we turn to Huberman (1973), who characterizes it as an action aimed at incorporating effective changes in the school environment. In the debate on technologies in education, Groenwald and Ruiz (2006, p. 5) observe that the integration of new technologies requires pedagogical innovation capable of improving teaching and learning processes (SCHERER, 2020, p. 9).

In this context, accessibility assumes a structuring role, guiding teachers and schools in the reformulation of learning objectives and the use of assistive technologies. Such technologies enable students with disabilities to follow the curriculum, through pedagogical interactions that promote reading experiences, image production and aesthetic-critical development (Alves, 2012, p. 99). Audio description, as a mediating word, enables accessible processes and confronts prejudices and stigmas (Alves, 2012, p. 97; Motta, 2016, p. 45).

In this line, the challenge of teacher training to integrate didactic audio description into the curriculum is highlighted. Almeida and Valente (2011) argue that the greatest difficulty does not lie in the technical mastery of technologies, but in the understanding of the pedagogical possibilities of use, related to the conceptions of learning. Costa and Felizardo (2012) argue that continuing education is essential to deal with teachers' beliefs and values, contributing to processes of curricular change and innovation.

As for Information and Communication Technologies (ICTs), Galvão Filho (2008) states that these have become central cultural instruments, especially for people with disabilities. ICTs can be used as assistive technology in themselves or through assistive resources, such as adaptations of keyboard, mouse and specific software (Filho, 2010).

In the educational sphere, it is discussed how to incorporate audio description into school daily life and how to foster an inclusive culture among students, teachers, pedagogical teams and families. For Mianes (2017, p. 7), the teacher is not required to be an audio describer, but

to use "instrumental audio description", characterized as a more informative than translational practice. This offers opportunities for reflection on pedagogical practice and for the consolidation of approaches sensitive to cultural differences and students' learning processes (Alves, 2012, p. 98).

In this sense, we reiterate the role of the school, as a space of cultural diversity, it must promote respect, solidarity and citizenship, regardless of the differences between the subjects (Costa, 2016). Thus, reflections on the possibilities of materializing audio description as a pedagogical resource follow.

3.2 AUDIO DESCRIPTION AS A PEDAGOGICAL RESOURCE IN SCHOOLS

The school is the space in which the determinations present in national normative documents are materialized — such as the LDB, the National Policy on Special Education in the Inclusive Perspective, the Brazilian Inclusion Law, resolutions and decrees. It is in this environment that students, protected by their rights, must experience learning situations that enhance and enable their full development, regardless of their previous conditions.

In this context, school managers, coordinators and teachers have the responsibility to ensure, propose and develop strategies that ensure the full participation of students in a participatory, creative, inclusive and citizenship-based teaching and learning environment. For democratic formation, Santomé (2013, p. 80) highlights that school institutions "need to work with didactic methodologies that foster the development of critical and creative thinking, which make it possible to understand, argue and live with people from different cultures, ideas and ideals". In addition, Motta (2010, p. 1) states that "the school, as a locus for the construction of knowledge and the formation of citizens, needs to prepare teachers capable of reading this chaotically imagetic world and teaching their students to do so".

Thus, the school is configured as an environment that is both powerful and challenging for all who participate in it. In the case of public special education students, it is recognized that this challenge can be even more intense. Mianes (2023, p. 34) observes that "it is undeniable that a student with a disability generates, for the most part, an initial strangeness and a feeling of unpreparedness in the face of the peculiarities of each student".

However, the paradigm that attributes the cause of educational obstacles to the specific needs of students has been overcome. The current understanding shifts to the context, when not appropriate or prepared, is what generates exclusion, hurting legally guaranteed rights, as established in Article 27 of the LBI (Brasil, 2015):

Education is the right of people with disabilities, ensuring an inclusive educational system at all levels and lifelong learning, in order to achieve the maximum possible development of their physical, sensory, intellectual and social talents and abilities, according to their characteristics, interests and learning needs.

In view of the diversity of students' learning conditions, the school faces demands that require transformations in practices, paradigms and assumptions. The teacher, in this process, is faced with the urgency of professionally qualifying to act, in co-responsibility with the institution and the education system, as provided for in the Brazilian Law of Inclusion (Brasil, 2015):

IX – Adoption of support measures that favor the development of linguistic, cultural, vocational and professional aspects, considering the talent, creativity, skills and interests of the student with disabilities;

XV – Access of people with disabilities, under equal conditions, to games and recreational, sports and leisure activities in the school system.

The professional qualification of teachers, in this sense, is a central element for the improvement of the conditions of access of public students to special education. It is through it that teachers can reflect on their practices, working conditions and professional development strategies. Ibernón (2011, p. 72) emphasizes that ongoing formation should make it possible to:

Assess the potential need and quality of educational innovation [...] develop basic skills within the framework of teaching strategies [...] provide skills to continuously modify educational tasks, adapting them to the diversity and context of learners; to commit to the social environment.

Teaching aimed at overcoming the barriers faced by students is recognized as an essential practice for the effectiveness of inclusion. From this perspective, audio description emerges as an instrument of curricular accessibility and flexibility, with significant potential for pedagogical practice and learning. As Mianes (2023, p. 34) states, "modifying thinking about students with disabilities means no longer being based on the 'defect' or 'lack' of a certain sense, but on the potentialities that the subjects have, even if they have some bodily limitation".

Thus, it is considered pertinent to analyze the potential of audio description as a resource for accessibility and inclusion not only for blind or low-vision students, but also for those with intellectual disabilities, global developmental disorder, dyslexia, and other conditions, as discussed in the studies by Mianes (2023), Franco (2018), and Motta (2010).

Accessibility is a right of people with disabilities, encompassing citizenship and human dignity. As determined by article 53 of the LBI, it is the right that guarantees the person with

disabilities or reduced mobility to live independently and exercise their rights of social participation (Brasil, 2015). In this sense, accessibility strategies must ensure access to spaces, content, and information.

It transfers images from the visual dimension, through verbal and sound information, expanding understanding and providing access to information and culture, enabling people with visual impairment to watch plays, TV programs, movies, exhibitions and others, on equal terms with sighted people, which brings us to the idea of cultural accessibility. (Motta, 2010, p. 68).

Although the specificities of the work of audio description professionals are recognized, it is necessary to understand how such a resource can be effective as a pedagogical tool, mediated by the teacher in the school context. Motta (2016, p. 7) points out that, given the prevalence of vision in the learning process, it is necessary to broadly explore other senses, such as touch, hearing and smell, in addition to the use of language. In the same sense, Mianes (2023, p. 35) adds:

A blind person will not be able to see a figure, but he can touch it or hear a description through which he himself can construct a mental image [...] according to his cultural and sensory repertoires.

At school, all environments are educational and must ensure inclusive pedagogical practices. In a context marked by the predominance of visual resources and complex social dynamics, audio description implemented in the school environment can collaborate in the realization of rights. Motta (2010, p. 3) argues that the resource benefits not only people with disabilities, but all students, as it "increases the sense of observation, broadens perception and understanding, shows and unveils details that would go unnoticed".

In this sense, the description can be used to present school spaces, murals, drawings, figures, posters and signage — visual resources widely used to communicate, inform and guide. When these elements are not accessible to blind or low-vision students, gaps are consolidated in their learning process. Mianes (2023, p. 40) warns that "these constant losses of access to content can hinder and even prevent the best performance of this student".

On the importance of a qualified presentation of the school space, Motta (2010, p. 9) highlights:

It will be a walk mediated by the other, exercising the gaze in search of characteristic elements of each place, room or department.

This practice can generate opportunities for dialogue with other students about inclusion and accessibility, fostering a reflection on the organization of the city and its repercussions on the lives of people with disabilities, contributing to the exercise of citizenship.

In the classroom, the teacher uses several strategies to mediate content, being frequently induced to the use of media and visual resources. However, accessibility must be integrated with pedagogical intentionality. The use of the blackboard, textbook, films, graphs or photographs requires systematic description and, preferably, prior access to information by the blind student. As Mianes (2023, p. 40) observes, when student involvement is fostered and their needs are addressed, the results are evident.

The description should prioritize information relevant to the understanding of the content. Mianes (2023) highlights its potential for different curricular components. In Portuguese, for example, description can be mobilized as a reading and written production strategy by sighted students, enriching vocabulary, textual interpretation and construction of meanings.

For the Exact Sciences, the description should include analogies with concrete objects and verbal explanation of formulas, theorems, graphs and tables, in order to facilitate the understanding of elements strongly anchored in visuality.

In the Natural Sciences, where many concepts are representations not visible to the naked eye, Mianes (2023, p. 41) explains that such images already constitute, in themselves, descriptions, which allows the teacher to integrate tactile resources and verbal descriptions to favor learning.

In areas related to body movement, such as Physical Education, the description needs to consider aspects such as laterality, orientation and spatial perception, and, in the case of sighted students, but with cognitive impairment, that the movements are described with caution, in order to enable imitation, ensuring that students with different specific needs can understand and perform the proposed activities. (Mianes, 2023).

Among the resources widely used in the school are videos and movies. When audio description is not available, it is recommended that the blind student has prior access to the material accompanied by the description made by the teacher. In the same way, in the use of the textbook, it is essential to describe the images. Motta (2010, p. 10) recalls that:

Both static and dynamic images are used not only to illustrate, draw attention and make classes more attractive, but also to complement the understanding of the text, the topic under study and make them more easily understood or assimilated. They all have meaning, hence the need to read and translate them into words, especially considering the diversity of students in the classroom and the possible communication barriers. (Motta, 2010, p.10).

The authors' contributions show that audio description, in the school context, constitutes a powerful pedagogical strategy, applicable to all stages of education and to different audiences. Its benefits are noticeable both for students with visual or cognitive impairment and for the entire school community, promoting inclusive experiences, reflection on diversity and the construction of a more civic and dignified society for all.

3.3 REFLECTIONS ON THE INTEGRATION OF DIDACTIC AUDIO DESCRIPTION

In the educational context, didactic audio description (Vergara-Nunes, 2016) is an essential assistive tool for students with visual impairment, helping both those with blindness and low vision to understand image content present in books and other didactic resources. From this point on, it is intended to reflect on its integration in the pedagogical practice of the common room teacher, as a way of considering the importance of access to visual content in different disciplines, especially for the special education public.

In regular education, attention to students with sensory or cognitive disabilities involves reflecting on aspects related to the initial and continuing training of teachers, as well as respect for the culture of others. The presence of students with disabilities reveals that many practices are still predominantly directed to students without disabilities, with the use of strongly visual materials and lacking accessibility resources. Thus, as Motta (2016) argues, it is necessary to incorporate strategies already consolidated in other contexts in the school to eliminate communication barriers.

Based on this reflection, it is understood that audio description, as a didactic resource and communicational accessibility, tends to assume an increasingly relevant role in society, as it collaborates with the promotion of access to image content in a broad and plural context. Its application ranges from books and slides to movies and documentaries. In didactic audio description, the description of an image can even provoke emotions, revealing feelings, sensations and understanding in the learning process (Vergara-Nunes, 2016).

As an assistive technology, audio description makes it possible to "hear what cannot be seen" and understand what cannot be understood without the use of sight. Initially designed for people with visual impairment, configuring itself as a universal design approach, accessible to all who need it. Its adoption contributes to innovate teaching practice and improve learning, both through the description of static images, as well as those present in textbooks and paradidactics, as well as dynamic images that circulate in educational videos.

However, it is recognized that, although this perspective presents itself as a powerful pedagogical strategy, the audio description of images and figures in teaching materials is still

insufficient. The educator's own performance needs greater qualification, because, despite the efforts, there is a lack of preparation in dealing with these learners, especially with regard to knowing how to behave and how, didactically, to describe fundamental elements for the student's understanding, aspects that could minimize difficulties in the learning process.

As Alves (2012, p. 96) argues, "[...] Such incorporation implies the development of systematic initiatives in the field of teaching practice and its training (initial and continuing), in articulation with the processes and challenges of special education from the perspective of school inclusion".

The BNCC (Brazil, 2018) addresses the singularities of the inclusive process and expands the possibilities for schools to seek new alternatives to teach everyone. In this way, it dialogues with the principles of Universal Design for Learning (UDL), which include: providing various means for learning; enable different forms of expression of what has been learned; and maintain the motivation and permanence of students.

In the field of knowledge visualization, in the educational space, audio description is presented as a useful tool that allows students with disabilities to access the visual content present in their teaching materials (GUEDES, 2011). For Vieira and Lima (2010, p. 3), "the adoption of audio description as a technology for accessibility to image content present in didactic materials becomes crucial for visually impaired students to be able to establish mental connections between image and text".

This possibility allows the use of the resource in the classroom to put the student with disabilities in equal conditions to follow classes in which the content is associated with images, as well as to perform any task. Based on Vieira and Lima (2010, p. 4), it can be stated that, if the image is properly described, students with disabilities will be able to fully participate in the school learning community and in discussions with their peers when the content discussed has been conveyed by visual means, ensuring a more inclusive process.

From this perspective, social inclusion is conceptualized as the process by which society adapts to include, in its general social systems, people with disabilities and, simultaneously, these people prepare themselves to assume their roles in society autonomously (SASSAKI, 2010, p. 46). Thus, a school committed to diversity and equity must adopt strategies aimed at overcoming challenges characterized as the ideal scenario for building a more citizen society and apt to tolerance. The use of audio description, in addition to constituting an accessibility resource, can be understood as an instrument for valuing the learning capacities of all students, regardless of their conditions, collaborating for their learning with a focus on their full development.

4 FINAL CONSIDERATIONS

Based on the above, it is observed that audio description, throughout the history of its application, has been consolidated as an important resource for overcoming communicational and educational barriers. Originally conceived to meet the needs of people with visual impairments, its use currently goes beyond this public, and can also benefit other people and contexts, especially in overcoming obstacles that hinder full participation in various social situations.

From the bibliographic and documentary analysis, it was recognized that audio description, when translating images into words, transcends the technical character and assumes a pedagogical, ethical and social dimension. In this sense, it is configured as a tool to support teachers in the teaching process and students in learning, contemplating educational specificities, as defended by Motta (2016) and Mianes (2023).

It was found that audio description is, at the same time, a communicational right and an essential didactic strategy for equitable access to knowledge by visually impaired students. Its application favors the active participation, intellectual autonomy and expansion of the sensory and cognitive experiences of these students, strengthening the effectiveness of the principles of inclusive education provided for in the Brazilian Inclusion Law (2015), the LDB (1996) and the BNCC (2017).

The school, as a privileged locus of paradigm ruptures, needs to consolidate itself as a democratic space for the construction of inclusive practices, capable of welcoming, valuing and enhancing differences. The theoretical results indicate that, when incorporated into pedagogical planning, audio description contributes to the humanization of teaching practices and to the transformation of teaching methodologies, enabling the construction of a more accessible, sensitive and plural curriculum.

Thus, its adoption should not be seen as a supplementary resource, but as a structuring element of educational practice aimed at diversity.

Developed in the school context, audio description plays the role of an accessibility resource and guarantee of rights, as demonstrated by Mianes (2023). It provides students with disabilities with better conditions of access to the curriculum, through pedagogical flexibility. This resource proves to be especially powerful in a markedly imagetic society, such as the contemporary one, and in the school environment, which demands multiple didactic resources to promote the appropriation of knowledge in different curricular components.

Another aspect evidenced by the research refers to teacher training, which is still a priority challenge. The absence of specific training in accessibility and audio description limits

the potential use of this resource in schools, indicating the need for public policies for continuing education and interdisciplinary integration between the areas of Education, Communication and Assistive Technology.

As Mianes (2023) and Motta (2016) point out, the teacher is the mediator of the inclusive process, and his ethical, aesthetic, and pedagogical engagement is decisive for the success of didactic audio description in the classroom.

Finally, it is understood that didactic audio description should be recognized as a pedagogical practice of sensory and cognitive inclusion, which expands the ways of perceiving, understanding and teaching the world. By transforming images into words and sounds into meanings, it materializes the principle that all learning is an act of accessible communication, reaffirming the dignity and right of all to education.

Therefore, this study contributes to the strengthening of the debate on audio description in the educational field, presenting theoretical subsidies that can guide future research, training and practices focused on accessibility. It is suggested, for further investigations, the development of empirical studies that analyze the application of didactic audio description in real teaching contexts, in order to verify its impacts on learning, perception and aesthetic experience of students with disabilities.

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CONTRIBUTIONS OF THE TUTOR-TEACHER IN THE INITIAL TRAINING OF CHEMISTRY TEACHERS

CONTRIBUIÇÕES DO PROFESSOR-TUTOR NA FORMAÇÃO INICIAL DO PROFESSOR DE QUÍMICA

CONTRIBUCIONES DEL PROFESOR-TUTOR EN LA FORMACIÓN INICIAL DEL PROFESOR DE QUÍMICA



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ABSTRACT

The present study investigates the involvement of the tutor-teacher in the initial training of Chemistry teachers. This object of study made it possible to monitor the pedagogical development of undergraduate students enrolled in a Distance Education Chemistry Teacher Training program at a large university in the city of Curitiba. The theme emerged from the following question: how can the tutor-teacher contribute to the initial training of Chemistry teachers? The objective of this study is to present the contributions of the tutor-teacher to the teacher education of Chemistry teachers. As a research methodology, a qualitative case study was adopted, encompassing two subjects of the program and involving a total of 38 students. Data analysis was carried out based on the activities posted by the students, taking into account the positive aspects of each activity, the students' statements, the problematizations and questions raised, and the systematization of learning. The theoretical framework was based on authors such as Lima (2019), Santos (2020), and Schnetzler (2020). The results indicate that the tutor-teacher contributes significantly to the initial training of Chemistry teachers through the posting of interactive activities grounded in active and innovative methodologies, online meetings that promote interaction and dialogue, and coherent, explanatory, and timely feedback.

Keywords: Distance Education. Tutor-Teacher. Chemistry. Virtual Learning Environment. Teaching Materials.

RESUMO

O trabalho que se apresenta tem como objeto de pesquisa o envolvimento do professor-tutor na formação inicial do professor de Química. Este objeto de estudo permitiu acompanhar a evolução pedagógica de estudantes do curso de Licenciatura em Química, na modalidade a distância, de uma universidade de grande porte da cidade de Curitiba, estado do Paraná. O tema escolhido partiu do seguinte questionamento: como o professor-tutor pode contribuir com a formação inicial do professor de Química? O objetivo deste trabalho é apresentar as contribuições do professor-tutor na formação docente do professor de Química. Como metodologia de pesquisa optou-se pelo estudo de caso, de abordagem qualitativa,

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contemplando 2 disciplinas do curso e envolvendo um total de 38 estudantes. A análise dos dados foi realizada com base nas atividades postadas pelos estudantes levando em consideração os aspectos positivos de cada atividade; os depoimentos dos estudantes; as problematizações e questionamentos; a sistematização da aprendizagem. Como aporte teórico utilizou-se autores como: Lima (2019), Santos (2020) e Schnetzler (2020). Os resultados apontam que o professor-tutor contribui significativamente com a formação inicial do professor de Química mediante postagem de atividades interativas pautadas em metodologias ativas e inovadoras, encontros online que promovem a interação e o diálogo, e feedback coerente, explicativo e em tempo hábil.

Palavras-chave: Educação a Distância. Professor-tutor. Química. Ambiente Virtual de Aprendizagem. Materiais Didáticos.

RESUMEN

El presente trabajo tiene como objeto de investigación la participación del profesor-tutor en la formación inicial del profesor de Química. Este objeto de estudio permitió acompañar la evolución pedagógica de estudiantes del curso de Licenciatura en Química, en la modalidad de educación a distancia, de una universidad de gran porte de la ciudad de Curitiba. El tema elegido surgió de la siguiente pregunta: ¿cómo puede el profesor-tutor contribuir a la formación inicial del profesor de Química? El objetivo de este trabajo es presentar las contribuciones del profesor-tutor en la formación docente del profesor de Química. Como metodología de investigación se optó por el estudio de caso, con enfoque cualitativo, contemplando dos asignaturas del curso e involucrando un total de 38 estudiantes. El análisis de los datos se realizó con base en las actividades publicadas por los estudiantes, considerando los aspectos positivos de cada actividad, los testimonios de los estudiantes, las problematizaciones y cuestionamientos, y la sistematización del aprendizaje. Como aporte teórico se utilizaron autores como Lima (2019), Santos (2020) y Schnetzler (2020). Los resultados señalan que el profesor-tutor contribuye significativamente a la formación inicial del profesor de Química mediante la publicación de actividades interactivas fundamentadas en metodologías activas e innovadoras, encuentros en línea que promueven la interacción y el diálogo, y retroalimentación coherente, explicativa y en tiempo oportuno.

Palabras clave: Educación a Distancia. Profesor-tutor. Química. Ambiente Virtual de Aprendizaje. Materiales Didáticos.

1 INTRODUCTION

This work addresses the contributions of the teacher-tutor in the initial training of the Chemistry teacher and allowed to follow the evolution of students of the Chemistry Teaching Degree course, in the distance modality, of a large university in the city of Curitiba, state of Paraná. The study started from the following question: how can the teacher-tutor contribute to the training of the Chemistry teacher? Thus, the objective of this work is to present the contributions of the teacher-tutor in the initial training of the Chemistry teacher. Therefore, the importance of the teacher-tutor in the monitoring of students who seek distance education as a training path, especially teacher training in Chemistry, is highlighted.

The role of the teacher-tutor is complex and requires time, study, organization, planning, and a lot of determination. In the literature, we find different nomenclatures for this function, the most common is only tutor, however, in the institution where this study was developed, this function is called teacher-tutor, that is, the main responsible for pedagogical interaction, for the processes of orientation and motivation of students in their academic activities (Ferreira and Morão, 2020). Thus:

The complexity of the role of the tutor teacher (to be or not to be a teacher) and the fact that we find different nomenclatures for this function in the literature, requires us to think about who this subject is and the practice he develops. The identity constructed by this professional is a relevant aspect, as it has repercussions on the actions that will be developed by him in his work with the students. If, on the one hand, the tutor teacher understands that his job is focused on administrative and technical issues, he will have little concern with pedagogical issues. But, if, on the other hand, he understands that his task is an educational activity, with a social dimension, his actions will contribute significantly to the training of the future teacher and will be focused on the pedagogical (Garcia and Silva, 2017, p. 33).

In other words, the teacher-tutor has a more complete role involving several tasks ranging from administrative and technical issues to those of a pedagogical nature. Hence the need to present the contributions of the teacher-tutor in the initial training of the Chemistry teacher.

2 THEORETICAL FOUNDATION

The teacher-tutor has a fundamental role in distance education and glimpses the importance of mediation, dialogue and feedback in this teaching modality. The way this professional organizes the posts in the virtual learning environment, the *Feedbacks* carried out referring to both evaluative and formative activities and the *Web conferences* promoted are the great challenge of the teacher-tutor and require a lot of study, planning, creativity and

determination.

The classes taught to students in the *web conference* format, as well as the production of didactic materials to complement the disciplines, require planning capable of promoting dialogue, interaction and student participation, so that the development of the activities carried out by them promotes meaningful learning. Thus, it is valid to place the three marks that characterize Söchnetzler's classes (2020, p. 89), namely:

- i) to encourage students so that they never forget their time as students, aiming to address the change in social roles, that is, from student to teacher and what differentiates them; ii) to use the metaphor of "hidden under the table" to represent the need to bring out conceptions that underpin our teaching; iii) exemplify new models or ways of teaching Chemistry.

These three brands can help the teacher-tutor in the planning and construction of didactic materials to post in the virtual learning environment and also to communicate with students in the *Web conferences*. By mentioning these three marks, the author emphasizes the need not to forget when we were students, as this leads us to reflect on the pedagogical practice we are using and whether she considers listening to the students' ideas, since "it is from what the student expresses that the teacher can define the direction of his teaching" (Schnetzler, 2020, p. 89). Still, it is essential that the future teacher is clear in "his conceptions of Science/Chemistry, teacher, student, teaching, learning, evaluation, language, school, society, elements that support any teaching action" (Schnetzler, 2020, p. 91), and this is also articulated with the author's third mark, that is, "that of exemplifying new models or ways of teaching Chemistry" (Schnetzler, 2020, p. 91). The interconnection between these three brands can promote dynamic and innovative teaching capable of stimulating students and involving them in the teaching and learning process.

Thus, based on these three marks that characterize the classes of the aforementioned author, it is possible to develop classes, online meetings and didactic materials in order to contribute to the initial training of the Chemistry teacher so that in the future he develops a less traditional and mechanistic teaching, that is, focused on the use of active and dynamic methodologies supporting, mainly, information and communication technologies.

Especially in distance education, the use of information and communication technologies is fundamental, since through them the teacher-tutors post the materials for the students, whether they are in the format of class, video lesson, notices, *Templates*, among others. Technologies corroborate with online meetings, allowing real-time interaction with students, giving voice and time to this audience and minimizing physical distance. Also, technologies

arouse curiosity and interest in the disciplines, providing moments of study, production, investigation, evaluation and supporting students to build their own knowledge.

Thus, the role of the teacher-tutor has a whole complexity, as he is one of the authors of the process when planning online meetings, video classes, podcasts, even a simple invitation demands research and care, because for the distance education student the materials posted in the virtual environment need to be attractive, interesting and meaningful. So, each video lesson, presentation in *Power Point*, invitation to *Web conferences*, teaching methodologies need to be rigorously thought out in order to involve this student and encourage him to learn.

In addition, it is also important that the teacher-tutor seeks to produce didactic materials that provide moments of constant reflection on the teaching practice carried out by this future teacher. However, "promoting training aimed at preparing reflective teachers needs resources and instruments that enable this introspection and autonomy in training, in this movement of becoming a teacher" (Lima, 2019, p. 59).

In the case of Chemistry, it is essential that the teacher-tutor seeks to include in the didactic materials produced the levels of understanding of chemical knowledge, namely: macroscopic, submicroscopic and symbolic (Johnstone, 2000). According to Johnstone (2000), it is essential to balance the conceptual relations between the three levels so that students can fully appropriate chemical knowledge and be able to solve problems. In this sense, the graduate needs to know these three levels and associate them so that they can transpose them to their future students. To illustrate, the macroscopic level is related to observable phenomena such as color change, candle burning, for example; the symbolic level refers to equations, calculations, graphs; The submicroscopic mode refers to what cannot be observed, such as the result of a chemical reaction. One of the skills expected of students is the ability to solve chemistry problems, but this requires multiple representation skills or the ability for them to move between levels of representation.

In this context, the didactic materials produced and posted in the virtual learning environment need to be well elaborated, prioritizing this movement between the levels of representation of chemical knowledge, quality, a language that promotes meaningful learning, the theory-practice relationship and the permanent reflection of and in practice. According to Santos (2020, p. 5):

In Distance Education (DE), teacher and student do not meet in person, but still dialogue and pedagogical interaction must exist. The didactic material in distance education is also responsible for this task. Its construction then needs to be based on the use of technological resources that enable communication and interaction between the agents involved in the educational process.

Despite the distance, digital technologies allow an approximation of those involved in the teaching and learning process in this teaching modality, even though it is virtual, minimizing distance and promoting interactive communication capable of meeting the needs of these students.

3 METHODOLOGY

This work was developed within a visual learning environment, in the distance learning course of a large university in a city in the State of Paraná. The study involved two disciplines of the Chemistry Degree course and had the participation of 38 students, a total of the two disciplines. The disciplines involved here are: Supervised Curricular Internship – Teaching of General Chemistry and Physical and Chemical Properties of Matter, each organized in a nine-week module.

The methodology used was the qualitative approach and had as a means the case study. It is understood that qualitative research approaches "are based on a perspective that conceives knowledge as a process socially constructed by subjects in their daily interactions, while they act in reality, transforming it and being transformed by it" (André, 2013, p. 97). Facts found in this study when involving the teacher-tutor, the students, the virtual learning environment and the interactions resulting from different moments. Furthermore, through the case study, it is possible to "understand complex social phenomena" (Yin, 2001, p. 21), that is, to analyze the complexity of the work of the teacher-tutor in the training of the Chemistry graduate. The data were collected by the teacher-tutor, responsible for the two disciplines mentioned, through the analysis of online meetings, messages received, questions and compliments made by students in training.

To contribute to the initial training of future teachers, online meetings, video classes, *web conferences*, workshops in the virtual laboratory, teacher-tutor/student communication through institutional messages, among other procedures, were held. In this study, online meetings, video classes, *web conferences* and teacher-tutor/student communication are highlighted, emphasizing the importance of reflection on practice, the insertion of new ways of teaching and learning chemistry, dialogue, interaction and *feedback*.

All the activities mentioned were designed with the aim of stimulating students, referring them to the role of both student and teacher, leading them to rethink the conceptions that underlie teaching and using new models or ways of teaching according to the current demands of society.

In the two disciplines, three online meetings were offered, each prepared according to

the needs of the disciplines. The first meeting was a presentation of the discipline, the second meeting comprised activity guidelines and the third a workshop in the institution's virtual laboratory. In the three online meetings, a moment of interaction was proposed, usually at the beginning of the meeting, with the use of technological tools, such as: *Padlet* (collective mural), *wordwall* (interactive activities website); *Mentimeter* (collective response website), and other resources, such as: current news related to the discipline; short videos with everyday situations to contextualize chemistry; images, among others.

For each subject, three video lessons were produced to resume content and five short videos containing important information about the evaluative activities. All these productions required planning, research and creation to maintain quality and promote meaningful, innovative and investigative teaching. Also, there was a concern to, whenever possible, cite the levels of understanding of chemical knowledge: macroscopic, submicroscopic and symbolic so that the graduate reflects on the importance of students going through these three levels to better understand Chemistry.

In each module, students are offered a *Web Conferencing*, which we call interactive connection, a moment in which students have the opportunity to listen to experiences lived by external members, invited in advance and who bring themes focused on the world of work, educational, social and psychological issues, among other topics. In this particular module, students had the opportunity to talk to a speaker who brought the work with enzymes in industries, focusing on Chemistry to the world of work.

Communication with students is carried out through a channel entitled *Contact Us*, where the teacher-tutor is responsible for the *Feedbacks*. So, every time the student has a question or difficulty in the discipline, he sends a message that must be answered by the teacher-tutor quickly, coherently and efficiently. Through this channel, the student also receives feedback on training and evaluative activities and guidance on the most diverse subjects involved in the disciplines.

All the activities mentioned in this work are the responsibility of the teacher-tutor who seeks, whenever possible, to meet the demand with care, preparation, organization and transparency. It is emphasized that all these activities contribute greatly to the initial training of students in the Chemistry Degree course.

4 RESULTS AND DISCUSSIONS

For the teacher-tutor, contributing to the initial training of the teacher is always a challenge, because it is known that even with a training considered adequate, many gaps are

still evident. Thus, the teacher-tutor who attended these two classes seeking to develop current, differentiated and interesting didactic materials, which were used in the activities explored here, stands out in this study.

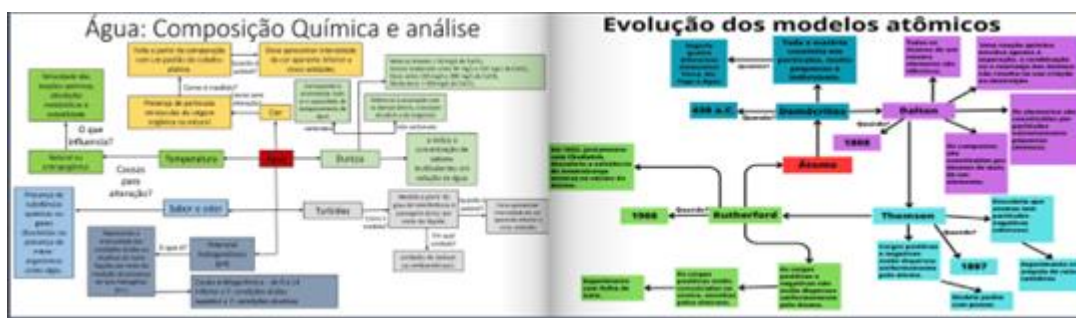
As a response, significant results were obtained in all the activities mentioned. The online meetings were well received by the students and praised. The most outstanding compliments were the new ways of teaching online and the differentiated technological resources, especially for the interaction promoted.

The video classes produced by the teacher-tutor brought several different ideas and didactic strategies that can be used in the teaching of Chemistry, so they achieved what was expected, since the students used several of these resources in the production of their lesson plans and in the realization of summative activities. In the case of the internship discipline, in particular, the students used *podcasts*, images, experiments with low-cost materials, news, everyday situations, everything to teach Chemistry in a different and current way, and it was also evident in some classes planned by the interns the concern with using the three levels of representation of chemical knowledge, which is very gratifying, as it proves the relevance of introducing these levels in the teaching of Chemistry.

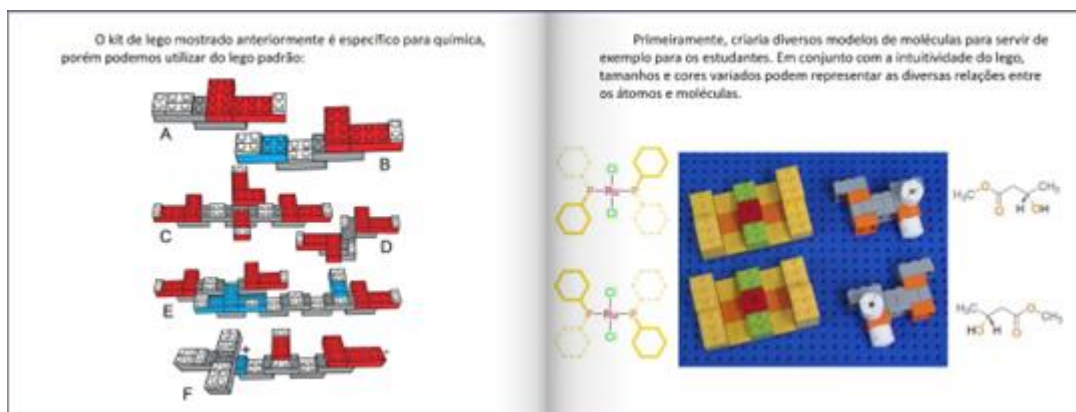
In the discipline of Physical and Chemical Properties of Matter, students created a digital portfolio containing a concept map, modeling with playdough and toothpicks, photography of homemade products with the proper chemical characteristics and properties. All these products are evidence that the materials posted in the virtual learning environment were relevant and contributed to the training of each one of them, in addition to that, at some point, they will be able to use all these resources in their classes in the future. An example of the result of the video classes is shown in Figures 1 and 2.

Figure 1

Concept map created by the students

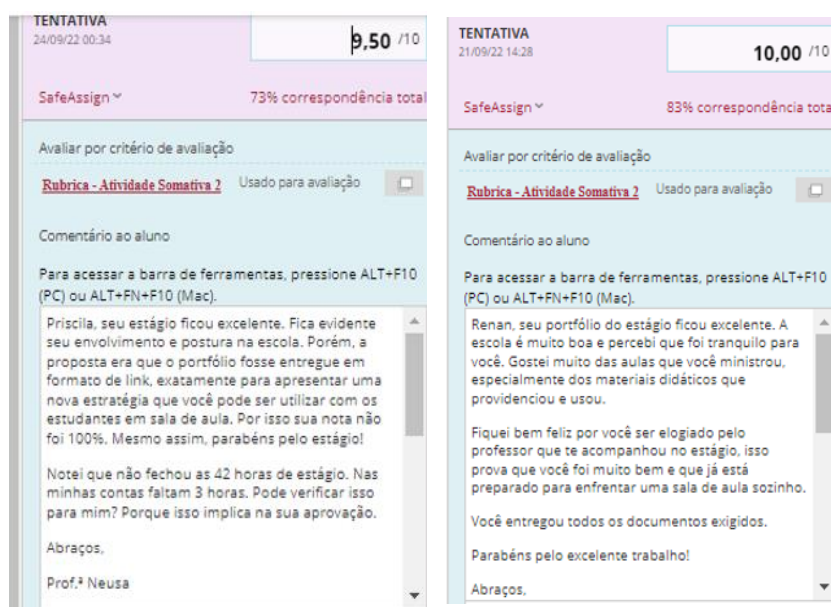


Source: Student of the discipline of Physical and Chemical Properties of Matter, 2023.

Figure 2*Use of lego as a teaching strategy*

Source: Student of the discipline Physical and Chemical Properties of Matter

Feedbacks represent a key point in distance education, so it is pointed out that both in the messages and in the evaluations, students had their *feedback*. The *feedbacks* of the evaluations, the final product of these two disciplines, were positive and made evident the contributions of the teacher-tutor in charge, as the works were creative, of quality and showed, in fact, a break in paradigms, demonstrating active students, most of them willing to innovate the teaching of Chemistry, prioritizing a current teaching that is consistent with the demands of the contemporary world. Two examples of *feedback*, from the discipline of Supervised Curricular Internship: Teaching of General Chemistry, are shown in Figure 3.

Figure 3*Examples of Feedback given to internship students*

Source: The author, 2023.

5 FINAL CONSIDERATIONS

It is concluded in this study that the contributions of the teacher-tutor in the initial training of the Chemistry teacher are many and can positively influence the professional life of the future teacher. For this, it is essential that the teacher-tutor plans the activities planned for each module, valuing innovative paradigms, active methodologies, which consider this student as the center of the process, promoting autonomy, criticality and the investigative sense so necessary in the teaching of Chemistry.

The contributions of the teacher-tutor can promote an adequate initial training based on the permanent reflection of the teaching practice that, consequently, is built with the elaboration of more dynamic, active and investigative classes. Generally, the graduate tends to follow the ways of teaching of his teachers, hence the need for us, in the case of teachers-tutors, to provide diversified methodologies and active ways of teaching and learning Chemistry.

Thus, it is important to highlight the use of experimentation, which was widely used in video classes and online meetings, precisely because of the need to promote an investigative Chemistry teaching, with the construction of hypotheses and questions, contextualized, and that makes meaning for the student, also, that leads him to associate this science with the daily life in which he lives. This theme was widely disseminated by the teacher-tutor who accompanied the classes and the contributions in this sense were significant, as the return of future teachers was visible in the internship reports and in the delivery of the digital portfolio.

In response to so many possible contributions by the teacher-tutor, the importance of leading the student in initial training to analyze and opt for innovative teaching concepts to support his teaching is reaffirmed, in addition to always looking for new models or ways of teaching Chemistry. This whole process, even developed in the distance modality, can contribute to the formation of a reflective teacher, concerned with social, cultural and environmental issues, and capable of developing quality and meaningful teaching.

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THE IDENTITY OF HIGHER EDUCATION TEACHERS: A PROCESS OF CONSTRUCTION

A IDENTIDADE DO DOCENTE DO ENSINO SUPERIOR: UM PROCESSO DE CONSTRUÇÃO

LA IDENTIDAD DEL DOCENTE DE LA EDUCACIÓN SUPERIOR: UN PROCESO DE CONSTRUCCIÓN



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ABSTRACT

Despite the growing academic production on teacher training in basic education, there is a significant gap in studies investigating the construction of teacher identity in higher education. This article aims to understand the processes involved in this construction, recognizing teacher identity as a dynamic, unfinished phenomenon influenced by multiple personal, social, historical, and institutional dimensions. The research, with a qualitative approach and theoretical foundation, analyzed scientific publications between 2014 and 2023, organized into three categories: teacher identity, pedagogical practice, and socioemotional skills. The results show that initial training, often limited to mastering specific content, is not sufficient to consolidate the identity of university professors. Its formation involves experiences, interactions, and reflections on practice, as well as coping with institutional demands. The study further emphasizes the importance of socioemotional competencies and the need for public policies that promote pedagogical development in higher education. It concludes that university teacher identity is a collective, ongoing, and constantly evolving construction that requires investment in the comprehensive training of teachers.

Keywords: Teacher Identity. Higher Education. Teacher Training. Pedagogical Practice. Socioemotional Competencies.

RESUMO

Apesar da crescente produção acadêmica sobre formação docente na educação básica, observa-se uma lacuna significativa de estudos que investiguem a construção da identidade

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docente no ensino superior. Este artigo tem como objetivo compreender os processos que envolvem essa construção, reconhecendo a identidade docente como um fenômeno dinâmico, inacabado e influenciado por múltiplas dimensões pessoais, sociais, históricas e institucionais. A pesquisa, de abordagem qualitativa e fundamentação teórica, analisou publicações científicas entre 2014 a 2023, organizadas em três categorias: identidade docente, prática pedagógica e habilidades socioemocionais. Os resultados evidenciam que a formação inicial, muitas vezes limitada ao domínio de conteúdos específicos, não é suficiente para consolidar a identidade do professor universitário. Sua constituição envolve experiências, interações e reflexões sobre a prática, além do enfrentamento das exigências institucionais. O estudo reforça ainda a importância das competências socioemocionais e a necessidade de políticas públicas que promovam o desenvolvimento pedagógico no ensino superior. Conclui-se que a identidade docente universitária é uma construção coletiva, permanente, e em constante construção que demanda investimento na formação integral do professor.

