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## CONTRADICTIONS AND EXPANSIONS IN THE USE OF THE TEXTBOOK: IMPLICATIONS FOR TEACHER TRAINING AND LEARNING ASSURANCE

CONTRADIÇÕES E EXPANSÕES NO USO DO LIVRO DIDÁTICO: IMPLICAÇÕES PARA A FORMAÇÃO DOCENTE E A GARANTIA DA APRENDIZAGEM

CONTRADICCIONES Y EXPANSIONES EN EL USO DEL LIBRO DE TEXTO: IMPLICACIONES PARA LA FORMACIÓN DOCENTE Y LA GARANTÍA DEL APRENDIZAJE

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**ABSTRACT:** This study investigates how the textbook can contribute to in-service teacher training and to ensuring learning in Basic Education. The central issue questions how the textbook can move beyond being a passive resource to become a formative tool and a mediator of more critical and meaningful pedagogical practices. To address this question, an integrative literature review was conducted, analyzing 23 studies selected from major academic databases, thematically categorized and interpreted in light of Engeström's Activity Theory. The findings reveal that, despite its historical centrality in Brazilian education, the textbook is still predominantly used in a mechanical and decontextualized manner. However, the research also identifies promising experiences in which continuing teacher education promoted a more reflective and intentional use of the material, enhancing its potential to foster meaningful learning.

**KEYWORDS:** Teaching material. Teacher education. Learning assurance.

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**RESUMO:** Este estudo investiga como o livro didático pode contribuir para a formação docente em serviço e para a garantia da aprendizagem na Educação Básica. A problemática central questiona de que maneira o livro pode deixar de ser um recurso passivo para tornar-se um instrumento formativo e mediador de práticas pedagógicas mais críticas e significativas. Para responder a essa questão, foi realizada uma revisão integrativa da literatura, com análise de 23 estudos selecionados nas principais bases acadêmicas, categorizados tematicamente e interpretados à luz da Teoria da Atividade de Engeström. Os achados revelam que, apesar de sua centralidade histórica na educação brasileira, o livro didático ainda é utilizado de forma predominantemente mecânica e descontextualizada. No entanto, a pesquisa também identifica experiências promissoras em que a formação continuada de professores favoreceu o uso mais reflexivo e intencional do material, ampliando seu potencial para promover aprendizagens significativas.

**PALAVRAS-CHAVE:** Material didático. Formação de professores. Garantia de aprendizagem.

**RESUMEN:** Este estudio investiga cómo el libro de texto puede contribuir a la formación docente en servicio y a la garantía del aprendizaje en la Educación Básica. La problemática central cuestiona de qué manera el libro puede dejar de ser un recurso pasivo para convertirse en un instrumento formativo y mediador de prácticas pedagógicas más críticas y significativas. Para responder a esta cuestión, se realizó una revisión integrativa de la literatura, con análisis de 23 estudios seleccionados en las principales bases académicas, categorizados temáticamente e interpretados a la luz de la Teoría de la Actividad de Engeström. Los hallazgos revelan que, a pesar de su centralidad histórica en la educación brasileña, el libro de texto aún se utiliza de manera predominantemente mecánica y descontextualizada. Sin embargo, la investigación también identifica experiencias prometedoras en las que la formación continua de los docentes favoreció un uso más reflexivo e intencional del material, ampliando su potencial para promover aprendizajes significativos.

**PALABRAS CLAVE:** Material didáctico. Formación de docentes. Garantía del aprendizaje.

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## INTRODUCTION

The textbook, central to Brazilian education, goes beyond the simple organization of content: it functions as support for pedagogical practice and as a tool for in-service teacher training (Oliveira & Valdemarin, 2023; Lajolo, 1996). In an educational scenario frequently marked by inequalities and scarcity of resources, this materiality serves as a link between educational policies and the everyday reality of schools. However, the use of this resource does not always favor learning, as the mechanical reproduction of content, disconnected from students' lived experiences, still persists (Oliveira & Valdemarin, 2023).

It is in this context that the role of the teacher becomes indispensable. Studies such as those by Perovano e Amaral (2023) and Santos and Bomfim (2020) demonstrate that the critical and creative mediation of the textbook directly depends on the teacher's ability to evaluate, select, and adapt materials to their context. In-service training—practical, situated, and reflective—thus emerges as a pathway to transform the book from a mere repository of content into an effective ally for learning. Here, a distinction is recognized between initial teacher training, which occurs during undergraduate education, and in-service training, experienced in the school's daily routine. It is in the latter that the greatest driver of pedagogical transformation is identified, making the use of the textbook more sensitive to realities that are increasingly diverse and mutable.