Palavras-chave: Identidade Docente. Ensino Superior. Formação de Professores. Prática Pedagógica. Competências Socioemocionais.

RESUMEN

A pesar de la creciente producción académica sobre la formación docente en la educación básica, se observa una significativa carencia de estudios que investiguen la construcción de la identidad docente en la educación superior. Este artículo tiene como objetivo comprender los procesos que implican esta construcción, reconociendo la identidad docente como un fenómeno dinámico, inacabado e influenciado por múltiples dimensiones personales, sociales, históricas e institucionales. La investigación, de enfoque cualitativo y fundamentación teórica, analizó publicaciones científicas entre 2014 y 2023, organizadas en tres categorías: identidad docente, práctica pedagógica y habilidades socioemocionales. Los resultados evidencian que la formación inicial, muchas veces limitada al dominio de contenidos específicos, no es suficiente para consolidar la identidad del profesor universitario. Su constitución implica experiencias, interacciones y reflexiones sobre la práctica, además del enfrentamiento de las demandas institucionales. El estudio también refuerza la importancia de las competencias socioemocionales y la necesidad de políticas públicas que promuevan el desarrollo pedagógico en la educación superior. Se concluye que la identidad docente universitaria es una construcción colectiva, permanente y en constante evolución, que requiere inversión en la formación integral del docente.

Palabras clave: Identidad Docente. Educación Superior. Formación de Docentes. Práctica Pedagógica. Competencias Socioemocionales.

1 INTRODUCTION

While teacher identity in basic education is often explored in educational research, the role of teaching in higher education still needs more in-depth attention. This lack of studies reveals an important gap: who, after all, is the university professor and his identity? The initial teacher training, offered during graduation, is not always enough to deliver to society a teacher with a consolidated professional identity. This raises an important question: how is the identity of being a teacher formed in higher education?

According to Hall (2009, p. 106), identity should be understood as a continuous construction, always "in process". This conception is in line with the proposal of this study, which seeks to provoke a reflection on teacher identity from a discursive approach, recognizing it as a process in constant construction, which involves the relationship with the other, as indicated by Ghiraldelo (2002, p. 44).

The environment in which the teacher works in higher education is characterized by being multifaceted and full of complexities. This is due not only to the dynamic and interdisciplinary nature of teaching, but also to the interaction with subjects who have diverse trajectories, experiences and identities, in addition to the specific conditions in which the teaching work is developed (Duarte, 2010). The exercise of teaching, therefore, goes beyond the classroom, encompassing a series of functions, responsibilities and interactions that occur inside and outside the institutional context of teaching (Gemelli; Closs, 2022).

This work aims to investigate how the identity of the teacher is constructed in Higher Education. The choice of the theme is justified by the understanding that the education professional does not leave fully prepared from graduation to face the challenges of pedagogical practice in higher education. The research adopts a qualitative approach, based on bibliography, aimed at understanding the elements that constitute the identity of the university professor.

To this end, the study was structured in three topics: the first addresses the concept and meaning of teacher identity, the second topic focuses on pedagogical practices and teacher identity, and the third socio-emotional skills and teacher identity. The second moment discusses the methodology, the third the results and discussion through the survey of publications on teacher identity in higher education between 2014 and 2023 and ending with the final considerations and references.

2 THEORETICAL FRAMEWORK

2.1 CONCEPT AND MEANING OF TEACHER IDENTITY

The concept of identity adopted in this work is based on the definition proposed by Hall (2009, p. 106), who understands identity under a discursive approach, seeing it as a continuous construction, never finished, that is, as something that is always "in process", or in constant construction. In the same sense, Ghiraldelo (2002, p. 44), in supporting Hall's ideas, states that identity, conceived from a discursive perspective and in constant construction, necessarily involves the relationship with the other.

As teachers, we are professionals in a constant process of incompleteness, an idea that is reaffirmed in Freire's (1996) conceptions, when he considers the subject as inconclusive. It is precisely as inconclusive beings that we assume our role as educators in higher education, inserting ourselves in a continuous movement of identity construction through the relationship with the other, be it the trainer, the professional colleague or the students themselves in a collective process of knowledge construction and affirmation of being a teacher.

For Pimenta and Anastasiou (2014, p. 77), the teacher's identity is constituted from the meaning of the teacher's actions, who acts as an actor and author in everyday life, based on their values and their way of positioning themselves in the world. And for the authors, identity is also marked by the personal trajectory, by the representations that the teacher carries, by his knowledge, anguish, desires and by the meaning he attributes to the exercise of teaching.

The construction of teacher identity goes hand in hand with professional maturity and is associated with the constant search for knowledge that sustains educational actions and relationships. It is a continuous path of formation, as Freire (2002) proposes, by understanding the subject as someone always in constitution. In other words, the teacher is permanently built in and through education.

The construction of identity, therefore, is a dynamic and continuous process shaped by the interaction of the subject with the historical and social context. This also applies to the teaching profession, which, like other professions, emerges and transforms in response to the demands of society in a given time and space. Over time, teaching acquires legitimacy and institutional recognition, and its identity is constituted from multiple social, historical and cultural factors (Pimenta, 1999).

Rodrigues and Mogarro (2020, p. 4), based on Sutherland and Markauskaire (2012) and Melville, Barthey and Fazio (2013), state that professional identity comprises three interconnected dimensions: (a) the narrative dimension, which involves telling stories to oneself and others; (b) the intrapersonal dimension, constructed by individual reflection on one's own

professional context; and (c) the interpersonal dimension, developed in daily interactions and practices, through the incorporation of norms, values and cultures of the profession.

In this sense, Nóvoa (2013, p. 33) emphasizes that reflection should be conceived as a chain of ideas arising from professional practice and that produce concrete effects. Reflecting is, therefore, the ability to attribute meaning to actions and experiences, as highlighted by Kelchtermans (2010) and Stenberg (2010).

Rodrigues and Mogarro (2020, p. 6) reinforce this idea by stating that "reflective practice strongly contributes to the construction of professional identity, constituting itself as a way of questioning teaching assumptions and practices" (Izadinia, 2013; Sutherland, Howard; Markauskaite, 2010).

This reflective path allows future teachers to better understand their educational experiences, make conscious decisions and integrate new knowledge into their practice, as pointed out by Anspal, Eisenschmidt and Löfström (2012) and Kelchtermans (2010).

Professional identity is also formed from the attribution of social meanings to the profession and the constant revision of these meanings in the light of cultural traditions and contemporary challenges. It is built in the clash between theory and practice, in the analysis of existing practices and in the construction of new theoretical perspectives.

Each teacher, as an agent and author, gives meaning to his or her performance based on his or her values, his or her life trajectory, his or her representations and the relationships he or she establishes with other teachers, whether in institutions, unions or collective spaces (Pimenta, 1999).

In view of this, it is essential to reflect on pedagogical practices and their relationship with the process of building teacher identity.

2.2 PEDAGOGICAL PRACTICES AND TEACHER IDENTITY

Research focused on teaching practice has contributed significantly to the opening of new horizons in the field of teacher education. One of the main aspects discussed is the professional identity of the teacher, which involves multiple elements among them, the knowledge that sustains the teaching practice. These studies have explored the different types of knowledge that educators need to master in order to practice their profession effectively.

Understanding and improving this knowledge is essential to strengthen the teacher's professional identity and qualify their performance in the classroom. This perspective has guided the development of new paths in teacher training, with the objective of preparing educators for the contemporary challenges of education.

However, the influences on teacher identity can begin in the early school years. As Moreira (2009, p. 50) states, "the teacher will be one of the privileged partners to mediate the construction of the identity of the little ones". Identity, therefore, begins to be built from interactions with the school environment, awakening, over time, interest in the profession. Such positive or negative experiences influence the choice for teaching, leading the future teacher to take as a reference models that he wants to follow or, on the contrary, avoid. In this context, the school trajectory is revealed as a determining factor in the decision to enter teaching degree courses, with initial training being a fundamental element in the constitution of the teacher's professional identity.

According to Souza J and Souza D. (2022), understanding the professional identity of teachers in the current scenario is directly related to the way society interprets this profession. In this way, it is considered that social movements are intrinsically linked to educational projects, since education does not take place in a neutral space, but in a scenario loaded with meanings, in which objectivity is an essential component. This implies recognizing that educational institutions perform specific functions within the society in which they are inserted.

The professional identity of teachers is, therefore, a result of the interaction between the educator and their individual experiences, which directly influence their pedagogical practice. Jesus *et al.* (2021) also highlight that teacher training is a decisive factor in the search for new knowledge that qualifies educational practice. As rational and inconclusive beings, teachers are in constant search for improvement, striving to build a better educational environment not only for the present, but also for the future.

In addition, the authors emphasize the importance of consolidating continuing education courses, which should be aimed at a broad and integral view of the subject. To this end, it is essential that teachers develop an open attitude to continuous learning, associating pedagogical practices with the available theoretical supports and constantly updating themselves. This implies replacing fragmented approaches with an interdisciplinary perspective, promoting transformations in themselves and in the reality around them.

2.3 SOCIO-EMOTIONAL SKILLS AND TEACHER IDENTITY

In recent decades, reflections on the need to re-signify the university and teacher training have intensified, especially in the face of the challenges imposed by the contemporary context. This scenario has highlighted crises in the constitution of the professional identity of teachers, requiring new formative approaches.

The development of socio-emotional competencies in teaching practice presupposes

that the learning process involves not only cognitive and technical aspects, but also emotional and social aspects. Such competencies are centered on understanding the interpersonal relationships and emotions that permeate teaching and meaningful learning (Abed, 2020).

Socio-emotional competencies comprise the integration of knowledge and practices aimed at self-knowledge and the relationship with others, based on awareness, expression, and management of emotions. The central objective is to promote personal well-being — subjective and psychological — and to improve the quality of social interactions (Gondim; Morais; Brantes, 2014, p. 400).

Bisquerra (2009) mentions five components of socio-emotional competence:

"1) emotional awareness of oneself and other people; 2) emotional regulation, refers to the management of emotions; 3) emotional autonomy, which highlights the positive attitude towards oneself and life, maintaining high self-esteem and recognizing personal limits, resorting, if necessary, to external help; 4) mastery of social skills, in which the ability to communicate, be assertive and adopt respectful attitudes towards other people stands out; and 5) life skills and well-being, defined as the ability to adopt appropriate and responsible behaviors in solving personal, family, professional and social problems, preserving personal and social well-being" (Bisquerra, 2009, p.143).

These elements dialogue directly with the four pillars of education for the twenty-first century, proposed by Jacques Delors in the report prepared for UNESCO (1999): learning to know, learning to do, learning to live together and learning to be. These pillars, which are also present in the National Common Curriculum Base (BNCC), are aligned with the proposal of integral development of the subject, highlighting the importance of socio-emotional dimensions in the training process.

For Freire (2002, p. 38), "teaching requires understanding that education is a form of intervention in the world", and, therefore, "the subject who opens himself to the world and to others inaugurates with his gesture the dialogical relationship in which he confirms himself as restlessness and curiosity, as inconclusive in permanent movement in history" (Freire, 2002, p. 51). This Freirean conception reinforces the importance of the human and emotional dimension in the constitution of the teacher.

Lisboa and Rocha (2021) point out that the development of socio-emotional skills in teacher training is, at the same time, a gap and an urgent agenda. For the authors, it is essential to intensify the debate on this topic in academic spaces, especially in view of the growing curricularization of higher education. They also defend the need to articulate theory and practice and to promote effective didactic transposition. In addition, they highlight the importance of ensuring the participation of teachers in practice in continuous training processes, through

diverse and accessible strategies, so that these professionals are not excluded from this movement of educational transformation.

3 METHODOLOGY

This is a qualitative research, of bibliographic nature and theoretical foundation, developed with the objective of understanding the processes involved in the constitution of the teacher identity in higher education.

To meet the objective of the research, an online search for scientific productions was carried out in the Google Scholar, SciELO and PePSIC databases, using descriptors related to teacher training, professional identity and higher education.

The selection of materials was carried out based on two criteria:

- 1) Publications between the years 2014 and 2023.
- 2) Use of descriptors: "Teacher Training ", "Higher Education" "Identity of Being a Teacher".

The analysis of the selected articles took place in two stages. In the first, a file of the publications was carried out, highlighting the main information and evaluating its relevance to the objectives of the research. In the second stage, an in-depth analysis of 20 articles was carried out, organized around three thematic axes: Teacher Identity, Teaching Practice and Training, and Socio-emotional Skills.

Based on the analyzed texts, it was identified that the constitution of the teacher's professional identity can be understood from three dimensions: Narrative: telling oneself and others, the intrapersonal that is characterized by the reflection of the individual in his professional context and the interpersonal dimension that occurs in the process of development in relationships in the midst of professional practices, skills relations and appropriation of norms, values and cultures specific to the profession.

4 RESULTS AND DISCUSSIONS

20 scientific articles were selected to compose the sample of this research, as shown in Chart 1. The selection of studies considered the relevance of the discussions in relation to the analytical categories defined in this study: teacher identity, pedagogical practice and teacher training, and socio-emotional skills.

The analyzed articles were published between 2014 and 2023 and obtained from the Google Scholar, Scielo, and Pepsic databases.

Table 1

Survey of publications on teacher identity in higher education between 2014 and 2023

Author(s)	Title	Database/Year
ABED, Anita; ZUPPO, Lilian.	The development of socio-emotional skills as a path to learning and school success for basic education students.	Pepsic, 2016.
ALENCAR, Marineide Pereira de.	Challenges of teaching practice in higher education: relevance in didactic training.	Google Scholar, 2019.
ALMEIDA, Sandra Raquel de; PENSO, Maria Aparecida; FREITAS, Leda Gonçalves de.	Teacher identity with a focus on the research scenario: a systematic review.	Scielo, 2019.
CENI, Jéssica Cristina; BEZERRA-DE-SOUZA, Indira Gandhi; FERNANDES, Jane Mendes Ferreira; SEEFELD, Rodrigo.	Is didactic training essential for teachers? Strategies applied by professors of administration in the classroom.	Scielo, 2022.
DAVID, Ricardo Santos.	Teacher training for higher education: teaching in contemporaneity.	Google Scholar, 2018.
DIAS, Maria Isabel Alencar; FERREIRA, Adriana Assis; ALLAIN, Luciana Resende.	Perceptions of bachelor's degree teachers about the construction of their professional teaching identity.	Google Scholar, 2023.
GEMELLI, Catia Eli; CLOSS, Lisiane Quadrado.	Teaching work in higher education: analysis of scientific production published in Brazil (2010-2019).	Scielo, 2022.
JESUS, Rudvan Cicotti Alves de; JESUS, Iêda Cicotti de; JESUS, Lurian Cicotti Alves de.	Teacher identity: teacher training as an essential requirement for the quality of education.	Google Scholar, 2019.
JUSTO, Alice Reuwsaat; ANDRETTA, Ilana.	Socio-emotional competencies of teachers: assessment of educational social skills and emotional regulation.	Pepsic, 2020.
LISBOA, Aissa Cavalcante Lisboa; ROCHA, Paulo Alfredo Martins.	Socio-emotional competencies and teaching: the BNCC and the new requirements in teacher training.	Google Scholar, 2021.
LUPIA, Márcia de Oliveira; CAPECCHI, Maria Candida Varone de Moraes.	The beginning of the teacher's career in higher education: a study on teacher identity.	Google Scholar, 2023.
MARTINS, Maria Rosa Selvati; MAGALY, Ada; SILVA, José Geraldo Ferreira da.	Teacher identity for higher education.	Google Scholar, 2014.
MURUSSI, Naiara Polidoro; POSSANI, Taíse Neves.	Constitution of teacher identity in the process of initial training.	Google Scholar, 2019.
PENA, Neide; BUENO, Flaviana Néias.	The teacher and teaching in higher education: aspects of training and profession.	Google Scholar, 2021.
RECH, Rose Aparecida Colognese; BOFF, Eva Teresinha de Oliveira.	The constitution of the teacher identity and its implications in the educational practices of teachers of a Community University.	Scielo, 2022.
RODRIGUES, Filomena Alves; MOGARRO, Maria João.	Professional identity images.	Scielo, 2020.

SCARTEZINI, Raquel Antunes.	Higher education teacher training and teacher professional identity.	Google Scholar, 2017.
SORDI, Mara Regina Lemes de.	Teaching in higher education: interpellating the meanings and challenges of institutional spaces of training.	Scielo, 2019.
SOUZA, José Clecio da Silva de; SANTOS, Décio Oliveira dos Santos.	The construction of the teacher's identity in the school.	Google Scholar, 2022.
SOUZA, Mauro José de; MONTEIRO, Filomena Maria de Arruda.	Identity and teacher training in higher education: a balance of production.	Scielo, 2022.

Source: Prepared by the authors (2026).

A greater concentration of publications was observed between 2019 and 2023, demonstrating a growth in scientific interest in the construction of teacher identity and the challenges related to training and professional performance in higher education.

Thus, the sample included research that addresses everything from the theoretical foundations of the teacher's professional identity to reflections on initial and continuing education, in addition to the importance of socio-emotional skills in the contemporary educational context.

For better organization and understanding of the findings, the results were structured into three analytical categories: (1) teacher identity; (2) teaching practice and training; and (3) socio-emotional skills, presented in the following subsections.

4.1 TEACHER IDENTITY

Regarding the teacher identity according to Murussi and Possani (2019), the entire path lived, experienced and especially felt during the training period is vital for the teacher identity to be established at the beginning of the journey. The teacher self is something that is gradually constituted. However, the teacher's identity has developed in a way that is not very dynamic and applicable, from a methodological and reflective point of view. "Learning by doing" is a reflection of this lack of professional direction (Martins; Magaly; Silva, 2014).

Martins, Magaly and Silva (2014) also state that when it comes to higher education teachers, there is no single identity for them, and in Brazil there is no specific policy defined for the development of their professional identity. Although qualification in the area is a requirement for acting, the same is not true for didactics. Therefore, it is necessary to seek a didactic approach that helps teachers to systematize their teaching-learning process, that is, to teach the educator to discover himself in the teaching process. Didactics should enable the teacher to select the best resources and methods, taking into account that each content and type of class has different approaches so that the learning process is facilitated effectively.

In addition, professional identity according to Jesus *et al.* (2019), is also influenced by the environment in which teachers work, including school culture, educational policies, and society's expectations regarding education. Teachers build their professional identities in interaction with colleagues, students, parents, and other members of the educational community. These social interactions help to create a shared view of the teaching profession and subjective representations about this profession.

Thus, the construction of the professional identity of teachers is, therefore, an individual and collective process, influenced by a variety of factors. It is dynamic as it evolves over time as teachers gain more experience, reflect on their practice, and adapt to new challenges and demands. The construction of professional identity is an essential aspect of teachers' professional development and contributes to their self-confidence and job satisfaction.

The identity of the university professor, according to Scartezini (2017), "is woven from three dimensions: representations and perceptions about their academic roles; conceptions about what it means to teach, learn and evaluate their subject; and the feelings related to their functions".

Also, for Scartezini (2017), the identity of teachers constitutes a space for internal and external negotiation between the cognitive, cultural and emotional dimensions that form the complex daily life of teachers, teachers start to act as mediators and facilitators in the classroom, in addition to teaching students to be independent and responsible for their learning, in addition to helping students in their integral development, so that they can face the challenges of society. However, "at the same time, teachers are not helped or are not sufficiently trained to develop and manage their professional teaching identity" (Scartezini, 2017, p.12).

Complementing this discussion, Almeida *et al.* (2019) observe that, in recent years, most research on teacher identity has focused on basic education, especially elementary education. This reveals a significant gap in studies focused on teaching in higher education, which reinforces the importance of expanding investigations that consider the specificities and challenges faced by university professors.

Complementing this discussion, Rech and Boff (2022) highlight that the constitution of teacher identity is directly related to the experiences lived by teachers in their institutional and pedagogical context. The authors show that educational practices, relationships established in the university environment and training processes significantly influence the way teachers understand their profession and develop their pedagogical performance.

Similarly, Rodrigues and Mogarro (2020) state that the professional identity of teachers is built through the representations, perceptions, and experiences accumulated throughout the academic and professional trajectory. According to the authors, the teacher identity is constantly resignified in the face of social, cultural and educational changes, being influenced both by individual experiences and by collective interactions lived in the school and university space.

In addition, Souza and Santos (2022) emphasize that the construction of teacher identity occurs progressively, involving knowledge acquired in initial training, professional experiences, and relationships established in daily school life. For the authors, the development of professional identity is associated with critical reflection on pedagogical practice and the teacher's commitment to the educational process.

4.2 TEACHING PRACTICE AND TRAINING

Regarding practices, the studies by Martins, Magaly and Silva (2014) comment that methodological practice for the teaching professional in Higher Education has an important role in this sense. Didactics should not be taken as a limiter, an "excuse" used by flawed systems and professionals; rather, it is traced by a complete methodological model, which encompasses as its object of relationship both the teacher and the students, the teaching practice and the theoretical content of teacher training, thus contextualizing learning.

In Alencar's (2019) studies, it can be stated that pedagogical training provides higher education teachers with a new perspective in relation to their didactic practice, allowing them to recreate, interpret and transform it into a source of motivation for learning. This training also brings with it a vision of change and acceleration, driving the teacher to constantly seek improvements in his practice. In addition, the role of teaching in higher education requires more than mastery of the content, but rather involvement, ethics and openness to continuing education, which thus contributes to the constitution of the teacher's identity (Araujo, 2015).

And yet, it is believed that didactics, according to the author, is of great importance for teaching in Higher Education, since its study covers principles, resources, organization, techniques, evaluation and lesson planning. In addition, didactics takes into account the individual condition of each student, the construction of citizenship, as well as political and ethical responsibility in quality teaching. All these elements influence the teacher to act more efficiently and consciously in his educational practice.

Complementing this discussion, the study by Sordi (2019) offers an important contribution by showing that many higher education professors, especially those entering

them, face an initial phase of intense fragility and isolation in the exercise of teaching. Through the narratives of beginning professors at a public university, the author identified recurrent expressions such as "shock with reality", "pedagogical loneliness" and "land as you can", which translate the lack of systematic reception and the absence of structured institutional policies aimed at pedagogical training.

Such experiences reveal that, although there are teacher training initiatives in higher education institutions (HEIs), many of them are still guided by a technicist logic, with a restricted focus on instruments and methods, without critically and reflexively addressing the ethical, political and social dimensions of teaching. This compromises the construction of a teacher identity based on a broader understanding of human education, reducing training to the individual responsibility of the teacher and not as part of a collective and institutional project.

Sordi (2019) argues that institutional spaces for education need to be resignified and transformed into places of education, endowed with meaning, belonging, and social commitment. The author argues that these places should provide dialogue between peers, critical reflection on pedagogical practice and the strengthening of a collaborative teaching culture. Such spaces, when effectively occupied by teachers, become fertile environments for professional development and for the consolidation of a teaching that is socially implicated and capable of responding to the contemporary demands of higher education.

Regarding training, Jesus *et al.* (2019), in their research, state that the work and training of teachers should be understood as a continuous process of training. As such, thinking about their education means thinking about it as a continuum of initial and continuous training. It is also understood that education is, in fact, self-education, since teachers re-elaborate initial knowledge in confrontation with their practical experiences, daily lived in school contexts. It is in this confrontation and in a collective process of exchange of experiences and practices that teachers constitute their knowledge.

The studies by Lupia and Capecchi (2023), which aim to constitute the teaching identity of higher education teachers who did not have initial training in undergraduate courses or in pedagogy, came to the conclusion that these teachers were detached, that the malaise at the beginning of their careers was due to the fact of having to learn to be a teacher, In addition, a context of institutional helplessness is revealed.

The studies by Souza and Monteiro (2022, p. 12) consider continuing education as an indispensable process for "their identity (re)signification". They emphasize that teacher training should be carried out through the study and reflection on the experiences of teachers, and that

these can "produce reflections on the processes of identity signification of the teachers involved, and by extension, on the teaching practices of these teachers and on the academic routines".

Furthermore, Souza and Monteiro (2022, p. 13) state that assuming "the teacher's identity as fluid implies an uninterrupted search for the understanding of a permanent one's own and professional becoming, associated with a continuous (re)composition of identity meanings, which would demand an incessant, inconclusive, and necessary training". Simultaneously, the teachers' place of speech is privileged, as well as the place of listening to other teachers, stimulating their narratives and reflection on the lived experience, as indicated.

Jesus *et al.* (2019) comment that continuing education courses should be increasingly established for the broad view of the subject. However, teachers need to be open-minded and understand that, in the face of so many changes, it is necessary to be able to learn more and more, because knowledge is dynamic. It is up to them to associate pedagogical practices with existing theoretical supports, to deepen the exercise of the profession and always updating and reflecting, replacing the fragmented with the interdisciplinary, transforming themselves and the world. Complementing this discussion, Pena and Bueno (2021) argue that teaching in higher education should be understood as a profession that requires continuous training and mastery of pedagogical, scientific, cultural, and technological knowledge. The authors warn that teacher training is often reduced to technical training, disregarding the complexity of the educational work.

In this sense, the study by Gemelli and Closs (2022) contributes to this discussion by presenting an analysis of Brazilian scientific production between 2010 and 2019 on teaching work in higher education. The training and evaluation of university teaching, teaching knowledge and practices, and working conditions were identified as central themes. The research shows that the teaching practice at this level is crossed by multiple institutional and social demands, requiring from the teacher a diversified repertoire of competencies.

In addition, the scarcity of public policies aimed at the pedagogical training of teachers is highlighted, especially in the case of bachelors who enter the teaching career without adequate didactic preparation. After the enactment of LDBEN No. 9,394/96, there was a significant expansion of public and private universities, which enabled a restructuring of the educational system, making it less elitist. This scenario has attracted a growing number of students in search of professional qualification, both at the undergraduate and graduate levels, motivated by transformations in the labor market and technological advances (Pena and Bueno, 2021; Ceni *et al.*, 2022).

In this context, it is worth reflecting: was the expansion of access to higher education accompanied by proportional improvements in the quality of teaching? It is worth noting that, in this work, the concept of teacher quality is not restricted to the domain of content, but covers, above all, the pedagogical and formative competencies that sustain the educational practice.

Studies such as those by Ceni *et al.* (2022) and Dias *et al.* (2023) reinforce the relevance of teacher training during graduate studies, especially through the teaching internship, which marks the first contact of the future teacher with the reality of the classroom. This initial experience is essential for the development of pedagogical knowledge and skills indispensable to teaching in higher education, going beyond technical specialization and promoting a more comprehensive education.

However, in this scenario of increasing demands, the higher education teacher is constantly asked to perform multiple functions: educator, administrator, psychologist, researcher and facilitator of learning. As David (2017) points out, these demands are not always accompanied by adequate working conditions, recognition or professional appreciation, which contributes to the physical and emotional exhaustion of the category. The pressure for performance, productivity and continuous training, added to institutional precariousness, compromises not only the quality of teaching, but also the very process of building the professional identity of teachers.

These aspects are directly related to the constitution of teacher identity and reinforce the importance of initial and continuing education as structuring elements of teaching practice and professional development.

4.3 SOCIO-EMOTIONAL SKILLS

The quote from Justo and Andretta (2021) highlights the importance of clarity and emotional awareness on the part of teachers so that they can communicate effectively with their students, providing instructions, approvals, and reproaches of behavior in a clear way. This underscores the need to address content that promotes emotional awareness and clarity, as well as educational social skills during teacher education.

In addition, emotional regulation goes beyond simply controlling emotional expression. It involves the recognition of emotions, the evaluation of their intensity and the ability to modify or not their expression, in order to achieve a desired result. In this sense, impulse control, the use of adopted strategies, emotional awareness, clarity about one's emotions, and understanding of desired goals are elements that help teachers understand how students have satisfied them emotionally and effectively deal with their behaviors.

Therefore, by developing emotion regulation skills and promoting emotional awareness and clarity, teachers have the ability to communicate more effectively, understand students' emotions and behaviors, and manage situations in the classroom. This can contribute to a more positive educational environment that is conducive to learning.

It is important to emphasize the need for interventions aimed at the development of socio-emotional skills and the promotion of health among teachers. These interventions should address skills such as emotional awareness, clarity of thought, goal-oriented action, and educational social skills.

Abed (2016) states that investing in the development of socio-emotional skills at school requires a focus on teacher improvement, enabling them to create the necessary conditions to mediate learning in a conscious and responsible way. This includes the recognition and action in the multiple intelligences and in the various cognitive-affective styles of the students, as well as the awareness of the teachers themselves about their individual characteristics. In addition, it is essential that teachers intentionally choose and use tools and strategies that facilitate the overall development of students. In this way, by strengthening the teacher as a socio-emotional mediator, it becomes possible to promote a more comprehensive and meaningful learning environment, which contributes to the construction of their teaching identity.

Corroborating this perspective, Lisboa and Rocha (2021) highlight that socio-emotional competencies have started to occupy more space in contemporary educational discussions, especially after the implementation of the National Common Curriculum Base (BNCC). The authors emphasize that the development of these competencies should not be aimed only at students, but also at teachers, considering that teaching requires skills related to empathy, communication, emotional balance and conflict mediation in the school environment.

In addition, the authors argue that teacher training needs to contemplate emotional and relational aspects, preparing teachers to deal with the social and affective challenges present in the educational routine. In this way, socio-emotional competencies become fundamental elements both for the strengthening of pedagogical practice and for the constitution of teacher identity.

5 CONCLUSION

From the analyses carried out, it is understood that the teacher identity is constituted as a continuous, dynamic and unfinished process, built through formative experiences, interpersonal relationships and practices developed throughout the professional trajectory. It

is a construction marked by individual and collective experiences, by the interactions established in the educational environment and by the constant social and institutional transformations that permeate the exercise of teaching in higher education.

The studies analyzed showed that the constitution of the teacher's identity goes beyond the technical and scientific domain, also involving pedagogical, emotional, ethical and social aspects. In this context, initial and continuing education plays a fundamental role in the professional development of teachers, contributing to critical reflection on pedagogical practice, to the resignification of teaching knowledge and to the strengthening of professional autonomy.

In addition, it was observed that socio-emotional skills exert an important influence on teaching performance, especially with regard to the relationships established with students, the mediation of the teaching-learning process and the confrontation of the challenges present in the academic routine. Thus, it is essential that the training processes include not only specific knowledge of the area of activity, but also relational, emotional and didactic skills.

It is concluded, therefore, that the teacher's identity is constructed in a procedural and collective way, being constantly reconstructed from the experiences, reflections and interactions lived by the teacher. Thus, understanding teaching as a permanent movement of training, learning and transformation contributes to the strengthening of pedagogical practices that are more critical, humane and committed to the quality of higher education.

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PEDAGOGICAL ACCESSIBILITY: THE CONTINUING EDUCATION OF TEACHERS WITHIN THE PREMISES OF INCLUSIVE EDUCATION

ACESSIBILIDADE PEDAGÓGICA: A FORMAÇÃO CONTINUADA DE PROFESSORES NOS PRESSUPOSTOS DA EDUCAÇÃO INCLUSIVA

ACCESIBILIDAD PEDAGÓGICA: LA FORMACIÓN CONTINUA DE DOCENTES EN LOS PRESUPUESTOS DE LA EDUCACIÓN INCLUSIVA



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ABSTRACT

This article aims to present the project "*Literacy and literate practices for students with intellectual disability with an emphasis on the Individualized Educational Plan*" [[nota: títulos de projeto/curso mantidos com tradução entre aspas para compreensão; "alfabetização e letramento" traduzido como "literacy and literate practices" — ver nota terminológica ao final]], by the Faculty of Education of the Universidade do Estado do Rio de Janeiro – UERJ. The focus of the proposal was the implementation of the Specialized Educational Service (AEE – *Atendimento Educacional Especializado*) in the remote modality, based on inclusive pedagogical practices aimed at the public of young people, adults, and the elderly with intellectual disability. The training proposal was grounded in the premises of action research, and the records started from the assumption that curricular accessibility is a determining factor for the promotion of equitable training paths. In the results, it was found that the development of accessible pedagogical practices fostered the learning of all students, promoting their inclusion in a significant way. It is concluded that the training proposal afforded teachers reflection on the processes of academic, occupational, and social development of the students, seeking to overcome the traditional conception of education.

Keywords: Teaching Strategies. Teacher Education. Educational Inclusion.

RESUMO

O artigo tem como objetivo apresentar o projeto "*Alfabetização e letramento para estudantes com deficiência intelectual com ênfase no Plano Educacional Individualizado*", pela Faculdade de Educação da Universidade do Estado do Rio de Janeiro - UERJ. O foco da proposta foi a implementação do Atendimento Educacional Especializado - AEE na modalidade remota, com base em práticas pedagógicas inclusivas voltadas ao público jovens, adultos e idosos com deficiência intelectual. A proposta formativa teve como base os pressupostos da pesquisa-ação, e os registros partiram do pressuposto de que a acessibilidade curricular é um fator determinante para a promoção de percursos formativos equitativos. Nos resultados, constatou-se que o desenvolvimento de práticas pedagógicas

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acessíveis, propiciaram à aprendizagem de todos os alunos, promovendo sua inclusão de forma significativa. Conclui-se que a proposta formativa propiciou aos professores a reflexão sobre os processos de desenvolvimento acadêmico, laboral e social dos estudantes, buscando superar a concepção tradicional da educação.

Palavras-chave: Estratégias de Ensino. Formação Docente. Inclusão Educacional.

RESUME

El artículo tiene como objetivo presentar el proyecto "Alfabetización y *letramento* para estudiantes con discapacidad intelectual con énfasis en el Plan Educativo Individualizado" [[nota: "letramento" (usos sociales de la lectura/escritura) no tiene equivalente unívoco en español, donde suele fundirse en "alfabetización" o traducirse como "literacidad"; mantenido el original en cursiva con esta indicación — recomienda-se ajustar según la convención de la revista]], por la Faculdade de Educação de la Universidade do Estado do Rio de Janeiro - UERJ. El foco de la propuesta fue la implementación del Atendimento Educacional Especializado - AEE (Servicio Educativo Especializado) en la modalidad remota, con base en prácticas pedagógicas inclusivas dirigidas al público de jóvenes, adultos y personas mayores con discapacidad intelectual. La propuesta formativa tuvo como base los presupuestos de la investigación-acción, y los registros partieron del supuesto de que la accesibilidad curricular es un factor determinante para la promoción de trayectorias formativas equitativas. En los resultados, se constató que el desarrollo de prácticas pedagógicas accesibles propició el aprendizaje de todos los alumnos, promoviendo su inclusión de forma significativa. Se concluye que la propuesta formativa propició a los docentes la reflexión sobre los procesos de desarrollo académico, laboral y social de los estudiantes, buscando superar la concepción tradicional de la educación.

Palabras clave: Estrategias de Enseñanza. Formación Docente. Inclusión Educativa.

1 INTRODUCTION

The construction of Inclusive Education requires more than accessible infrastructure or policies; it depends on the training of professionals who are skilled and confident in its applicability. In this movement, teacher education for inclusion becomes a process that still requires constant debate.

Various national and international legal frameworks reinforce this need. The Salamanca Statement – UNESCO (1994), for example, reinforces that teacher training is fundamental for schools to become welcoming and accessible environments for all students. The Convention on the Rights of Persons with Disabilities – UN (2006), in turn, determines that States are to guarantee the training of education professionals in inclusive practices.

At the national level, the Brazilian Law for the Inclusion of Persons with Disabilities (LBI – *Lei Brasileira de Inclusão da Pessoa com Deficiência*) – Law No. 13.146/2015, establishes that teacher training must include content on special education from an inclusive perspective. The National Education Plan (PNE – *Plano Nacional de Educação*) (2014–2024) also provides for goals for the training of teachers with a view to promoting an inclusive school.

In this sense, within the scope of teacher education, reflection must be afforded and debate stirred regarding the silencers of diversity, which seek to homogenize pedagogical practices and the relations established in this space, denying the voices and the different identities.

According to the opinion of the National Council of Education (CNE/CP – *Conselho Nacional de Educação*) (2001), which established the Curricular Guidelines for the Training of Basic Education Teachers in Higher Education Courses, Basic Education needs to be inclusive, in order to serve a policy of integration of students with disabilities into regular classes. However, according to (Calegari-Falco et al., 2025, p. 11), "although the inclusive perspective is present in the Curricular Guidelines for the training of the pedagogue, situations of marginalization and exclusion are still increasing in education."

That said, it becomes fundamental to afford teachers, in a multifaceted, democratic, and plural society, initial or continuing education with a view to inclusion, since, as Mascaro and Estef highlight:

Teaching work from the perspective of Inclusive Education requires a vast investment, among which the initial and continuing education of teachers, given that it has the role of making their practices accessible to the diversity of the student body that presents specific accessibility needs in learning. (Mascaro et. Estef, 2023, p. 02).

Thus, this work presents an excerpt of the continuing education course, in the improvement (*aperfeiçoamento*) modality, titled "*Literacy and literate practices of students*

with intellectual disability with an emphasis on Universal Design for Learning – DUA and on the Individualized Educational Plan – PEI,” offered by the Faculty of Education of the Universidade do Estado do Rio de Janeiro – UERJ.

The course is part of the research *“Teacher education for the specialized educational service: the Individualized Educational Plan – PEI, mediated by technologies,”* having as its target audience education professionals, teachers, mediators, students with intellectual disability, and their families.

In this movement, the present article aims to report aspects developed in the training that corroborated reflection on curricular accessibility, in order to meet the specificities of each student, when necessary, and the development of universal pedagogical practices for all.

2 METHOD

The methodological choice needs to have a direct relation with what is intended to be investigated, since, through it, it becomes possible to understand the appropriate path to achieve the proposed objectives. In this sense, the study was developed within the context of the qualitative research matrix, through the lens of action research, a modality of investigation that enables action-reflection-action on practice. (Mascaro et. Redig, 2024)

The justification for the methodological choice takes into consideration that the proposal is geared toward a reflection on the demands that emerge regarding what is or will be part of the participants' professional everyday life. With the training, we aimed not only to report the observed object but to reflect together with the agents of the process, seeking new means in the teaching-learning relationship.

Thus, it was observed that the action-research methodology provided the participants with an involvement that went beyond the description and theorization of a problem; its *theoretical-practical* condition seeks to provide means for the transformation of the presented reality.

Therefore, we understand that the methodology employed in this study, besides being essentially collaborative, fosters democracy and critical reflection, since the involvement of all the agents of the process favors *analysis-action-reflection-action*, for possible interventions deemed necessary in view of the analyzed object. “The proposal of collaborative teaching, fundamentally, had as its purpose the collaboration between teachers in the development of activities in the school everyday life, more specifically in the classroom.” (Braun et. Marin, 2016).

The relevance of this study lies in its contribution to broadening the debate on education in the contemporary educational scenario, evidencing gaps and proposing paths to overcome them through legal grounding—especially the LBI (2015), which advocates that political-pedagogical projects should not contemplate only the Specialized Educational Service (AEE), but also supports that respect the specificities of students, as well as afford access to the curriculum.

In this sense, continuing education with a view to accessibility was structured in a theoretical and practical manner, in which the synchronous meetings occur through the *Google Meet* or *Zoom* platforms for the reflection, preparation, and application of the PEI, in a collaborative way toward a common objective: the understanding of curricular accessibility.

The theoretical part addressed themes that led the course participants to reflect on: The student with intellectual disability and their specificities; Transition to adult life of the student with disability; Models of knowledge appropriation; Literacy and literate practices; Universal Design for Learning; Collaborative teaching; Individualized Educational Plan; Technological mediation. (Mascaro et. Redig, 2024).

In the practice stage, the work was geared toward the application of the PEI with students with intellectual disability, which was divided into three categories: introductory stage; application of the PEI; evaluation of the PEI. For this purpose, the course participants were divided into teams to develop remote activities with a student with intellectual disability.

After each meeting, the course participants gathered to reflect on the development of the stage and to plan new meetings. In addition, at the end of each process, they filled out the "Planning of the Introductory Stage" (Mascaro, 2024) and, at the end, the "Result of the Introductory Stage of the Individualized Educational Planning." (Mascaro, 2024)

To delimit which contents would be developed during the PEI application stage, three fields were inserted: the contents related to writing, reading, mathematical literacy, and digital literacy; evaluation criteria, made explicit according to each item of the contents.