Within this scenario, the concept of ensuring learning goes beyond the mere verification of correct content transmission, involving appropriation, meaning-making, and application of knowledge in real contexts (Lajolo, 1996; Oliveira & Valdemarin, 2021). In this work, learning assurance is understood not only as the verification that content has been correctly transmitted but as part of a process in which students appropriate, interpret, and apply knowledge in real contexts of their school and social life (Lajolo, 1996; Oliveira & Valdemarin, 2021). This conception recognizes learning as a fundamental right of students and, simultaneously, as an institutional duty of the school. This duty entails the intentional planning, monitoring, and management of pedagogical practices that ensure the effective development of competencies established in curricula, aiming to overcome inequalities and meet the educational needs of all students. The assumption here is that when the teacher uses the textbook critically and sensitively, they can expand its potential as a tool for planning, connecting with daily life, and stimulating thinking.

Considering Activity Theory, proposed by Engeström (2002), we believe it provides a powerful lens to understand the multiple relationships among textbooks, teachers, and students. By recognizing the textbook as a mediating artifact within a broader system—comprising subjects, tools, rules, division of labor, and community—this approach highlights contradictions

and invites the teacher to act as a transformative agent, not in the sense of rejecting the book, but in configuring it intentionally for learning.

Against this backdrop, the present study begins with an integrative literature review (ILR), aiming to map and critically analyze how academic productions have discussed the relationship between textbooks, teacher training, and learning assurance, especially in Basic Education. In conjunction with this, and grounded in Activity Theory, the article seeks to identify contradictions, tensions, and possibilities that can inform the construction of more effective didactic paths and strategies with and through textbooks. Accordingly, the guiding research question is: how can the textbook serve as a source for in-service teacher training and contribute to students' learning assurance?

## METHODOLOGY

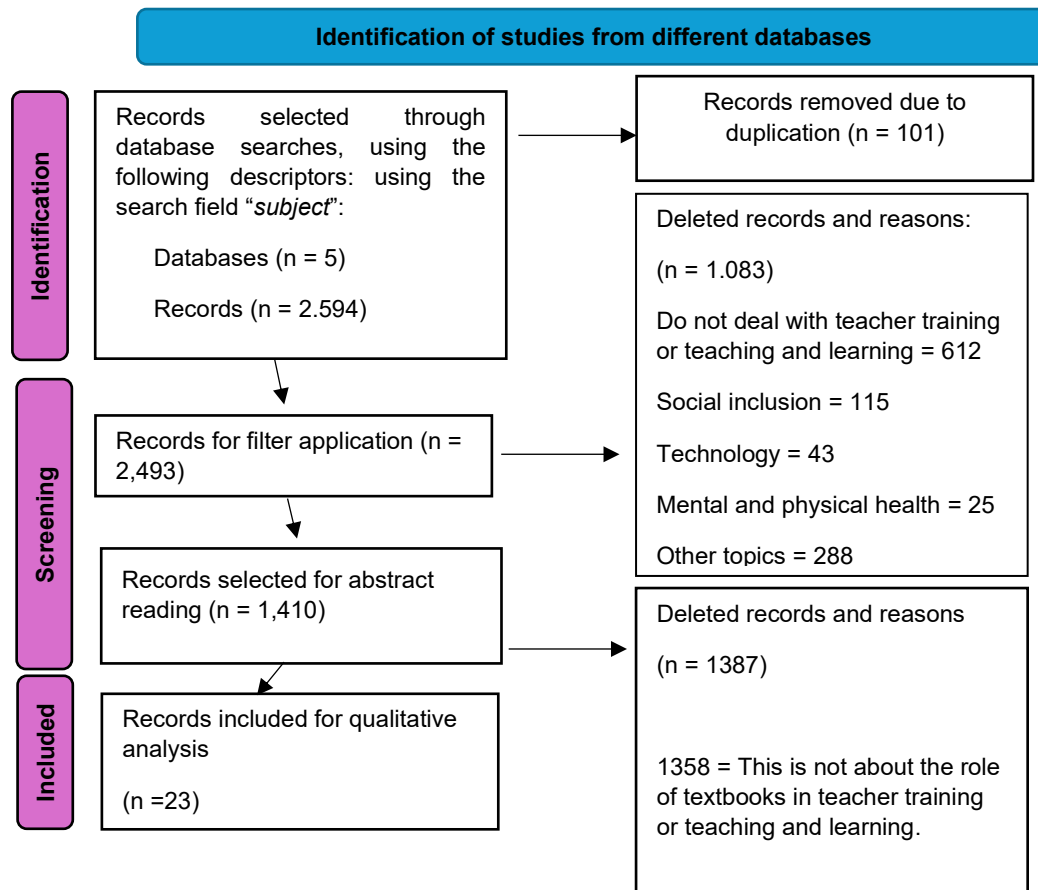
This study adopts a qualitative and exploratory approach, structured in multiple methodologically interconnected stages. The choice of a multi-phase methodological pathway arises from the complexity of the object of investigation, which involves the interrelationship among textbooks, in-service teacher training, and learning assurance in the early years of Basic Education. The investigative process was designed to ensure consistency, traceability, and ongoing dialogue between empirical findings and theoretical grounding. In general, the methodology encompassed the following stages: (1) general research design, including the definition of the conceptual framework of the investigation; (2) execution of an ILR for the selection of the analysis corpus; (3) thematic categorization of selected studies; (4) evaluation of the theoretical-methodological robustness of the texts; and (5) development of an in-depth interpretive reading, guided by the five principles of Activity Theory. As the first stage has already been addressed in the introduction, the following sections detail the procedures adopted in the remaining stages.

### *Search and selection procedures for studies*

Based on the research objectives, the process of searching, screening, and selecting studies was structured (Moher, 2015; Lakatos, 2017). The review was conducted between March 18 and May 28, 2024. Searches were carried out in the CAPES, SPELL, ERIC, SciELO, and BDTD databases, without date restrictions. The descriptors used were "textbook," "teaching-learning," "teacher training," "mathematics," and "PNLD," applied in the "subject" field. Given the scarcity of studies addressing teacher training and learning assurance jointly, it was decided to include texts that addressed these themes separately, provided they were linked to the

use of textbooks. Articles, dissertations, and theses in Portuguese, English, or Spanish were selected. After analyzing titles and abstracts, texts outside the scope, unavailable, or duplicated were excluded, as shown in Figure 1.

Figure 1. PRISMA Results



Source: prepared by the authors (2024).

During the initial screening, 2,493 texts were identified, of which 101 were removed due to duplication. After reading 1,410 abstracts, 23 studies fully met the criteria and were selected for complete analysis. Most of the excluded works did not directly address the central focus of this research—the relationship between textbooks, teacher training, mathematics teaching, and learning assurance. Many focused on specific subjects (such as Portuguese, science, and geography) or broader topics, including the use of technologies, the final years of elementary school, secondary education, and the production of materials during the pandemic. Studies on textbook images, institutional evaluation, material disposal, and less recurrent areas in this context, such as financial education, school culture, and philosophy, were also discarded. Although relevant in other contexts, these studies did not meet the objective of the present work.

## Thematic categorization of selected studies

After defining the corpus, the texts were classified into four thematic categories, constructed based on content analysis and the research objectives: (1) Teacher Training; (2) Textbook and Mathematics Teaching; (3) Textbook and Teaching-Learning; and (4) Historical and Functional Aspects of the Textbook. This categorization allowed structuring the analysis coherently with the theoretical focuses defined in the conceptual framework. As shown in Table 1, the final analysis revealed a concentration on teaching-learning processes and the use of textbooks in instruction, while only four texts directly addressed teacher training linked to textbook use. This finding highlights a significant gap in the literature.

**Table 1.** Selection of texts by subject

<b>Textbook and Teacher Training</b>
<ol style="list-style-type: none"> <li>1. <i>A formação de professores e o livro didático: avaliação e controle dos saberes escolares;</i></li> <li>2. <i>O livro didático como recurso formador docente na educação infantil;</i></li> <li>3. <i>Propostas pedagógicas em livros didáticos: reflexões sobre a pseudoformação.</i></li> </ol>
<b>Textbook and Mathematics Teaching</b>
<ol style="list-style-type: none"> <li>1. <i>A contextualização no ensino de matemática: concepções e práticas;</i></li> <li>2. <i>Incorporação da Álgebra Infantil na Educação Infantil: uma análise a partir dos livros didáticos;</i></li> <li>3. <i>Dos Tabelas de Dunton às cartas de Parker: números e cálculos à vista (São Paulo, 1890-1910);</i></li> <li>4. <i>Investigation of Use Cases of Mathematics Textbooks in the Teaching Process from a Developmental Perspective;</i></li> <li>5. <i>Pesquisar sobre a História do Ensino da Matemática: Metodologia, Abordagens e Perspectivas;</i></li> <li>6. <i>Interdisciplinarity in Data Analysis Through the Primary School Textbooks in Greece and Singapore;</i></li> <li>7. <i>Manual Pedagógico para a Escola Moderna: Rumo à Matemática Moderna para os Primeiros Anos do Ensino Primário;</i></li> <li>8. <i>Materiais Didáticos para o Ensino de Números nos Anos Iniciais: uma ação na formação do professor de matemática;</i></li> <li>9. <i>O Livro Didático na Educação Infantil: Reflexão versus Repetição na Resolução de Problemas Matemáticos;</i></li> <li>10. <i>Um livro sob medida como instrumento do ensino de aritmética na escola primária.</i></li> </ol>
<b>Textbook and Teaching-Learning</b>
<ol style="list-style-type: none"> <li>1. <i>A relação do uso de materiais didáticos multimodais com a aprendizagem;</i></li> <li>2. <i>O livro didático ao longo do tempo: a forma do conteúdo;</i></li> <li>3. <i>Argumentação nos projetos integradores do Programa Nacional do Livro Didático 2021;</i></li> <li>4. <i>O livro didático e sua (sub) utilização;</i></li> <li>5. <i>Livro Didático como Recurso Pedagógico: Conceito, Função, Escolha e Uso;</i></li> <li>6. <i>Textbooks and Students' Knowledge;</i></li> <li>7. <i>Uma Caracterização das Finalidades dos Materiais Didáticos como um Elemento do Saber Profissional do Professor que Ensinava Matemática a partir de Revistas Pedagógicas (Primeira Metade do Século XX).</i></li> </ol>