In accordance with the delimitation of the contents, the application of the training paths began. Each meeting was documented in the *"Individualized Educational Plan – PEI for Alfabetramento"* [[nota: "Alfabetramento" é neologismo (junção de "alfabetização" + "letramento") cunhado pela autora; mantido no original por não ter equivalente em inglês — aproxima-se de "literacy-and-literate-practice"]] (Mascaro, 2024), containing the context of the application (whether it is to complement/supplement academic-life skills, insertion into a new stage of the training itinerary, insertion into or maintenance in the world of work), the delimitation of the content, objectives, and the strategies of engagement, means of representation, means of expression, description of the activity, as well as the evaluation of

the activity following the participant evaluation scale for the progressive observation of the actions.

The scale was categorized into RI (performs independently), RP (performs partially), RA (performs with support), NR (does not perform), NA (was not presented) [[nota: siglas da escala de avaliação mantidas no original (RI, RP, RA, NR, NA), com tradução do significado entre parênteses, conforme regra 5]]. The categories have a score that, at the end of each class, was to be filled out by the team with the justification of the evaluation result and the date of the next activity; Evaluation of the PEI and referrals: at the end of all the applications, the evaluation was filled out, with the record of the observations made, categorized on the evaluation scale.

For the meetings, we counted on the participation of a facilitator (*articulador*), of course-participant teachers—appliers of the PEI—a subject—a research student—and a support agent, always a family member who could assist in the use of the technological resources and/or in the activities when necessary. We emphasize that the support agent, at the beginning of each course, was instructed to be an observer, allowing the student to participate actively through the mediation of the appliers.

The meetings took place once a week, lasting from 40 to 60 minutes, according to the objectives listed in line with the Content Matrix (Mascaro, 2024). It is worth emphasizing that the moments should always be as relaxed and meaningful as possible, taking into consideration the students' preferences.

3 RESULTS AND DISCUSSION

Teaching practice from the inclusive perspective requires research, collaboration, dialogue, affection, and so many other attributes that culminate in a proposal that legitimizes the diversity and plurality existing in all spaces, including the classroom.

The application of inclusive methodologies for the appropriation of reading and writing and the social use of these skills for young people and adults with intellectual disability constitutes a process that still requires permanent study, discussion, and reflection for the development of accessible pedagogical practices.

In this sense, the continuing education highlighted the importance of the PEI, emphasizing its relevance for the development of more inclusive and personalized pedagogical practices—a fundamental pedagogical instrument for curricular accessibility, with the aim of making content accessible to a student. (Mascaro et. Redig, 2024)

In the course, the preparation and application of the PEI focused on collaborative work, following the premises of action research. For this, it became fundamental to know the

student, their needs and potentialities, factors that were collected in the introductory stage. Thus, in the training proposal, the PEI was prepared according to the everyday life of each student. As Mascaro and Estef (2023) state:

The premise of an inclusive school is that it provides all students with: access, participation, and the construction of knowledge. For this, the school needs to find ways to deal with the different modes in which human intelligence manifests itself, not being permitted a single way of teaching everyone. (Mascaro et. Estef, 2023, p. 03)

However, in order for the planning to be clear, objective, and centered on the student, in 2024 the importance of aligning the PEI with the principles of Universal Design for Learning (DUA – *Desenho Universal para Aprendizagem*) as observed. It was developed by David H. Rose, a researcher at the *Harvard Graduate School of Education*, in the 1990s, in partnership with the *Center for Applied Special Technology* – CAST, as a response to the need to make environments, products, and services accessible to all people.

Universal Design for Learning (DUA) has three pillars grounded in neuroscience: Engagement (the why of learning), Representation (the what of learning), and Action and Expression (the how of learning). These principles aim to promote diversified pedagogical approaches, making it possible for the learning process to be accessible, relevant, and enriching for all students.

In this context, Zerbato and Mendes (2018) point out that the DUA avoids the logic of decontextualized and one-off adaptation, proposing a curricular redesign that considers the diversity of the classroom.

The DUA approach established a significant connection with the Historical-Social perspective, favoring, throughout the research, the development process of the participants through collective interaction. This dynamic valued socially constructed knowledge, recognizing the active role of the subjects in the production of knowledge.

In this sense, the articulation between the DUA and the PEI made possible reflection on pedagogical practices for the elimination of possible curricular barriers, promoting pedagogical accessibility, involving all the dimensions of the student's development, respecting curricular flexibility and the constant reassessment of the actions that the planning requires.

In addition, the proposal of the course made possible the insertion of technological tools in the construction of dynamic practices in line with contemporary training, in which the course-participant teachers and the students with disability had access to digital resources, such as: *Canva*, *Wordwall*, *YouTube*, *Google Meet*, *Padlet*, among others [[nota: o original grafa "Wordall"; corrigido para "Wordwall" (nome da plataforma); recomenda-se confirmar]],

enhancing the engagement of those involved and the valorization of knowledge socially constructed in contemporary times, since a large part of the population makes use of digital resources in their daily life.

The training proposal emphasized the importance of the teacher's role as a mediator and facilitator of the teaching process, acting collaboratively with students, family members, and other professionals. This action afforded significant advances in the development of both the professionals involved and the students and their family members.

Over the years, the course energized paths that culminated in a critical teacher education in the face of the demands that emerge in school everyday life, placing the teacher as a researcher within the context of which they are part. Educators who, often, leave their initial training without the praxis necessary to mediate quality teaching for all students. For this reason, reflective constancy through continuing education is so important.

Consequently, it engaged families in the proposals, bringing at least one family member as an agent of practices grounded in the development of the students in relation to everyday life, thus improving the autonomy of persons with intellectual disability.

4 FINAL CONSIDERATIONS

Understanding Inclusive Education is, above all, recognizing and valuing the diversity present in the classroom. It is through coexistence with differences that it becomes possible to think of pedagogical strategies that proceed from the collective to the singular, and from the singular to the collective.

When the teacher recognizes the specificities of the students who are the target population of special education—or even of those in situations of vulnerability that directly impact their learning conditions—without ceasing to see these students as part of a collective, the teacher draws closer to the principles of the DUA.

The development of projects and pedagogical practices for curricular accessibility has great relevance in the contemporary educational scenario, since it contributed to education professionals creating strategies so that the training paths would be centered on the students, promoting the development of students with disability.

As a result, these students came to have access to a meaningful education that respected their needs, recognized their potentialities, and favored their integral development.

It was understood that a course such as this, which united theoretical training with practice for action in different training spaces, also had great potential for development toward joint work in the school space, since the participants acted actively and collaboratively for the

investigation and production of knowledge, as the premises of action research foster. Mascaro and Estef (2023) reinforce this understanding, stating that:

The construction of an inclusive school requires that the school community, researchers, and society seek dialogue with research on the different forms of functioning in order to meet the specificities of students who still encounter barriers in the contemporary school environment. (Mascaro et. Estef, 2023, p. 03)

In this sense, education professionals perceived the importance of meeting the needs and specificities of students for the construction of pedagogical practices that transcend traditional models. In addition, this cyclical movement made possible a view of the need to strengthen ties both with the student and with the family for work that is meaningful for those involved.

The proposal contributed to reflections on the accessibility of contents, pedagogical strategies, and forms of evaluation, through the PEI and the DUA, in which the curriculum may cease to be a rigid model and come to embrace the diversity of students, respecting the singularities, learning rhythms, abilities, and specific needs of the students.

In this movement, inclusion constitutes an ethical commitment that values diversity, requiring the collaborative action of educators, managers, and the school community in the recognition that inclusion is not limited only to the physical presence of the student in the classroom, but also encompasses their active participation, their protagonism.

Thus, with this study we hope to broaden knowledge about curricular accessibility as a fundamental pillar for the construction of a truly inclusive, equitable, and democratic education—an instrument of social justice.

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GLOBALISATION AND ITS IMPACT ON HEALTH AND HIGHER EDUCATION IN MEDICINE: CHALLENGES, OPPORTUNITIES AND CONTEMPORARY PERSPECTIVES

GLOBALIZAÇÃO E SEU IMPACTO NA SAÚDE E NO ENSINO SUPERIOR EM MEDICINA: DESAFIOS, OPORTUNIDADES E PERSPECTIVAS CONTEMPORÂNEAS

GLOBALIZACIÓN Y SU IMPACTO EN LA SALUD Y LA EDUCACIÓN SUPERIOR EN MEDICINA: DESAFÍOS, OPORTUNIDADES Y PERSPECTIVAS CONTEMPORÁNEAS



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ABSTRACT

Background: Globalisation has emerged as a multidimensional process that has significantly reshaped health systems and higher education in medicine. It has facilitated the rapid exchange of knowledge, technological innovation and international collaboration, while simultaneously intensifying structural inequalities, particularly in low- and middle-income countries. Understanding its dual impact is essential for designing equitable and sustainable medical education systems. Objective: To critically analyse the impact of globalisation on health and higher education in medicine, highlighting its benefits, challenges and implications for future medical training. Methods: A narrative review with an analytical-critical approach was conducted. Scientific literature was retrieved from major databases, including PubMed, Scopus, Web of Science and SciELO. Articles published between 2000 and 2025 in English and Spanish were included. The selection process involved screening titles and abstracts, followed by full-text evaluation. Thematic analysis was performed to synthesise findings across key domains, including health systems, medical education, internationalisation and structural inequalities. Results: Globalisation has enhanced access to scientific information, promoted international research collaboration and accelerated technological innovation in healthcare. It has also driven the internationalisation of medical education through academic mobility, global curricula and digital learning models. However, it has contributed to persistent inequalities in health and education, increased privatisation and the commodification of knowledge. Additionally, the migration of healthcare professionals and dependence on external models remain significant challenges, particularly in Latin America. Conclusions:

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Globalisation represents both an opportunity and a challenge for health and medical education. While it fosters innovation and global cooperation, it also exacerbates inequities and raises concerns about sustainability and social responsibility. Achieving a balance between global integration and local relevance is essential to ensure equitable, high-quality and humanistic medical training. Future strategies should prioritise inclusive policies, strengthen public institutions and integrate technological advances with ethical and social considerations.

Keywords: Globalisation. Medical Education. Global Health. Higher Education. Health Policies.

RESUMO

Antecedentes: A globalização emergiu como um processo multidimensional que remodelou significativamente os sistemas de saúde e o ensino superior em medicina. Facilitou o intercâmbio rápido de conhecimentos, a inovação tecnológica e a colaboração internacional, ao mesmo tempo que intensificou as desigualdades estruturais, especialmente nos países de baixa e média renda. Compreender o seu impacto dual é essencial para conceber sistemas de educação médica equitativos e sustentáveis. **Objetivo:** Analisar criticamente o impacto da globalização na saúde e no ensino superior em medicina, destacando os seus benefícios, desafios e implicações para a formação médica futura. **Métodos:** Realizou-se uma revisão narrativa com abordagem analítico-crítica. Recuperou-se literatura científica das principais bases de dados, incluindo PubMed, Scopus, Web of Science e SciELO. Foram incluídos artigos publicados entre 2000 e 2025 em inglês e espanhol. O processo de seleção envolveu a triagem de títulos e resumos, seguida da avaliação do texto completo. Realizou-se uma análise temática para sintetizar os achados nos principais domínios, incluindo sistemas de saúde, educação médica, internacionalização e iniquidades estruturais. **Resultados:** A globalização melhorou o acesso à informação científica, promoveu a colaboração internacional na investigação e acelerou a inovação tecnológica na assistência à saúde. Também impulsionou a internacionalização da educação médica por meio da mobilidade académica, currículos globais e modelos de aprendizagem digital. No entanto, contribuiu para a persistência das desigualdades em saúde e educação, para o aumento da privatização e para a mercantilização do conhecimento. Além disso, a migração de profissionais de saúde e a dependência de modelos externos continuam a ser desafios importantes, particularmente na América Latina. **Conclusões:** A globalização representa tanto uma oportunidade como um desafio para a educação em saúde e medicina. Embora fomente a inovação e a cooperação global, também exacerba as iniquidades e gera preocupações quanto à sustentabilidade e à responsabilidade social. Alcançar um equilíbrio entre a integração global e a relevância local é essencial para garantir uma formação médica equitativa, de alta qualidade e humanista. As estratégias futuras devem priorizar políticas inclusivas, fortalecer as instituições públicas e integrar os avanços tecnológicos com considerações éticas e sociais.

Palavras-chave: Globalização. Educação Médica. Saúde Global. Ensino Superior. Políticas de Saúde.

RESUMEN

Antecedentes: La globalización ha surgido como un proceso multidimensional que ha remodelado de manera significativa los sistemas de salud y la educación superior en medicina. Ha facilitado el intercambio rápido de conocimientos, la innovación tecnológica y la colaboración internacional, al mismo tiempo que ha intensificado las desigualdades estructurales, especialmente en países de ingresos bajos y medios. Comprender su impacto dual es esencial para diseñar sistemas de educación médica equitativos y sostenibles. **Objetivo:** Analizar críticamente el impacto de la globalización en la salud y la educación

superior en medicina, destacando sus beneficios, desafíos e implicaciones para la formación médica futura. Métodos: Se realizó una revisión narrativa con un enfoque analítico-crítico. Se recuperó literatura científica de las principales bases de datos, incluyendo PubMed, Scopus, Web of Science y SciELO. Se incluyeron artículos publicados entre 2000 y 2025 en inglés y español. El proceso de selección involucró la revisión de títulos y resúmenes, seguida de la evaluación del texto completo. Se realizó un análisis temático para sintetizar los hallazgos a través de los principales dominios, incluyendo sistemas de salud, educación médica, internacionalización e inequidades estructurales. Resultados: La globalización ha mejorado el acceso a la información científica, promovido la colaboración internacional en la investigación y acelerado la innovación tecnológica en la atención sanitaria. También ha impulsado la internacionalización de la educación médica mediante la movilidad académica, currícula globales y modelos de aprendizaje digital. Sin embargo, ha contribuido a la persistencia de las desigualdades en salud y educación, al aumento de la privatización y a la mercantilización del conocimiento. Además, la migración de profesionales de la salud y la dependencia de modelos externos siguen siendo desafíos importantes, particularmente en América Latina. Conclusiones: La globalización representa tanto una oportunidad como un desafío para la educación en salud y medicina. Si bien fomenta la innovación y la cooperación global, también exacerba las inequidades y genera preocupaciones sobre la sostenibilidad y la responsabilidad social. Lograr un equilibrio entre la integración global y la relevancia local es esencial para garantizar una formación médica equitativa, de alta calidad y humanista. Las estrategias futuras deben priorizar políticas inclusivas, fortalecer las instituciones públicas e integrar los avances tecnológicos con consideraciones éticas y sociales.

Palabras clave: Globalización. Educación Médica. Salud Global. Educación Superior. Políticas Sanitarias.

1 INTRODUCTION

In recent decades, globalisation has emerged as one of the most influential processes in shaping contemporary societies. Its impact transcends the strictly economic sphere, encompassing political, cultural, technological and educational dimensions, and configuring a complex web of interdependencies among nations, institutions and knowledge systems [1,18]. This phenomenon has been driven by the accelerated development of information technologies, the liberalisation of markets and the growing mobility of goods, services and human capital, which has redefined the dynamics of the production and circulation of knowledge on a global scale [11,23].

In the field of health, globalisation has profoundly modified the way in which health-disease processes are conceived and managed. The rapid dissemination of scientific information, the expansion of international research networks and cooperation between multilateral bodies have enabled significant advances in the prevention, diagnosis and treatment of various pathologies [6,14]. Likewise, it has facilitated a coordinated response to global health emergencies, demonstrating the need for integrated and transnational approaches in public health [10,15]. However, these benefits coexist with important challenges, such as the accelerated spread of diseases, technological dependence and inequities in access to health resources [31,34].

In parallel, higher education in medicine has undergone substantial transformations arising from this phenomenon. The internationalisation of academic programmes, the adoption of global quality standards and the incorporation of digital technologies have redefined teaching-learning processes, promoting more flexible, interdisciplinary and competency-oriented educational models [21,24]. In this context, medical training is increasingly influenced by global dynamics that prioritise innovation, research and international competitiveness [25,29]. Nevertheless, tensions have also arisen related to the commodification of education, the loss of humanistic approaches and the homogenisation of curricula, which may affect the local relevance of professional training [27,33].

Critically, several authors have noted that globalisation, framed within neoliberal policies, has contributed to deepening structural inequalities, particularly in low- and middle-income countries. These inequalities are manifested both in access to health services and in opportunities for academic training, evidencing significant gaps between regions and social groups [31,32]. The migration of highly skilled professionals, known as 'brain drain', constitutes another relevant phenomenon that negatively impacts the health systems of developing countries [34].

In this context, the present chapter aims to critically analyse the effects of globalisation on health and higher education in medicine, highlighting its benefits, risks and challenges in the contemporary scenario. Likewise, it seeks to contribute a reflection that supports the construction of more equitable, sustainable and contextualised models, capable of responding to the real needs of populations in an increasingly interconnected world.

2 METHODOLOGY

2.1 STUDY DESIGN

A narrative review with an analytical-critical approach was conducted, aimed at integrating and synthesising the available evidence on the impact of globalisation on health and higher education in medicine. This approach was selected due to the multidimensional nature of the phenomenon under study, which encompasses social, economic, political and educational components, making it difficult to address through exclusively quantitative methodologies [3,11].

2.2 SEARCH STRATEGY

The bibliographic search was carried out in high-impact international scientific databases, including:

- a) PubMed/MEDLINE
- b) Scopus
- c) Web of Science
- d) SciELO

Combinations of controlled terms (MeSH) and free keywords in English and Spanish were used, such as:

- a) "globalization", "global health", "medical education", "higher education", "health systems"
- b) "globalización", "educación médica", "salud global", "educación superior", "políticas de salud"

The terms were combined using Boolean operators (AND, OR) to optimise the sensitivity and specificity of the search.

2.3 INCLUSION AND EXCLUSION CRITERIA

Inclusion criteria:

- a) Original articles, systematic and narrative reviews
- b) Publications in indexed journals
- c) Studies published between 2000 and 2025

- d) Documents in English and Spanish
- e) Research related to globalisation, health and/or medical education

Exclusion criteria:

- a) Articles without peer review
- b) Documents with restricted access without full text available
- c) Studies with an exclusively local focus unconnected to the global phenomenon
- d) Duplicate publications

2.4 STUDY SELECTION PROCESS

The selection of articles was carried out in three stages:

- a) Review of titles and abstracts, to identify thematic relevance
- b) Full-text reading, to assess methodological and conceptual pertinence
- c) Final selection, based on the quality of the evidence and its contribution to the analysis

Priority was given to studies with high academic impact, documents from international bodies and literature widely cited in the field [6,15].

2.5 ANALYSIS AND SYNTHESIS OF THE INFORMATION

The information gathered was analysed using a qualitative thematic approach, organising the findings into the following categories:

- a) Impact of globalisation on health
- b) Transformations in medical education
- c) Internationalisation and academic mobility
- d) Structural inequalities and effects of neoliberalism

Subsequently, an integrative critical synthesis was carried out, comparing different theoretical positions (approaches favourable to and critical of globalisation), with the aim of generating a balanced interpretation of the phenomenon [31,32].

2.6 ETHICAL CONSIDERATIONS

As this is a literature review, this study did not involve direct intervention in human beings or the handling of sensitive data. Nevertheless, the principles of scientific integrity, appropriate citation and transparency in the use of sources were respected.

2.7 METHODOLOGICAL LIMITATIONS

Among the main limitations, the following are recognised:

- a) The narrative nature of the study, which may entail a certain degree of subjectivity
- b) The heterogeneity of the included studies

c) The possible exclusion of grey literature

However, an attempt was made to minimise these biases through a broad systematic search and the inclusion of sources of high academic impact.

3 CONCEPTUALISATION OF GLOBALISATION

Globalisation can be defined as a dynamic process of integration and interdependence among countries, driven by the continuous exchange of goods, services, information, technologies and human capital, which transcends national borders and redefines economic, social and cultural structures on a global scale [17,18]. (Figure 1) This phenomenon should not be understood as a one-dimensional process, but as a complex and multifaceted reality involving simultaneous transformations in various spheres of knowledge and social organisation [1,11].

From an analytical perspective, globalisation has been conceptualised through multiple theoretical approaches. On the one hand, economic currents interpret it as an expansion of global capitalism characterised by the liberalisation of markets, financial deregulation and the intensification of international trade [11]. On the other hand, socio-political approaches highlight its impact on the reconfiguration of power, global governance and relations among states, international bodies and private actors [12,16]. Likewise, from a cultural perspective, globalisation involves processes of symbolic exchange that can lead to both the homogenisation and the hybridisation of identities and social practices [18].

Figure 1

Flow diagram describing the processes through which globalisation impacts health and medical education. It includes mediating factors such as technological advancement, international mobility and market dynamics, which lead to structural transformations with both positive and negative outcomes



Source: prepared by the authors.

In the field of health, globalisation has given rise to the concept of global health, understood as an interdisciplinary field that addresses health problems transcending national borders and requiring coordinated responses at the international level [15]. This approach recognises the interconnection of health systems, the rapid spread of infectious diseases, the impact of environmental factors and the role of social determinants in the distribution of health and disease [10,31]. In this context, global health governance becomes a key element, where international bodies play a central role in policy formulation, epidemiological surveillance and the response to health crises [14].

In parallel, in the field of higher education, globalisation is manifested through internationalisation processes that include academic mobility, inter-institutional cooperation and the adoption of global quality standards [23,24]. This phenomenon has profoundly transformed the structure and function of universities, promoting educational models oriented towards competitiveness, innovation and the production of knowledge within global networks [25]. Medical education, in particular, has undergone a transition towards approaches based on global competencies, integrating digital technologies and active learning methodologies [21,22].

However, this conceptualisation has also been the subject of criticism. Several authors warn that globalisation, especially under a neoliberal paradigm, can generate adverse effects such as the commodification of education, the privatisation of health systems and the deepening of structural inequalities between countries and regions [31,32]. In this sense, globalisation is not a neutral process, but a phenomenon that reflects and reproduces power relations, conditioning access to resources, knowledge and opportunities [13].

In summary, globalisation constitutes a complex and multidimensional process that directly impacts health and higher education in medicine. Its understanding requires a critical and integrative approach that allows for the analysis of both its benefits and its limitations, especially in contexts marked by social and economic inequalities.

4 IMPACT OF GLOBALISATION ON HEALTH

4.1 BENEFITS

Globalisation has played a fundamental role in the transformation of health worldwide, giving rise to the concept of global health, characterised by the interdependence of health systems and the need for coordinated responses to problems that transcend national borders [15]. One of the most significant contributions has been the expansion and relative democratisation of access to scientific information. The development of digital platforms, biomedical databases and research networks has enabled an accelerated dissemination of medical knowledge, facilitating the continuous updating of health professionals and the implementation of evidence-based practices [1,3].

Likewise, globalisation has driven international research cooperation, promoting the development of multicentre studies and collaborative clinical trials that allow for the generation of more robust and generalisable evidence [6]. This phenomenon has been key in the advancement of areas such as epidemiology, pharmacology and translational medicine, favouring the integration of knowledge from different geographical and cultural contexts.

Another relevant aspect is the boost to technological innovation in health. Globalisation has facilitated the transfer of medical technologies, including advanced diagnostic tools, innovative therapies and telemedicine systems, which have improved the response capacity of health systems [10]. These innovations have contributed to optimising medical care, especially in contexts where physical access to specialised services is limited.

Furthermore, globalisation has strengthened the mechanisms of response to health emergencies. Coordination among international bodies, governments and research centres has enabled the development of joint strategies for epidemiological surveillance, disease

control and health crisis management, as has been demonstrated in recent epidemic outbreaks [14,15]. This collaborative approach has proven essential in an interconnected world where threats to public health can spread rapidly.

4.2 CHALLENGES AND NEGATIVE EFFECTS

Despite the benefits noted, globalisation has also generated important challenges that affect the equity and sustainability of health systems. One of the most relevant problems is the persistence and even deepening of health inequalities between and within countries. The differences in access to resources, technologies and health services reflect structural disparities associated with economic, social and political factors [31,32]. In this sense, globalisation has favoured certain contexts with greater adaptive capacity, while leaving more vulnerable health systems behind.

Another critical aspect is the growing commodification of health services, driven by market-oriented economic models. Under this approach, health tends to be conceived as a tradable good rather than a fundamental right, which can limit equitable access to essential services and prioritise profitability over quality and coverage [11]. This phenomenon has been particularly evident in systems where privatisation has reduced the regulatory role of the state.

The international migration of health professionals, known as brain drain, constitutes another significant challenge. The search for better job opportunities and working conditions has favoured the mobility of doctors, nurses and other professionals towards developed countries, generating a deficit of human resources in regions with greater health needs [34]. This phenomenon contributes to deepening global inequities in the availability of specialised talent.

Finally, technological dependence represents an important limitation for many developing countries. The incorporation of advanced medical technologies, while improving diagnostic and therapeutic capacity, also generates dependence on external suppliers and high implementation and maintenance costs [18]. This can hinder the sustainability of health systems and limit their autonomy in decision-making.

5 IMPACT ON HIGHER EDUCATION IN MEDICINE

5.1 STRUCTURAL TRANSFORMATIONS

Globalisation has generated profound transformations in the organisation and functioning of higher education, particularly in the field of medical training. One of the most relevant changes has been the reconfiguration of funding models, characterised by a

progressive reduction in public funding and a sustained increase in private investment in educational institutions [26,27]. This process has modified the internal dynamics of universities, steering them towards management schemes closer to market logics.

In this context, the adoption of international quality standards and accreditation systems has taken on a central role, promoting the homogenisation of educational criteria and comparability among institutions at a global level [24,25]. While these mechanisms have contributed to improving quality and transparency, they have also generated pressures towards standardisation, sometimes to the detriment of local particularities.

Additionally, the growing global competition among universities has driven a transformation in institutional objectives, prioritising indicators such as scientific productivity, international visibility and positioning in global rankings [25]. In medical education, this translates into training increasingly oriented towards research, innovation and professional competitiveness, which may strengthen certain competencies but also displace fundamental dimensions such as ethical and humanistic training [29].

5.2 INTERNATIONALISATION OF MEDICAL EDUCATION

One of the most evident effects of globalisation on higher education is internationalisation. This process is manifested through student and faculty mobility, the establishment of academic exchange programmes and the consolidation of inter-institutional collaboration networks [24]. These dynamics have favoured the exchange of knowledge, experiences and cultural perspectives, enriching the training of health professionals.

Likewise, the implementation of globalised curricula has enabled the incorporation of transversal competencies oriented towards medical practice in diverse contexts, including intercultural skills, critical thinking and the capacity to adapt to heterogeneous health systems [23]. Proficiency in English as a scientific language has facilitated access to specialised literature and participation in international academic communities, consolidating itself as a key element in contemporary medical training [24].

Nevertheless, this process has also generated important tensions. The adoption of educational models from developed contexts can lead to an academic dependence that limits the autonomy of local institutions and reduces the relevance of training programmes to the specific needs of each region [28]. In this sense, internationalisation, although beneficial, must be contextualised to avoid processes of acritical homogenisation. (Figure 2)

Figure 2

Conceptual diagram illustrating globalisation as a central axis that simultaneously influences health systems and medical education. Its main effects are represented in terms of benefits (innovation, access to knowledge, international cooperation) and challenges (inequities, commodification, structural dependence), evidencing its dual and complex nature



Source: prepared by the authors.

5.3 EDUCATIONAL INNOVATION

Globalisation has acted as a catalyst for innovation in the teaching-learning processes of medical education. The development of digital technologies has enabled the expansion of virtual education, facilitating access to academic content and promoting flexible and continuous learning models [21]. This transformation has been especially relevant in contexts where in-person attendance is limited, broadening training opportunities.

Likewise, the incorporation of clinical simulation tools has revolutionised practical teaching, enabling students to develop clinical skills in controlled and safe environments [22]. These strategies have improved the quality of learning and preparation for professional practice.

On the other hand, active methodologies such as problem-based learning (PBL) have gained prominence, promoting a student-centred approach oriented towards the development of clinical reasoning and decision-making [8]. To this is added the growing importance of continuing medical education, which responds to the need for permanent updating in an environment characterised by the rapid evolution of scientific knowledge [9].

5.4 EMERGING PROBLEMS

Despite the advances described, globalisation has also generated a series of problems that affect higher education in medicine. The growing privatisation of education has transformed access to knowledge into a good conditioned by economic capacity, which can deepen social inequalities and limit educational inclusion [27].

Likewise, a progressive decline in the humanistic approach in medical training has been observed, due to the prioritisation of technical and productive competencies over ethical, social and communicative aspects [33]. This imbalance may affect the integral quality of professional practice and the doctor-patient relationship.

The massification of higher education constitutes another relevant challenge. The increase in the demand for medical training, without a proportional growth in infrastructure and resources, can compromise educational quality and academic supervision [25]. Finally, inequalities in access to quality higher education persist as a structural problem, reflecting the socio-economic gaps that exist at a global level [31].

6 GLOBALISATION AND THE NEOLIBERAL APPROACH IN MEDICAL EDUCATION

The impact of globalisation on higher education in medicine cannot be fully understood without analysing its close relationship with the consolidation of neoliberal-oriented policies. This approach has promoted a reconfiguration of universities under market principles, where efficiency, competitiveness and profitability acquire a central role in educational management [27,29]. In this context, higher education institutions have shifted from models centred on the public good towards schemes that prioritise business logic, redefining their traditional functions of teaching, research and outreach.

One of the most visible elements of this transformation is the intensification of institutional competition. Universities, including medical faculties, are immersed in global positioning dynamics, where international rankings, the attraction of external funding and scientific production become key indicators of prestige and legitimacy [25]. This scenario has incentivised the adoption of strategies oriented towards maximising academic productivity, sometimes to the detriment of training quality and the social commitment of institutions.

In parallel, the privatisation of medical education has emerged as a significant trend in various contexts. The decrease in public funding has favoured the expansion of private institutions and the increase in costs associated with training, which can limit access to higher education for more vulnerable socio-economic sectors [29]. This transformation contributes to the consolidation of an educational model where knowledge is configured as a tradable

good, conditioned by the ability to pay, which raises questions about equity and social justice in access to medical training.

Another central component of the neoliberal approach is the implementation of evaluation systems based on productivity indicators. The measurement of academic performance through scientific publications, citation indices and funding obtained has redefined institutional priorities, steering university activity towards quantifiable results [25]. While these mechanisms can stimulate research and innovation, they can also generate adverse effects, such as pressure on academic staff, the fragmentation of knowledge and the prioritisation of research lines with greater profitability or international visibility.

From a critical perspective, several authors have noted that these dynamics can contribute to social exclusion and the deterioration of equity in higher education [32]. The adoption of homogeneous models, inspired by developed contexts, can prove of little relevance to local realities characterised by structural inequalities, limiting the capacity of institutions to respond to the specific needs of their communities.

Nevertheless, it is important to recognise that the neoliberal approach has also introduced certain elements that may be considered positive, such as the improvement of management systems, the internationalisation of education and the strengthening of scientific research. In this sense, the challenge does not lie in an absolute acceptance or rejection of this model, but in the construction of hybrid approaches that integrate efficiency and competitiveness with principles of equity, social responsibility and contextual relevance.

In summary, the relationship between globalisation and neoliberalism in medical education configures a complex scenario, characterised by tensions between market and right, between efficiency and equity, and between global standardisation and local diversity. Understanding these dynamics is fundamental for the design of educational policies that promote quality medical training without losing sight of its ethical dimension and its commitment to society.

7 IMPLICATIONS FOR LATIN AMERICA

In Latin America, the effects of globalisation are manifested with particular intensity due to the structural conditions that characterise the region, marked by persistent socio-economic inequalities, heterogeneous health systems and limitations in the funding of higher education. These conditions configure a scenario in which global processes not only transform but also amplify existing gaps [30,31].

One of the main challenges lies in the economic limitations faced by the countries of the region. Budgetary restrictions in key sectors such as health and education directly impact

the quality of services and the capacity of institutions to adapt to the demands of the global environment [30]. In this context, public universities, which have historically played a central role in medical training, face growing pressures to maintain quality standards under conditions of limited resources. (Figure 3)

Figure 3

Analytical scheme showing how the structural conditions of Latin America (inequality, economic limitations and fragmentation of systems) modulate the impact of globalisation. Consequences such as technological dependence, the migration of professionals and gaps in access to education and health are highlighted



Source: prepared by the authors.

Likewise, health systems in Latin America are characterised by their fragmentation, with the coexistence of public, private and social security subsystems that operate in a disjointed manner [31]. This fragmentation hinders the implementation of comprehensive health policies and limits the capacity to respond to global challenges, such as emerging diseases or epidemiological crises. Consequently, medical training is influenced by these structures, generating professionals who must adapt to complex and, in many cases, inequitable environments.

Another critical aspect is the low investment in scientific research, which restricts the production of local knowledge and the capacity for innovation in health [28]. This limitation contributes to dependence on evidence and technologies developed in external contexts, which may result in the adoption of models poorly adjusted to the epidemiological and social

realities of the region. In the field of medical education, this translates into curricula that, on occasion, prioritise global content to the detriment of relevant local problems.

Dependence on educational and health models from developed countries constitutes another significant challenge. While the adoption of international standards can contribute to improving academic quality, it can also generate processes of homogenisation that ignore the cultural, social and epidemiological particularities of Latin America [23]. This situation raises the need to develop contextualised educational approaches, capable of integrating the global with the local.

Faced with this panorama, it is essential to strengthen the role of public universities as strategic actors in the training of health professionals committed to their contexts. This implies not only guaranteeing adequate funding, but also promoting inclusive educational policies that broaden access and reduce inequalities. Likewise, it is fundamental to promote regional research, foster Latin American collaboration networks and develop medical education models that respond to the real needs of populations.

In summary, globalisation represents both an opportunity and a challenge for Latin America. Its impact on health and medical education will depend largely on the capacity of countries to design policies that balance global integration with social equity, local relevance and the strengthening of their public systems.

8 FUTURE PERSPECTIVES

The future of medical education in the context of globalisation will be profoundly influenced by the convergence of technological advances, social transformations and new demands in health. In this scenario, the incorporation of artificial intelligence (AI) emerges as one of the most disruptive factors, with the potential to redefine both clinical practice and teaching-learning processes. The integration of diagnostic support systems, the analysis of large volumes of data and adaptive learning tools will enable a more personalised, efficient and evidence-based decision-oriented medical training. (Figure 4)

Complementarily, personalised medicine emerges as a paradigm that will transform healthcare, by considering the genetic, environmental and behavioural characteristics of each individual. This approach requires a reconfiguration of medical curricula, incorporating competencies in genetics, bioinformatics and data analysis, which implies a significant challenge for educational institutions in terms of curricular updating and adaptation.

Figure 4

Timeline representing the transformation of medical education from traditional local models towards globalised, digital and competency-based approaches. The influence of globalisation on the incorporation of technologies, internationalisation and new educational paradigms is emphasised



Source: prepared by the authors.

In the pedagogical sphere, hybrid education will be consolidated as a predominant model, combining in-person strategies with virtual learning environments. This approach will allow for broadening access to medical education, making training processes more flexible and fostering autonomous and continuous learning. However, its effective implementation will require sustained investments in technological infrastructure, faculty training and quality instructional design.

Likewise, the strengthening of the global health approach will be fundamental for training professionals capable of facing transnational health challenges, such as pandemics, climate change, migration and emerging diseases. This implies the development of intercultural competencies, systems thinking and the capacity to work in multidisciplinary and international environments.

Nevertheless, these advances must be framed within a solid ethical and humanistic approach. The growing technification of medicine should not displace the human dimension of care, but rather complement it. The medical training of the future will need to balance the acquisition of technical competencies with the development of values such as empathy,

equity and social responsibility, guaranteeing person-centred care that is respectful of human dignity [33].

In summary, the future perspectives of medical education will be defined by the capacity to integrate technological innovation with humanistic principles, in a global context characterised by complexity and interdependence. The challenge for educational institutions will be to anticipate these changes, adapting their training models to prepare competent, critical professionals committed to the health of populations. (Figure 5)

Figure 5

Conceptual model in the form of a balance illustrating the need to harmonise the benefits of globalisation (innovation, internationalisation, technological development) with principles of equity, local relevance and humanistic training, as a basis for sustainable and socially responsible medical education



Source: prepared by the authors.

9 CONCLUSIONS

Globalisation has profoundly and irreversibly transformed health systems and higher education in medicine, configuring a scenario characterised by interdependence, innovation and growing complexity. This process has favoured significant advances in the generation and circulation of scientific knowledge, international cooperation and the incorporation of emerging technologies, consolidating an increasingly interconnected global health model [6,15].

However, these benefits coexist with relevant structural challenges. Globalisation has contributed to deepening inequalities in access to health services and medical education, especially in low- and middle-income contexts, where economic limitations, system fragmentation and dependence on external models persist [31,32]. Likewise, the growing commodification of education and health services raises tensions between efficiency, equity and social responsibility, questioning the role of academic institutions as guarantors of the public good.

In the field of medical education, the transition towards models oriented towards competitiveness, internationalisation and scientific productivity has generated opportunities for innovation and professional development, but it has also evidenced the need to preserve local relevance and the humanistic approach in the training of future doctors. In this sense, the incorporation of new technologies and educational methodologies must be accompanied by an ethical reflection that guarantees person-centred clinical practice.

Looking to the future, the main challenge lies in achieving a balance between global integration and social equity. This implies strengthening public health and education systems, promoting inclusive policies and fostering contextualised research that responds to the real needs of populations. Likewise, it is fundamental to promote medical training models that integrate technical competencies, critical thinking and social commitment.

In conclusion, globalisation should not be understood solely as an economic process, but as an opportunity to reconfigure medical education and health systems towards more equitable, sustainable and humanistic paradigms. The capacity of countries and institutions to adapt critically to this phenomenon will largely determine the quality of healthcare and the training of the professionals of the future.

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MUSICAL PERCEPTION IN EARLY CHILDHOOD EDUCATION (4-5 YEARS) AND DIGITAL RESOURCES: A LITERATURE REVIEW ON SOUNDSCAPE LISTENING IN THE LIGHT OF THE BNCC

PERCEÇÃO MUSICAL NA EDUCAÇÃO INFANTIL (4-5 ANOS) E RECURSOS DIGITAIS: REVISÃO DE LITERATURA SOBRE ESCUTA DE PAISAGENS SONORAS À LUZ DA BNCC

PERCEPCIÓN MUSICAL EN LA EDUCACIÓN INFANTIL (4-5 AÑOS) Y RECURSOS DIGITALES: REVISIÓN DE LA LITERATURA SOBRE LA ESCUCHA DE PAISAJES SONOROS A LA LUZ DE LA BNCC



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ABSTRACT

The presence of digital technologies in everyday school life expands possibilities for communication, recording and access to content and influences Music Education practices in Early Childhood Education. The article analyses the contributions and limits of using digital teaching resources to promote soundscape listening experiences and to develop musical perception in preschool children (4 to 5 years), understood as the capacity to direct attention to sounds, describe them, recognise them and attribute meanings to auditory experiences. A bibliographic literature review was used, complemented by documentary analysis of the Base Nacional Comum Curricular and of the Referencial Curricular Nacional para a Educação Infantil. The synthesis of the literature indicates that the exploration of soundscapes, sounds of the school environment and of everyday life, fosters active listening, the broadening of the auditory repertoire and the comparison of sound parameters, such as variations in intensity and duration, as well as contrasts of timbre and pitch, in connection with the field “Traços, sons, cores e formas” and, especially, with the EI03TS03 competence of the BNCC. The use of resources such as mobile phones, recorders, tablets and simple applications contributes mainly by allowing the capturing, re-listening, organising and documenting of sounds, supporting teaching sequences and pedagogical feedback. The effectiveness of these proposals depends on intentional teacher mediation, supervision and ethical care, as well as adaptation to the infrastructure conditions of schools.

Keywords: Early Childhood Education. Musical Perception. Soundscapes.

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RESUMO

A presença de tecnologias digitais no cotidiano escolar amplia possibilidades de comunicação, registro e acesso a conteúdo e influencia práticas de Educação Musical na Educação Infantil. O artigo analisa contribuições e limites do uso de recursos didáticos digitais para promover experiências de escuta de paisagens sonoras e desenvolver a percepção musical em crianças da pré-escola (4 a 5 anos), compreendida como a capacidade de direcionar a atenção aos sons, descrevê-los, reconhecê-los e atribuir sentidos às experiências auditivas. Utilizou-se uma revisão de literatura bibliográfica, complementada por análise documental da Base Nacional Comum Curricular e do Referencial Curricular Nacional para a Educação Infantil. A síntese da literatura indica que a exploração de paisagens sonoras, sons do ambiente escolar e do cotidiano, favorece escuta ativa, ampliação do repertório auditivo e comparação de parâmetros do som, como variações de intensidade e duração, bem como contrastes de timbre e de altura, em articulação com o campo “Traços, sons, cores e formas” e, especialmente, com a habilidade EI03TS03 da BNCC. A utilização de recursos como celulares, gravadores, tablets e aplicativos simples contribuem principalmente ao permitir capturar, reouvir, organizar e documentar sons, apoiando sequências didáticas e a devolutiva pedagógica. A efetividade dessas propostas depende de mediação docente intencional, supervisão e cuidados éticos, além de adaptação às condições de infraestrutura das escolas.

Palavras-chave: Educação Infantil. Percepção Musical. Paisagens Sonoras.

RESUMEN

La presencia de tecnologías digitales en la vida escolar cotidiana amplía las posibilidades de comunicación, registro y acceso a contenidos e influye en las prácticas de Educación Musical en la Educación Infantil. El artículo analiza las contribuciones y los límites del uso de recursos didáticos digitales para promover experiencias de escucha de paisajes sonoros y desarrollar la percepción musical en niños de preescolar (4 a 5 años), entendida como la capacidad de dirigir la atención a los sonidos, describirlos, reconocerlos y atribuir sentidos a las experiencias auditivas. Se utilizó una revisión de la literatura bibliográfica, complementada por un análisis documental de la Base Nacional Comum Curricular y del Referencial Curricular Nacional para a Educação Infantil. La síntesis de la literatura indica que la exploración de paisajes sonoros, sonidos del entorno escolar y de la vida cotidiana, favorece la escucha activa, la ampliación del repertorio auditivo y la comparación de parámetros del sonido, como variaciones de intensidad y duración, así como contrastes de timbre y altura, en articulación con el campo “Traços, sons, cores e formas” y, especialmente, con la habilidad EI03TS03 de la BNCC. El uso de recursos como teléfonos móviles, grabadoras, tabletas y aplicaciones sencillas contribuye principalmente al permitir capturar, volver a escuchar, organizar y documentar sonidos, apoyando secuencias didáticas y la devolución pedagógica. La efectividad de estas propuestas depende de la mediación docente intencional, la supervisión y los cuidados éticos, además de la adaptación a las condiciones de infraestructura de las escuelas.

Palabras clave: Educación Infantil. Percepción Musical. Paisajes Sonoros.

1 INTRODUCTION

In recent years, the incorporation of digital technologies in different educational contexts has reconfigured ways of planning activities, recording processes and sharing productions, also affecting Music Education practices (PELIZZON *et al.*, 2019). In the field of Music Education, these resources can foster listening, creation and appreciation experiences, provided they are used with didactic intentionality and adequate mediation. In Early Childhood Education, especially in preschool (children aged 4 to 5 years), sound and musical experiences (BRITO, 2003) act on integral development, involving attention, imagination, bodily expression, language and social interaction. From this perspective, musical perception is understood as a process of listening to and attributing meaning to everyday sounds, in which the child mobilises attention, differentiates sound characteristics and recognises sources and patterns, gradually broadening their understanding of the sound environment.

Among the approaches to working with listening in childhood, the exploration of soundscapes stands out, here focused as a pedagogical strategy for investigating, organising and resignifying the sounds of the school environment and of everyday life. Soundscape listening allows the child to broaden their auditory repertoire and develop active listening, by comparing timbres, intensities, durations and pitches, in addition to perceiving differences between natural sounds and sounds generated by human actions.

In Brazil, the Base Nacional Comum Curricular (BNCC) (BRASIL, 2018) guides pedagogical work in Early Childhood Education (ROSA, 2020) through Fields of Experience, articulating learning rights and objectives to be developed. In the field “Traços, sons, cores e formas”, the BNCC sets out objectives related to the exploration and recognition of sound qualities, such as intensity, duration, pitch and timbre, in listening, production and appreciation activities. In particular, the EI03TS03 competence (BRASIL, 2018) indicates that children should recognise such qualities when listening to music (BRITO, 2003) and sounds and use them in their productions. This guidance directly dialogues with proposals for listening to the environment and to everyday life, since soundscapes offer a great variety of auditory stimuli for observation, comparison, description and organisation, contributing to musicalisation practices (ROSA, 2020) that are more connected to children's experiences. Furthermore, other competences may be articulated with this work, insofar as listening may involve bodily participation in games and play (as in situations of movement and sound response), multimodal records of experiences and the socialisation of ideas and feelings in collective contexts.

In this scenario, digital resources (such as recorders, mobile phones and tablets) can support pedagogical work by enabling the recording of sounds, oriented second listening and the monitoring of experiences carried out with the group. However, the use of technologies with young children also requires care: selection/supervision of materials, suitability to the age group, safety, exposure time, privacy and clear definition of pedagogical objectives.

This article is guided by the research question: what contributions and limits does the literature in Portuguese and other languages present on the use of digital teaching resources to promote soundscape listening experiences (SCHAFER, 2001) and musical perception with children aged 4–5 years, and how do these proposals dialogue with BNCC competences (with codes) (BRASIL, 2018) and guidelines of the Referencial Curricular Nacional para a Educação Infantil (RCNEI) (BRASIL, 1998)? As a general objective, it seeks to analyse the contributions and limits of using digital teaching resources for the development of musical perception, focusing on soundscape listening, in children aged 4–5 years, articulating findings from the literature with BNCC competences (BRASIL, 2018) and RCNEI guidelines (BRASIL, 1998). Specifically, it intends to select and systematise a set of studies on the topic, examine how they describe digital resources and teacher mediation strategies, and relate the findings to curricular guidelines, indicating pedagogical implications for preschool.

Methodologically, this is a bibliographic literature review, with a qualitative approach, complemented by documentary analysis of the BNCC (BRASIL, 2018) and the RCNEI (BRASIL, 2018). The survey will be carried out in academic databases (such as Google Acadêmico, SciELO and Periódicos CAPES) and in institutional repositories, with descriptors related to musical perception, early childhood education, soundscape (SCHAFER, 2001), (GERALDES, 2014) and digital technologies. The selected materials will be analysed by categories, aiming to identify the types of resources used, the ways of conducting listening activities, the modes of recording and assessment and the limits pointed out by the authors, in order to then discuss their articulation with learning objectives of Early Childhood Education (ROSA, 2020) in the Brazilian context.

The article is organised into four main sections: in the Introduction, the delimitation of the theme, the problem, the justification, the objectives and the methodology are presented; in the Methodology section, the procedures for searching, selecting and analysing the material are detailed; in the Literature review/State of the art section, the theoretical foundations and the results of the synthesis of the selected studies are discussed, articulating them with the BNCC (BRASIL, 2018) and the RCNEI (BRASIL, 1998). And finally, in the Final considerations, the central findings are taken up again, contributions and limits are made

explicit and implications for teaching practice and possibilities for future research are indicated.

2 METHODOLOGY

This work is characterised as a bibliographic literature review, with a qualitative approach, complemented by documentary analysis of normative documents that guide Early Childhood Education (ROSA, 2020) in Brazil, specifically the Base Nacional Comum Curricular (BNCC) (BRASIL, 2018) and the Referencial Curricular Nacional para a Educação Infantil (RCNEI) (BRASIL, 1998). The choice of a bibliographic review is justified because it allows mapping, organising and interpreting the academic production on the use of digital teaching resources in soundscape listening experiences and in the development of musical perception with children aged 4–5 years (preschool), articulating the findings with the prescribed curriculum.

The study focused on publications from the last 10 years, encompassing up-to-date developments on digital resources and pedagogical practices in music education in childhood (PELIZZON *et al.*, 2019). Studies published in this interval in Portuguese and English were considered, since these are the languages of both national production and the international literature on music education, listening and educational technologies.

The research was bibliographic, based on books, scientific articles, theses, dissertations and official documents, such as the Base Nacional Comum Curricular (BNCC) (BRASIL, 2018). The instruments for the bibliographic survey were academic databases, such as Google Acadêmico, Scielo, Periódicos CAPES and institutional repositories of universities. In addition, teaching materials and manuals available on educational platforms were consulted. This approach allowed a solid and well-grounded theoretical analysis, which served as support for musical perception in early childhood education (4-5 years) and digital resources.

The search was guided by descriptors associated with four axes: (a) Early Childhood Education/preschool; (b) musical perception/listening; (c) soundscape; (d) digital resources/technologies.

3 LITERATURE REVIEW/STATE OF THE ART

3.1 MUSICAL PERCEPTION AND LISTENING IN EARLY CHILDHOOD EDUCATION (4–5 YEARS)

In Early Childhood Education, music (BRITO, 2003) can be understood as a language that is expressed through sounds, silences, rhythms, timbres and gestures, being

experienced in play, songs, games, explorations and interaction situations. For children aged 4–5 years, a phase in which curiosity, imagination and the capacity for symbolisation intensify, meaningful musical experiences contribute to the development of sensitivity, attention, bodily expression and communication. In this context, musical perception can be understood as a set of capacities related to listening attentively, distinguishing sound characteristics, recognising patterns and attributing meanings to what is heard, whether in music or in everyday sounds.

From a perspective suited to childhood, perceptual development (MA *et al.* 2022) occurs when the child has opportunities to experiment, repeat, compare, imitate, create and talk about what they heard. Thus, musical perception is constructed in concrete situations: distinguishing loud and soft sounds in “echo” games; perceiving short and long sounds when clapping hands or playing percussion instruments; recognising different timbres (for example, clapping and voice); noticing contrasts between high and low sounds, even if the child describes them in everyday terms (such as “thin” and “thick”). These practices, in addition to promoting musical learning, tend to strengthen attention and auditory memory skills, which are important for overall development.

Listening, therefore, is not reduced to a “passive” activity of hearing. It can be planned as active listening, that is, listening guided by pedagogical intentions and by the teacher's interventions. Active listening involves directing attention to certain aspects of sound, seeking differences and similarities, raising hypotheses (“what could have made that sound?”), describing sensations and sharing interpretations with classmates. In Early Childhood Education, this is carried out in a way compatible with play: sound guessing games (“what sound is that?”), exploration of everyday objects, conversation circles about environmental sounds, dramatisations that use sounds as part of the narrative and vocal/bodily imitation activities of sounds.

The teacher has the responsibility to create situations in which the child is invited to perceive and express what they hear, without transforming the musical experience into a formal or assessment requirement that is inappropriate for the age group (ROSA, 2020). By planning simple questions and gradual teaching sequences, the teacher can help the child to broaden their repertoire and develop ways of talking about sounds, also favouring interdisciplinary work with oral language, visual arts (records through drawing) and movement (bodily responses). Thus, musical perception is constructed in a processual way, articulating experience, reflection and expression.

The BNCC (BRASIL, 2018) reinforces the importance of these experiences by guiding that preschool children recognise sound qualities when listening to music and sounds and

use them in their productions (EI03TS03). This guideline supports pedagogical practices aimed at listening and sound exploration, sustaining the idea that developing musical perception in childhood implies offering intentional opportunities for listening, comparison and creation, connected to the child's real experiences.

3.2 SOUNDSCAPE AND EVERYDAY LISTENING: CONCEPTS AND PEDAGOGICAL POSSIBILITIES IN PRESCHOOL

In pedagogical terms, working with soundscapes (SCHAFER, 2001) means considering that the environment in which the child lives and moves, the school, the home, the street, the square is also a space for auditory learning, full of sound events that can be perceived, organised and interpreted.

By proposing situations of listening to the environment, the teacher invites the child to perceive sounds that, in everyday life, tend to be ignored because they are always present (such as the fan, footsteps in the corridor, birds, water, doors, cars in the distance). This attention to the “sound of the world” can favour the broadening of the auditory repertoire and the formation of listening attitudes, essential for musical perception.

One possibility is to carry out a brief listening journey in the school space, with short pauses for the children to identify striking sounds and share what they perceived. At a later moment, the records can be grouped by categories constructed with the group itself, helping to perceive that the environment is composed of different sound layers (BRITO *et al.*, 2003).

It is also possible to relate soundscapes to expressive and creative aspects. After listening to the environment, the children can represent sounds through drawings (lines, dots, shapes), through movements (large gestures for loud sounds, small gestures for soft sounds) or through vocalisations and objects (imitating rain with fingers and hands, imitating a bird with the voice, creating “story sounds”). These activities connect listening and production, helping the child to understand that sound can be explored, transformed and used to communicate ideas and feelings.

Finally, when considering the BNCC (BRASIL, 2018), the soundscape approach proves coherent with the objective of favouring that children recognise sound qualities (intensity, duration, pitch and timbre) when listening to music and sounds and when using them in productions (EI03TS03) (BRASIL, 2018). Everyday life offers, in a rich and varied way, opportunities for this recognition: doors with different timbres, footsteps on distinct surfaces, water in varied containers, wind, leaves, voices at different intensities.

3.3 TEACHER MEDIATION: INTENTIONALITY, ORGANISATION OF THE ENVIRONMENT AND CONDUCT OF LISTENING

Pedagogical intentionality consists, first of all, of the teacher defining what they intend to develop in a given sequence of activities. In the case of soundscape listening (SCHAFER, 2001), this intentionality can be directed towards the development of auditory attention, the recognition of sound qualities (loud/soft, long/short, high/low, different timbres), the broadening of the listening repertoire, the expression of perceptions and the socialisation of experiences.

Another element is the organisation of the environment to favour listening. In preschool, “hearing” is deeply influenced by concrete conditions: excessive noise, intense circulation, multiple visual stimuli and frequent interruptions can hinder auditory attention. Thus, the teacher can organise specific moments of listening in which the group is arranged and welcomed for this experience: forming a circle, reducing parallel stimuli, establishing simple agreements (such as “let us be silent for a few seconds to listen”) and providing for alternation between listening and movement (PONICK, 2023).

The conduct of listening is the basis of mediation. Young children can perceive sounds in a very sensitive way, but they cannot always maintain attention or verbalise what they heard. For this reason, the teacher can use guiding questions and simple challenges, in a progressive manner. At first, more open questions help to activate perception: “What did you hear?”, “Where did that sound come from?”, “Was it near or far?”. Then, comparative questions can deepen the listening: “Which sound was louder?”, “Did that sound last more or less?”, “Does that sound seem the same as or different from that one?”. This type of conduct stimulates the child to advance from “I heard a noise” to a more qualified description, even if not technical, bringing the experience closer to the development of musical perception.

In activities with soundscapes (PEDRESKI *et al.*, 2024), a “down-to-earth” didactic practice is directed listening followed by socialisation. For example, after a soundwalk in the playground, the teacher can take up again, in the classroom, what was heard, organising the conversation with the support of simple groupings defined with the children, in order to structure what was perceived and favour comparisons between the sounds.

When digital resources are used, teacher mediation becomes even more important, since it is necessary to avoid that the “use of technology” overrides the musical objective. A recording, for example, only becomes educational if the teacher guides the listening of what was recorded, promotes comparisons and helps the children to perceive sound details. A simple procedure is to play the same audio two or three times, with different focuses: the first time, “let us just listen”; the second, “let us discover how many different sounds appear”; the

third, “let us identify the loudest and the softest sound”. This type of repetition with progressive focus tends to favour the recognition of sound qualities, contributing directly to the BNCC (EI03TS03) (BRASIL, 2018).

Mediation includes the selection and supervision of sound material. The teacher can decide, for example, to record only short excerpts, with clearly identifiable sounds, so as not to confuse the group; they can avoid recordings with identifiable speech of children (for privacy) and prioritise environmental sounds.

Another aspect is the documentation and recording of experiences, conducted in a way compatible with Early Childhood Education. The teacher can propose records through drawing (“draw the sound you liked best”), through collage (“paste images of things that made sounds on the outing”), through photographs of the route (when permitted) and through small statements of the children transcribed by the teacher (“the child said the sound seemed like rain”). These records help to make the learning process visible and serve to plan the next steps: if many children confuse loud/soft, the teacher can propose new contrast games; if they perceive timbres easily, they can deepen with comparisons of materials (metal, wood, plastic).

Teacher mediation, finally, involves recognising that listening is also a social practice: children learn by listening to others, by waiting their turn, by agreeing and disagreeing about what was heard, by justifying their perceptions (“I think it was a frog because ...”). Thus, when planning and conducting activities with soundscapes and digital resources, the teacher acts as an organiser of experiences, broadening auditory sensitivity and promoting learning compatible with the child's age and with curricular guidelines.

3.4 DIGITAL RESOURCES AS DIDACTIC SUPPORT FOR LISTENING EXPERIENCES IN PRESCHOOL (4–5 YEARS)

The use of digital resources in Early Childhood Education (ROSA, 2020) can broaden possibilities for pedagogical work with listening, provided that these resources are understood as means (and not as ends in themselves) and that their use is aligned with clear learning objectives. In the case of music education with children aged 4–5 years, simple technologies that are already present in everyday school and family life, such as mobile phones, tablets, recorders, speakers and basic audio applications, can support active listening practices, favouring the development of musical perception through the exploration of environmental sounds, that is, soundscapes.

A first contribution of digital resources concerns the capturing for relisting of everyday sounds. In practice, the recording of surrounding sounds (for example, sounds of

the playground, of the classroom, of the corridor, of the wind, of the rain, of the gate, of footsteps, of objects being handled) allows the child to return to the auditory experience at another moment, in a situation of greater calm and concentration, comparing records and perceiving details that may go unnoticed “in the heat of the moment”. This return to the recorded sound creates conditions for the teacher to propose questions and challenges suited to the age group, such as: “Is that sound loud or soft?”, “Is it long or short?”, “Does it seem high or low?”, “Is it a smooth or rough sound?”, “Is it a continuous or choppy sound?”, “Is it a sound of nature or made by someone?”. Even if the child does not use technical terms, the essential thing is that they are led to differentiate, compare and attribute meanings to what they hear, broadening repertoire and auditory attention.

Furthermore, digital resources can favour the didactic organisation of a collection of sounds, functioning as a “sound library” of the class. The teacher can store recordings in folders with simple names (for example: “school sounds”, “street sounds”, “nature sounds”, “body sounds”) and use them in pedagogical sequences over weeks. This type of organisation contributes to giving continuity to the work with listening, avoiding that the activities become punctual or episodic. By revisiting old recordings, the children can perceive changes of environment (for example, the difference between a rainy day and a sunny day in the playground), identify recurring sounds and build auditory memory, aspects related to musical perception.

Digital resources can also support activities of classification and sound mapping, in a language accessible to Early Childhood Education (PELIZZON *et al.*, 2019). A “down-to-earth” example consists of carrying out a soundwalk through the school space and, after listening, producing with the children a simple “map” of the route: on a sheet of cardboard, the path is drawn (classroom → corridor → playground), and the teacher inserts icons/images to represent the recorded sounds (bird, door, water, footsteps), possibly including a QR code or link (when the school allows) to access the corresponding audio. Even when there is no infrastructure for QR codes, the activity can take place in an analogous way: the teacher plays the audio and the children point on the map where that sound was heard. This type of dynamic integrates listening, memory, language and organisation of thought, maintaining the centrality of the musical experience.

In the field of musical creation (BRITO, 2003), even without using complex software, it is possible to explore the assembly of small sound narratives. For example, after recording everyday sounds, the teacher can propose that the class create a “story with sounds”: beginning (a sound of a door opening), middle (footsteps, voices in the distance, water), end (a bird, silence). The “editing” can be done in a simple way, even just by choosing the order

of playback of the audio in a playlist. Musical learning, in this case, appears both in the listening and in the temporal organisation (sequence, repetition, contrasts), bringing the children closer to fundamental notions of sound language in a playful manner suited to the age.

Despite these contributions, the pedagogical use of digital resources needs to consider limits and care. A central care is didactic intentionality: recording and listening to sounds only makes educational sense when the teacher defines what they intend to develop (for example, auditory attention, recognition of timbres, sound contrasts, participation in the circle, recording of experiences) and creates interventions compatible with the age group.

Another care is supervision: selecting content, environments and materials that do not expose the children to inappropriate sounds or excessive stimuli. Highlighting the need for attention to aspects of safety and privacy, especially in audio and video recordings, which must respect institutional rules and family authorisations, avoiding undue exposure of the children.

Finally, it is important to recognise that the school reality is heterogeneous: not all schools have equipment, internet or conditions for using certain tools. In this sense, when the use of digital resources is proposed broadly, it is recommended to favour accessible and adaptable solutions, such as the controlled use of a single device of the teacher for recording and playback, or the sharing of sounds in an offline environment. The focus, therefore, remains on listening and on pedagogical mediation, understanding the digital resource as support to broaden possibilities of sound experience and reflection in preschool.

3.5 DIALOGUE WITH THE BNCC AND THE RCNEI: COMPETENCES AND PEDAGOGICAL IMPLICATIONS FOR SOUNDSCAPE LISTENING

The articulation between proposals for soundscape listening, digital resources and the development of musical perception in early childhood education (ROSA, 2020) finds support in the BNCC, which organises the curriculum by fields of experience and sets out learning objectives for preschool. In the field “Traços, sons, cores e formas”, the EI03TS03 competence stands out (BRASIL, 2018), which guides work with the recognition of sound qualities such as intensity, duration, pitch and timbre, when listening to music and sounds and when using them in sound productions.

In this sense, the use of digital resources can enhance the pedagogical implementation of EI03TS03 by allowing repetition, comparison and resumption of the sound material. In practice, when the teacher records everyday sounds and plays them at distinct moments, space is opened for the children to identify differences in timbre (for example,

paper crumpling versus plastic crumpling), in intensity (the fall of a light object versus a heavier object), in duration (a short sound of clapping versus a continuous sound of running water) and in pitch (more “thin” and more “thick” sounds). Technology, in this case, contributes to making listening more observable and organised, without substituting the experiential and playful character proper to Early Childhood Education.

In addition to EI03TS03, proposals for listening and soundscape (SCHAFER, 2001), (GERALDES, 2014) can dialogue with other BNCC competences when integrated with bodily, expressive and communicative experiences. Listening activities can be organised in the form of games and play that involve movement, pause, imitation and bodily response to sound (for example, walking to the rhythm of long/short sounds; freezing in silence; representing with the body a “loud” sound and a “soft” sound), strengthening the integration between sound and body. Likewise, recording practices such as drawings of what was heard, photographs of the sound route, production of posters and conversation circles, favour the children expressing their perceptions and constructing meanings collectively.

The documentary analysis also considers guidelines of the RCNEI (BRASIL, 1998), which, although prior to the BNCC (BRASIL, 2018), remains an important reference for understanding principles of work with languages in early childhood education, including experiences with music and sounds. In pedagogical terms, the RCNEI (BRASIL, 2018) reinforces the need to propose meaningful situations, respecting childhood as a time of experimentation, play, interaction and expression.

From the point of view of teacher planning, the articulation of the BNCC (BRASIL, 2018) and the RCNEI (BRASIL, 1998) suggests some practical implications. Firstly, it is recommended that the listening proposal be organised as a teaching sequence, and not as an isolated activity: starting with listening in the environment (exploration), advancing to recordings and listening (comparison), proposing simple classifications (organisation), stimulating sound productions (creation) and ending with socialisation and records (documentation). Secondly, the centrality of the teacher's mediation is reinforced: it is the teaching intervention that transforms “hearing sounds” into musical learning, through questions, provocations, listening, contrasts and the broadening of vocabulary. Thirdly, it is necessary to consider ethical and suitability care when digital resources are used, ensuring that the focus remains on the educational experience and that the use of technology is at the service of child development.

Thus, by dialoguing with the BNCC (BRASIL, 2018) and the RCNEI (BRASIL, 1998), soundscape listening with the support of digital resources can be understood as a consistent pedagogical possibility for preschool: it promotes meaningful listening experiences, broadens

the sound repertoire, favours the perception of sound qualities and stimulates expression and communication, central elements for musical development in childhood.

3.6 SYNTHESIS AND DISCUSSION OF THE SELECTED STUDIES (FOUR CENTRAL STUDIES AND ONE CONCEPTUAL-BASIS STUDY)

This stage brings together and discusses 4 studies that address the soundscape (SCHAFFER, 2001), (GERALDES, 2014) and environmental listening in educational contexts, with an emphasis on Early Childhood Education, articulating such evidence with the objective of this work: to understand pedagogical possibilities for developing listening, perception and reflection on everyday sounds, in dialogue with music education and with the guiding documents of the BNCC (BRASIL, 2018) and the RCNEI (BRASIL, 1998), taking digital resources as a transversal support (recording, organisation and feedback of experiences).

In general, the 4 selected studies converge on three points: (a) the soundscape (SCHAFFER, 2001), (PONICK, 2023) is not just an acoustic “background”, but a cultural and educational component; (b) the development of listening involves intentional teacher mediation (organisation of the environment, investigation proposals and systematisation); and (c) practices such as soundwalks and recording/description activities favour the passage from spontaneous listening to more conscious, analytical and sensitive listening. The 4 selected studies follow.

3.6.1 Theoretical contributions - concept, historicity and educational uses of the soundscape (study 1)

On the conceptual and historical level, study 1 (Paisagem sonora: conceito, história e usos na educação musical) (PEDRESKI *et al.*, 2024) offers a basis for delimiting the term “soundscape” and sustaining its use in music education. By situating the concept and discussing its didactic uses, the text contributes to understanding that the soundscape (SCHAFFER, 2001), (GERALDES, 2014) can be treated as an object of appreciation, analysis and creation, shifting the idea of music restricted to the formal repertoire to also include everyday sounds as pedagogical material. This foundation is especially useful for Early Childhood Education, as it legitimises proposals centred on sound exploration, listening and experimentation, favouring an approach compatible with the characteristics of preschool: curiosity, play, imagination and learning through experience.

In summary, study 1 theoretically sustains that working with the soundscape (PONICK, 2023) in Early Childhood Education (ROSA, 2020) is not an “extra activity”, but a consistent possibility of sensitive and contextualised music education.

3.6.2 Empirical and practical contributions - Early Childhood Education and the formation of a “thinking listening” (study 2)

With regard to pedagogical practice directly linked to Early Childhood Education, study 2 (*Paisagem sonora na Educação Infantil: o caminhar para uma escuta pensante através de ações do PIBID*) (LANDGRAF, 2017) stands out for making explicit a methodological direction compatible with what this article proposes: to promote, in children, listening that gradually becomes more conscious and reflective, here named “thinking listening” (PONICK, 2023). Study 2, in dealing with formative actions and interventions in an educational context, points to the importance of proposing situations in which children can: (a) listen with intention; (b) name and differentiate sounds; (c) relate sounds to sources/actions; and (d) collectively reconstruct meanings about what was heard.

3.6.3 The soundwalk as a pedagogical strategy applicable to preschool (study 3)

Among the international studies, study 3 (*Let the children listen: a first approximation to the assessment of the children's sound environment through a Soundwalk approach*) (ESTÉVEZ MAURIZ *et al.*, 2020) is interesting to justify as a structuring strategy. Even though the study is not exclusively restricted to 4–5 years, it provides a robust argument: the assessment and understanding of the sound environment can be accessed through guided listening experiences in the territory itself, mobilising perception, attention, description and expression.

By bringing the soundwalk as an approach, Study 3 reinforces that active listening is not reduced to “hearing sounds” in a spontaneous way; it can be organised in didactic stages, such as: preparation (agreements, focus of listening), route (attention to sound sources and environmental changes), recording (drawing, report, simple markings) and feedback/systematisation (socialisation of what was heard, comparison of perceptions, choice of the most striking sounds). This structure is easily adaptable to preschool (4–5 years) with adjustments: short and safe routes, reduced time, records predominantly through drawing and orality, and teacher mediation through simple questions (“what sound is that?”, “where does it come from?”, “is it near or far?”, “is it a ‘loud’ or ‘soft’ sound?”).

In this adaptation, digital resources can appear as transversal didactic support (without “taking over” the protagonism of the activity): recording of small excerpts for later listening, creation of a “sound archive of the class”, comparison between moments (morning/afternoon; classroom/playground), or production of a short audio sequence for socialisation with families. Thus, study 3 methodologically sustains a practice that, although simple, is highly

aligned with the objective of music education in Early Childhood Education: to form sensitivity, attention and expression through listening to the world.

3.6.4 Evidence on the perception of the soundscape in preschool children (study 4)

Study 4 (Caracterização da percepção da paisagem sonora de crianças na pré-escolar) (MA *et al.*, 2022) contributes by offering an empirical focus centred on the preschool, reinforcing that the perception of sound environments by children can be investigated and characterised, and that this audience responds significantly to the qualities of the acoustic environment. For the present work, this type of evidence is useful in two senses: (a) it confirms that preschool is a pertinent context for studies on soundscape (PONICK, 2023) and listening; and (b) it justifies that pedagogical proposals for listening (such as soundwalks and activities of classification/description of sounds) are not “too advanced”, since the perception and assessment of the sound environment are part of the possible repertoire of children.

Even though study 4 is in the interdisciplinary field (with an interface with the built environment/acoustics), its inclusion broadens the dialogue beyond strict music education, showing that the soundscape (PONICK, 2023) is also a phenomenon for well-being, everyday experience and the understanding of space and dimensions that can be worked on pedagogically in Early Childhood Education (ROSA, 2020) in an integrated way (listening, movement, language, social relations and environment).

3.6.5 Synthesis of contributions and pedagogical implications

By integrating the findings and contributions, it is possible to organise a synthesis into four pedagogical implications for preschool (4–5 years), coherent with the set of studies and with the focus of this work:

- a) The soundscape as educational content/object: based on study 1, the soundscape can be treated as legitimate material of music education, articulating listening, sensitivity and culture.
- b) Intentional and progressive teacher mediation: study 2 shows that the passage to a “thinking listening” depends on planned proposals, with stages, guiding questions and collective feedback.
- c) The soundwalk as a central didactic device: study 3 sustains the soundwalk as a strategy for structuring active listening in the territory, with possibilities of adaptation to preschool.
- d) Empirical validation of the focus on preschoolers: study 4 reinforces that preschool children can perceive and respond to the qualities of the sound environment, supporting the pertinence of the age focus and of the pedagogical investment in listening practices.

In this way, the set of selected studies supports the proposition of activities involving: exploration of everyday sounds (playground, classroom, surroundings), soundwalks, records through drawing and language, comparison of sounds, creation of small “sound maps” of the school and socialisation of the findings. Digital resources (mobile phone/tablet/simple apps) can appear transversally as instruments of recording, organisation and later listening, strengthening the process without substituting the bodily and sensory experience of listening in the environment.

4 FINAL CONSIDERATIONS

This article aimed to analyse, on the basis of a literature review and documentary analysis, the contributions and limits of using digital teaching resources for the development of musical perception in children aged 4–5 years, focusing on soundscape listening experiences, articulating the discussion with the guidelines of the BNCC (BRASIL, 2018) and the RCNEI (BRASIL, 1998). Throughout the text, it was argued that listening in Early Childhood Education (ROSA, 2020) should be understood as a formative and intentional practice, capable of broadening auditory repertoires, favouring attention and supporting processes of expression and communication, especially when organised in playful and contextualised situations.

This study worked with the field of experience “Traços, sons, cores e formas” of the BNCC and, more specifically, with the EI03TS03 competence (BRASIL, 2018), favouring that children recognise sound qualities in situations of listening and sound production.

With regard to digital resources, it was observed that their main contribution does not lie in “modernising” the lesson, but in broadening conditions for recording, revisiting, comparing and organising listening experiences. The recording of environmental sounds, for example, allows relistening at distinct moments and with varied focuses, favouring that the child perceives details and refines their auditory attention. Likewise, the organisation of small sound collections, as well as the use of multimodal records (audio, photos and children's productions), can support pedagogical documentation, making the learning process more visible to the teacher, to the class and, where pertinent, to families.

However, the discussion also makes evident the necessary limits and care. A first limit is the understanding that technology, by itself, does not guarantee learning: the listening experience requires teacher mediation, planning and intentionality. Thus, a recurring risk is that the activity becomes centred on the use of the device (recording, pressing buttons, “listening to an audio”) and not on the formation of attitudes of listening, comparison and reflection. Another important limit concerns the concrete conditions of schools, since

infrastructure, access to equipment and connectivity vary widely between schools, which requires that pedagogical proposals be adaptable and viable also in contexts with few resources.

In pedagogical terms, this work reinforces that the implementation of soundscape listening activities with digital resources tends to be more consistent when organised as a teaching sequence, articulating exploration of the environment, oriented listening, simple classification, sound production/representation and documentation. In this sequence, the teacher assumes the role of organiser of the experience, proposing guiding questions, contrasts and listening, and favouring forms of expression compatible with childhood, such as drawings, movements, play and conversation circles. This perspective dialogues with principles present in curricular and guiding documents, by valuing learning through experience, through play and through interaction.

In future research, it is suggested to broaden empirical investigations in Brazilian schools, analysing how soundscape listening can be integrated into teacher planning in different realities and how pedagogical documentation can support the monitoring of musical learning in Early Childhood Education.

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ANALYSIS OF RESEARCH ON SCHOOL ABSENTEEISM: TECHNICAL-TECHNOLOGICAL PRODUCTS AND THEIR CONTRIBUTIONS

ANÁLISE DE PESQUISAS SOBRE INFREQUÊNCIA ESCOLAR: PRODUTOS TÉCNICO-TECNOLÓGICOS E SUAS CONTRIBUIÇÕES

ANÁLISIS DE INVESTIGACIONES SOBRE INASISTENCIA ESCOLAR: PRODUCTOS TÉCNICO-TECNOLÓGICOS Y SUS CONTRIBUCIONES



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ABSTRACT

This study, of a bibliographic nature, has as its central objective to map and analyse academic productions — Theses, Dissertations and Technical-Technological Products (Educational Products) — available in the Digital Library of Theses and Dissertations (BDTD), which directly address school absenteeism in Basic Education. The investigation departs from two main questions: how do the studies describe the factors that contribute to school absenteeism in Basic Education? And in what way have Technical-Technological Products been proposed as interventions to understand, confront and mitigate this problem? The research is qualitative and is grounded in the foundations of Historical-Critical Pedagogy. Based on the analysis of seven dissertations, it was found that the causes of absenteeism are multiple — familial, educational, social and economic — and that there is still a scarcity of Technical-Technological Products addressing the theme, although the existing ones present consistency, objectivity and a preventive character.

Keywords: School Absenteeism. Technical-Technological Products. Basic Education. Historical-Critical Pedagogy. Dropout.

RESUMO

Este estudo, de natureza bibliográfica, tem como objetivo central mapear e analisar produções acadêmicas — Teses, Dissertações e Produtos Técnico-Tecnológicos (Produtos Educacionais) — disponíveis na Biblioteca Digital de Teses e Dissertações (BDTD), que abordam diretamente a infrequência escolar na Educação Básica. A investigação parte de duas perguntas principais: como as pesquisas descrevem os fatores que contribuem para a infrequência escolar na Educação Básica? E de que forma os Produtos Técnico-Tecnológicos têm sido propostos como intervenções para compreender, enfrentar e mitigar esse problema? A pesquisa é qualitativa e apoia-se nos fundamentos da Pedagogia Histórico-Crítica. A partir da análise de sete dissertações, constatou-se que as causas da infrequência são múltiplas — familiares, escolares, sociais e econômicas — e que ainda há escassez de Produtos Técnico-Tecnológicos voltados ao tema, embora os existentes apresentem consistência, objetividade e caráter preventivo.

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Palavras-chave: Infrequência Escolar. Produtos Técnico-Tecnológicos. Educação Básica. Pedagogia Histórico-Crítica. Evasão.

RESUMEN

Este estudio, de naturaleza bibliográfica, tiene como objetivo central mapear y analizar producciones académicas — Tesis, Disertaciones y Productos Técnico-Tecnológicos (Productos Educativos) — disponibles en la Biblioteca Digital de Tesis y Disertaciones (BDTD), que abordan directamente la inasistencia escolar en la Educación Básica. La investigación parte de dos preguntas principales: ¿cómo describen las investigaciones los factores que contribuyen a la inasistencia escolar en la Educación Básica? ¿Y de qué forma los Productos Técnico-Tecnológicos han sido propuestos como intervenciones para comprender, enfrentar y mitigar este problema? La investigación es cualitativa y se apoya en los fundamentos de la Pedagogía Histórico-Crítica. A partir del análisis de siete disertaciones, se constató que las causas de la inasistencia son múltiples — familiares, escolares, sociales y económicas — y que aún existe escasez de Productos Técnico-Tecnológicos dirigidos al tema, aunque los existentes presentan consistencia, objetividad y carácter preventivo.

Palabras clave: Inasistencia Escolar. Productos Técnico-Tecnológicos. Educación Básica. Pedagogía Histórico-Crítica. Deserción.

1 INTRODUCTION

Brazilian education, as established by the Constituição Federal de 1988 and the Lei de Diretrizes e Bases da Educação Nacional (Lei nº 9.394/1996), is recognised as a fundamental, inalienable social right grounded in the promotion of quality. These legal instruments guide the State regarding students' rights and the level of education that must be offered to them. As established by Article 208, item V, of the Constituição Federal, the “acesso aos níveis mais elevados do ensino, da pesquisa e da criação artística, segundo a capacidade de cada um” must be ensured (Brasil, 1988).

Although the Constituição Federal does not specify which are the higher levels of education, it indicates that such access must be grounded in conditions favourable to students' development; the matter is complemented by the LDB, in Article 4, item IX, as “padrões mínimos de qualidade de ensino, definidos como a variedade e a quantidade mínimas, por aluno, de insumos indispensáveis ao desenvolvimento do processo de ensino-aprendizagem, adequados à idade e às necessidades específicas de cada estudante, [...]” (Brasil, 1996).

However, despite the legal frameworks, historical challenges persist in Brazilian education, and one of them is school absenteeism. But, after all, what is school absenteeism? This phenomenon is characterised by students' recurrent absence from classes, compromising their continuity in the teaching-learning process and, often, preceding more serious situations, such as school dropout or abandonment. This absence occurs so persistently that it compromises both academic performance and their passing of the year.

When investigating the origin of the word *infrequência* (absenteeism), we perceive that it derives from the prefix “in”, which indicates negation or absence. The term “*frequência*” comes from the Latin *frequentia*, which refers to constant presence in a given space. Thus, school absenteeism manifests itself through the student's continuous absence from the school environment, affecting their curricular activities and, consequently, their learning.

School absenteeism is a warning sign. The Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira (Inep, 2022) recognises it as one of the main causes of school abandonment and dropout. According to the institute, abandonment refers to the prolonged interruption of attendance even before the end of the school year. In view of this, it is up to the school to closely monitor students' attendance, identifying possible risk situations in advance and taking measures that favour their permanence.

Among these measures are contact with the guardians, the action of the Conselho de Escola and, in some cases, communication with the Conselho Tutelar, as the LDB states in Article 12, item VII: “Informar pai e mãe, conviventes ou não com seus filhos, e, se for o caso,

os responsáveis legais, sobre a frequência e rendimento dos alunos, bem como sobre a execução da proposta pedagógica da escola” (Brasil, 1996). And also to alert the Conselho Tutelar as determined by the LDB, Article 12, item VIII: “Notificar ao Conselho Tutelar do Município a relação dos alunos que apresentem quantidade de faltas acima de 30% (trinta por cento) do percentual permitido em lei” (Brasil, 1996).

Besides absenteeism and abandonment, the INEP (2022) also defines what school dropout is. For the institute, it concerns the student's definitive withdrawal, identified when they do not return to school the following year and do not enrol in another educational institution either. According to the LDB, in Article 24, item VI, a minimum attendance of 75% of classes is mandatory for passing the year (Brasil, 1996).

The Estatuto da Criança e do Adolescente (ECA) reaffirms the State's responsibility to guarantee not only access but also students' permanence in school. Article 54, § 3, determines that “competes ao poder público recensear os educandos no ensino fundamental, fazer-lhes a chamada e zelar, junto aos pais ou responsável, pela frequência à escola” (Brasil, 1990).

Article 56 of the ECA reaffirms what is set out in Article 12 of the LDB, namely that the directors of primary education establishments must inform the Conselho Tutelar of cases of repeated unjustified absences and school dropout, after the exhaustion of school resources. These legal provisions demonstrate that school absenteeism cannot be treated as the exclusive responsibility of families, but rather as a collective challenge, requiring articulated attention between school, public authorities and community.