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#### Historical and Functional Aspects of the Textbook

1. *O livro didático como objeto da história da educação brasileira;*
  2. *A eficiência e/ou ineficiência do livro didático no processo de ensino-aprendizagem;*
  3. *Livro Didático: um (quase) manual de usuário.*
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Source: prepared by the authors (2024).

### *Evaluation of the theoretical-methodological robustness of the studies*

After the selection and thematic categorization of the studies, an evaluation of the theoretical-methodological robustness of the 23 texts comprising the corpus of this research was carried out. This stage aimed to qualify the subsequent interpretative reading, providing the reader with a more critical view of the degree of scientific consistency of the evidence used. Robustness, in this context, was understood as the level of theoretical and methodological consistency of the publications, considering aspects such as: (a) clarity in defining the objectives; (b) coherence between the objectives, methodological procedures, and the results presented; (c) explicit and adequate theoretical foundation; and (d) applicability of the results to the educational field, particularly concerning teacher training and learning assurance.

The evaluation process followed the criteria for classifying scientific evidence proposed by Souza et al. (2010), which guide the categorization of studies into three levels of robustness: high, medium, and low. The analysis was conducted independently by two researchers, followed by a comparison and discussion of the results. In cases of divergence, the texts were reassessed collectively until consensus was reached. It is important to emphasize that the attribution of robustness levels was not exclusionary. All studies, regardless of the classification received, were maintained in the corpus and considered in the subsequent interpretative analysis. The main purpose of this stage was to qualify the reading of the data, allowing the reader to understand the relative weight of the evidence throughout the discussion, which was essential for constructing the final table. In Table 2 below, the analysis and final justification for the robustness classification are presented.

**Table 2.** Classification of studies by level of methodological and theoretical robustness

1.	<p><b>Author/Year:</b> Horikawa e Jardimino (2010)</p> <p><b>Title:</b> <i>A formação de professores e o livro didático: avaliação e controle dos saberes escolares.</i></p> <p><b>Critical Analysis Summary:</b> Documentary and bibliographical study with strong theoretical and methodological articulation. Contributes to the discussion of public evaluation policies.</p> <p><b>Robustness Level:</b> High</p>
2.	<p><b>Author/Year:</b> Reis e Nehring (2017)</p> <p><b>Title:</b> <i>A contextualização no ensino de matemática: concepções e práticas.</i></p> <p><b>Critical Analysis Summary:</b> Meta-analysis with a robust theoretical foundation and in-depth discussion on contextualized teaching.</p> <p><b>Robustness Level:</b> High.</p>
3.	<p><b>Author/Year:</b> Oliveira e Valdemarin (2021)</p> <p><b>Title:</b> <i>Dos Tabelas de Dunton às cartas de Parker: números e cálculos à vista (São Paulo, 1890-1910).</i></p> <p><b>Critical Analysis Summary:</b> Well-grounded historical study with clear documentary analysis and consistent contextualization.</p> <p><b>Robustness Level:</b> High.</p>
4.	<p><b>Author/Year:</b> Schubring (2023)</p> <p><b>Title:</b> <i>Pesquisar sobre a história do ensino da matemática: metodologia, abordagens e perspectivas.</i></p> <p><b>Critical Analysis Summary:</b> Theoretical reflection with a solid methodological basis and a critical approach to educational systems.</p> <p><b>Robustness Level:</b> High.</p>
5.	<p><b>Author/Year:</b> Gouveia e Valente (2023)</p> <p><b>Title:</b> <i>Manual Pedagógico para a escola moderna: rumo à matemática moderna para os primeiros anos do ensino primário.</i></p> <p><b>Critical Analysis Summary:</b> Solid documentary analysis highlighting the modern mathematics movement. Good articulation with teacher training.</p> <p><b>Robustness Level:</b> High.</p>
6.	<p><b>Author/Year:</b> Perovano e Amaral (2023)</p> <p><b>Title:</b> <i>Livro didático como recurso pedagógico: conceito, função, escolha e uso.</i></p> <p><b>Critical Analysis Summary:</b> Theoretical essay with solid conceptual basis. Presents an in-depth discussion on the social, pedagogical, and ideological function of the textbook.</p> <p><b>Robustness Level:</b> High.</p>
7.	<p><b>Author/Year:</b> Santos e Bomfim (2020)</p> <p><b>Title:</b> <i>O livro didático como objeto da história da educação brasileira.</i></p> <p><b>Critical Analysis Summary:</b> Well-founded historical-documentary study with a broad review of the textbook's role in structuring the Brazilian educational system.</p> <p><b>Robustness Level:</b> High.</p>
8.	<p><b>Author/Year:</b> Assis (2020)</p> <p><b>Title:</b> <i>O livro didático como recurso formador docente na educação infantil.</i></p> <p><b>Critical Analysis Summary:</b> Qualitative study with interviews. Presents methodological coherence, though with a limited theoretical scope.</p> <p><b>Robustness Level:</b> Medium.</p>
9.	<p><b>Author/Year:</b> Galuch e Crochík (2016)</p> <p><b>Title:</b> <i>Propostas pedagógicas em livros didáticos: reflexões sobre a pseudoformação.</i></p> <p><b>Critical Analysis Summary:</b> Text with a solid critical foundation but limited methodological explicitness.</p> <p><b>Robustness Level:</b> Medium.</p>
10.	<p><b>Author/Year:</b> Pincheira, Acosta e Alsina (2022)</p> <p><b>Title:</b> <i>Incorporação da álgebra infantil na educação infantil: uma análise a partir dos livros didáticos.</i></p> <p><b>Critical Analysis Summary:</b> Qualitative and descriptive study. Contributes to the field of mathematics education but lacks methodological rigor.</p> <p><b>Robustness Level:</b> Medium.</p>

11. **Author/Year:** Yazici (2021)  
**Title:** *Investigation of use cases of mathematics textbooks in the teaching process from a developmental perspective.*  
**Critical Analysis Summary:** Study with pre-service teachers. Adequate methodology but superficial theoretical analysis.  
**Robustness Level:** Medium.

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12. **Author/Year:** Zorzos e Avgerinos (2022)  
**Title:** *Interdisciplinarity in data analysis through the Primary School textbooks in Greece and Singapore.*  
**Critical Analysis Summary:** Comparative study with a clear approach. Limited theoretical depth.  
**Robustness Level:** Medium.

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13. **Author/Year:** Paim (2021)  
**Title:** *Materiais didáticos para o ensino de números nos anos iniciais: uma ação na formação do professor de matemática.*  
**Critical Analysis Summary:** Action research with good pedagogical intentions, but limited methodological description.  
**Robustness Level:** Medium.

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14. **Author/Year:** Zardo e Porto (2022)  
**Title:** *A relação do uso de materiais didáticos multimodais com a aprendizagem.*  
**Critical Analysis Summary:** Interpretative study with a solid theoretical foundation, but exploratory methodology and a lack of in-depth empirical data.  
**Robustness Level:** Medium.

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15. **Author/Year:** Freitas e Rodrigues (2008)  
**Title:** *O livro didático ao longo do tempo: a forma do conteúdo.*  
**Critical Analysis Summary:** Historical study with documentary basis. Relevant approach but with descriptive focus and limited pedagogical analysis.  
**Robustness Level:** Medium.

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16. **Author/Year:** Martins e Klein (2020)  
**Title:** *O livro didático e sua (sub)utilização.*  
**Critical Analysis Summary:** Critical analysis with solid theoretical reflection, but lacking empirical data to support the discussion.  
**Robustness Level:** Medium.

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17. **Author/Year:** Pavešić e Cankar (2022)  
**Title:** *Textbooks and Students' Knowledge.*  
**Critical Analysis Summary:** Study based on TIMSS data. Relevant for educational policies but limited in qualitative analysis.  
**Robustness Level:** Medium.

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18. **Author/Year:** Pincheira, Acosta e Alsina (2022)  
**Title:** *Uma caracterização das finalidades dos materiais didáticos como um elemento do saber profissional do professor que ensinava matemática a partir de revistas pedagógicas (primeira metade do século XX).*  
**Critical Analysis Summary:** Well-structured historical documentary research. Presents a relevant approach but limited diversity of sources.  
**Robustness Level:** Medium.

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19. **Author/Year:** Silva (2020)  
**Title:** *A imagem no livro didático de Educação Infantil nas décadas de 1960 e 1970.*  
**Critical Analysis Summary:** Study with cultural and social sensitivity, but limited methodological description.  
**Robustness Level:** Medium.

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20. **Author/Year:** Oliveira e Valdamarin (2021)  
**Title:** *A eficiência e/ou ineficiência do livro didático no processo de ensino-aprendizagem.*  
**Critical Analysis Summary:** Reflective text with relevant observations, but unclear methodology and no corpus delimitation.  
**Robustness Level:** Medium.