For Saviani (1991), education must be a space of social transformation, where criticism and collaboration are fundamental values. From this perspective, it becomes essential to rethink pedagogical strategies, promoting students' active participation and confronting the factors that contribute to absenteeism. This effort is indispensable to guarantee a more inclusive and meaningful education.

Research such as that of Branco *et al.* (2020) and Dore, Sale and Castro (2014) show that the causes of school absenteeism are multiple and involve familial, educational and economic dimensions. In line with these studies, UNICEF highlights that the Covid-19 pandemic further aggravated the situation, especially affecting students in contexts of greater social vulnerability.

In view of this scenario, this study, of a bibliographic nature, has as its central objective to map and analyse academic productions: Theses, Dissertations and Technical-Technological Products (Educational Products), available in the Biblioteca Digital de Teses e Dissertações (BDTD), which directly address school absenteeism in Basic Education. The

investigation departs from two main questions: how do the studies describe the factors that contribute to school absenteeism in Basic Education? And in what way have Technical-Technological Products (Educational Products) been proposed as interventions to understand, confront and mitigate this problem?

The research is qualitative, as it seeks to capture the different approaches and understandings of the investigations on school absenteeism in Basic Education. To this end, it is grounded in the foundations of Historical-Critical Pedagogy (PHC), which proposes a profound reflection on educational reality, with the aim of transforming it in a radical, rigorous and articulated manner, as advocated by Saviani (2002, p. 17).

2 SCHOOL ABSENTEEISM IN RESEARCH AVAILABLE IN THE BIBLIOTECA DIGITAL DE TESES E DISSERTAÇÕES (BDTD)

Initially, the research was carried out in the form of a search in the Biblioteca Digital de Teses e Dissertações (BDTD), based on the keywords “frequência escolar”, “ensino fundamental” and “aprendizagem”. This search resulted in 299 academic works, which the library related to the terms used. With this, a floating reading of all the respective titles was carried out, in order to seek words correlated with school absenteeism.

As a follow-up, an exclusion criterion was adopted: only works bearing, in the title, terms correlated with absenteeism would be used, namely: abandonment, dropout, absenteeism, attendance, permanence and school absence. Only 7 of the 299 analysed studies were selected.

Of the seven works selected for analysis, three correspond to dissertations linked to Academic Master's Programmes, while four are associated with Professional Master's Programmes. Among these four professional master's dissertations, two present, in their body, the production of a Technical-Technological Product (Educational Product). The other two, however, make no mention of the elaboration of such a product, nor do they present a record of publication in the Biblioteca Digital de Teses e Dissertações (BDTD).

For the organisation of the selected material, Content Analysis was used, as proposed by Bardin (1977). Based on the floating reading and the exploration of the content of the titles and abstracts, thematic analysis categories were defined, as described in the table below.

Table 1

Categorisation according to Bardin's Content Analysis (1977)

Content Analysis Stage	Procedure Carried Out	Criterion Applied	Result
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1. Stage: Pre-analysis	Floating reading of the titles of the 299 works offered by the BDTD	Words correlated with school absenteeism: dropout, abandonment, school absence, attendance, permanence and the term “infrequência” (absenteeism) itself	292 works discarded for not meeting the established criteria
2. Initial Selection Process (inclusion/exclusion)	Verification based on the application of inclusion and exclusion criteria	Inclusion: direct focus on the problem of absenteeism or school absence, abandonment and dropout in Basic Education; Exclusion: approaches aimed at other educational stages or with themes not related	07 works selected for qualitative analysis
3. Coding and thematic categorisation	Exploratory reading and analysis of the dissertations that fit the research object	Survey of recurrent themes, based on the content identified in the introduction, abstracts and objectives proposed by each work	Creation of five thematic categories

Source: prepared by the authors.

The following table will present the thematic categories:

Table 2

Thematic Categorisation – 5 categories

Thematic Category	Inclusion Criterion	Dissertations
Public policies dealing with school attendance	Research that analyses the participation of public bodies and their respective programmes to combat absenteeism, abandonment and school dropout.	Mourão (2021); Paulon (2018); Rajewski (2016); Xavier (2019)
Social and economic issues related to absenteeism	Works that deal with absenteeism establishing a relationship with the problems of social vulnerability, poverty, and gender and racial inequality.	Paulon (2018); Racoski (2019); Silva (2024)
Influence of the family on school absenteeism	Works that investigate how the family context interferes with students' attendance and permanence.	Paulon (2018); Racoski (2021)
Youth and Adult Education (EJA)	Dissertations that analyse dropout or absenteeism specifically in the EJA modality.	Xavier (2019); Mourão (2021)
School management and equity	Works that discuss the role of school management and its strategies to combat dropout.	Benevides (2019)

Source: prepared by the authors.

Table 3

Location, date, title, author and electronic address; keywords; Technical-Technological Product; Programme

No.	Location, date, title, author and electronic address	Keywords	Technical-Technological Product	Programme
1	Location and date: São Paulo, 2018. Title: School Absenteeism in Public Primary Education: Dimensioning the problem and exploratory analysis based on two variables: family and educational public policies. Author: Rita de Cássia Paulon. https://repositorio.fgv.br/items/a91c3f5e-129a-4f4e-91d0-4642b70b7735	Student absenteeism; Family; Educational public policies; School; Municipal education network of the city of São Paulo.	Not located	Professional Master's
2	Location and date: Erechim, 2019. Title: The expressions of the social question presented in school absenteeism. Author: Franciele Racoski. https://rd.uffs.edu.br/bitstream/prefix/3644/1/RACOSKI.pdf	Education; School; School Absenteeism; Expressions of the social question.	Not located	Professional Master's
3	Location and date: Cascavel, 2016. Title: School permanence in the final years of primary and secondary education: The FICA and Combating School Abandonment programmes of the State of Paraná. Author: Cristiane Mara Rajewski. https://tede.unioeste.br/handle/tede/3317	School permanence; Learning; FICA; Dropout; Abandonment.	No	Academic Master's
4	Location and date: Castanhal, 2019. Title: Study on persistence and school dropout in EJA in the Northeast, Castanhal-PA: Analysis and propositions. Author: Maria do Perpétuo Socorro Ramos Xavier. https://repositorio.ufpa.br/jspui/handle/2011/12435	School Dropout; Public Policies; Differentiated and Contextualised Methodology; Persistence.	No	Academic Master's
5	Location and date: Curitiba, 2024. Title: The production of school dropout of female students in primary and secondary education: gender, race and the crossing of Covid-19. Author: Solange da Silva. https://bdtd.ibict.br/vufind/Record/UFPR_09960db5f5c88d68cb998e791d89271f	School dropout; Female students; Covid-19; Basic Education; Expulsion.	No	Academic Master's
6	Location and date: Juiz de Fora, 2019. Title: Management and equity: The challenge of dropout in	School Management	PAE - the Educational	Professional Master's

	the 1st grade of the Escola de Ensino Médio Ananias do Amaral Vieira. Author: Tacila Maria Alves Benevides. https://repositorio.ufjf.br/jspui/handle/ufjf/11759	nt. Dropout in Secondary Education. Equity.	Action Plan: Actions to map vulnerable students and the proposition of a protocol of actions that assist the work of management.	
7	Location and date: Juiz de Fora, 2017. Title: Non-permanence in semi-presential youth and adult education in a state centre for continuing education (CESEC) of the State of Minas Gerais. Author: Marília Mourão. https://repositorio.ufjf.br/jspui/handle/ufjf/6739	Non-permanence; Youth and Adult Education-EJA; School Management.	PAE - Educational Action Plan proposing actions that may assist management in minimising the problem detected in EJA.	Professional Master's

Source: prepared by the authors.

3 ANALYSIS OF THE SEVEN STUDIES ON SCHOOL ABSENTEEISM AVAILABLE IN THE BIBLIOTECA DIGITAL DE TESES E DISSERTAÇÕES (BDTD)

The first study, entitled School attendance in public primary education: dimensioning the problem and exploratory analysis based on two variables: family and educational public policies, a professional master's dissertation by Rita de Cássia Paulon (2018), developed a mixed (quali-quantitative) research, focusing on 3rd-year primary school students from the municipal schools of the Prefeitura de São Paulo.

With an approach of an applied nature, the research concluded that absenteeism is a multifaceted problem and is related to the lack of active participation of the public authorities, the school and the family. The choice of this school age range is due to the fact that it concerns the conclusion of the literacy cycle, a moment that is so fundamental, since it is in it that the acquisition of reading, writing and mathematical calculations is grounded.

The author anchored the research on the Constituição Federal de 1988 (articles 6 and 205), the Estatuto da Criança e do Adolescente (ECA) and the Lei de Diretrizes e Bases da Educação Nacional (LDB nº 9.394/96), since these three documents ground the right to education and provide for the duties of the State, the family and society in the students' educational process.

The author analysed absenteeism data of 51 thousand students enrolled in 501 schools of the municipal network, distributed across 98 districts and 13 Diretorias Regionais

de Ensino (DREs), using official databases such as INEP, Educacenso, IBGE, Pnad, PNE and Atlas do Desenvolvimento Humano. With this, the researcher identified patterns of school absenteeism in different geographical points of the city, with different socioeconomic contexts.

The research revealed that the causes of absenteeism are diverse, such as the absence of family monitoring, the lack of effective public policies to support permanence, precarious socioeconomic conditions and deficiencies in the articulation between school and community. As a practical result, the study mapped the 3rd-year students of the Prefeitura de São Paulo and identified that the problem of absenteeism occurs in different social contexts, both in vulnerable neighbourhoods and in neighbourhoods with better socioeconomic conditions.

The research also presented diverse practices, at the national and international level, aimed at promoting school attendance, which involve strategies of integration between school and family, the strengthening of school management and the stimulation of community participation, in addition to the implementation of social protection programmes.

The research reached the conclusion that school absenteeism is a multifaceted phenomenon that requires articulated actions among different actors and instances. With this, the research contributes significantly to the formulation of public policies sensitive to local realities and reinforces the urgency of preventive strategies, based on concrete data and on listening to the subjects involved in the educational process.

The second study, entitled *The expressions of the social question presented in school absenteeism*, concerns the professional master's dissertation by Franciele Racoski (2021), which investigates school absenteeism from the expressions of the social question. The research was carried out with primary school students of the Escola Municipal de Ensino Fundamental Paiol Grande, located in Erechim (RS). The research problem arose from the author's disquiet, in her professional practice as a teacher and social worker, to understand the latent problem of absenteeism in the school where she works.

Of a qualitative nature, the research is grounded on two pillars: Education and Social Work, and has as its data collection technique the application of structured questionnaires to students and teachers of the school unit. For the analysis of the collected material, Content Analysis was used, according to Bardin (1977).

When carrying out the analysis, the researcher detected the same determining factors of absenteeism pointed out by Paulon (2018), namely: the fragility of family involvement, socioeconomic difficulties and the lack of perspective of social transformation through the

school. According to the researcher, this uncertainty should not be understood as individual deviations, but as a reflection of the social context in which the school institution is inserted.

With regard to the theoretical framework, the author was grounded mainly on Pierre Bourdieu, an author who, although he does not conceive of the possibility of the school being an agent of social transformation, discourses with propriety on the extent to which educational systems are at the service of the dominant classes and on maintaining the status quo of society.

From this theoretical basis, the work was able to diagnose the researched school and provide relevant information for the construction of intervention tools, thus contributing to the researched school unit and to the field of research in education, since it evidences the need for school policies and the complexity of educational systems.

The author concludes by saying that the starting point is the appreciation of listening to the subjects involved and the articulation between critical theory and social practice, suggesting interdisciplinary approaches committed to the transformation of school reality.

The third study, *School permanence in the final years of primary and secondary education: The FICA and Combating School Abandonment Programmes of the State of Paraná*, by Cristiane Mara Rajewski (2016), is an academic master's dissertation in Education. It is a documentary bibliographic research, whose technique used was data collection in 10 state school units of Laranjeiras do Sul, in Cascavel (PR), between the years 2012 and 2014.

The research is an analysis of the legislation on attendance and the effectiveness of the actions, as well as the relationship between permanence and learning of the “Fica Comigo” and “Combate ao Abandono Escolar” programmes, implemented in the State of Paraná in 2005. The research has as its theoretical basis authors such as Bakhtin, Mészáros, Vigotski, Saviani and Duarte.

The results of the research point to weaknesses in the programmes, beginning with the prerogative of school permanence, without the concern to guarantee students' learning, since many students pass the year without knowing the fundamental contents to begin the following year. The author also highlights the importance of breaking with welfare practices, which divert the school from its central role, which is the teaching of the knowledge constructed by humanity over the centuries.

Another factor identified in the study is the excess of bureaucratisation in the schools' actions. The school unit comes to perform welfare and monitoring functions, leaving uncovered its main responsibility and mission, which is learning, thus hindering the consolidation of the educational process in students' lives.

The author defends a qualified permanence, with the integral formation of the student, that develops critical thinking and the understanding of the social and historical relations that govern society. In addition, she presents the need for public policies that consider the student in their totality, as a historical and social subject, and that make it possible to confront the challenges of quality education, even in this context marked by inequalities and structural contradictions.

As it is a dissertation linked to an academic master's, this research does not present the elaboration of a Technical-Technological Product (Educational Product). However, its relevance lies in evidencing how educational public policies fail in complying with the legislation.

The fourth study analysed, entitled Study on Persistence and School Dropout in EJA in the Northeast, Castanhal-PA: Analysis and Propositions, is the dissertation by Maria do Perpétuo Socorro Ramos Xavier, defended in 2019, which had as its objective to investigate the factors that influence the permanence and dropout of students of Youth and Adult Education (EJA), in three municipal schools of Castanhal, in the northeast of Pará.

To carry out the research, considered mixed (quali-quanti), the author collected data from the main actors of both the rural school and the urban school, on the outskirts of the city: students, teachers, managers and specialists. When analysing the collected data, Xavier identified that the main factors leading to dropout and non-permanence are: low grades, health problems, lack of interest and, mainly, the need to work.

The research reached the conclusion that schools that adopt interdisciplinary methodologies and the use of Digital Information and Communication Technologies (TDICs) tend to present lower dropout rates. These practices promote the development of skills such as reading, writing, problem-solving and professional qualification, contributing to students' permanence and their social inclusion. However, this conclusion should be considered with care, attending to the educational specificities and the teaching modality of each school institution.

Although the research did not develop a Technical-Technological Product (Educational Product), as it is an academic dissertation, its theoretical contribution is significant. The study proposes reflections and strategies to confront dropout in EJA, emphasising the importance of public policies that consider the local context and value pedagogical approaches adapted to the realities of these students.

The fifth work analysed, The Production of school dropout of female students in primary and secondary education: gender, race and the crossing of Covid-19, is the title of the master's dissertation in Education by Solange da Silva (2024). The research investigated

specifically the school dropout of female students of primary education (final years) and secondary education, in municipalities of southern Paraná, considering the impacts of the Covid-19 pandemic.

The research unfolds in the intersections between gender, race and class. The methodology involved two aspects: documentary analysis and semi-structured interviews. In addition, a survey of school data was carried out based on the years 2019, 2021 and 2022.

The results of the research demonstrate that there was a reduction in school dropout rates in the researched schools in 2021. However, this drop may be intimately linked to the flexibilisation of attendance criteria adopted during the period of emergency remote teaching.

Another conclusion of the research that explains students' absence is the lack of interest in study, early pregnancy, low family involvement and learning difficulties, these being the most frequent reasons especially among Black female students. Therefore, the dropout of girls is part of a process of educational exclusion, reinforced by historical inequalities, and which can be confronted through public policies that consider, in an integrated manner, the social dimensions of gender and race.

The fact that the research does not have a Technical-Technological Product (Educational Product) is justified because it is an academic research, whose main objective is to analyse the causes of school dropout from the social questions related to gender, race and class in the context of the Covid-19 pandemic. However, the research offers important contributions to the understanding of this problem, which can guide future public policies and pedagogical practices aimed at combating abandonment, dropout and school absenteeism.

The sixth study in question corresponds to the important work of Tacila Maria Alves Benevides, Management and equity: the challenge of dropout in the 1st grade of the Escola de Ensino Médio Ananias do Amaral Vieira, presented in the Professional Master's in Management and Evaluation. The author carries out an applied investigation, with a qualitative approach. She was based on a case study, carried out in a state school in Ceará, aimed at understanding the main factors that influence and determine school dropout in the 1st grade of secondary education.

The author mobilised multiple research techniques, including, initially, documentary analysis and bibliographic review. In loco, the author carried out interviews with students and managers, in addition to focus groups with teachers, which strengthened the triangulation of the data and the depth of the analysis.

The research highlights that dropout is closely related to factors internal and external to the school, beginning with absenteeism and the learning deficit, culminating in grade repetition. Benevides emphasises the importance of school management acting as a

strategic agent in the formulation and implementation of actions, redoubling attention regarding the specificities of students in situations of vulnerability.

As a practical result, the author developed a Technical-Technological Product (Educational Product) under the name of Educational Action Plan (PAE). The author used the 5W2H technique, a management tool that structures the planning and execution of actions through the questions: what? why? where? when? who? how? how much? According to the author, this approach guaranteed clarity and objectivity in the organisation of the activities proposed for confronting school dropout.

The actions were divided into three main fronts. First, the identification of the students most prone to dropping out, through the mapping of school trajectories. Second, the systematic monitoring of attendance, with intervention protocols graduated according to the levels of absenteeism. And third, the pedagogical adaptations, which contemplate an alternative curriculum, fairer assessment criteria and support for pregnant and postpartum students.

Firstly, a questionnaire was applied at the beginning of the school year, in order to visualise school trajectories and identify profiles with greater propensity to drop out. This initial stage was deepened with conversation circles, which allowed the comprehension of subjective and contextual aspects, promoting dialogue with the students.

Then, continuous monitoring of attendance was carried out, allowing management to act in advance, identifying absent students. With this, upon detecting cases, a protocol of actions is initiated involving the family, the Conselho Tutelar and the Ministério Público.

In addition, another action was implemented: the calls for school projects came to require a minimum attendance of 80% for the student's participation, functioning as an incentive to permanence. The plan focused on learning, which took place through the identification of students with difficulties and the creation of an alternative curriculum, with assessment criteria that considered different levels of performance.

Finally, specific actions were proposed to guarantee the right to education of pregnant and postpartum students, with pedagogical strategies that ensure their permanence and the conclusion of the school year. These actions, together, configure a preventive institutional response, sensitive and committed to confronting inequalities in the school context.

In view of this, the research evidenced the action of school management, aligned with public policies and guided by concrete data, which can contribute significantly to the reduction of dropout and the promotion of a more inclusive and equitable education. Thus, the dissertation offers contributions to the discussions on educational management practices

aimed at school permanence and serves as a reference for the elaboration of preventive policies and strategies in similar contexts.

The seventh and last study, entitled Non-permanence in semi-presential youth and adult education in a state centre for continuing education (CESEC) of the State of Minas Gerais, by Marília Mourão (2017), investigated the factors that contribute to the non-permanence of students in Youth and Adult Education (EJA), in the semi-presential modality, of the final years of primary education.

The research was carried out at the Centro Estadual de Educação Continuada (CESEC) of Minas Gerais. The research identified that a large part of the students are workers and that, although they wish to complete their studies, they face difficulties due to the incompatibility between the work day and the time allocated to school, in addition to the distance between their homes and the school unit.

The research, of a qualitative approach, had as its technique the collection of data through interviews with mentor teachers and questionnaires applied to students. From the analysis of the data, the researcher elaborated a Technical-Technological Product (Educational Product), which received the name of Educational Action Plan (PAE), with the objective of confronting the identified problems and proposing concrete measures for the reduction of school dropout.

The PAE, presented at the end of the dissertation, organises actions in different axes, such as: welcoming and pedagogical diagnosis; access and permanence; didactic-pedagogical innovation; strengthening of school bonds; integration with families; and support for the learning process. Some measures were implemented, such as the initial welcoming with an interview at enrolment, the application of diagnostic assessments at the beginning of each curricular component and the carrying out of specific activities to remedy learning difficulties.

Another measure adopted was to forward, together with the Secretaria Municipal de Educação, a request for school transport for students who reside in regions far from the school unit. In the pedagogical field, the plan included the creation of an Interactive Formative Wall, with a bank of questions per module, the carrying out of thematic consultations with the learners, the intensification of the use of educational technologies, the promotion of reading projects, the Mobile Library project and the Reader of the Term project.

In addition, to strengthen the bond between students and the school and humanise the process, the PAE proposed the organisation of lectures on current themes, cultural moments with exhibition of student productions for exchanges and new knowledge, and artistic expressions, seeking to promote belonging, involvement and participation.

Still in relation to the school-family, the plan suggests the survey of absent students, meetings with family members and the creation of Family Day. Finally, it contemplates the creation of study groups and content recovery classes in Portuguese and Mathematics, aiming to improve academic performance and favour students' permanence until the conclusion of the educational stage.

Therefore, the PAE constitutes itself as an applied proposal, which articulates school management, pedagogical practices and community relations, with a view to combating dropout and strengthening the permanence of EJA semi-presential students, adapting the school to the reality of its public and broadening the possibilities of learning.

4 CONCLUSION

I understand that, in discoursing on each of the seven dissertations, from the analysis made, it was possible to answer the first part of the question of this article: how do the studies describe the factors that contribute to school absenteeism? In addition, it was possible to verify that each of the teaching modalities of Basic Education has its own specificities, but all face the same problems in relation to students' attendance.

In relation to the second part of the problem: in what way have Technical-Technological Products (Educational Products) been proposed as interventions to understand, confront and mitigate this problem, it was observed, firstly, the absence of a Technical-Technological Product (Educational Product) with the theme of school absenteeism, since, of the seven dissertations studied, only two presented a Technical-Technological Product (Educational Product).

However, even so, the Educational Action Plan (PAE) of the two studies that presented a Technical-Technological Product (Educational Product) presented consistency, objectivity and a preventive character, with the potential to be reproduced or even adapted for other educational realities.

Furthermore, it is necessary to expose the danger of school absenteeism in education and to evidence that it causes profound fissures in students' learning. It is a chronic problem, of a system that fails to guarantee the conditions necessary for all students to remain and advance. This occurs, often, due to the fact that the school is disconnected from the socioeconomic and family reality of the students and to the lack of commitment of the public authorities.

This distancing occurs because educational policies and school practices are still, to a large extent, marked by bureaucratic and welfare approaches, which do not dialogue with the concrete needs of families and communities. School management, when little sensitive

or disarticulated, perpetuates an unwelcoming environment, where attendance comes to be controlled in a punitive manner, or through the sending of disconnected activities, which do not provide learning and serve only to fill virtual records, in order to comply with the 75% attendance required by the LDB.

In addition, the absence of a consistent articulation between school, family and public policies only strengthens the tripod: absenteeism, abandonment and school dropout. Many families live in a situation of vulnerability and require responses beyond the classroom, such as social assistance and effective public policies.

Another point to be highlighted, comprehended and confronted is the permanence of traditional pedagogical methods, little flexible and little attractive, which ignore the social and cultural diversity of the students. It is necessary that the school be prepared to deal with the questions experienced by the students, that have a connection with their real social context, that address the knowledge constructed over the centuries, making students understand that the school has a relation with the social, political, economic and cultural determinations of society.

To this end, it is fundamental to include contents and discussions that deal with the questions of race, gender and class, fundamental to comprehending the social and educational inequalities present in our society. In this way, school absenteeism should not be treated only as an individual or family problem, but as a reflection of the structures of the educational and social system.

We conclude that the effective commitment of the whole of civil and political society to the school and its main actors, the students, in their individual and social diversities, is necessary and urgent. May the legislation, the social and educational public policies consider the school as a place of inclusion, of the exercise of knowledge and of citizen participation, specifically for the most vulnerable.

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ENVIRONMENTAL EDUCATION IN PRIMARY EDUCATION (LOWER PRIMARY): PUPILS' KNOWLEDGE, PERCEPTIONS AND PRACTICES IN THE CONSTRUCTION OF A CRITICAL ENVIRONMENTAL AWARENESS

EDUCAÇÃO AMBIENTAL NO ENSINO FUNDAMENTAL I: CONHECIMENTOS, PERCEPÇÕES E PRÁTICAS DOS ALUNOS NA CONSTRUÇÃO DE UMA CONSCIÊNCIA AMBIENTAL CRÍTICA

EDUCACIÓN AMBIENTAL EN LA ENSEÑANZA PRIMARIA: CONOCIMIENTOS, PERCEPCIONES Y PRÁCTICAS DE LOS ALUMNOS EN LA CONSTRUCCIÓN DE UNA CONCIENCIA AMBIENTAL CRÍTICA



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ABSTRACT

Environmental Education plays a fundamental role in the formation of citizens who are aware of and committed to the preservation of the environment. However, its approach in lower primary education still faces challenges related to the continuity of pedagogical actions and the integration of content into the school curriculum. In view of this issue, the aim is to analyse the perceptions, knowledge and attitudes of lower-primary pupils regarding Environmental Education in the school context. To this end, field research was conducted with 66 pupils, using a questionnaire composed of 12 questions addressing aspects related to pupils' prior knowledge, the frequency with which the topic is addressed, interdisciplinarity, pedagogical practices and participation in environmental activities. It was thus observed that most pupils have some contact with environmental issues, although their treatment occurs irregularly and, in many cases, superficially. The results show that pupils present an initial understanding focused mainly on everyday preservation practices, demonstrating limitations regarding the comprehension of broader and more critical environmental issues. It is concluded that it is necessary to strengthen Environmental Education practices through continuous actions, curricular integration and the adoption of participatory methodologies that foster pupil agency and contribute to the formation of aware, critical subjects committed to sustainability.

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Keywords: Environmental Awareness. Environmental Education. Lower Primary Education. Pedagogical Practices. Sustainability.

RESUMO

A Educação Ambiental desempenha um papel fundamental na formação de cidadãos conscientes e comprometidos com a preservação do meio ambiente. No entanto, sua abordagem no Ensino Fundamental I ainda enfrenta desafios relacionados à continuidade das ações pedagógicas e à integração dos conteúdos ao currículo escolar. Considerando essa problemática, objetiva-se analisar as percepções, os conhecimentos e as atitudes de alunos do Ensino Fundamental I acerca da Educação Ambiental no contexto escolar. Para tanto, procede-se à realização de uma pesquisa de campo com 66 estudantes, utilizando-se um questionário composto por 12 questões que abordam aspectos relacionados ao conhecimento prévio dos alunos, à frequência com que a temática é trabalhada, à interdisciplinaridade, às práticas pedagógicas e à participação em atividades ambientais. Desse modo, observa-se que a maioria dos estudantes possui contato com a temática ambiental, porém sua abordagem ocorre de forma irregular e, em muitos casos, superficial. Os resultados evidenciam que os alunos apresentam uma compreensão inicial voltada principalmente para práticas cotidianas de preservação, demonstrando limitações quanto à compreensão de questões ambientais mais amplas e críticas. Conclui-se que é necessário fortalecer as práticas de Educação Ambiental por meio de ações contínuas, integração curricular e adoção de metodologias participativas que favoreçam o protagonismo discente e contribuam para a formação de sujeitos conscientes, críticos e comprometidos com a sustentabilidade.

Palavras-chave: Consciência Ambiental. Educação Ambiental. Ensino Fundamental I. Práticas Pedagógicas. Sustentabilidade.

RESUMEN

La Educación Ambiental desempeña un papel fundamental en la formación de ciudadanos conscientes y comprometidos con la preservación del medio ambiente. Sin embargo, su abordaje en la Enseñanza Primaria todavía enfrenta desafíos relacionados con la continuidad de las acciones pedagógicas y la integración de los contenidos en el currículo escolar. Considerando esta problemática, se pretende analizar las percepciones, los conocimientos y las actitudes de alumnos de la Enseñanza Primaria acerca de la Educación Ambiental en el contexto escolar. Para ello, se realiza una investigación de campo con 66 estudiantes, utilizando un cuestionario compuesto por 12 preguntas que abordan aspectos relacionados con el conocimiento previo de los alumnos, la frecuencia con que se trabaja la temática, la interdisciplinariedad, las prácticas pedagógicas y la participación en actividades ambientales. De este modo, se observa que la mayoría de los estudiantes tiene contacto con la temática ambiental, pero su abordaje ocurre de forma irregular y, en muchos casos, superficial. Los resultados evidencian que los alumnos presentan una comprensión inicial orientada principalmente hacia prácticas cotidianas de preservación, demostrando limitaciones en cuanto a la comprensión de cuestiones ambientales más amplias y críticas. Se concluye que es necesario fortalecer las prácticas de Educación Ambiental mediante acciones continuas, integración curricular y adopción de metodologías participativas que favorezcan el protagonismo del estudiante y contribuyan a la formación de sujetos conscientes, críticos y comprometidos con la sostenibilidad.

Palabras clave: Conciencia Ambiental. Educación Ambiental. Enseñanza Primaria. Prácticas Pedagógicas. Sostenibilidad.

1 INTRODUCTION

Environmental Education has consolidated itself as an important instrument for understanding and confronting contemporary social and environmental challenges. Internationally recognised from the Conferência de Tbilisi (1977) and strengthened by documents such as Agenda 21, resulting from the Conferência das Nações Unidas sobre Meio Ambiente e Desenvolvimento (Rio-92), this field seeks to promote the formation of critical, participatory individuals committed to sustainability. In Brazil, its relevance is reaffirmed by the Política Nacional de Educação Ambiental (Lei nº 9.795/1999), which establishes its inclusion at all levels and modalities of education.

In the early years of Basic Education, Environmental Education plays a fundamental role in the construction of knowledge, values and attitudes aimed at environmental preservation and the exercise of citizenship. At this stage of schooling, children begin to form habits and behaviours that may influence their relationship with the environment throughout their lives. Thus, the school environment constitutes a privileged space for the development of educational actions that foster pupils' awareness, reflection and participation regarding environmental issues.

However, despite the advances achieved in the field of educational policies and the growing inclusion of environmental issues in the school context, challenges still persist for the formation of a critical environmental awareness. Among these challenges, the following stand out: the occasional and fragmented approach to content, the limited interdisciplinary articulation, the insufficiency of contextualised pedagogical practices and the difficulty of relating environmental problems to the social, economic and cultural dimensions that surround them.

In this context, it becomes relevant to investigate how pupils in the early years understand environmental issues and in what way the experiences lived in the school environment contribute to the construction of knowledge, values and attitudes aimed at sustainability. Thus, the present study aims to analyse the perceptions, knowledge and attitudes of lower-primary pupils regarding Environmental Education in the school context, seeking to identify the challenges and contributions of this topic to the formation of a critical environmental awareness in the early years of Basic Education.

2 OBJECTIVES

2.1 GENERAL OBJECTIVE

To analyse the knowledge, perceptions and practices of lower-primary pupils regarding Environmental Education in the school context, understanding their contributions to the construction of a critical environmental awareness in the early years.

2.2 SPECIFIC OBJECTIVES

To identify the knowledge and perceptions of lower-primary pupils regarding Environmental Education and the environmental issues present in their everyday lives.

To analyse pupils' participation in Environmental Education practices and activities developed in the school context, considering their influence on the adoption of environmentally responsible attitudes.

To verify how pupils' environmental knowledge, perceptions and practices contribute to the construction of a critical environmental awareness aimed at the conservation of the environment.

3 METHODOLOGY

The present research is characterised as action research, of an applied nature, with a qualitative and quantitative approach and descriptive objectives. The choice of this methodology is justified by the possibility of investigating the educational reality while simultaneously promoting reflections and actions aimed at strengthening Environmental Education in the school context.

The study was carried out with 66 lower-primary pupils, focusing on analysing pupils' knowledge, perceptions and practices regarding Environmental Education and its contribution to the construction of a critical environmental awareness.

With regard to data collection, this was carried out through the application of a questionnaire composed of 12 open and closed questions, designed to identify pupils' knowledge, perceptions and practices regarding Environmental Education. The instrument addressed variables related to prior knowledge of environmental issues, pupils' environmental perception, the frequency with which the topic is addressed in the school context, interdisciplinarity, the pedagogical practices developed by the school, pupils' participation in environmental activities and attitudes aimed at the conservation of the environment.

The quantitative data were organised and presented in graphs, allowing the analysis of the frequencies and percentages of the responses. The qualitative data were submitted to

Content Analysis, as proposed by Bardin (2011), enabling the identification of thematic categories related to pupils' environmental perceptions, knowledge, attitudes and practices.

Action research made it possible to understand the reality of pupils in relation to Environmental Education and to reflect on pedagogical strategies capable of strengthening the formation of a critical, participatory environmental awareness committed to the conservation of the environment.

4 THEORETICAL FRAMEWORK

4.1 ENVIRONMENTAL EDUCATION IN THE BRAZILIAN EDUCATIONAL CONTEXT

In Brazil, the institutionalisation of Environmental Education occurred through Lei nº 9.795, of 27 April 1999, which established the Política Nacional de Educação Ambiental. This legislation represents a significant advance by recognising Environmental Education as an essential and permanent component of national education, which must be present at all levels and modalities of education (BRASIL, 1999). Furthermore, the law reinforces the importance of an interdisciplinary, continuous and integrated approach that goes beyond the limits of traditional subjects and promotes the articulation between different areas of knowledge. This perspective is reaffirmed by the Base Nacional Comum Curricular, which incorporates Environmental Education as one of the cross-cutting contemporary themes, highlighting its relevance in the comprehensive formation of pupils. The BNCC guides that environmental issues should be addressed in a contextualised, critical and interdisciplinary manner, contributing to the development of competences and skills that enable pupils to understand and intervene in the social and environmental reality in which they are inserted (BRASIL, 2017).

In this sense, Environmental Education, when articulated with social education and introduced from basic education onwards, proves to be a fundamental instrument for the formation of critical, reflective and participatory subjects. Rather than being mere receivers of information, pupils come to be recognised as transforming agents, capable of analysing the relationships between society and nature and of acting in the construction of solutions to environmental problems. Such an approach is in line with the contributions of Paulo Freire, who defends an emancipatory education based on dialogue, critical reflection and the active participation of subjects in the educational process (FREIRE, 2019).

Environmental Education can be understood as a field under constant construction, which goes beyond the limits of traditional Environmental Sciences. In this context, the contribution of Enrique Leff stands out, who proposes the concept of 'environmental knowledge' as a new rationality capable of integrating different forms of knowledge, including

scientific, popular and traditional knowledge. For the author, this emerging knowledge configures itself as a space of articulation between nature and society, promoting the reconstruction of identities and the re-signification of the relationships between human beings and the environment (LEFF, 2001).

Faced with the challenges imposed by the contemporary environmental crisis, it becomes essential to strengthen Environmental Education as a structuring axis of educational processes. Its implementation requires the commitment of different social actors, including educational institutions, public managers and civil society, in the sense of promoting educational practices that stimulate critical reflection, social participation and collective responsibility. Thus, Environmental Education consolidates itself as an essential instrument for the transformation of the relationships between society and nature, contributing to the construction of a more sustainable future.

Environmental Education has assumed an increasingly relevant role in the face of contemporary social and environmental challenges. The worsening of problems such as pollution, deforestation, climate change and the inadequate use of natural resources highlights the need to develop educational processes capable of promoting changes in attitudes, values and behaviours aimed at sustainability. In this context, Environmental Education constitutes an important instrument for the formation of aware, critical citizens committed to environmental preservation and to the construction of a more sustainable society.

4.2 EARTH, OUR HOME: A CALL TO ENVIRONMENTAL AWARENESS

The consolidation of Environmental Education on the international scene occurred from the Conferência Intergovernamental de Educação Ambiental held in Tbilisi in 1977. According to UNESCO (1978), this event represented a milestone for the definition of principles and guidelines aimed at the formation of a critical environmental awareness, highlighting the need for permanent, interdisciplinary and participatory education.

Subsequently, the Conferência das Nações Unidas sobre Meio Ambiente e Desenvolvimento, held in Rio de Janeiro in 1992, strengthened the debate on sustainability and resulted in the elaboration of Agenda 21, a document that proposes actions aimed at sustainable development on a global scale (ONU, 1992). More recently, Agenda 2030 reaffirmed the importance of education as a fundamental instrument for the promotion of sustainability and global citizenship (ONU, 2015).

In Brazil, Environmental Education was institutionalised through Lei nº 9.795, of 27 April 1999, which established the Política Nacional de Educação Ambiental. According to

Brasil (1999), Environmental Education is an essential and permanent component of national education, which must be present at all levels and modalities of education in an articulated and interdisciplinary manner.

This guidance is reinforced by the Base Nacional Comum Curricular, which recognises Environmental Education as a cross-cutting contemporary theme. According to Brasil (2017), the topic should be developed in an integrated manner with the different areas of knowledge, favouring the construction of competences related to citizenship, social and environmental responsibility and critical thinking.

In the early years of Primary Education, Environmental Education plays a fundamental role in the formation of values and attitudes aimed at caring for the environment. Dias (2004) states that Environmental Education should enable individuals to understand the relationships between society and nature, promoting changes in behaviour and encouraging participation in the resolution of environmental problems.

For Jacobi (2003), Environmental Education constitutes an important instrument for the construction of citizenship and sustainability, as it favours the critical understanding of social and environmental problems and stimulates individuals' participation in the transformation of reality. From this same perspective, Carvalho (2012) highlights that Environmental Education should contribute to the formation of the ecological subject, capable of understanding their responsibility in environmental preservation and in the construction of a sustainable society.

In discussing the critical dimension of Environmental Education, Guimarães (2004) argues that it cannot be restricted to the transmission of information about nature. For the author, it is necessary to develop educational practices that enable pupils to understand the structural causes of environmental problems and to reflect on the models of production, consumption and development present in contemporary society.

The contributions of Freire (2019) are also fundamental for understanding Environmental Education as an emancipatory practice. The author defends an education based on dialogue, critical reflection and the active participation of learners in the construction of knowledge. This conception favours the development of pupils' autonomy and critical awareness in the face of environmental issues.

Leff (2001) broadens this discussion by proposing the concept of environmental knowledge, understood as a new rationality capable of integrating different forms of knowledge. According to the author, overcoming the environmental crisis requires the articulation between scientific, popular and traditional knowledge, promoting a broader understanding of the relationships between society and nature.

Another important reference for Environmental Education is the Carta da Terra. According to the Carta da Terra (2000), humanity shares the responsibility of protecting the ecological integrity of the planet, promoting values related to respect for life, social justice and sustainability. In this sense, Boff (2017) states that the Carta da Terra represents one of the most important ethical documents aimed at the construction of a planetary awareness based on care for life and on collective responsibility.

Corroborating this perspective, Gadotti (2007) defends the need to develop an education aimed at the construction of an earthly identity and planetary awareness. For the author, the school should promote values such as solidarity, cooperation, respect for diversity and social and environmental responsibility, contributing to the formation of citizens committed to the preservation of the planet.

Despite legal and theoretical advances, the implementation of Environmental Education in lower primary education still faces challenges related to teacher training, curricular integration and the availability of adequate pedagogical resources. However, when developed in a continuous, interdisciplinary and contextualised manner, Environmental Education contributes significantly to the formation of a critical environmental awareness, favouring the development of knowledge, values and attitudes indispensable to the construction of more sustainable societies.

The Carta da Terra, elaborated between 1992 and 2000 by thousands of people from different cultures, religions and forms of knowledge, is an urgent call to the risks that threaten humanity. With brief and accessible language, it gathers common values and principles that point, with hope, to paths for a sustainable coexistence on this vulnerable planet (BOFF, 2017). In this way, humanity is part of a vast universe in constant evolution, with the Earth being our only known home, a living and dynamic space that shelters a rich and diverse community of life. The forces of nature make existence a challenging and, at the same time, extraordinary journey, providing the essential conditions for the development of life in all its forms. In this sense, understanding the value of the planet is the first step to guaranteeing its preservation.

The Earth offers us indispensable resources, such as water, clean air, fertile soils and biodiversity, fundamental elements for human survival and the balance of ecosystems. However, these resources are finite and depend directly on human actions for their conservation. Nature's capacity for recovery is intimately linked to the care we have for the environment, and it is everyone's responsibility to protect the vitality, diversity and beauty of the planet.

In this way, it becomes essential to develop, from childhood, a critical and responsible environmental awareness. In the school context, Environmental Education plays a fundamental role in the formation of attitudes and values that encourage respect for nature and the sustainable use of natural resources. Small everyday actions, such as not throwing rubbish on the ground, saving water, preserving green areas and caring for animals, contribute significantly to the construction of a healthier and more balanced environment.