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21. **Author/Year:** Santos (2022)  
**Title:** *Argumentação nos projetos integradores do Programa Nacional do Livro Didático 2021.*  
**Critical Analysis Summary:** Documentary study addressing the presence of argumentation in the PNLD 2021 textbooks. Despite the relevant theme, the analysis is descriptive and weakly linked to pedagogical implications, with methodological fragility.  
**Robustness Level:** Low.
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22. **Author/Year:** Brandão e Selva (1999)  
**Title:** *O livro didático na Educação Infantil: reflexão versus repetição na resolução de problemas matemáticos.*  
**Critical Analysis Summary:** Descriptive analysis of mathematics textbook collections for Early Childhood Education. Presents relevant data but lacks theoretical depth and methodological explicitness.  
**Robustness Level:** Low.
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23. **Author/Year:** Pinheiro (2021)  
**Title:** *Um livro sob medida como instrumento do ensino de aritmética na escola primária.*  
**Critical Analysis Summary:** Historical study focused on a specific textbook. Although contextualized, it presents vague methodology and limited analysis.  
**Robustness Level:** Low.
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Source: prepared by the authors (2024).

### Detailed characterization of the included studies

After thematic categorization, a detailed characterization of the 23 studies that composed the corpus of this review was conducted. For this purpose, a systematic extraction of relevant information from each text was carried out, covering aspects such as authorship, year of publication, type of study, methodological instruments used, country of origin, and main findings. The organization of these data made it possible to visualize the methodological and thematic diversity present in the selected materials, which was important for building methodological robustness and for structuring the tables presented throughout the study and explained previously. The included studies addressed different approaches related to the textbook: from its use in mathematics teaching, its role in teacher training, to broader discussions on its historical, political, and pedagogical aspects. This systematization was carried out to ensure an overview of the research field, highlighting gaps, convergences, and potential for future investigations.

Below, Table 3 presents a detailed synthesis of each study, providing the reader with an objective and organized overview of the analyzed materials.

**Table 3.** Characterization of the selected studies

1.	<p><b>Author/Year:</b> Marisa Lajolo (1996)</p> <p><b>Title:</b> <i>Livro didático: um (quase) manual de usuário.</i></p> <p><b>Type of Study:</b> Theoretical-reflective essay.</p> <p><b>Instruments Used:</b> Critical review based on literature and the author's experience.</p> <p><b>Country:</b> Brazil.</p> <p><b>Main Findings:</b> The author argues that the textbook should serve as a support tool rather than a control mechanism, highlighting the need for critical and planned use by teachers. The work emphasizes that no textbook replaces teacher mediation and that a good teacher can turn even a poor textbook into an effective pedagogical resource. The text also advocates for valuing teacher autonomy and decentralizing the selection and production of materials.</p>
2.	<p><b>Author/Year:</b> Brandão and Selva (1999).</p> <p><b>Title:</b> <i>O Livro didático na Educação Infantil: reflexão versus repetição na resolução de problemas matemáticos.</i></p> <p><b>Type of Study:</b> Descriptive study with quantitative and qualitative analysis.</p> <p><b>Instruments Used:</b> Analysis of 12 mathematics textbook collections aimed at early childhood education.</p> <p><b>Country:</b> Brazil.</p> <p><b>Main Findings:</b> The study found little variety in the structure of problems, with a predominance of combination and transformation problems for addition and subtraction. Furthermore, in many cases, textbook illustrations provided the answers to the problems, limiting reflection and the development of diverse strategies by children.</p>
3.	<p><b>Author/Year:</b> Freitas and Rodrigues (2008)</p> <p><b>Title:</b> <i>O livro didático ao longo do tempo: a forma do conteúdo.</i></p> <p><b>Type of Study:</b> Historical-documentary study.</p> <p><b>Instruments Used:</b> Analysis of bibliographic sources and historical documents on the evolution of textbooks over time.</p> <p><b>Country:</b> Brazil.</p> <p><b>Main Findings:</b> The study reveals that textbooks have undergone several changes in format and content approach, reflecting transformations in pedagogical conceptions and educational needs over the decades.</p>
4.	<p><b>Author/Year:</b> Horikawa and Jardimino (2010).</p> <p><b>Title:</b> <i>A formação de professores e o livro didático: avaliação e controle dos saberes escolares.</i></p> <p><b>Type of Study:</b> Documentary analysis and literature review.</p> <p><b>Instruments Used:</b> Analysis of documents and literature review on teacher education and textbook use in Brazil.</p> <p><b>Country:</b> Brazil.</p> <p><b>Main Findings:</b> The study discusses how textbook production in Brazil is associated with teacher training, highlighting that state evaluation of these materials may contribute to improving the quality of education provided to underprivileged groups. However, it points out that improvements in textbook quality have not been accompanied by equivalent advances in initial and continuing teacher training.</p>
5.	<p><b>Author/Year:</b> Galuch and Crochík, 2016.</p> <p><b>Title:</b> <i>Propostas pedagógicas em livros didáticos: reflexões sobre a pseudoformação.</i></p> <p><b>Type of Study:</b> Critical study based on the Critical Theory of Society.</p> <p><b>Instruments Used:</b> Analysis of five 5th-grade elementary school textbooks.</p> <p><b>Country:</b> Brazil.</p> <p><b>Main Findings:</b> The study concludes that the pedagogical proposals in the analyzed textbooks dilute teacher authority and emphasize a false autonomy among students, prioritizing group work and superficial community problem-solving. This reflects pseudo-formation, which fails to equip students with genuine critical thinking skills.</p>

6. **Author/Year:** Reis and Nehring (2017).  
**Title:** *A contextualização no ensino de matemática: concepções e práticas.*  
**Type of Study:** Meta-analysis of existing research on the subject.  
**Instruments Used:** Analysis of documents, textbooks, and assessments, as well as conceptions and practices developed by mathematics education teachers and researchers.  
**Country:** Brazil.  
**Main Findings:** The study found a gap between the theoretical understanding of contextualization and its practical application in classrooms. There is a weakness in the comprehension of the concept, which limits teaching to problem-solving and application, simplifying concepts without emphasizing the abstraction process that contextualization should promote.

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7. **Author/Year:** Santos and Bomfim (2020).  
**Title:** *O livro didático como objeto da história da educação brasileira.*  
**Type of Study:** Historical-documentary study.  
**Instruments Used:** Literature review and analysis of historical documents on the role of the textbook in the history of Brazilian education.  
**Country:** Brazil.  
**Main Findings:** The study highlights the central role of textbooks in the development of the Brazilian educational system, being used as the main pedagogical tool and reflecting social and political changes in education.

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8. **Author/Year:** Assis (2020).  
**Title:** *O livro didático como recurso formador docente na educação infantil.*  
**Type of Study:** Qualitative case study.  
**Instruments Used:** Semi-structured qualitative interviews with six early childhood education teachers.  
**Country:** Brazil.  
**Main Findings:** The study revealed that the textbook is a central tool for guiding and directing teaching practices, helping in content understanding. However, the teachers indicated some autonomy in using other pedagogical resources alongside the textbook.

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9. **Author/Year:** Martins and Klein, 2020  
**Title:** *O Livro didático e sua (sub)utilização.*  
**Type of Study:** Critical and reflective analysis.  
**Instruments Used:** Literature review and qualitative analysis of textbook use and underuse in the school environment.  
**Country:** Brazil.  
**Main Findings:** The study points out that although the textbook is widely adopted, it is often underused due to inadequate teacher training or resistance to using it as a central teaching tool. Furthermore, the research highlights the need for a more critical and contextualized use of teaching materials.

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10. **Author/Year:** Oliveira (2021).  
**Title:** *A eficiência e/ou ineficiência do livro didático no processo de ensino-aprendizagem.*  
**Type of Study:** Empirical-interpretative study based on field research and literature review.  
**Instruments Used:** Oral interviews and questionnaires with 9th-grade teachers and students from public and private schools in Rio de Janeiro.  
**Country:** Brazil.  
**Main Findings:** The study identified that although the textbook is essential, it is often used as the sole pedagogical resource, which limits teacher autonomy and hinders active and critical student learning. Overly technical language and disconnection from students' realities were cited as barriers. The author proposes a new methodology for textbook use, promoting its articulation with students' daily lives.