It is important to understand that the global environment is a common concern for all of humanity. Each individual, regardless of their age, has an important role in the preservation of the planet. When pupils recognise that their attitudes can positively or negatively impact the environment in which they live, they become protagonists in the construction of a more sustainable future. According to GADOTTI (2007):

The feeling of belonging to the Earth does not begin in adulthood, nor through an act of reason. From childhood, we feel connected to something much greater than ourselves. As children we feel deeply connected to the universe and we place ourselves before it in a mixture of astonishment and respect. And, throughout our lives, we seek answers as to what we are, where we came from, where we are going — in short, what the meaning of our existence is. It is an unceasing search that never ends. Education can have a role in this process if it poses fundamental philosophical questions, but also if it knows how to work, alongside knowledge, this capacity of ours to be enchanted by the universe.

Given this context, caring for the Earth is not only a responsibility, but an ethical commitment to life (DA TERRA, 2000). Protecting the environment means guaranteeing quality of life for present and future generations. The preservation of the planet must be understood as a collective and continuous duty, which requires respect, awareness and action. After all, the Earth is our home — and caring for it is caring for ourselves.

This pedagogical perspective defends the formation of aware, critical subjects committed to the preservation of life on the planet. Such an approach proposes the valorisation of interdependent forms of knowledge, highlighting the importance of educating for critical and global thinking, going beyond the mere accumulation of information. Moreover, it emphasises the education of feelings, recognising the human being as a subject who thinks, feels and seeks meaning in their existence. And it stresses the need to develop earthly identity and planetary awareness, understanding the interdependence between all beings and the collective responsibility in the preservation of the planet. In this context, education must promote ethics, solidarity and understanding, overcoming utilitarian and competitive views.

Another central aspect is the valorisation of principles such as simplicity, balance, coexistence and respect, encouraging changes in consumption patterns and ways of life.

However, this transformation must be associated with social justice, guaranteeing dignified conditions for all.

In this way, Gadotti (2007) understands that the Pedagogy of the Earth presents itself as an essential alternative in the face of social and environmental crises, proposing an education aimed at the construction of a more just, supportive and sustainable society.

4.3 ENVIRONMENTAL PERCEPTION

Environmental perception, in the literature of Environmental Education, is understood as a field of study that investigates the way subjects interpret, attribute meanings to and relate to the environment in which they live, considering cognitive, affective, cultural and social dimensions. It is a subjective and historical construction, influenced by individual and collective experiences, as well as by the social and cultural conditions in which individuals are inserted (MARIN, 2008; PALMA, 2005).

According to this perspective, environmental perception cannot be understood only as a sensory reading of reality, but as a process of constructing meanings about the lived world, in which the subject establishes relationships with the environment and attributes meanings to their everyday experiences (DA CUNHA; LEITE, 2009). Thus, this process involves both individual and collective aspects, being constantly influenced by the sociocultural context.

In the educational context, environmental perception assumes a fundamental role, as it contributes to the formation of subjects who are more aware and critical of social and environmental issues. In this sense, Kubiszewski and Da Silva Iocca (2013) highlight that pupils' environmental perception is directly related to their everyday practices, being essential for the development of attitudes of preservation and care for the environment.

Furthermore, Palma (2005) emphasises that environmental perception can be used as an important instrument in the planning of Environmental Education, since it allows us to understand how different groups perceive and relate to the environment, enabling the elaboration of more contextualised and meaningful pedagogical practices.

Likewise, Marin (2008) reinforces that studies on environmental perception contribute to the understanding of the different forms of relationship between society and nature, showing that these perceptions directly influence the environmental attitudes and behaviours of subjects.

In this way, the literature shows that environmental perception is not constituted as an isolated element, but as an integral part of the process of human formation and of Environmental Education. When addressed in Primary Education, especially in the early years, it contributes significantly to the development of subjects who are more reflective,

critical and committed to environmental preservation and to the construction of a more sustainable society.

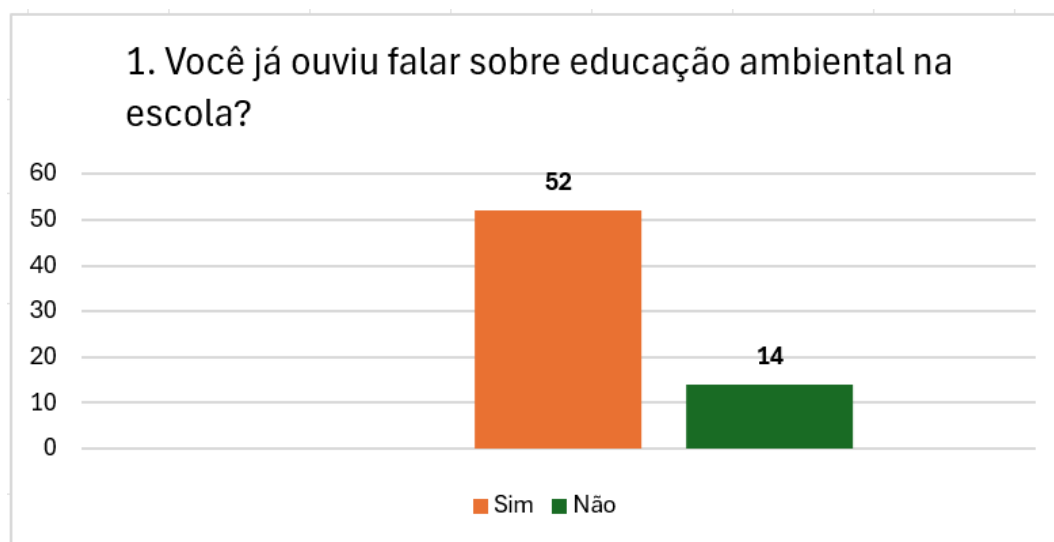
5 ANALYSIS AND DISCUSSION OF THE RESULTS

The analysis of the data obtained from the 66 lower-primary pupils made it possible to understand the perceptions, knowledge and attitudes related to Environmental Education in the school context. The results show that pupils have an initial contact with environmental issues, although this approach still occurs in a limited, fragmented and, in many cases, superficial manner.

Initially, it was found that most pupils stated that they had already heard about Environmental Education at school. The presence of a significant percentage of pupils who are unaware of the topic reveals possible weaknesses in pedagogical practices, in curricular integration or even in the frequency with which the subject is addressed in the classroom. This datum demonstrates that the topic is present in the educational environment, although not in a homogeneous manner among all pupils. However, a significant portion reported having no prior knowledge of the topic, indicating weaknesses in the continuity and scope of the pedagogical practices developed.

Figure 1

Graph 1 - Environmental education at school



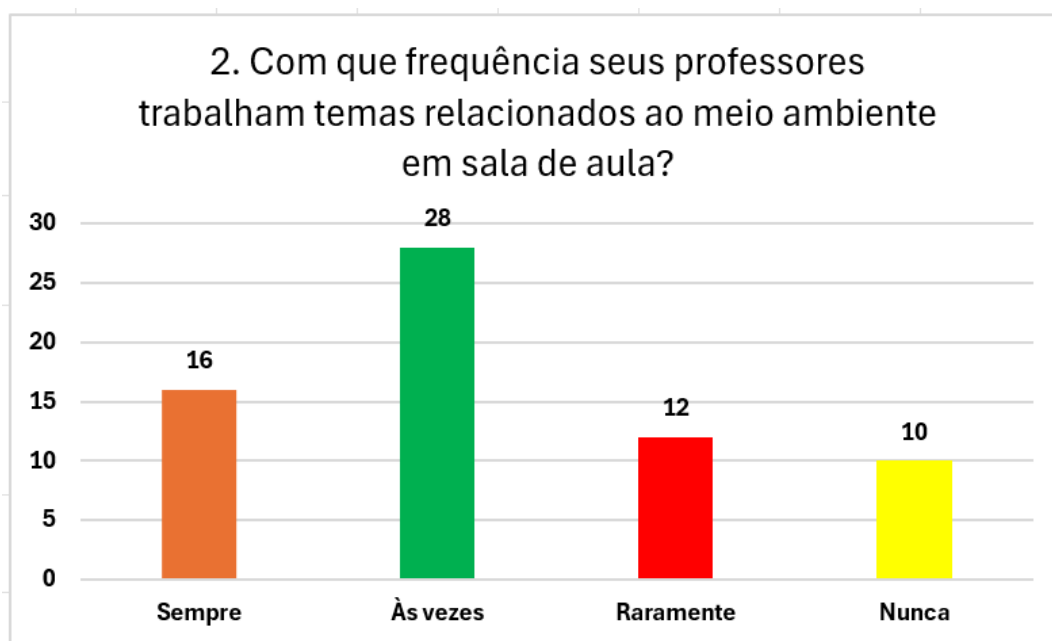
Source: prepared by the author (2020).

In this sense, the results point to the need to strengthen the educational actions aimed at Environmental Education, in order to guarantee greater scope, continuity and depth of content. It becomes fundamental that pedagogical practices be planned in a systematic and contextualised manner, promoting not only access to information, but also the construction of

a critical and participatory awareness among pupils, essential for the development of attitudes and values aimed at sustainability and social and environmental transformation.

Figure 2

Graph 2 - Frequency of lessons delivered regarding the environment



Source: prepared by the author (2020).

With regard to the frequency with which environmental content is addressed in the classroom, the results indicate that most pupils perceive this approach only 'sometimes'. This scenario reveals that Environmental Education has not yet consolidated itself as a continuous and cross-cutting practice in everyday school life, frequently occurring in an occasional manner, linked to specific projects or commemorative dates. Such fragmentation compromises the construction of deeper knowledge and limits the development of a critical awareness of social and environmental issues.

With regard to the conceptual understanding of Environmental Education, it was observed that pupils associate the topic mainly with practical preservation actions, such as recycling, saving water, correct disposal of rubbish and caring for nature. The responses demonstrate that pupils understand the importance of environmental preservation and recognise sustainable attitudes in everyday life. However, this understanding still presents itself predominantly at a behavioural and descriptive level, centred on individual and immediate actions.

The pupils' statements reveal an environmental perception constructed mainly from the experiences lived in their everyday lives and from the practices developed at school. Many pupils relate environmental problems to the accumulation of rubbish, pollution, flooding

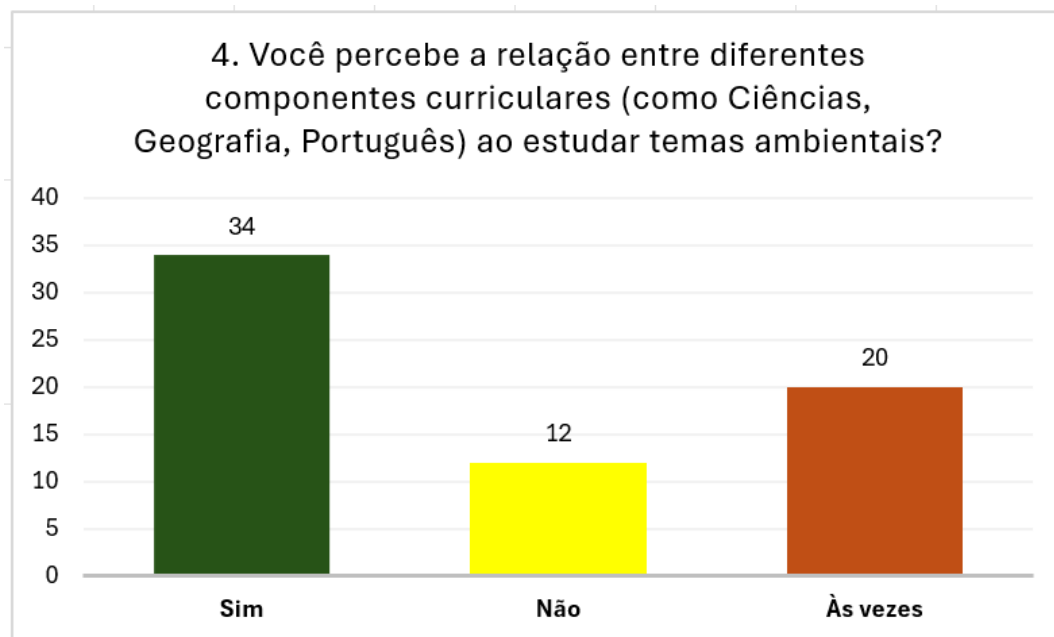
and impacts on the health of the population. This perception shows an important level of environmental awareness, as pupils are able to identify problems present in their reality and recognise their direct effects on quality of life. However, it was observed that pupils' understanding still presents limitations regarding the social, economic, political and cultural dimensions of environmental issues. The responses demonstrate little articulation with structural aspects, such as social and environmental inequalities, excessive consumption, public policies or global impacts related to sustainability. This indicates that the constructed knowledge remains, to a large extent, linked to common sense and immediate experiences.

From the content analysis grounded in Bardin (2011), it was possible to identify recurrent thematic categories in pupils' statements, such as environmental preservation practices, awareness-raising, individual responsibility, sustainability, respect for nature and participation in environmental actions. These categories reveal manifest contents related to the internalisation of basic values of care and preservation of the environment. However, the analysis also shows latent contents that point to the need to deepen pedagogical practices. Although pupils demonstrate an initial awareness of environmental problems, they still do not present a critical and systemic understanding of the social and environmental issue. In this sense, it becomes fundamental to broaden educational strategies beyond behavioural actions, promoting more contextualised and problematising reflections.

The data also reveal weaknesses in the perception of interdisciplinarity. Most pupils stated that the relationship between the different curricular components and environmental issues occurs only occasionally. This result shows that Environmental Education is not yet fully developed as a cross-cutting axis in the school curriculum, hindering the integration of knowledge and the construction of a broader view of reality.

Figure 3

Graph 3 - Perception of the relationship between different curricular components regarding environmental topics



Source: prepared by the author (2020).

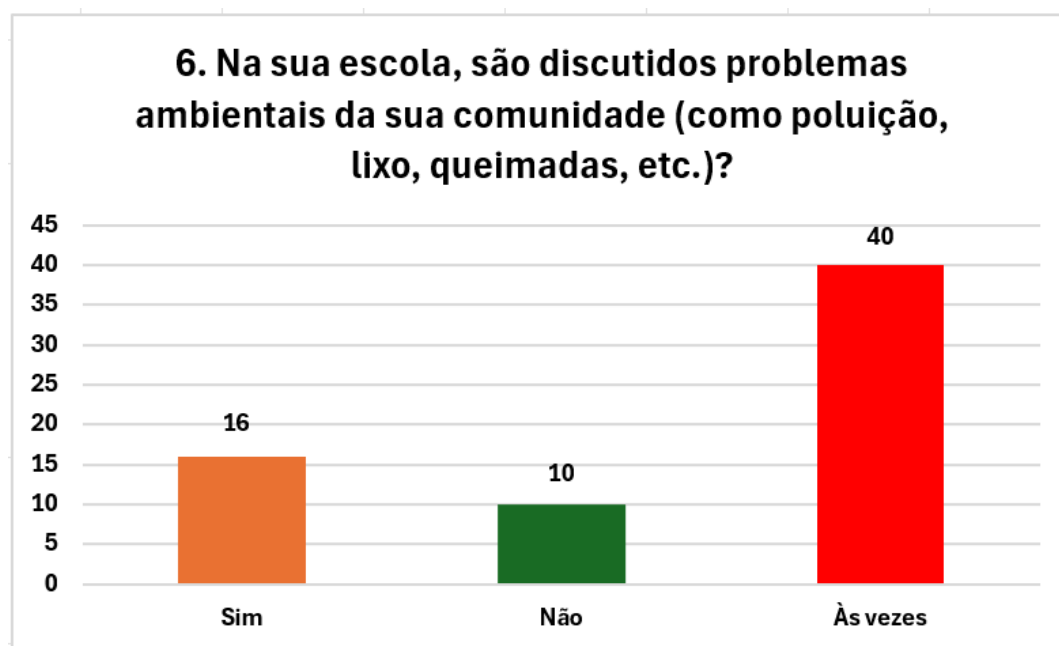
Interdisciplinarity constitutes one of the fundamental principles of Environmental Education, as it allows environmental problems to be understood in an integrated manner, relating scientific, social, cultural and economic aspects. When this articulation does not occur effectively, the content tends to be addressed in an isolated manner, limiting pupils' capacity to understand the complexity of contemporary environmental issues.

Regarding the environmental activities developed at school, pupils reported participating in practices such as recycling, clean-up efforts, tree planting, educational campaigns and lectures on environmental preservation. These experiences demonstrate that the school institution seeks to promote actions aimed at caring for the environment, favouring the development of sustainable attitudes.

Practical activities stand out as important pedagogical strategies, as they bring pupils closer to environmental reality and enable the articulation between theory and practice. Direct contact with preservation actions contributes to the strengthening of values such as responsibility, cooperation, belonging and respect for nature.

Figure 4

Graph 4 - Discussion of environmental problems within the school



Source: prepared by the author (2020).

However, the results indicate that these practices still occur in an occasional and poorly systematised manner. In many cases, environmental actions are linked to specific events or temporary campaigns, without continuity throughout the school year. This limitation reduces the formative potential of Environmental Education and hinders the consolidation of more meaningful learning.

Another relevant aspect refers to the contextualisation of environmental content to the pupils' local reality. The results show that the environmental problems of the community are addressed only occasionally in the school context. Although some pupils recognise discussions about pollution, rubbish and flooding, the approach still occurs in an insufficient manner.

The valorisation of the local context is essential for the construction of meaningful learning, as it allows pupils to relate school content to the situations experienced in their everyday lives. When Environmental Education starts from the pupils' reality, it becomes closer, more concrete and more relevant, favouring the development of critical thinking and social participation.

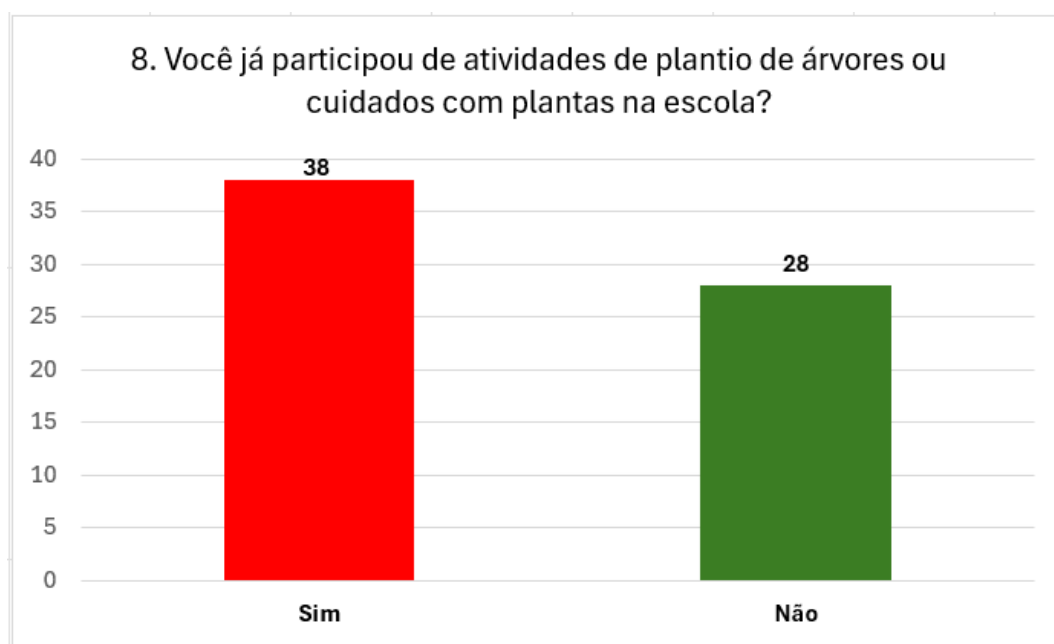
Pupils' perceptions regarding environmental impacts in their community demonstrate that they recognise the effects of environmental degradation on health, well-being and quality of life. The statements reveal concerns with accumulated rubbish, bad smells, diseases, floods and urban pollution. Such responses indicate an environmental perception constructed from everyday experience.

Pupils still present difficulties in understanding the structural causes of these problems and their relationships with economic, social and political issues. This shows the need for pedagogical practices that promote greater critical and reflective depth, enabling pupils to understand the multiple dimensions of the environmental issue.

With regard to afforestation activities, the results show that a significant portion of pupils have already participated in tree-planting actions or plant care. These experiences contribute to strengthening pupils' bond with nature and favour environmental awareness.

Figure 5

Graph 5 - Participation in tree-planting activities and/or plant care



Source: prepared by the author (2020).

Pupils recognise the importance of trees for improving air quality, reducing heat, preserving nature and collective well-being. The statements demonstrate a positive perception regarding afforestation, associating it with the improvement of quality of life and environmental conservation.

However, this understanding still occurs in an introductory manner, based mainly on perceptible aspects of everyday life. There is little articulation with more complex scientific concepts, such as biodiversity, ecological balance and climate change. This reinforces the need for theoretical deepening and contextualisation of pedagogical practices.

The suggestions presented by pupils to improve environmental preservation at school show a participatory and proactive stance. Among the main proposals, the following stand out: the expansion of selective collection, the carrying out of environmental projects, the

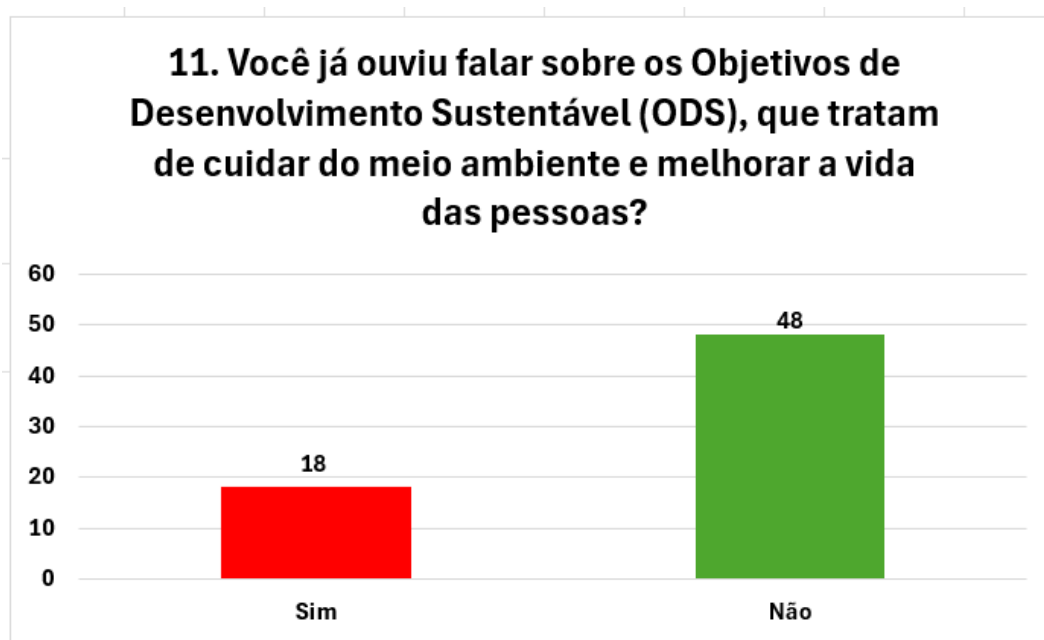
creation of school gardens, tree planting, educational campaigns and the strengthening of awareness-raising actions.

These responses reveal that pupils not only recognise environmental problems, but also demonstrate an interest in participating in solutions and improvements in the school environment. Such involvement represents an important potential for the development of pupil agency and environmental citizenship.

Another relevant datum refers to pupils' low level of knowledge regarding the Sustainable Development Goals (SDGs).

Figure 6

Graph 6 - Sustainable Development Goals (SDGs)



Source: prepared by the author (2020).

Most pupils stated that they were unaware of this topic, showing weaknesses in the approach to content related to global sustainability and contemporary challenges.

The absence of more in-depth discussions about the SDGs limits the formation of a broader environmental awareness, hindering the understanding of the relationships between local problems and global challenges. In this context, it becomes fundamental to integrate the SDGs into pedagogical practices in an interdisciplinary, contextualised and meaningful manner.

The responses related to the actions that can be carried out at home and at school to preserve the environment reinforce the predominance of an understanding aimed at everyday practices, such as recycling, saving water, adequate disposal of rubbish and caring for nature.

Although these attitudes are important, there is a need to broaden pupils' understanding beyond individual actions, favouring a more critical and collective view of sustainability.

The analysis of the results shows that Environmental Education has significant potential in the school context, especially due to the interest and participation demonstrated by pupils. However, it also reveals important challenges related to the continuity of pedagogical actions, interdisciplinarity, conceptual deepening and the contextualisation of content.

In this sense, it becomes fundamental to strengthen more integrated, critical and participatory pedagogical practices, capable of promoting the articulation between theory and practice and favouring the development of a critical and transforming environmental awareness. The adoption of active methodologies, interdisciplinary projects, investigative activities and community actions can contribute significantly to the construction of more meaningful learning.

In dialogue with the critical perspective of Paulo Freire (2019), it is understood that Environmental Education must go beyond merely informative or behavioural practices, constituting itself as a formative process aimed at awareness-raising, critical reflection and social transformation. The school, in this context, assumes an essential role in the formation of subjects capable of understanding their reality and acting in a responsible and participatory manner in the construction of a more just and sustainable society.

In this way, the results demonstrate that pupils present an initial base of environmental awareness, constructed mainly from their everyday experiences and from the practices developed at school. However, they also show the need to broaden and deepen educational actions, in order to favour the comprehensive formation of pupils and the strengthening of a critical, continuous and transforming Environmental Education.

6 FINAL CONSIDERATIONS

The present research aimed to analyse the knowledge, perceptions and practices of lower-primary pupils regarding Environmental Education in the school context, as well as to understand their contributions to the construction of a critical environmental awareness in the early years. Based on the results obtained, it is considered that the proposed objectives were achieved, since it was possible to identify pupils' knowledge and perceptions about environmental issues, analyse their participation in activities related to the topic and verify the contributions of these experiences to the formation of attitudes aimed at the conservation of the environment.

The results showed that pupils have initial knowledge about Environmental Education, mainly related to recycling, saving water, adequate disposal of waste and caring for nature. It was possible to verify that pupils present an environmental perception of the problems present in their everyday lives, recognising issues such as pollution, accumulation of rubbish, floods and their impacts on quality of life. Furthermore, pupils' participation in environmental activities promoted by the school was observed, such as educational campaigns, recycling actions and tree planting, demonstrating interest and involvement with the topic.

However, the data revealed that the constructed knowledge still presents itself in a limited and shallow manner, concentrating mainly on individual actions of environmental conservation. It was found that Environmental Education, although present in the school environment, still occurs in an occasional and fragmented manner, with limitations related to interdisciplinarity, the continuity of pedagogical actions and the contextualisation of content with the reality experienced by pupils.

In this context, it becomes fundamental to strengthen pedagogical practices that promote curricular integration, the contextualisation of content and pupil agency, favouring meaningful learning experiences. The adoption of active methodologies, integrative projects and continuous actions can contribute significantly to the formation of critical, reflective subjects committed to sustainability and social and environmental transformation.

The relevance of the teacher's role as a mediator of the educational process stands out, stimulating collective participation, critical reflection and the construction of values aimed at social and environmental responsibility. Thus, the continuing training of teachers, associated with collective and interdisciplinary planning, presents itself as an essential element for the effectiveness of pedagogical practices in Environmental Education.

In this way, it is concluded that Environmental Education plays a fundamental role in the comprehensive formation of pupils in the early years, contributing to the development of values, attitudes and practices aimed at the conservation of the environment. However, for its effectiveness to be broadened, it becomes necessary to promote continuous and meaningful educational actions that enable pupils to understand social and environmental reality in a critical manner and to act as participatory subjects in the construction of a more sustainable society.

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SPECIAL EDUCATION AT THE FEDERAL INSTITUTE OF RIO DE JANEIRO: THE CONTINUITY OF DIALOGICAL DISCUSSION

A EDUCAÇÃO ESPECIAL NO INSTITUTO FEDERAL DO RIO DE JANEIRO: A CONTINUIDADE DA DISCUSSÃO DIALÓGICA

EDUCACIÓN ESPECIAL EN EL INSTITUTO FEDERAL DE RÍO DE JANEIRO: LA CONTINUIDAD DEL DIÁLOGO



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ABSTRACT

This article presents a comparative dialogue between the results found in two research projects: the first, conducted during a master's degree in 2020, and the second, a doctoral research project in 2024, aimed at maintaining a dialogical continuity with managers and coordinators of the Centres for Assistance to People with Specific Needs (NAPNEs), regarding the inclusion of students with disabilities and specific needs at the Federal Institute of Rio de Janeiro (IFRJ). The research focused on identifying and analysing how the inclusion process occurs at IFRJ. Methodologically, both studies employed qualitative and quantitative approaches, and participatory research, using bibliographic research, documentary analysis, and semi-structured interviews with open-ended questions as data collection instruments. For data analysis, both studies used content analysis as proposed by Bardin. Finally, the integration of the results from both studies complements and expands the discussions, promoting continuity in the debate. The research results showed that the accessibility centres, despite the difficulties, have demonstrated a commitment to inclusion. In the NAPNEs, limited infrastructure and a lack of human and financial resources hinder more effective actions. We conclude that the NAPNEs are, to date, the only initiative aimed at the Special Education population on the campuses, contributing to guaranteeing not only access but also the retention of these students, promoting inclusive education, albeit in a still limited way. And that the practice of Social Responsibility at IFRJ, even with the advances, still faces challenges, including the normalisation of the violation of the human rights of these people. We conclude that the implementation of inclusion at IFRJ requires more than just documents; it demands practical and concrete actions, contributing to the dissemination of a culture of inclusion and human rights.

Keywords: Special Education. Inclusion. Federal Institute of Rio de Janeiro. Accessibility Centres. NAPNEs.

RESUMO

O presente artigo trata de um diálogo comparativo entre os resultados encontrados em duas pesquisas, a primeira, realizada no curso de mestrado em 2020, a segunda, a pesquisa do doutorado em 2024, com propósito de continuidade dialógica, com gestores e coordenadores dos Núcleos de Atendimento às Pessoas com Necessidades Específicas

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(NAPNEs), sobre a inclusão dos estudantes com deficiência e necessidades específicas do Instituto Federal do Rio de Janeiro (IFRJ). A pesquisa se debruçou na identificação e na análise de como se dá o processo de inclusão no IFRJ. Metodologicamente, nas duas pesquisas utilizamos abordagens qualitativa e quantitativa, e pesquisa participante empregando como instrumentos de coleta de dados, o levantamento bibliográfico, a análise de acervo documental e entrevistas semiestruturadas com perguntas abertas. Para análise dos dados, nas duas pesquisas utilizamos a análise de conteúdo proposta por Bardin. E ao final, a integração dos resultados das duas pesquisas, que complementa e amplia as discussões, promovendo continuidade ao debate. Os resultados da pesquisa mostraram que os núcleos de acessibilidade, apesar das dificuldades, têm demonstrado compromisso com a inclusão. Nos NAPNEs, a limitação de infraestrutura e a carência de recursos humanos e financeiros impede ações mais eficazes. Concluímos que os NAPNES são, até o momento, a única iniciativa voltada ao público da EE nos campi, contribuindo para garantir não apenas o acesso, mas também a permanência desses estudantes, promovendo uma educação inclusiva, embora de forma ainda limitada. E que a prática da Responsabilidade Social no IFRJ, mesmo com os avanços, ainda enfrenta desafios, incluindo a naturalização da violação dos direitos humanos dessas pessoas. Concluímos que a implementação da inclusão no IFRJ, requer mais do que apenas documentos; exige ações práticas e concretas, contribuindo para a disseminação da cultura de inclusão e dos direitos humanos.

Palavras-chave: Educação Especial. Inclusão. Instituto Federal do Rio de Janeiro. Núcleos de Acessibilidade. NAPNEs.

RESUMEN

Este artículo presenta un diálogo comparativo entre los resultados de dos proyectos de investigación: el primero, realizado durante una maestría en 2020, y el segundo, un proyecto de investigación doctoral en 2024, cuyo objetivo era mantener una continuidad dialógica con los gestores y coordinadores de los Centros de Asistencia a Personas con Necesidades Especiales (NAPNEs), en relación con la inclusión de estudiantes con discapacidades y necesidades específicas en el Instituto Federal de Río de Janeiro (IFRJ). La investigación se centró en identificar y analizar cómo se produce el proceso de inclusión en el IFRJ. Metodológicamente, ambos estudios emplearon enfoques cualitativos y cuantitativos, e investigación participativa, utilizando investigación bibliográfica, análisis documental y entrevistas semiestructuradas con preguntas abiertas como instrumentos de recolección de datos. Para el análisis de datos, ambos estudios utilizaron el análisis de contenido propuesto por Bardin. Finalmente, la integración de los resultados de ambos estudios complementa y amplía las discusiones, promoviendo la continuidad en el debate. Los resultados de la investigación mostraron que los centros de accesibilidad, a pesar de las dificultades, han demostrado un compromiso con la inclusión. En los NAPNES, la infraestructura limitada y la falta de recursos humanos y financieros dificultan acciones más efectivas. Concluimos que los NAPNES son, hasta la fecha, la única iniciativa dirigida a la población de Educación Especial en los campus, contribuyendo a garantizar no solo el acceso sino también la retención de estos estudiantes, promoviendo la educación inclusiva, aunque de manera aún limitada. Asimismo, la práctica de la Responsabilidad Social en el IFRJ, incluso con los avances, aún enfrenta desafíos, incluyendo la normalización de la violación de los derechos humanos de estas personas. Concluimos que la implementación de la inclusión en el IFRJ requiere más que simples documentos; exige acciones prácticas y concretas que contribuyan a la difusión de una cultura de inclusión y derechos humanos.

Palabras clave: Educación Especial. Inclusión. Instituto Federal de Río de Janeiro. Centros de Accesibilidad. NAPNE.

1 INTRODUCTION

This work is the result of an excerpt drawn from the findings of a dissertation and a thesis. The two research projects aimed to analyse the inclusion of students with disabilities and specific needs at the Federal Institute of Education, Science and Technology of Rio de Janeiro (IFRJ).

Taking into account the developments of the dissertation of the Professional Master's Programme in Diversity and Inclusion of the Universidade Federal Fluminense, whose objective was to listen to and identify the conceptions of teaching managers and the coordinators of the Centres for Assistance to People with Specific Needs (NAPNEs) regarding the inclusion of students with disabilities or specific needs in Professional and Technological Education (EPT) at IFRJ, amplifying their voices and identifying the strengths and limitations pointed out by the managers and coordinators of the NAPNEs in the support provided to the students of each centre, in order to guide joint work and create improvements in the conditions of access, retention and success of the students who are the public of Special Education (EE) at IFRJ.

And the thesis aimed to investigate how the inclusion process aimed at the Special Education population and at students with specific needs at IFRJ occurs.

Given the relevance of the diagnoses on inclusion as a Public Policy at IFRJ found in the dissertation's results, it became necessary in the thesis to continue the investigative process begun during the master's course, which brought, among other contributions: (i) a fairly detailed panel of the inclusive perspective at IFRJ, which only consolidates on paper, taking shape through a macro-scenario and presenting itself under a view of inclusion that does not yet solidify, because it does not materialise on the campuses; (ii) the establishment of a dialogical continuity with the theme and with the previous research. Thus, these contributions were able to bring clarifications for a better understanding of the public inclusion policy at IFRJ.

The need and importance of this study are validated in the face of research with scarce and little specialised results, diagnosed during the bibliographic survey, mainly of research on: social responsibility, inclusive practices in the Federal Network of Professional, Scientific and Technological Education (RFEPCT) and, above all, on inclusive practices at IFRJ, thus evidencing fertile ground for academic studies and the production of materials on the subject.

This work aims to integrate the results of the research carried out in the master's course in 2020 with the results of the doctoral research in 2024, with the purpose of dialogical continuity, with managers and coordinators of the NAPNEs regarding the inclusion of students with disabilities and specific needs at IFRJ.

2 LITERATURE REVIEW

2.1 THE FEDERAL INSTITUTE OF EDUCATION, SCIENCE AND TECHNOLOGY OF RIO DE JANEIRO

We shall provide a brief historical contextualisation of the researched institution, IFRJ, the setting and locus of the study, based on content available on the official IFRJ website.

IFRJ originated with the creation of the Technical Course in Industrial Chemistry, in the 1940s, during the Second World War, at a time when the field of industrial chemistry was seen as strategic for Brazil. In 1999, it became the Centro Federal de Educação Tecnológica de Química (CEFETQ) which, in 2001, began to offer undergraduate and postgraduate courses, in addition to Secondary and Technical Education courses. On 29 December 2008, through Lei nº 11.892 (Brasil, 2008a), CEFETQ was transformed into IFRJ.

The organisational structure of the Federal Institutes (IFs) is defined by Lei nº 11.892 (Brasil, 2008a), which establishes the RFEPCT and creates the IFs. The IFs have an organisational structure, unlike basic education schools, which allows them to be compared to Federal Universities.

IFRJ is an Institution of Basic and Higher Education, multidisciplinary and multi-campus, specialised in the provision of Professional and Technological Education, with activity in research, innovation and extension, and enjoys university autonomy. IFRJ operates at different levels and modalities of Basic, Technical and Technological Education, from Professional Education, with extension courses, offering training in the Youth and Adult Education (EJA) modality, through Initial and Continuing Training (FIC) courses at the Fundamental level, Secondary Education (technical courses that may be taken in an integrated, concomitant and subsequent manner to Secondary Education), Higher Technology Course, Bachelor's degree, Teaching Degree, and Lato and Stricto Sensu Postgraduate studies.

IFRJ currently has 15 campuses installed in the state of Rio de Janeiro, namely: Arraial do Cabo, Belford Roxo, Duque de Caxias, Engenheiro Paulo de Frontin, Mesquita, Nilópolis, Niterói, Paracambi, Pinheiral, Realengo, Resende, Rio de Janeiro, São Gonçalo, São João de Meriti, Volta Redonda and the Rectory. According to the institution's portal, IFRJ was awarded three new campuses: Parque Olímpico, Teresópolis and Complexo do Alemão.

2.2 THE INTEGRATION AND DIALOGICAL CONTINUITY WITH THE RESULTS OF THE 2020 RESEARCH

The professional master's course produced as a product of the course an Orienting Guide (Dias; Fernandes; Salgado, 2020) and two books: the first entitled "Práticas

Pedagógicas na Educação Especial: um suporte para a promoção do acesso, permanência e êxito" (Dias; Fernandes; Salgado, 2021) and the second entitled "Inclusão como Política Pública na Rede Federal: um olhar sobre o IFRJ" (Dias; Fernandes; Salgado, 2021a), in addition to repercussions following the publications and dissemination of the results.

I consider that these mobilisations result directly from the findings and projections outlined by the research, which evidenced a growing concern with inclusion as a central axis of Public Policies. This concern encompasses fundamental aspects such as the access, retention and success of students with disabilities and specific needs. It is a relatively recent concern, which gained prominence with the sudden and largely unforeseen arrival of a significant number of students with such needs. This scenario occurred despite the warnings issued by the Accessibility Centres of IFRJ, especially after the enactment of the Brazilian Inclusion Law (LBI) in 2015 and the Reservation of Places Law in 2017.

Another relevant finding of the research, which generated great repercussion, was the verification of a significant increase of 913% in the number of enrolments of students with disabilities and specific needs at the IFRJ campuses, between the years 2014 and 2020. This substantial growth reinforces the importance of deepening the investigation, allowing us not only to better understand the context and challenges of inclusion, but also to guide institutional and social responsibility policies that adequately address this new reality.

In order to leverage the continuity of the research and within the scenario presented in the dissertation's results, it was important for us to question: to what extent does the legacy of the Federal Network of 1909 still invisibly prevail, when the IFs, in 2024, do not have an institutional inclusion policy? Why did IFRJ only create its Inclusion Policy in June 2023? Was it necessary to wait for an increase of more than 913% to create an inclusion policy? Is it necessary to create an inclusion policy for inclusion to occur in an institution? Why do national legal provisions not guarantee inclusion? What unites the two scenarios of the research? Such questions were the central elements that motivated us to continue the research.

Given the motivation for carrying out the doctorate with the results found and the perspectives outlined, we know that the investigation in the thesis was qualified by the importance it may come to represent in answering these questions, and in delineating a path for polytechnic institutions, or not, especially for IFRJ, after the creation of its Institutional Inclusion Policy in 2023.

Therefore, with the purpose of giving continuity to the results obtained on the inclusion of students with disabilities and specific needs in Professional and Technological Education at IFRJ, and transporting it to a new research project, after four years, we shall present in this study the developments following its dissemination.

After the due presentation of the methodologies used in the two research projects, we shall move on to the results and discussion section, where the results of the master's research in 2020 will be presented, followed by the presentation of the results found in the doctorate, already making a comparative reflective analysis of the two research projects, enabling the integration of the results with the purpose of dialogical continuity to the interlocutions with teaching managers and coordinators of the accessibility centres regarding the inclusion of students with disabilities and specific needs at IFRJ.

Thus, this work aims only to present a comparative study between the results found in the dissertation in 2020 and in the thesis in 2024. Both research projects analysed how the inclusion of students with disabilities and specific needs occurs at IFRJ.

3 METHODOLOGY

This study is situated within the scope of research with qualitative and quantitative approaches, and uses participatory research, employing as data collection instruments the bibliographic survey, the analysis of the documentary archive, and semi-structured interviews with open-ended questions.

In order to make possible the intention of bringing the two research projects closer and integrating them, we used a methodology close to that used in the master's research, but with updated data and different actors. Thus, the opportunity arose to research how the inclusion process occurs at IFRJ and at the Instituto Politécnico de Viseu (IPV) in Portugal, both polytechnic institutions, one in Rio de Janeiro, Brazil, the other in Viseu, Portugal.

Thus, the two research projects advanced along two preliminary paths, and a third, based on the analysis of the data. In the first path, dedicating themselves to a bibliographic survey in databases, on the portal of the Brazilian Digital Library of Theses and Dissertations (BDTD), in the Bank of Theses and Dissertations of the Coordination for the Improvement of Higher Education Personnel (Capes), on publications within the scope of Professional Education, Social Responsibility, Special Education, and Polytechnic Education in the RFEPCT, at IFRJ and at IPV, which served as a reflective basis for the elaboration of the research. In the master's research, the bibliographic survey was carried out in the period from 2010 to 2018, and in the doctorate in the period from 2020 to 2024. In the 2020 research, the terms Social Responsibility and IPV were not researched.

The analysis of the documentary archive was the second path in both research projects, and had as its purpose to learn about the mandatory documents that govern Professional Education and Special Education in Brazil and their relations with the investigation. In addition to the internal normative documents of IFRJ.

In 2024, the documentary analysis included the legislation governing Professional Education and Special Education in Portugal and the internal normative documents of IPV, in addition to a request for information through the e-Sic system, to obtain updated data from IFRJ. In the documentary analysis, legislation such as: laws, decrees, resolutions, ordinances, opinions and technical notes, the United Nations Convention on the Rights of Persons with Disabilities (ONU, 2006; ratified in Portugal, 2009); the Universal Declaration of Human Rights (ONU, 1948), the Convention on the Rights of Persons with Disabilities (CDPD) (2006), and the data collected in the e-Sic were evaluated. In 2020, except for the documents concerning Portugal and the e-Sic research.

In the third path, by means of interviews with 14 open-ended questions and a questionnaire. The participants of the 2020 research, through interviews, were: (i) four Managers linked to teaching within the scope of the Rectory (the Rector of IFRJ, the Pro-Rector of the Pro-Rector of Basic, Technical and Technological Education, the Pro-Rector of the Pro-Rector of Extension, who was replaced by the Pro-Rector of the Pro-Rector of Research, Postgraduate Studies and Innovation, and the Director of Diversity and Affirmative Actions; (ii) sixteen Teaching Managers at the IFRJ campuses, the Directors of Teaching.

And with a questionnaire, the fifteen coordinators of the NAPNEs, today, Coordination of the Centres for Assistance to People with Specific Needs (CONAPNEs), who are the protagonists and articulators of the institution's inclusive actions, enabling reflections on daily practices, equipping the IFRJ campuses. It is worth remembering that, in the 2024 research, we did not use the questionnaire, only the interviews with the same questions used previously, but adapted to IPV. With the vice-presidency of IPV, and the coordination of the Centre for Support to the Inclusion of Students with Specific Educational Needs (NAI-ENEE) of IPV, carrying out an integration and giving dialogical continuity to the results obtained in the research carried out in the master's course in 2020.

In summary, twenty interviews were carried out in all, of which four were interviews with the Teaching Managers of the Rectory and sixteen were interviews with Directors of Teaching of the campuses. Furthermore, fifteen questionnaires were answered by the Coordinators of the NAPNEs, amounting to full adherence of those researched, 100% of the thirty-five subjects foreseen in the sample. And two interviews at IPV, in 2023.

In the 2024 research, we used, in the data collection, the resource of methodological triangulation, with three macro-categories. Thus, we considered, in the first category, the bibliographic survey and the analysis of the documentary archive as a methodology of the same nature. Therefore, we judged this first stage, with the two models, as the basis of the

triangulation, given the importance of the material, and, being a dense material, allowing us to revisit the path travelled by EP, EE, RFEPC, IFRJ and IPV.

The basis of the triangulation of this work, that is, the bibliographic survey and the analysis of the documentary archive, were the first procedures of the data collection and served as a basis for the elaboration of the research, consolidating the theoretical foundation and serving as a fundamental structure for all the other moments of the research.

As the second category of the triangulation, we listed the interviews, which made it possible to collect information on the perceptions of the subjects and information on how the participants perceive the facts. And, as the third category, the carrying out of the integration with the research conducted in the master's course in 2020, giving dialogical continuity to the results revealed on inclusion as a Public Policy at IFRJ.

Documentary research points to a series of advantages, since it must be considered that documents constitute a rich and stable source of data. As documents subsist over time, they become the most important source of data in any research of a historical nature (Gil, 2002) (Figure 1).

Figure 1

Triangulation of Methodologies with Three Macro-categories



Source: prepared by the authors.

The first path served as the basis for the triangulation, by means of the bibliographic survey and subsequent analysis of the material, of the documentary analyses that support the RFEPC, IFRJ, IPV, EE and EP in Brazil and Portugal, and of the analysis of the material collected through the e-Sic.

In the second path and as the second category of the triangulation, the analyses of the interviews carried out at IPV. And, in the third path and as the third category of the triangulation, the integration of these results with the research conducted in the master's course in 2020.

The bibliographic research was conducted in publicly accessible databases; the process of documentary analysis was carried out between the years 2022 and 2023. The writing of the thesis and the data collection in the citizen information service, e-Sic, on the governmental platform Fala.BR, began in the year 2024.

For Gil (2008), bibliographic research and documentary research differ from each other by the nature of the texts, even though they are similar.

Lüdke and André (1986) affirm that documentary analysis is a valuable technique for approaching qualitative data, whether complementing the information obtained by other techniques or unveiling new aspects of a theme or problem; we understand that the technique provided us with a view of national and international policies on the rights of persons with disabilities.

In the understanding of Minayo (2009), the interview is a privileged form of communication and collection of information, being one of the most used strategies in the research process; we used the semi-structured interview as a data collection technique. The interview being of the semi-structured type implies saying that the researcher can ask free and specific questions, allowing the interviewee to respond according to their understanding (Gil, 1999).

Interviews, according to Lüdke and André (1986), constitute one of the greatest sources for collecting information on the perceptions of subjects, a moment of social interaction and of dialogues on the subject involved.

In this sense, the interview, according to Minayo (1996), produces data of two natures: those that the researcher can obtain from other sources and those that refer directly to the interviewee, such as their attitudes, values and opinions.

In the 2020 research, data triangulation was not used, only content analysis (Bardin, 2011). After the end of the bibliographic research and the documentary analysis, the Project for the Plataforma Brasil was conceived.

In accordance with the methodological proposal of this research, for the survey and analysis of the data, the information obtained through all the bibliographic and documentary material researched and the result of the analyses of the information obtained in the e-Sic were considered.

With regard to the requests for information made to the Federal Executive Power, the Office of the Comptroller General of the Union (CGU) created the e-Sic, an electronic system supported by the Access Law (Lei nº 12.527/2011), which serves as a mechanism for requests for information. In addition, in 2013 it created the manual of the access to information law for states and municipalities and, in 2016, the e-Sic manual, a guide for citizens with all the step-by-step instructions for making the request.

In view of all this, we understand that the Access Law aims to ensure the guarantee of access to information for anyone interested, thus strengthening public transparency. As a result, on 16 July 2024, on the gov.br website through Fala.BR, we opened process no. 23546.066020/2024-67, requesting some information from IFRJ.

The research was submitted for analysis and approval by the Research Ethics Committee (CEP), via the Plataforma Brasil, under the Certificate of Presentation for Ethical Appreciation (CAAE) no. 70572123.7.0000.8160, due to the involvement of human beings.

The data will be analysed using the content analysis method, which is a data treatment technique proposed by Bardin (2011). According to the author, content analysis is:

A set of techniques for the analysis of communications aiming to obtain, by systematic and objective procedures of description of the content of the messages, indicators (quantitative or not) that allow the inference of knowledge relating to the conditions of production/reception (inferred variables) of these messages (Bardin, 2011, p. 42).

In the understanding of Bardin (2011), content analysis is a data treatment technique that aims at the objective, systematic and quantitative description of the manifest content of communications, with the purpose of interpreting them (Minayo, 2010). From the perspective of Minayo (2011), based on Bardin (2011), this type of analysis aims to go beyond the level of common sense and subjectivism in interpretation, seeking to achieve critical vigilance in relation to the communication of documents, literary texts, biographies, interviews or results of observation (Minayo, 2010).

In her words, she clarifies that there is an implicit meaning that must be unveiled in the discourses; content analysis aims to decompose the lexical or thematic units of a text. For this reason, we chose the content analysis method for the interpretation of the collected data. In short, content analysis aims at the description and interpretation of reality: "to make a thematic analysis consists of discovering the 'cores of meaning' that compose the communication and whose presence, or frequency of appearance, may mean something for the chosen analytical objective" (Bardin, 2011, p. 105).

In the author's assessment, the analysis aims to examine, categorise and classify the data in a way that makes it possible to reach the answers to the problem proposed in the

investigation. In order to facilitate operationalisation, these procedures were unfolded into three stages: "pre-analysis, exploration of the material and treatment of the results, inference and interpretation" (Bardin, 2011, p. 95).

According to Bardin (2011), pre-analysis is the stage in which the collected and organised material will provide an immersion in the elements included in the documents to be explored, redoing the initial objectives of the research.

The author further clarifies that the exploration of the material occurs when the fragmentation of the texts, of the subjects' statements, of the documents, of the records is carried out, equivalent to a classification, which aims to reach the core of comprehension of the text.

Grounded and guided by the point of view of Bardin (2011) on content analysis, inferences were made on the material, identifying the cores of meaning in the classifications carried out, always dialoguing with the previous interpretations, relating them to the material initially delimited and designed.

Continuing with the understanding of content analysis, Lüdke and André (1986, p. 48): "It is necessary that the analysis not be restricted to what is explicit in the material, but that it dive deep, revealing implicit content and contradictory dimensions and 'silenced' questions".

4 RESULTS AND DISCUSSION

4.1 MAIN CONCLUSIONS OF THE 2020 RESEARCH

The Professional Master's Programme in Diversity and Inclusion of the Universidade Federal Fluminense. The research had as its main objective to understand and identify the conceptions of the Teaching Managers regarding the inclusion of students with disabilities in Professional and Technological Education, and also to amplify the voices of the Coordinators of the Centres for Assistance to People with Specific Needs, identifying the strengths and limitations of the Centres, for a possible consolidation of joint work and improvements in the conditions of access, retention and success of the students, the target public of Special Education at IFRJ.

Thus, the data collected in the research were analysed using the content analysis method, which is a data treatment technique proposed by Bardin (2011). Thus, four categories and eleven subcategories were generated in the analyses of the narratives of the Teaching Managers and the Coordinators of the NAPNEs of IFRJ, as we observe in Table 1.

Table 1

Categories and Subcategories of the master's research

THEMATIC CATEGORIES	SUBCATEGORIES
4.1 – Structure, strengths and limitations in the support of students who are the public of Special Education at IFRJ	4.1.1 – Profile of the Participants; 4.1.2 – Structure of the NAPNEs; 4.1.3 – Function and Work developed by the NAPNEs; 4.1.4 – Strengths and limitations of the NAPNEs; 4.1.5 – Impact of the work of the NAPNEs on the teaching-learning process
4.2 – Conceptions of those researched on the inclusion of students who are the public of Special Education in professional and technological education	4.2.1 – Perception of the Managers and Coordinators of the NAPNEs on inclusion; 4.2.2 – View of the participants on the creation of an Orienting Guide for the development of more inclusive work
4.3 – Management and Inclusion at IFRJ	4.3.1 – Proposals for management projects for the NAPNEs and the work of the NAPNEs in the view of the Managers; 4.3.2 – Articulation between NAPNEs and Managers
4.4 – Work perspectives	4.4.1 – Elaboration of the product; 4.4.2 – Expansion of knowledge/construction of articles

Source: prepared by the researcher based on the collected data (Dias; Fernandes; Salgado, 2020).

As we can observe in the table presented, the data collected as a result of the analyses of the interviews were grouped into categories defined according to the purpose of the study. Based on these analyses, and considering the narratives and interlocations of the research participants, the triangulation of these data was carried out, linked to subcategories that broaden the descriptive-analytical possibility of understanding the conceptions of the teaching Managers and the Coordinators of the NAPNEs.

Within the first category analysed (i) Structure, strengths and limitations in the support of students who are the public of Special Education at IFRJ, we verified that the Coordinators of the NAPNEs face daily the challenge of building inclusive strategies for the public of Special Education. Based on the analysis, we understand that the NAPNEs of IFRJ revealed themselves to have great potential for action with the public of Special Education, who, in a solitary manner, articulate and promote inclusive actions on their campuses, even without being provided with the minimum necessary infrastructure to carry out their actions. Still within the first category, we found that the Teaching Managers of the Rectory lack a mapping of the reality of the Centres, so that they at least know the number of students with disabilities and specific needs enrolled in the institution they manage.

The study also indicated that all those researched recognise the importance of the Centres in the institution, since, despite the chaotic scenario presented in the Centres such as: lack of working conditions, lack of infrastructure, absence of equipment, scarcity of workforce, attitudinal barriers, lack of personnel, non-participation of teachers working in the Centres, financial difficulties to support the projects developed, lack of external partnerships,

absence of Specialised Educational Service (AEE), the non-existence of the Multifunctional Resource Room (SRM) and lack of a specialised team for the support of the students.

Another important point raised is that, by virtue of the expansion of the Federal Network and the legal provisions on the reservation of places for students with disabilities, an increase was identified at IFRJ in 2020, over six years, from 2014 to 2020, of the order of 913% in the enrolments of students with disabilities and specific needs, with important delineations and dimensions in terms of support in the Centres of the Federal Institutes.

In the second category analysed (ii) Conceptions of those researched on the inclusion of students who are the public of Special Education in EPT, we identified the possibility of inclusive Education in EPT; however, those researched point to the structural issue as a condition for this to occur and affirm (Dias; Fernandes; Salgado, 2020): otherwise, we shall run the risk of falling into a "false inclusion" or a "perverse inclusion", in which the student has the right to access and, subsequently, discovers that it was a utopia, since they will not have the conditions to remain and complete their course, due to a lack of structural conditions, such as a lack of specialised workforce (Specialised Educational Service teacher, psychologist, pedagogue, psychopedagogue, translator and interpreter of Libras, and others), of teacher training, of equipment, of accessibility and of investments.

The author clarifies that the Coordinators of the Centres still believe in the work together with the teachers and the team of staff on the campuses, that the NAPNEs have "extracted milk from a stone" in developing their daily activities with an infrastructure deficit (Dias; Fernandes; Salgado, 2020). Even with all this, they believe in the potential of the students, valuing their knowledge, minimising their difficulties, believing in their potential and in their successful education.

In the third category of analysis, which concerns (iii) Management and the inclusion of students at IFRJ, it was observed that, even with the absence of an institutional proposal for a Project for the public of Special Education, originating from the Rectory, through its Pro-Rectories, the NAPNEs develop their projects in a diversified manner by means of extension courses, teacher training, pedagogical meetings, courses for the internal and external community, forums, lectures and the welcoming of students.

It is opportune to emphasise that the research by Dias, Fernandes and Salgado (2020) stresses that at IFRJ the NAPNEs are allocated to the management of the Pro-Rector of Extension and, on the campuses, under the management of the General Directorate, according to the institutional organisation chart and the Regulation of the NAPNEs. In view of the reality presented, we ponder whether it would be more profitable for the NAPNEs to be linked to the Pro-Rector of Teaching, the Pro-Rector of Teaching, by virtue of

Special Education being a teaching modality, and on the campuses, to the Directors of Teaching, since they are the ones who govern the entire political-pedagogical conception of the courses, from their proposal to their execution.

Another diagnosis found by the author concerns the fact that each Centre develops its work in a solitary manner, that there is no articulation between the Pro-Rector of Extension, the Directorate of Diversity and Affirmative Actions, the General Coordination of Diversity and the NAPNEs. The author clarifies that, although the Directorate of Diversity and Affirmative Actions and the General Coordination of Diversity are sub-hierarchised to the Pro-Rector of Extension, in relation to the NAPNEs, the Centres do not receive guidelines that constitute a network woven between these instances of diversity management (Dias; Fernandes; Salgado, 2020).

Thus, the author clarifies the need for the construction of communication, of a relationship between the Centres and their leadership at the Rectory, whether the Pro-Rector of Extension, the Directorate of Diversity and Affirmative Actions or the General Coordination of Diversity (Dias; Fernandes; Salgado, 2020). The Directorate of Diversity and Affirmative Actions and the General Coordination of Diversity need to serve as "drains" for the needs present in the daily life of the Centres, taking their real shortcomings up to the instanced Pro-Rector and the Rector.

We believe that this disconnected action between the Pro-Rector of Extension, the Directorate of Diversity and Affirmative Actions and the General Coordination of Diversity brings, as a consequence, negative impacts that fall upon the NAPNEs (Dias; Fernandes; Salgado, 2020), which, due to the complexity that inclusion is and, furthermore, the total deprivation to which the Accessibility Centres are subjected, nevertheless have a general coordination that embraces three Centres: the Centres for Assistance to People with Specific Educational Needs, the Centres for Afro-Brazilian Studies and the Centres for Gender and Sexual Diversity.

The fact of having a single coordination embracing three such diverse Centres is an additional negative distinction that IFRJ offers, lacking a specific sector at the Rectory to implement and monitor the actions, advising and subsidising the educational process of the Special Education students. Thus, the reflection arose of the need for the NAPNE to be transformed into a sector, due to its specificities and the diversified clientele for which it offers support daily. A sector of reference and excellence in an institution of reference and excellence, the place where inclusion should be.

The results brought, through the narratives of the participants, the evidence of the institutional reality of the NAPNEs of IFRJ, which work in a solitary manner and without any

kind of support from the Rectory. In this sense, it was then perceived that the only intervention made by the Rectory in the NAPNEs was the Ordinance of creation and of appointment of the members. After that, nothing more seems to have been done (Dias; Fernandes; Salgado, 2020).

In the fourth category of analysis (iv) Work perspectives, the Guide aimed to guide any individual who works with people with disabilities and specific needs, whether in contributing to professional and personal development, providing support in the education of students, in the SRM with the Specialised Educational Service, in the pedagogical team, in the support actions of the Centres, in short, to subsidise the work of the school team, facilitating the inclusion process of the student with a disability.

A comparison will be presented at the end of this section, aiming at an effective comparison between the results found in 2020 and in 2024, and also pointing out the issues that were resolved in the interval between the publication of the results in 2020 and 2024.

4.2 MAIN CONCLUSIONS OF THE 2024 RESEARCH

As presented, in the 2020 research, based on the data collected and analysed, four thematic categories were constructed, relating the reflection on the analysed data with the theoretical framework studied and the objectives of the research.

With this objective, we converged to integrate into the results of this research the results of the research conducted in 2024, providing the dialogical continuity of the interlocutions with teaching managers and coordinators of the accessibility centres regarding the inclusion of students with disabilities and specific needs at IFRJ.

In view of these considerations, we organised Table 2 with the results of the 2024 research classified within the context of categories, which are unfolded into subcategories.

The choice of this theme attempts to broaden an analysis of the policies in the area of Social Responsibility, in the accessibility centres of IFRJ, bringing the narratives of the teaching managers and the managers of the accessibility centres, who develop daily and tirelessly actions, in order to implement practices that respect the assumptions of inclusion.

A fact that is important, especially in defending, in truth, the (in)visibility of these centres within the institutions, which still lack greater representativeness to achieve a more incisive and categorical action, in the constant search for spaces and for a consolidation of their activities.

Table 2

Categories and Subcategories

Thematic categories	Subcategories
1. Structure, strengths and limitations in the support of the public of Special Education at IFRJ and at IPV	1. Profile of the Participants; 2. Structure of the Accessibility Centres; 3. Function and Work developed by the Centres; 4. Strengths and limitations of the Centres; 5. Impact of the work of the Centres on the teaching-learning process of the students
2. Conceptions of the Teaching Managers and Coordinators of the Centres on public policies in the area of social responsibility	6. Perception of the Teaching Managers and Coordinators of the Centres of IFRJ and IPV on inclusion as social responsibility; 7. Perception of the Teaching Managers and Coordinators of the Centres of IFRJ and IPV on public policies in the area of social responsibility; 8. The NAI-ENEE and the NAPNE, and management with social responsibility
3. Management and inclusion at IFRJ and at IPV	9. The NAI-ENEE and the NAPNE, and the development of the culture of inclusion; 10. Articulation between the Centres and the Managers; 11. Proposals for projects and affirmative actions of the management for the Centres
4. Perspectives after the publication and dissemination of the research	12. Proposals for future work; 13. Expansion of knowledge, participation in events and construction of articles

Source: prepared by the researcher (2024).

In the 2024 research, we chose to carry out the research with the Teaching Managers, by considering the Coordinators of the Centres as Managers, by concluding that they, daily, align and stitch together teaching actions with the entire internal and external community. Thus, the choice of the Teaching Managers occurs due to the design with the subject researched, and because we understand that the Management is the main party responsible for articulating public policies at IFRJ and carrying out the articulations of daily practices with the accessibility centres.

Furthermore, it is necessary to emphasise that this first category dialogued with all the other categories and subcategories, in view of there being an interweaving between them and, in addition, we converged to integrate into the results of this research the results of the research conducted in 2020, providing the dialogical continuity of the interlocutions with teaching managers regarding the inclusion of students with disabilities and specific needs at IFRJ, focused on the development of inclusion in the Special Education scenario.

In the first category, structure, strengths and limitations in the support of the public of special education at IFRJ, it was found that in 2024, even knowing that, since 2018, the CONSUP ensured the creation of a space with minimum structure for the functioning of the Centre's activities, more than six years on, some centres still do not have a room, or use a room shared with other centres or sectors, such as the Pedagogical Technical Coordination

or with the pseudo-SRMs, without resources, and continue to count on the goodwill of the General Directors to have this guarantee that was ensured in 2018.

As regards the structures of the Accessibility Centres of IFRJ, with regard to structure, human resources, material and financial resources, there are not many differences between the two research projects.

Now at IFRJ, since 2020, we have seen that the institutional reality presented is one of the limitations pointed out for the realisation of inclusion, with the urgent need for the hiring of specialists such as: pedagogues, psychopedagogues, psychologists, translators and interpreters of Libras and AEE teachers, in addition to equipped SRMs, as provided for in the PEEI (Resolução nº 125/2023/ConSup/IFRJ).

Another point found is in the impact of the work of the centres on the teaching-learning process of the students, and the potential that the centres possess in the development of the work they perform. The Centres have met the needs of the students, seeking solutions to daily problems, possibilities for the development of individualised work for the public, even without infrastructure. Such daily problems may be associated with attitudinal accessibility, since, daily, we observe the reaffirmation of the disabilities and impossibilities of these students, while their abilities and possibilities are rarely highlighted.

At IFRJ, the NAPNEs, until now, represent one of the only, or the only, action within the scope of IFRJ aimed at the public of Special Education on the campuses. However, we can observe, in the course of this research, that the NAPNEs have carried out work that contributes to the promotion not only of access, but of the retention of students with disabilities and specific needs, developing actions for the promotion of an inclusive education, even if still in a very solitary manner.

Although revolutionary in the pedagogical field, the action of the centres, amply exposed in this work, clearly evidences the dedication and competence of these entities in the construction and development of an inclusive education. Such education is grounded in the tripod of teaching, research and extension, a triad provided for in the Law of Directives and Bases of Brazilian Education (Lei nº 9.394/1996) as a function of the universities and, analogously, also proposed by the Federal Institutes (IFs), as set out in Lei nº 11.892/2008 (BRASIL, 2008).

In the case of IFRJ, we can conclude that since the carrying out of the 2020 research, four years on, the limitations of the NAPNEs are the same, founded on a lack of infrastructure and the absence of human resources and investments. Were the Centres created only by force of law? At this point, almost no change is noted in the result of the previous research.

We perceive, in view of all this, and once again conclude that, even with the creation of an Inclusive Special Education Policy, IFRJ has not become an Inclusive Institution in fact; for this, effective internal actions will be necessary to modify the culture of exclusion existing in the institution, since a document by itself does not change a culture of exclusion rooted for years; many still defend the idea that an institution of reference and excellence is no place for people with disabilities and specific needs.

And, even knowing that, having an Inclusive Policy, IFRJ remains inhibited, since even being the only document that supports Special Education at IFRJ, it does not ensure favourable conditions for the construction of a culture of inclusion. Let us look at the increasingly galloping advance in the number of students with disabilities or specific needs enrolled, as presented by the research conducted in the e-SIC, and even knowing that the previous research evidences an increase in the enrolments of this public, of the order of 913% in six years, from 2014 to 2020, who have access, already needing specialised support and its non-existence. Any action is overwhelmed by the non-existence of the minimum, such as, for example, a room for the NAPNE, an AEE teacher, an equipped SRM, specialised professionals for the support of this public.

It is not observed at IFRJ, since its creation in 2008, even with the creation of the Inclusive Special Education Policy in the institution in 2023, actions to promote the culture of inclusion, procedures to change the chaotic scenario in the support of these students; only modest and palliative attitudes occur, even so, in obedience to some of the mandatory documents.

In the second category, Conceptions of the Teaching Managers and Coordinators of the Centres on public policies in the area of social responsibility, we sought to give protagonism to those who daily have the mission of operationalising teaching actions, for the students and, indeed, for those of Special Education, the Teaching Managers.

Given the importance of Social Responsibility in the inclusion of students with disabilities and specific needs, we point out that the term Social Responsibility is still little propagated in Brazil, mainly within the scope of Teaching and Special Education, the focus of the research.

In order to understand the perceptions of the managers regarding inclusion as Social Responsibility, both the Teaching Institutions and the citizens have a very relevant role in contributing to the improvement of the conditions of society, through the development of Social Responsibility, whether at the level of practices, or that of reflections, of the training and education of the values of citizens, or in the investigation of the theme.

To provoke compelling reflections on Social Responsibility, we reiterate that implicit in Social Responsibility is a voluntary integration of its practices, with expectations that, from that commitment, concerns and imperative actions result, which mobilise and bring benefits in the medium and long term to the focus of the objective. Then, it is estimated that this return already occurs in the teaching institutions, which we can no longer foresee for IFRJ, since the institution does not bring in its mission, values and vision, inclusion as social responsibility. To what extent does IFRJ leverage what is in the orienting and guiding documents on inclusion? To what extent does IFRJ enact what is in its Inclusion Policy? Does the Inclusion Policy of IFRJ ensure the existence of favourable conditions for the construction of a culture of inclusion? Since the publication of the Inclusion Policy in 2023, do the practices at IFRJ act as affirmative actions, aiming at the deconstruction of the culture of exclusion and the consolidation of the culture of inclusion on its campuses? Did the published Policy have an impact on changes in the routines of the NAPNEs? Did it begin to ensure the retention and success of the students?

The 2020 research brings some limitation with regard to the approach to social responsibility, which is being undertaken in this section; even so, we shall undertake the view of the teaching managers on the affirmative actions and public policies in the area of inclusion at IFRJ.

In the accounts of those interviewed in the 2020 research, it is a consensus that the Managers found difficulties in the implementation of the actions aimed at inclusion, mainly due to issues such as the lack of sensitivity of some teachers, precarious infrastructure, lack of teacher training, the absence of a specialised team, lack of accessibility on the campuses and continuing training for the staff on the themes of inclusion. For the managers, without the solution of these impediments, the Special Education students at IFRJ will be victims of "perverse inclusion".

Another fact that is a consensus in the 2020 research is that most of those researched expressed that the inclusive practices within IFRJ need to be modified and improved, since the deadline for actions in compliance with the documents of a mandatory nature of Brazilian education to be fulfilled has already been exceeded.

It is necessary to stress that in the 2020 research, the Management points to the institutional reality of the NAPNEs, which serve as support for the pedagogical practices with students with disabilities and specific needs, work in a solitary manner and without any kind of support from the Rectory. Thus, it seems to us that the only intervention made by the Rectory in the NAPNEs was the ordinance of creation and that of the appointment of their members. After that, in 2023, the publication of the Inclusive Special Education Policy and

the appointment of a general Coordination for the NAPNEs at the Rectory, composed of a single person. Thus we conclude that nothing more needs to be done, since they seem to believe that, in this way, the inclusive institutional policy will leave the paper and be established in the 15 NAPNEs of the institution.

In the third category, management and inclusion at IFRJ, we sought to bring the perceptions of the subjects of the research on the accessibility centres and the development of the culture of inclusion in the two institutions, the projects developed by the centres, as well as to analyse the articulation between them and the centres; we further intend to show whether there is an interweaving of actions and of information between the daily work in the Centres and the Managers, as well as an articulation of work proposals from the Managers to the Coordinators of the Centres.

The school, in order to be inclusive, needs to (re)design its structure, its organisation, its conception, its assessment practice, its teaching strategies and methodologies. It is necessary to think of multiple inclusive actions, together with the mission, values, vision and institutional Social Responsibility, as in the account of one of the managers of IPV "because we want to affirm ourselves as an institution that welcomes well, and that is inclusive"!

The interface of these descriptions with the results pointed out in the 2020 research, in which we perceive that, in addition to the projects, the NAPNEs manage to achieve much more than expected, in view of the scenario identified, of the absence of almost everything; we just could not find, in view of the narratives, the will to give up. We perceive that on that occasion, of the 15 Centres, 13 Centres were developing Projects.

In view of the foregoing, that even with the absence of a Project proposal for the public of EE, originating from the Rectory, through its Pro-Rectories, the NAPNEs develop their projects in a diversified manner through extension courses, teacher training, pedagogical meetings, courses for the internal and external community, forums, lectures and the welcoming of students, even with the total absence of infrastructure.

Making a brief intertextuality, by returning to the idea of whether it would not be more appropriate and profitable if the Centres on the campuses were under the immediate leadership of the Directorate of Teaching, instead of the General Directorate, in view of EE being a teaching modality, and because it is in teaching where the students are allocated? We understand that, within a teaching institution, it is Teaching that experiences the daily issues of pedagogical practice of teachers and students. And we still do not understand why Special Education is allocated to the Pro-Rectory of Extension.

The text of the research brings, in the accounts of the Managers of the Rectory, the absence of articulation with the centres and the recognition of the difficulty of the Centres with

the lack of infrastructure. Thus, the NAPNE cannot solve the problems pointed out so far with the goodwill of its members; however, this fact, once again, exposes the invisibility of the centre and of the students with disabilities and specific needs before the institution, which nevertheless wishes to have excellence in teaching and to be a reference in teaching.

We can register, through the accounts of the teaching Managers, that the difficulties encountered, in most cases, are linked to the lack of structure to develop the work. In the accounts of the Coordinators, the expression that the Centres carry out the work and develop their projects, even without managing to obtain such a structure, is imperative. We need to convert this situation presented into investments to constitute these spaces of fundamental importance in the institution, with the centres also becoming spaces of excellence and reference in the inclusion of the students.

It must be taken into consideration that at IFRJ, the Managers of the Rectory present a different view from that of the Directors of Teaching regarding the articulation between the management and the Centres. In the narratives of the Directors of Teaching we perceive that they appropriate the reality of the centres, including some Directors of Teaching composing the NAPNEs, supporting activities, seeking partnerships. We do not perceive any articulation of the Managers of the Rectory with the campuses; they seem to remain distant and with very reserved explanations on this possible articulation.

It is necessary, and urgently, to establish a relationship between the NAPNEs and the managements; we verified in the narratives that the link exists within the campuses, between the NAPNEs and the directorates. This relationship is also necessary between the Centres and the Rectory, whether through the Pro-Rector of Extension (PROEX), the Directorate of Diversity and Affirmative Actions (DiDAA), the General Coordination of Gender and Diversity (COGED), the General Coordination of the Centres for Assistance to People with Specific Needs (CGNAPNE), but that there be, in fact, a relationship with effective communication.

It seems that the CGNAPNE is serving as an "outlet" for the needs present in the daily life of the Centres, taking their real shortcomings up to PROEX, which is very good, and began to be executed only in 2022, but it is necessary for the Centre to have a voice within the Institute, and for the real shortcomings of the centres to reach higher instances with decision-making powers.

Starting from the premise of the lack of articulation and communication between the rectory and the centres, one of the questions to the directors of teaching of the campuses in the 2020 research was: what guidelines does your management receive from the Rectory or Pro-Rectories to better develop the inclusive actions on your campus? The responses were: 14, or 88%, responded that they receive no guidance, one, or 6%, responded very little, and

one, or 6%, responded that they receive it, but from the Pro-Rector of Basic, Technical and Technological Education. What we thought, until now, to be a disarticulation between PROEX, DiDAA, COGED and the NAPNEs is characterised, through the narratives, as a total disarray and a complete disarticulation and lack of communication between these sectors.

In this way, it can be understood that this articulation is fundamental, since during all these years of existence, the NAPNEs have become a database with precious information on the paths to be followed, as well as on the paths that should be avoided. It is essential that this articulation be sought with the intention of replanning the Centres, from their infrastructure to their action and function on the campuses. In the search for an anchorage for the execution of the Inclusive Special Education Policy, which still lives only on paper, and urgently needs to become an inclusion policy, of Social Responsibility of the institution.

As regards the perspectives, the fourth category found in the research, we believe that the final work may provide readers with a deeper understanding of the fundamental relationship between Polytechnic Education, Special Education and Social Responsibility. By highlighting these interconnections, we seek to broaden the visibility of the actions developed by the Accessibility Centres in the various teaching institutions, including the Centres for Assistance to People with Specific Needs, present in the almost seven hundred IFs throughout Brazil.

This approach aims to reinforce the importance of these centres not only as support structures, but as essential spaces for inclusion, promoting equity and guaranteeing the access of students with disabilities and specific needs to a quality education. By broadening this visibility, we hope that the research will contribute to the advancement of an inclusive culture in the teaching institutions, making the practices of accessibility and inclusion more evident, effective and recognised within the context of polytechnic education.

Finalising and as a resource of parameter to collaborate with the analysis and reflection, the sixteen main results found, not by priority but as a conclusion of the master's research in 2020 (Dias; Fernandes; Salgado, 2020), in which we identified them as effective contributions of the study for the optimisation of the conditions of access, retention and success of the Special Education students, will be listed here.

Among the sixteen priority needs found in the results, six of them were effected in a complete manner, in the period between 2020 and 2024, others in a partial manner, with ten still remaining to be carried out. We shall present, firstly, the six effected, then the ten not yet carried out and, at the end, we shall comment on those that were carried out in a partial manner, as we present below:

a) implementation of a transversalising Institutional Inclusion Policy;

- b) transformation of the Centre for Assistance to People with Specific Educational Needs into a sector of IFRJ, with the characteristics and possibilities of a sector for the support of students who are the target public of Special Education, with institutionalised protocols, with staff with exclusive dedication and with a gratification;
- c) construction of a channel of communication for the maintenance of dialogue between the Pro-Rector to which the Centre for Assistance to People with Specific Educational Needs is instanced;
- d) guidelines of procedures, adoption of support protocols;
- e) an action plan guided by the Pro-Rector to which the Centre for Assistance to People with Specific Educational Needs is instanced;
- f) planning of activities and exchanges between the Centres with the participation of the Directorate of Diversity and Affirmative Actions and the General Coordination of Diversity.
- a) hiring of specialists such as: pedagogues, psychologists, translators and interpreters of Libras and a teacher for the Specialised Educational Service;
- b) financial investments in the Centre for Assistance to People with Specific Educational Needs, giving structure to the work performed;
- c) accessibility on the 15 campuses and at the Rector;
- d) updating of the Regulation;
- e) training of the staff for the support of the public of EE;
- f) revision of the workload allocated to the support of the Centre, of eight hours per week, according to the Regulation and, according to the document concerning the teaching workload, of four hours per week;
- g) use of Educational Assistive Technologies;
- h) use of active educational methodologies;
- i) SRM on the campuses where the need exists;
- j) revision of inclusion in the Institutional Documents, such as, for example, in the Individual Development Plan and in the Institutional Pedagogical Project.

It is worth emphasising that the following items were partially fulfilled: item two, the staff who work in the Centre for Assistance to People with Specific Educational Needs as coordinators do not have exclusive dedication, nor do its members, despite the centre having been transformed into a sector. In item six, the planning and activities between the centres are being carried out in partnership with the CGNAPNE and not with the Directorate of Diversity and Affirmative Actions, nor with the General Coordination of Diversity, which are the instances possessing prerogatives and management over inclusion at IFRJ. As for item

one of those not carried out, only four substitute AEE teachers were hired, and only four campuses of IFRJ possess the pseudo-SRMs, in the year 2024.

5 CONCLUSION

We sought to present, by means of an excerpt of the main points, some of the specificities of what occurred throughout the 2020 and 2024 research in the exercise of the analyses of the categories and subcategories. The apprehensions presented as a result of the research had as their objective to demonstrate the conceptions of the Teaching Managers and the Coordinators of the NAPNEs, which ground the narratives regarding Special Education in Professional Education, at IFRJ, by these actors.

In the analysis of the documentary architecture carried out in the research, we concentrated especially on the guiding institutional documents and internal normative documents of IFRJ. Thus, it was possible to perceive that, although gradually, the situation has been changing, even if in a very slow manner. However, it is important to recognise that, often, the changes still remain only on paper and far from what is really required by Brazilian legislation, especially with regard to the guidelines for the AEE and the SRMs. The distance between the documented policies and their practical implementation reflects the continuous challenges in the realisation of inclusion and adequate support for students with disabilities and specific needs.

We verified that some internal normative documents of IFRJ still present obsolete texts, which shows the reflection of the difficulties in the effective implementation of inclusive policies. Based on the orienting and mandatory documents, the analyses sought to understand how these texts direct the discussions on the policy of IFRJ aimed at Special Education. The research identified an accelerated growth in the enrolments of students with disabilities and specific needs, which requires the construction of more adequate and detailed policies, in addition to greater investment in the structure and services of the NAPNEs of IFRJ, to meet the growing demand and guarantee the full inclusion of these students.

Another important conclusion of the research is that, just as in the 2020 research, the NAPNEs of IFRJ continue to be the only ones responsible for the support of the public of Special Education in the institution.

We also conclude that the NAPNEs were created only by force of law and continue in a similar manner since their creation, with very modest modifications over time. In 2025, we corroborate the view of the 2020 research, revealing that, despite the difficulties faced by the centres, they have not ceased to demonstrate their potential.

The NAPNEs have striven to carry out actions aimed at inclusion, even in the face of the many structural limitations and scarce resources, which hinder the implementation of more comprehensive and effective work. This scenario points to a reality in which, although the centres are committed and act in a positive manner, the structural conditions necessary for their actions to become truly transformative are still very insufficient.

The lack of structure and effective support limits the capacity for execution of these actions and evidences the urgent need for a change of attitude by the management so that inclusion at IFRJ may be effective and of quality, and of excellence and reference not only in teaching, but in Social Responsibility and public policies of inclusion.

A change observed from 2020 to the present moment, in consonance with the results of the 2020 research, was the transformation of the NAPNE into a specific sector, the CONAPNE, which made possible the creation of the desired General Coordination of the NAPNE, the CGNAPNE, a specific sector within the Rectory. This change represented an important advance, bringing greater visibility and structure to the centres and to the inclusion process.

Another point highlighted in the results of the 2020 research was the lack of articulation between the instances responsible at the Rectory for the NAPNEs; this isolation contributed to a scenario of disarticulation, in which the lack of integration hindered the effectiveness of the inclusion policies and compromised the support necessary for the good development of the actions.

The creation of the General Coordination was a direct response to this situation, separating the Coordination of the NAPNEs from the other two centres, but it also reflected the complexity of inclusion and the structural deprivation to which the NAPNEs were subjected. As was amply criticised in the 2020 research, the existence of a single coordination embracing three such distinct and complex centres was seen as a limiting and negative factor.

It is relevant to comment that, since the results of the 2020 research, the NAPNEs at IFRJ continue allocated to the Pro-Rectory of Extension, and not instanced to the Pro-Rectory of Basic, Technical and Technological Education, which is the instance responsible for teaching, considering that Special Education is a teaching modality.

One of the objectives of this research was to give continuity to the investigative process begun during the master's course, integrating its results and maintaining a dialogical continuity with the previous research. This continuity allowed a greater understanding of the interlocutions with teaching managers regarding the inclusion of students with disabilities and specific needs at IFRJ. By integrating all the objectives proposed, we can conclude that we achieved the results, since we managed to answer the guiding questions of the research.

We understand that there is still a distance to be travelled for inclusion at IFRJ to be completely aligned with the existing legal normative documents and with the internal norms, created and not complied with by IFRJ. The inclusion process involves both the students and the staff, with and without a management position. The current reality, as observed, demands a real commitment from the institution, which needs to recognise inclusion as a genuine Social Responsibility.

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KNOWLEDGE MANAGEMENT IN POLICE TRAINING: SHARING GOOD TEACHING PRACTICES AMONG PROFESSORS

GESTÃO DO CONHECIMENTO NA FORMAÇÃO POLICIAL: COMPARTILHAMENTO DE BOAS PRÁTICAS DOCENTES ENTRE PROFESSORES

GESTIÓN DEL CONOCIMIENTO EN LA FORMACIÓN POLICIAL: INTERCAMBIO DE BUENAS PRÁCTICAS DOCENTES ENTRE PROFESORES



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ABSTRACT

Contemporary police training requires more than the transmission of technical and procedural content; it also demands the consolidation of institutional processes capable of preserving, sharing, and updating the pedagogical knowledge built by teachers throughout their professional trajectories. In this context, Knowledge Management emerges as a strategic dimension for strengthening police teaching, especially regarding the sharing of good practices between experienced instructors and novice teachers. This article aims to analyze how teaching knowledge circulates within the police training process of the Military Police of Minas Gerais (PMMG), focusing on the ways in which successful classroom experiences, training activities, and practical disciplines are socialized, appropriated, and retransmitted among instructors. This is a qualitative, descriptive, and applied study developed through a systematic literature review, documentary research, and field research using questionnaires administered to teachers from the Officer Training School (EFO). The study seeks to understand the formal and informal mechanisms used for sharing pedagogical knowledge, the barriers to its institutionalization, and the potential for building a collaborative culture among peers. The results indicate that the sharing of good teaching practices occurs predominantly through informal means, such as conversations among colleagues, instant messaging groups, and occasional exchanges in daily institutional life, revealing weaknesses in the systematization of pedagogical knowledge and in the preservation of teaching memory. It concludes that strengthening institutional Knowledge Management policies, combined with the creation of formal spaces for pedagogical interaction, may promote integration between experience, methodological innovation, and organizational continuity in police training.

Keywords: Knowledge Management. Good Teaching Practices. Police Training. Knowledge Sharing. Officer Training School.

RESUMO

A formação policial contemporânea exige mais do que a transmissão de conteúdos técnicos e procedimentais, demandando também a consolidação de processos institucionais capazes de preservar, compartilhar e atualizar os saberes pedagógicos construídos pelos docentes ao longo de sua trajetória profissional. Nesse contexto, a Gestão do Conhecimento apresenta-se como dimensão estratégica para o fortalecimento da docência policial, especialmente no que se refere ao compartilhamento de boas práticas entre professores mais experientes e docentes ingressantes. O presente artigo tem como objetivo analisar

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como ocorre a circulação de conhecimentos docentes no processo de formação policial da Polícia Militar de Minas Gerais (PMMG), com foco nas formas pelas quais experiências bem-sucedidas em sala de aula, nos treinamentos e nas disciplinas práticas são socializadas, apropriadas e retransmitidas entre os professores. Trata-se de pesquisa qualitativa, de natureza descritiva e aplicada, desenvolvida mediante revisão sistemática da literatura, pesquisa documental e pesquisa de campo com aplicação de questionários a docentes da Escola de Formação de Oficiais (EFO). Busca-se compreender os mecanismos formais e informais utilizados para o compartilhamento de saberes pedagógicos, as barreiras à sua institucionalização e as potencialidades de construção de uma cultura colaborativa entre pares. Os resultados indicam que o compartilhamento de boas práticas ocorre predominantemente por meios informais, como conversas entre colegas, grupos de mensagens instantâneas e trocas pontuais no cotidiano institucional, evidenciando fragilidades na sistematização do conhecimento pedagógico e na preservação da memória docente. Conclui-se que o fortalecimento de políticas institucionais de Gestão do Conhecimento, aliado à criação de espaços formais de interação pedagógica, pode favorecer a integração entre experiência, inovação metodológica e continuidade organizacional na formação policial.

Palavras-chave: Gestão do Conhecimento. Boas Práticas Docentes. Formação Policial. Compartilhamento de Saberes. Escola de Formação de Oficiais.

RESUMEN

La formación policial contemporánea exige más que la transmisión de contenidos técnicos y procedimentales, demandando también la consolidación de procesos institucionales capaces de preservar, compartir y actualizar los saberes pedagógicos construidos por los docentes a lo largo de su trayectoria profesional. En este contexto, la Gestión del Conocimiento se presenta como una dimensión estratégica para el fortalecimiento de la docencia policial, especialmente en lo que respecta al intercambio de buenas prácticas entre profesores más experimentados y docentes ingresantes. El presente artículo tiene como objetivo analizar cómo ocurre la circulación de conocimientos docentes en el proceso de formación policial de la Polícia Militar de Minas Gerais (PMMG), con foco en las formas mediante las cuales experiencias exitosas en el aula, en los entrenamientos y en las disciplinas prácticas son socializadas, apropiadas y retransmitidas entre los profesores. Se trata de una investigación cualitativa, de naturaleza descriptiva y aplicada, desarrollada mediante revisión sistemática de la literatura, investigación documental e investigación de campo con aplicación de cuestionarios a docentes de la Escola de Formação de Oficiais (EFO). Se busca comprender los mecanismos formales e informales utilizados para el intercambio de saberes pedagógicos, las barreras para su institucionalización y las potencialidades de construcción de una cultura colaborativa entre pares. Los resultados indican que el intercambio de buenas prácticas ocurre predominantemente por medios informales, como conversaciones entre colegas, grupos de mensajería instantánea e intercambios puntuales en el cotidiano institucional, evidenciando fragilidades en la sistematización del conocimiento pedagógico y en la preservación de la memoria docente. Se concluye que el fortalecimiento de políticas institucionales de Gestión del Conocimiento, aliado a la creación de espacios formales de interacción pedagógica, puede favorecer la integración entre experiencia, innovación metodológica y continuidad organizacional en la formación policial.

Palabras clave: Gestión del Conocimiento. Buenas Práticas Docentes. Formación Policial. Intercambio de Saberes. Escola de Formação de Oficiais.

1 INTRODUCTION

Military police training constitutes one of the fundamental pillars for the qualification of professionals responsible for acting in response to the complex demands of contemporary public security. In a context marked by social, technological, institutional, and cultural transformations, training processes must go beyond exclusively instructional and content-based models, incorporating pedagogical dynamics that foster reflection, decision-making, ethical development, and meaningful learning. In this scenario, police teaching assumes a central role, since teachers and instructors not only transmit technical content but also model practices, values, and forms of professional action (Bayley, 2006; Soares, 2019; Farias Braga *et al.*, 2021).

Within the Military Police of Minas Gerais (PMMG), the training courses for officers and enlisted personnel constitute privileged spaces for the production, reproduction, and renewal of institutional knowledge. However, much of the knowledge that sustains police teaching practice is not fully formalised in manuals, teaching plans, or normative documents. Much of this knowledge is built in the everyday experience of teachers, in the solutions found for concrete challenges in the classroom, in the methodological adjustments made in practical disciplines, and in the mediation between institutional theory and operational reality. It is, therefore, a pedagogical heritage that is often tacit, situated, and relational, whose value depends on the institutional capacity to promote it as shared knowledge rather than merely individual knowledge.

From this perspective, Knowledge Management (KM) becomes especially relevant. In experience-intensive organisations, such as military police institutions, KM cannot be understood merely as the storage of information or the organisation of documents, but as a set of practices that make it possible to capture, socialise, record, combine, and reapply knowledge produced by subjects in interaction. In the educational field, this means recognising that good teaching practices, successful teaching strategies, ways of conducting complex classes, and effective forms of integrating theory and practice must be treated as institutional assets to be cultivated, preserved, and disseminated (Vasconcelos, 2010; Nonaka; Takeuchi, 1997; Nonaka; Takeuchi, 2008).

In the specific case of police training, the importance of this discussion is amplified when one observes the coexistence of teachers with a long institutional trajectory and younger teachers or those newly entering the teaching function. The former accumulate not only operational experience but also a pedagogical repertoire built over the years; the latter, in turn, often arrive with new qualifications, academic updates, and greater familiarity with innovative technologies and methodologies. The interaction between these different profiles

can produce a fertile environment for collective learning, provided there are adequate mechanisms for sharing, mediation, and institutionalisation of knowledge. Without these mechanisms, there is a risk that valuable practices remain restricted to individual trajectories, making the organisation dependent on the memory of a few and vulnerable to personnel turnover.

Previous research on police training in the PMMG has already highlighted the presence of innovative methodologies and the effort of some teachers to enhance the teaching-learning process. However, it also pointed to weaknesses in the systematisation of these experiences and in the existence of formal channels for the circulation of pedagogical knowledge. In other words, although there are successful initiatives, they tend to be diffused through informal means, such as conversations among peers, messaging groups, or direct observation, without fully becoming organisational knowledge accessible and reusable by other teachers.

Based on this context, the present article shifts the focus of the debate to the sharing of good teaching practices within military police training. The interest is to understand how more experienced teachers share knowledge with younger teachers, how successful pedagogical practices are transmitted, adapted, and incorporated by other teachers, and what the institutional limits are for this flow of knowledge to consolidate as an organisational policy of teacher learning.

Thus, the central problem of the research can be formulated as follows: **how do the more experienced teachers of police training share their pedagogical knowledge with younger teachers, and in what way are the good teaching practices developed in practical disciplines socialised, appropriated, and institutionalised within the Military Police of Minas Gerais?**

To answer this problem, the general objective was defined as analysing the sharing of good teaching practices in the police training process of the PMMG, focusing on the relationships between experienced and incoming teachers and on the mechanisms for the circulation of pedagogical knowledge among teachers of the Officer Training School. As specific objectives, the study seeks to: **A)** identify the ways in which experienced teachers share pedagogical knowledge with younger teachers; **B)** map the formal and informal mechanisms of dissemination of good teaching practices in police training; **C)** analyse the factors that favour or hinder the institutionalisation of this sharing; **D)** and propose guidelines for strengthening a culture of teacher collaboration supported by principles of Knowledge Management.

The relevance of this study lies in the fact that the quality of police training depends not only on the curricula, the content, and the available technologies, but also on the institutional capacity to transform teaching experiences into collective heritage. By investigating how teachers learn from one another and how good practices circulate among teaching generations, the article contributes to expanding the understanding of military police teaching as a social, pedagogical, and organisational practice. Furthermore, it reinforces the need for policies that value the accumulated knowledge of veteran instructors, while at the same time promoting environments of exchange, updating, and innovation among all those involved in the training process.

2 LITERATURE MAPPING AND METHODOLOGICAL PROCEDURES

The analysis of the sharing of good teaching practices in police training requires an articulated understanding among three theoretical and empirical axes: military police training, teaching and its pedagogical practices, and Knowledge Management applied to complex institutional contexts. To this end, this study was structured along two complementary fronts. The first corresponds to the Systematic Literature Review (SLR), aimed at identifying scientific production related to police training, educational methodologies, teacher learning, knowledge sharing, and knowledge management. The second refers to the field research of a qualitative and descriptive approach, developed with the teachers of the Officer Training School (EFO) of the PMMG, seeking to apprehend how pedagogical knowledge circulates in everyday training life.

The combination of these two methodological fronts allows not only to situate the researched object in the broader academic debate, but also to confront the theoretical frameworks with the concrete reality of the teachers responsible for police training. Such a strategy becomes pertinent because the sharing of good teaching practices, especially in environments marked by hierarchical tradition and high technical-operational demands, is not always easily captured by formal indicators, requiring attention to everyday practices, interpersonal interactions, and the meanings attributed by the subjects themselves to their teaching experience.

2.1 SYSTEMATIC LITERATURE REVIEW PROTOCOL

The Systematic Literature Review protocol was designed with the aim of mapping scientific publications that addressed, directly or indirectly, the articulation between police training, pedagogical teaching practices, and knowledge management. The temporal scope adopted covers the period from 2000 to 2026, encompassing publications in Portuguese and

studies indexed in national and international databases, among which the following stand out: Scopus, SciELO, BRAPCI, OASISBR, the Sophia System of the Academia de Polícia Militar de Minas Gerais, and the CAPES Journal Portal.

The search strategy was built from descriptors such as: “knowledge management and police teaching”, “sharing of good teaching practices”, “police training and learning among teachers”, “educational methodologies in police teaching”, “socialisation of pedagogical knowledge”, and “experienced teachers and teacher training”. The intention was to locate studies that addressed the circulation of knowledge among peers, organisational learning in training institutions, and the appreciation of teaching knowledge in specialised professional environments.

The following were defined as inclusion criteria: scientific articles, case studies, and empirical or theoretical research directly related to the aforementioned themes. As exclusion criteria, it was decided to remove works outside the thematic scope, publications not classified as scientific articles, conference papers, monographs, dissertations, and theses, as well as duplicate materials.

2.1.1 Survey on the Sophia platform (APM/MG)

In the survey conducted on the Sophia Platform, a predominance of institutional productions focused on Basic Police Training, curricular structuring, continuing education, and management of educational processes was observed. Although some publications touch upon the appreciation of teaching experience and the importance of exchanging knowledge in training practice, an absence of a systematic approach was verified regarding how more experienced teachers share methodologies, class-conduction strategies, and pedagogical solutions with younger or newly incoming teachers.

2.1.2 Survey in the SciELO database

In the SciELO database, the findings are concentrated in studies on the sociology of police education, organisational reforms, curriculum, professionalisation, and human rights in police training. However, studies that specifically address the sharing of good teaching practices among peers, pedagogical learning between generations of teachers, or knowledge management focused on teaching work in police academies are scarce.

2.1.3 Complementary surveys (CAPES, BRAPCI, OASISBR and SCOPUS)

In the CAPES, BRAPCI, OASISBR, and SCOPUS databases, fragmented production on the three central axes of this investigation was identified. There are relevant studies on

knowledge management in public organisations, works on active methodologies in higher education, and research related to police training, but few consistently integrate the problem of police teaching with the intergenerational circulation of pedagogical knowledge.

In particular, it was verified that the sharing of good practices tends to appear more frequently in studies on communities of practice, organisational learning, and teacher mentoring in general educational contexts, without focusing on the military police environment. This finding reinforces the existence of a specific gap in the field, namely, the need to understand how pedagogical knowledge is built, socialised, and institutionalised among teachers of police training.

2.1.4 Synthesis of findings

Below, a synthetic table is presented with the main findings of the review.

Table 1

Synthesis of the studies found in the researched platforms

Database	Main Findings and Themes	Identified Gaps
Sophia (PMMG)	Police training, TPB, curricular guidelines, educational technology, and internal training processes.	Absence of specific studies on the sharing of good teaching practices between experienced and incoming instructors.
SciELO	Police education, professionalization, curriculum, human rights, and institutional reforms.	Scarcity of research on peer learning among teachers and pedagogical knowledge management in police education.
CAPEs	Teacher training, pedagogical innovation, educational policies, and professional education.	Little articulation between police training and the institutional circulation of pedagogical knowledge.
BRAPCI	Knowledge management, organizational learning, and institutional memory.	Low incidence of studies applied to police teaching and the sharing of teaching practices.
OASISBR	Police training, operational knowledge management, and professional education.	Predominant focus on core police activity, with little attention to teaching as a space for knowledge production.
SCOPUS	Active methodologies, professional training, communities of practice, and knowledge sharing.	International output scarcely focused on the specificity of Brazilian military police training.

Source: Elaborated by the author, 2026.

The results of the review show that, although there are relevant contributions on police training, teaching methodologies, and knowledge management, a gap still persists regarding the articulated treatment of the sharing of good teaching practices in the context of military police training. This finding reinforces the pertinence of the present study and justifies its specific focus.

2.2 METHODOLOGICAL PROCEDURES

The present research is characterised as applied, with a qualitative approach, and with exploratory and descriptive objectives. Its applied nature is justified by the interest in understanding a concrete institutional problem and producing input that may contribute to the

improvement of the training process in the PMMG. The qualitative approach proves adequate as it allows the apprehension of the meanings, perceptions, and experiences attributed by teachers to knowledge-sharing practices.

The technical procedures combined three complementary strategies: systematic literature review, documentary research, and field research. The field survey was conducted with the 15 teachers of the Officer Training School responsible for the disciplines of Police Personal Defence, Military Police Technique, and Riot Operations, constituting a census sample of the investigated universe. Data collection took place through questionnaires administered to the teachers, in compliance with the ethical principles ensured by the Free and Informed Consent Form (TCLE).

The documentary research encompassed the analysis of institutional guidelines, educational regulations, internal norms, and pedagogical documents of the PMMG, with the purpose of identifying whether there are formal mechanisms provided for the socialisation of teaching practices, pedagogical alignment, and preservation of the knowledge produced by teachers.

The inductive method was adopted, starting from the empirical data collected for the construction of interpretative inferences. The treatment of the material was carried out based on the content analysis technique, according to Bardin, articulated with triangulation among the questionnaires, the analysed documents, and the selected theoretical framework.

By centring the investigation on the dynamics of sharing between experienced teachers and younger teachers, the research seeks to illuminate an aspect of police training still little explored: teaching as a space for the collective production of knowledge and as a strategic field for strengthening organisational learning.

2.3 THEORETICAL FRAMEWORK

The theoretical framework that sustains this investigation is organised around four main axes: **a)** military police education in Minas Gerais; **b)** Knowledge Management and the processes of production, conversion, and circulation of knowledge; **c)** good teaching practices and peer learning; and **d)** pedagogical methodologies applied to police training. The articulation of these axes allows understanding that police teaching is not reduced to the act of delivering content, but constitutes a social and institutional process in which experiences, practices, values, and knowledge are continuously produced, shared, and resignified.

2.3.1 Military police education in Minas Gerais

Military police education in the Military Police of Minas Gerais (PMMG) is structured as an institutional system of initial, continuing, and specialised training, guided by its own guidelines and articulated with the principles of national education. In this context, the Officer Training Course (CFO) stands out, developed at the Officer Training School (EFO), whose purpose is to train officers capable of performing the functions typical of the Officer Corps of the Military Police, through training that combines academic foundations, technical training, physical preparation, and institutional socialisation.

According to the Education Guideline of the Military Police (DEPM), Military Police Education is founded on principles such as integration into national education, pluralism of ideas, continuing professionalisation, guarantee of a quality standard, appreciation of professional experience, and the link between school education, work, and social practices (Minas Gerais, 2022). Such principles reveal that the corporation formally recognises the importance of training that goes beyond the mere mechanical reproduction of content, also valuing professional experience and the articulation between theory and practice.

Recent research has shown that military police training in Minas Gerais has become an object of academic reflection under different approaches, including continuing education, teaching competencies, human rights, ethnic-racial relations, and professionalisation (Krul; Faria; Grossi, 2024). Nevertheless, it remains a challenge to deepen analyses on the ways in which the pedagogical knowledge of instructors is produced and circulates internally. Attention to this dimension becomes even more relevant in an institution where many teachers accumulate extensive operational and teaching experience, but do not always have formal spaces to transform this experience into collective pedagogical heritage.

2.3.2 Data, information and knowledge

Understanding Knowledge Management requires conceptually distinguishing data, information, and knowledge. Davenport and Prusak (1998) define data as objective and distinct facts relating to events. By themselves, they do not possess sufficient interpretative meaning. When organised, contextualised, and processed, they are transformed into information. This, in turn, comes to offer meaning and usefulness to the subjects who receive it (Rezende; Abreu, 2013; Laudon; Laudon, 1999).

Knowledge corresponds to a more complex stage, since it results from the incorporation of information into the experience, values, interpretation, and capacity for action of individuals. For Davenport and Prusak (1998), it is a fluid mixture of condensed experience, values, and experienced insight. Nonaka and Takeuchi (1997) reinforce this perspective by

emphasising that knowledge is not something purely formal or objective, but a dynamic construction deeply linked to the practices of the subjects.

In the field of police teaching, this distinction is fundamental. A lesson plan or an institutional procedure may represent explicit information; however, the ability to conduct a class, adapt an exercise to a specific reality, perceive learning difficulties, or transform a real case into a productive pedagogical situation corresponds to forms of knowledge that go beyond mere recorded information. It is precisely in this field that many of the good teaching practices investigated in this study are situated.

2.3.3 Types of knowledge: tacit and explicit

Nonaka and Takeuchi (1997) distinguish two types of knowledge: **tacit**, which is personal, contextual, subjective, and difficult to formalise; and **explicit**, which can be codified, recorded, and transmitted in a systematised manner. Tacit knowledge includes intuitions, practical skills, mental models, and accumulated experiences; explicit knowledge, in turn, is manifested in documents, norms, instructions, and didactic materials.

This distinction is particularly useful for understanding the reality of police training teachers. Much of the practices considered successful by the more experienced teachers are not fully present in formal documents. They are expressed in the way of organising a didactic sequence, correcting a practical activity, interpreting the reactions of the class, making connections between content and operational reality, or adapting methodologies to the profile of the students. It is a knowledge built in experience and which, for that very reason, requires relational spaces to be shared.

2.3.4 Knowledge conversion and the SECI model

The theory of organisational knowledge creation proposed by Nonaka and Takeuchi (1997) offers an important analytical key for the present study. According to the authors, organisational knowledge develops from a dynamic process of conversion between tacit and explicit knowledge, called the **SECI** model, composed of four modes: **socialisation**, **externalisation**, **combination**, and **internalisation**.

Socialisation corresponds to the sharing of tacit knowledge among subjects, generally through coexistence, observation, joint practice, and informal interactions. In police teaching, it can occur when a younger teacher learns from a more experienced one by observing them deliver classes, dialoguing about difficulties, or sharing impressions about the conduct of an instruction.

Externalisation occurs when tacit knowledge is transformed into explicit knowledge, for example, through reports, records, guides, scripts, lesson plans, or systematisations of experiences. It is in this movement that a successful practice ceases to be merely personal knowledge and comes to be shared institutionally.

Combination refers to the articulation among different explicit knowledge, bringing together documents, materials, and information to produce new organised arrangements of knowledge. **Internalisation**, in turn, corresponds to the moment in which explicit knowledge is once again incorporated by the subjects, coming to guide their practice in a tacit way.

The research assumes that, in the police training of the PMMG, the sharing of good teaching practices occurs with relative intensity in the socialisation phase, but encounters weaknesses in the movements of externalisation and combination, which compromises the organisational retention of pedagogical knowledge.

2.3.5 The theory of “ba” and spaces for the production of knowledge

The notion of **ba**, developed by Nonaka and Takeuchi (2008) from the philosophy of Nishida, contributes to understanding the environments in which knowledge is created and shared. Ba can be understood as a shared space - physical, virtual, or relational - in which subjects interact, build trust, exchange experiences, and produce collective meaning. Bohm (1996) and Senge (1990; 1998) reinforce this perspective by emphasising the importance of dialogue, joint learning, and collaborative relationships for the development of learning organisations.

In the investigated reality, the corridors, the messaging groups, the intervals between classes, the occasional planning sessions, and the conversations among colleagues can be understood as embryonic forms of ba. However, when these spaces exist only in a spontaneous and poorly structured manner, sharing depends strongly on individual initiative and on the proximity between subjects. The institutionalisation of communities of practice, pedagogical workshops, and collaborative repositories could expand the potential of these spaces, transforming them into more stable environments for the production and circulation of teaching knowledge.

2.3.6 Good teaching practices and peer learning

The concept of good teaching practices refers to strategies, procedures, forms of didactic organisation, and pedagogical actions that, in a given context, demonstrate effectiveness in fostering learning, student participation, and the articulation between theory and practice. These practices are neither universal nor static; on the contrary, they are

situated, contextual, and dependent on the institutional conditions, the profile of the students, and the experience of the teachers.

In police training, good teaching practices may include the qualified use of case studies, the mediation of simulations, the use of videos of real incidents for critical analysis, the construction of problem scenarios, the adaptation of language to the level of the class, the balanced use of pedagogical authority, and the capacity to integrate technical procedures with ethical and situational reflections. Such practices, when successful, constitute valuable pedagogical knowledge, especially for incoming teachers who are still building their teaching identity within the corporation.

Peer learning, in this context, assumes great relevance. Teachers do not learn only in formal training courses; they also learn by observing colleagues, discussing experiences, exchanging materials, evaluating classroom situations, and reinterpreting successful strategies. Thus, the sharing between experienced and younger teachers can be understood as a mechanism of mentoring, professional socialisation, and institutional development.

2.3.7 Technology and educational methodologies in police teaching

The literature on innovative educational methodologies indicates that adult training demands more participatory strategies, contextualised and connected to the experience of the subjects (Kolb, 1984; Bacich; Moran, 2018). In police training, this translates into the use of Problem-Based Learning, case studies, experiential learning, the flipped classroom, gamification, and simulations.

However, the use of these methodologies does not depend only on the existence of resources or curricular guidelines. It is directly linked to the capacity of teachers to learn from one another, share successful experiences, and adapt practices to the institutional context. In other words, methodological innovation is also a phenomenon of knowledge management. A methodology successfully applied by one teacher only effectively becomes institutional innovation when it can be communicated, understood, appropriated, and retransmitted by the others.

2.4 RESULTS AND ANALYSIS

The analysis of the collected data shows that the sharing of good teaching practices in the Officer Training School of the PMMG constitutes a process that exists, is recognised, and is valued by teachers, but is still strongly supported by informal, discontinuous, and poorly institutionalised mechanisms. Under the prism of Knowledge Management, this result reveals an environment rich in intellectual capital and pedagogical experience, yet marked by

weaknesses in the processes of retention, systematisation, and structured circulation of teaching knowledge.

2.4.1 Profile of the teaching staff and potential for sharing

The first aspect to be considered refers to the profile of the investigated teaching staff. The results indicate a picture of high professional experience, since 93.3% of the teachers have more than four years of activity in military police training. There is also an important concentration in the upper ranges of experience, including teachers with nine, thirteen, and more than fourteen years of continuous activity. It is, therefore, a group with an expressive accumulation of practical knowledge, both on the operational and pedagogical levels.

This characteristic has direct implications for the object of this research. In institutional terms, an experienced teaching staff represents an important reserve of tacit knowledge, accumulated over years of experimentation in the classroom, adaptation of methods, confrontation of pedagogical difficulties, and mediation between police theory and practice. At the same time, this heritage can become vulnerable if there are no mechanisms capable of converting it into shared knowledge, especially in the face of functional turnover, transfers, and the departure of teachers from the teaching function.

Regarding pedagogical training, the data show that 66.7% of the teachers have some type of qualification aimed at teaching, while 33.3% do not have formal pedagogical training. This scenario indicates a coexistence between systematised didactic-pedagogical knowledge and forms of teaching sustained predominantly on practical and technical experience. Such composition reinforces the importance of peer sharing: for younger or less experienced teachers, the approximation with veteran teachers can represent access to valuable practical repertoires; for the more experienced ones, contact with newer teachers can favour methodological, technological, and theoretical updating.

2.4.2 How teachers share good practices

The research revealed that the sharing of good practices among teachers occurs mainly through informal means. Among the most mentioned mechanisms, instant messaging groups stand out, especially WhatsApp, exchanges by e-mail, and informal dialogues in corridors, intervals, and occasional meetings throughout the institutional routine. These spaces of exchange play a relevant role in the everyday circulation of knowledge, allowing teachers to report experiences, clarify doubts, send materials, and comment on classroom strategies.

However, although these channels are functional, they present important limitations. Firstly, they depend on the relational proximity between the subjects and the individual disposition to share. Secondly, they tend to favour the immediate circulation of information, but not its organised preservation over time. Thirdly, they produce a flow that is hardly traceable and difficult to recover later, which compromises the consolidation of institutional pedagogical memory.

From the perspective of the SECI model, a predominance of **socialisation** is verified, since knowledge circulates above all through coexistence, conversation, and interpersonal exchange. In contrast, the movements of **externalisation** and **combination** prove fragile, as these practices are rarely recorded systematically, converted into structured materials, or organised into institutional banks of good practices. Thus, a successful class, an innovative instruction script, or an effective class-conduction strategy may be known to some colleagues, but does not necessarily become heritage accessible to the entire organisation.

2.4.3 Experienced teachers and younger teachers

The data suggest that the more experienced teachers play a central role in the transmission of teaching knowledge, although often in a non-formalised manner. They are frequently recognised as practical references, especially in the disciplines that require strong articulation among technical mastery, control of the class, and capacity for pedagogical mediation. Sharing with younger or incoming teachers seems to occur through spontaneous approximation, observation, occasional consultations, and exchange of materials.

This process, although valuable, tends to depend on interpersonal relationships and individual initiatives. No consolidated institutional mechanisms of teacher mentoring, systematic monitoring of incoming teachers, or formal programmes of pedagogical integration between generations were identified. As a consequence, the access of the younger teacher to the knowledge accumulated by the more experienced ones can vary greatly according to the context, the discipline, the relational openness of the colleagues, and the organisational conditions of time and space.

At the same time, the presence of younger teachers or those with more recent academic training also produces relevant contributions to the collective. These teachers tend to present greater proximity to digital tools, greater familiarity with contemporary educational literature, and a disposition for methodological experimentation. In this way, the exchange of knowledge should not be understood in a unidirectional sense, as a simple vertical transmission from the older to the younger ones, but as a potentially dialogical process, in which experience and updating can complement each other.

2.4.4 Successful good practices in the classroom

Among the pedagogical practices most valued by the teachers, the use of case studies, Problem-Based Learning, the analysis of videos of real or simulated incidents, and the contextualisation of technical content with concrete operational situations stand out. Such strategies are perceived as effective for developing decision-making, critical reflection, the connection between theory and practice, and greater student engagement.

However, the investigation indicates that the circulation of these successful practices does not occur in a fully structured manner. Often, a successful strategy remains linked to the teacher who conceived or perfected it, being shared only with closer colleagues. The absence of organised pedagogical repositories, permanent committees by discipline, or periodic systematisation meetings makes the diffusion of these experiences partial, discontinuous, and subject to institutional forgetting.

This finding is relevant because it reveals that pedagogical innovation, although present, has not yet fully become an institutional policy of teacher learning. In other words, the corporation has valuable experiences, but still lacks devices capable of transforming them into a collective reference.

2.4.5 Barriers to sharing

The qualitative analysis revealed three large groups of barriers to the sharing of good teaching practices.

The first group refers to the **absence of a structured institutional culture of sharing**. Although the teachers recognise the importance of the exchange of experiences, this practice still does not seem to be incorporated in an organic way into the institution's pedagogical routine. A clear policy that encourages, values, and organises the recording and circulation of teaching knowledge is lacking.

The second group is related to the **limitation of integrated technological platforms and instruments**. The existence of a dynamic institutional repository specifically aimed at storing lesson plans, experience reports, validated case studies, didactic sequences, or pedagogically commented instructional materials was not identified. This gap leads teachers to store materials in a dispersed manner, often in personal files or in occasional exchanges through messaging applications.

The third group concerns the **time restriction**, resulting from the operational workload, administrative demands, and the intensity of the institutional routine. Even when there is a

disposition to share, teachers do not always have protected time for joint planning, pedagogical reflection, or systematisation of experiences.

Curiously, factors such as explicit cultural resistance or rigid hierarchy did not appear with strong intensity in the responses. This suggests that the main difficulties do not necessarily stem from the military nature of the institution, but from the lack of governance and of organisational arrangements that sustain continued processes of pedagogical knowledge management.

2.4.6 Institutional maturity and teaching memory

The data indicate that the mechanisms of knowledge retention and preservation of organisational teaching memory are perceived mostly as ineffective or only partially effective. There is a prevailing perception that the institution manages to retain explicit content more easily, such as syllabi, general plans, slides, and formal guidelines, but has difficulty preserving the tacit knowledge associated with teaching practices themselves.

This finding is central to the present research. What is lost with the departure or transfer of an experienced teacher is not only files or content, but ways of teaching, mediation strategies, repertoires of examples, readings of the class, methodological adaptations, and solutions built from experience. It is a qualitative loss, often invisible, but deeply impactful for the continuity and quality of the training process.

In this sense, the PMMG presents an intermediate stage of maturity in pedagogical knowledge management. There is recognition of the value of teaching experience, openness to innovation, and the existence of exchanges among teachers, but institutional mechanisms sufficiently robust to transform such elements into a sustainable system of organisational learning have not yet been consolidated.

2.4.7 Teacher demands for support tools

When asked about instruments that could strengthen sharing, the teachers demonstrated a preference for tools of practical usefulness and for spaces of structured interaction. Pedagogical sharing workshops appeared among the most valued alternatives, followed by a bank of lesson plans and seminars with the support of educators. Digital forums and social networks presented lower adherence, suggesting that teachers value mediated, contextualised spaces directly related to their concrete teaching needs more than generic environments of virtual interaction.

In light of the theory of **ba**, these results indicate the importance of creating formal spaces for meeting, dialogue, and joint production of knowledge. The institutionalisation of

pedagogical workshops, meetings by discipline, and collaborative recording environments can favour the transition from episodic exchange to the collective construction of teaching memory.

3 FINAL CONSIDERATIONS

The central objective of the present article was to analyse the sharing of good teaching practices in the police training process of the Military Police of Minas Gerais, focusing on the relationships between experienced and younger teachers, as well as on the mechanisms through which pedagogical knowledge circulates, is appropriated, and can be institutionalised within the Officer Training School. The investigation made it possible to show that police teaching constitutes a fertile space for the production of knowledge, but that the transformation of this knowledge into collective heritage still faces structural, procedural, and organisational limitations.

The articulation among the Systematic Literature Review, the documentary research, and the empirical survey with the teachers made it possible to sustain, with reasonable consistency, the fulfilment of the general objective and the specific objectives proposed. Regarding **Specific objective (A)**, it was found that experienced teachers share their knowledge with younger teachers mainly through everyday relationships of proximity, informal conversations, practical observation, sending of materials, and occasional guidance. This sharing, although effective to a certain extent, occurs in a poorly formalised way, depending more on individual disposition and interpersonal relationships than on permanent institutional devices.

As for **Specific objective (B)**, it was verified that the predominant mechanisms of dissemination of good teaching practices are informal, with instant messaging groups, e-mails, and dialogues in social spaces standing out. The consolidated presence of structured channels of pedagogical knowledge management was not identified, such as dynamic institutional repositories, commented banks of lesson plans, formal mentoring programmes, or regularly organised communities of practice.

Regarding **Specific objective (C)**, the research showed that the institutionalisation of sharing encounters obstacles related above all to the absence of an organisational culture explicitly aimed at the systematisation of teaching knowledge, the limitation of integrated technological tools, and the insufficiency of time formally allocated to planning and pedagogical exchange. In contrast, a relatively favourable environment for innovation and exchange among teachers was observed, which indicates that the barriers are concentrated less on cultural resistance and more on the lack of structure and governance.

Finally, regarding **Specific objective (D)**, the findings of the study make it possible to propose concrete guidelines for strengthening a culture of teacher collaboration supported by principles of Knowledge Management. Such guidelines should not be understood as measures external to the pedagogical process, but as constitutive elements of the training quality itself.

3.1 WEAKNESSES IDENTIFIED IN THE SHARING OF GOOD TEACHING PRACTICES

The results point, firstly, to the predominance of a model of knowledge circulation based on orality, relational improvisation, and proximity among colleagues. This model presents advantages in terms of agility, trust, and spontaneity, but carries severe limitations for organisational memory. When knowledge remains linked to the individual and does not become a record, reference, or institutionally recognised practice, the corporation is exposed to the loss of intellectual capital.

Secondly, it was observed that the relationship between more experienced and younger teachers, although potentially rich, is not accompanied by formal devices of mentoring, integration, or pedagogical monitoring. This means that teacher learning between generations exists, but is not institutionally guaranteed. As a consequence, the access of incoming teachers to the accumulated pedagogical heritage may occur in an unequal way.

Thirdly, it was verified that the pedagogical practices considered successful - such as case studies, analysis of incident videos, problem-solving, and contextualised simulations - circulate without standardisation, without systematic recording, and without continuous collective validation. Instead of consolidating themselves as institutional knowledge, many of these practices remain associated with the professional identity of certain teachers.

Finally, it was found that the institution still presents a low capacity for externalisation of tacit pedagogical knowledge. The difficulty lies not only in recording materials, but in capturing the didactic reasoning, the methodological decisions, the adaptation criteria, the ways of conducting, and the learnings resulting from accumulated experience.

3.2 GUIDELINES FOR STRENGTHENING TEACHER SHARING AT THE MILITARY POLICE ACADEMY

Based on the results obtained, it is possible to list some institutional guidelines for strengthening the sharing of good teaching practices within the APM.

a) Institutionalisation of communities of pedagogical practice

The creation of regular spaces for meeting among teachers, organised by discipline or training axis, can favour the socialisation and externalisation of knowledge. Such meetings

should go beyond the merely administrative model of meeting and assume the character of a pedagogical workshop, aimed at the presentation of experiences, analysis of strategies, discussion of difficulties, and systematisation of learnings.

b) Formal mentoring programme among teachers

The approximation between experienced and incoming teachers can be strengthened through the creation of a formal mentoring programme. This programme would allow veteran teachers to accompany the first cycles of activity of younger teachers, sharing didactic guidance, repertoires of cases, ways of planning, and strategies for conducting practical classes.

c) Institutional repository of good teaching practices

The implementation of a collaborative digital environment, specifically aimed at police teaching, can contribute to storing and organising lesson plans, case studies, didactic sequences, commented videos, experience reports, and support materials. The differential of this repository would not be merely to archive documents, but to allow them to be contextualised pedagogically, updated, and commented by the teachers themselves.

d) Protected institutional time for planning and sharing

The sharing of knowledge cannot depend exclusively on individual goodwill. It is necessary to provide, in the organisation of the teaching workload, time formally protected for joint planning, pedagogical reflection, and collaborative production of materials. Without this, knowledge management tends to remain peripheral in the face of other institutional demands.

e) Institutional appreciation of teacher collaboration

The consolidation of a culture of sharing requires symbolic and organisational recognition. The institution can establish mechanisms of appreciation for teachers who systematise good practices, produce reference materials, guide incoming colleagues, and contribute to the pedagogical memory of the corporation. Such a measure reinforces the idea that sharing knowledge is part of teaching excellence.

3.3 POSSIBILITIES FOR FUTURE STUDIES

The results of this research also point to relevant academic developments. A first path consists of deepening the study of **teacher mentoring** in police training, analysing more closely how the learning relationships between experienced and novice teachers are constituted, which knowledge is prioritised, and which factors increase or reduce the effectiveness of this interaction.

Another possibility refers to the development of studies on **communities of practice in police education**, investigating whether and how teacher groups can organise themselves

around the continued production of pedagogical knowledge and what impacts this produces on the standardisation, innovation, and quality of teaching.

The investigation of **institutional repositories of pedagogical knowledge** also proves promising, especially regarding teacher adherence, usability, updating, and the potential to transform tacit knowledge into accessible and reapplicable knowledge.

Finally, it is recommended to extend the research to other contexts of police training, including training courses for enlisted personnel, continuing training, and other training units of the corporation, in order to verify whether the patterns identified here are repeated or assume distinct configurations.

In summary, this study shows that the PMMG has an experienced, qualified teaching staff that produces relevant pedagogical knowledge, but still needs to advance in the construction of institutional mechanisms that convert this heritage into collective memory, organisational learning, and training continuity. The sharing of good teaching practices should not be treated as an accessory or occasional action, but as a strategic dimension of the quality of police training. Transforming experience into shared knowledge, and shared knowledge into continuous improvement of teaching, constitutes a decisive step for strengthening contemporary police education.

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