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11. **Author/Year:** Oliveira and Valdemarin (2021).  
**Title:** *Dos Tabelas de Dunton às cartas de Parker: números e cálculos à vista (São Paulo, 1890-1910).*  
**Type of Study:** Historical-descriptive study.  
**Instruments Used:** Analysis of historical documents, including didactic tables and cards used in mathematics teaching between 1890 and 1910.  
**Country:** Brazil.  
**Main Findings:** The study reveals the gradual adoption of more visual and practical methods in teaching numbers and calculations, with emphasis on Dunton's tables and Parker's cards, which transformed the pedagogical practices of the time.
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12. **Author/Year:** Yazici (2021).  
**Title:** Investigation of use cases of mathematics textbooks in the teaching process from a developmental perspective.  
**Type of Study:** Qualitative study with a developmental perspective using a cross-sectional model.  
**Instruments Used:** Semi-structured interviews and document analysis.  
**Country:** Turkey.  
**Main Findings:** The study revealed that many pre-service teachers intend to use textbooks at the beginning of their careers, while more experienced teachers tend to move away from textbooks, preferring supplementary resources due to the inadequacy of textbooks in terms of variety and technological adaptation.
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13. **Author/Year:** Paim (2021).  
**Title:** *Materiais didáticos para o ensino de números nos anos iniciais: uma ação na formação do professor de matemática.*  
**Type of Study:** Qualitative action research.  
**Instruments Used:** Pedagogical workshops, Google Forms questionnaires, evaluative analysis reports, and virtual data collection (chat and photos).  
**Country:** Brazil.  
**Main Findings:** The analyzed teaching materials were considered by participants as alternatives to traditional number teaching, standing out as class facilitators that promote integration, interdisciplinarity, and socialization in the knowledge-building process.
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14. **Author/Year:** Pinheiro (2021).  
**Title:** *Um livro sob medida como instrumento do ensino de aritmética na escola primária.*  
**Type of Study:** Historical-documentary study.  
**Instruments Used:** Analysis of historical sources and textbooks, specifically the book *Nossa Aritmética* (1937).  
**Country:** Brazil.  
**Main Findings:** The study revealed that *Nossa Aritmética* was developed based on scientific experiments and adjusted to individual differences among students. The book aimed at efficiency and productivity rather than mathematical learning itself, reflecting Taylorist influences in education.
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15. **Author/Year:** Zardo and Porto (2022).  
**Title:** *A relação do uso de materiais didáticos multimodais com a aprendizagem.*  
**Type of Study:** Interpretative analysis based on content analysis of theses and dissertations on the use of multimodal teaching materials, suggesting an exploratory or descriptive approach.  
**Instruments Used:** Multimodal teaching materials using different modes of representation, such as text, images, audio, video, and interactive elements, to facilitate teaching and learning.  
**Country:** Brazil.  
**Main Findings:** Multimodal materials are effective in making content more accessible and adaptable to different learning styles. They can be used actively or through traditional methodologies, depending on the teacher's approach.
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16. **Author/Year:** Santos (2022).  
**Title:** *Argumentação nos projetos integradores do Programa Nacional do Livro Didático 2021.*  
**Type of Study:** Documentary research with qualitative and descriptive aspects.  
**Instruments Used:** Documentary research with qualitative and descriptive aspects, analysis of official documents, and mathematics textbooks from the PNLD 2021.  
**Country:** Brazil.  
**Main Findings:** Most of the analyzed books presented explanatory argumentation, especially in the units addressing Plane Geometry.

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17. **Author/Year:** Pincheira, Acosta and Alsina (2022).  
**Title:** *Incorporação da álgebra infantil na Educação Infantil: uma análise a partir dos livros didáticos.*  
**Type of Study:** Qualitative, exploratory-descriptive in nature.  
**Instruments Used:** Analysis of Early Childhood Education textbooks addressing Early Algebra.  
**Country:** Chile  
**Main Findings:** The study observes that the incorporation of Early Algebra in textbooks is limited, with greater emphasis on basic concepts and little focus on more complex activities aimed at introducing algebraic foundations.

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18. **Author/Year:** Zorzos and Avgerinos (2022).  
**Title:** *Interdisciplinarity in data analysis through the Primary School textbooks in Greece and Singapore.*  
**Type of Study:** Comparative and descriptive study.  
**Instruments Used:** Analysis of primary school mathematics textbooks from Greece and Singapore.  
**Country:** Greece and Singapore.  
**Main Findings:** The study reveals that both countries promote interdisciplinarity through their textbooks, but Singapore presents a greater number of daily-context activities and a wider range of interdisciplinary subjects, while Greece focuses more on social and environmental issues.

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19. **Author/Year:** Nascimento (2022).  
**Title:** *Uma caracterização das finalidades dos materiais didáticos como um elemento do saber profissional do professor que ensinava matemática a partir de revistas pedagógicas (primeira metade do século XX).*  
**Type of Study:** Historical-documentary research.  
**Instruments Used:** Analysis of pedagogical magazine issues such as Revista de Ensino, Revista Escolar, Revista do Professor, and others published in the first half of the 20th century.  
**Country:** Brazil.  
**Main Findings:** Teaching materials were used for different purposes: representation, manipulation, and construction. Materials such as Parker cards, beads, sticks, and paper sheets were mentioned. The research concludes that these materials promoted an articulation between mathematics for teaching and mathematics for learning—key elements of teachers’ professional knowledge.

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20. **Author/Year:** Pavešić and Cankar (2022).  
**Title:** *Textbooks and Students’ Knowledge.*  
**Type of Study:** Descriptive and comparative study.  
**Instruments Used:** Analysis of national and international assessment data (TIMSS) and a national database on textbook use.  
**Country:** Slovenia.  
**Main Findings:** Significant differences were found in the knowledge and attitudes of students using different textbooks. The study suggests that textbook selection can affect student performance, but also indicates the need for improvements in national textbook validation criteria to ensure quality.

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21. **Author/Year:** Perovano and Amaral (2023).  
**Title:** *Livro didático como recurso pedagógico: conceito, função, escolha e uso.*  
**Type of Study:** Theoretical essay.  
**Instruments Used:** Theoretical review and literature analysis related to the history, concept, and function of textbooks.  
**Country:** Brazil.  
**Main Findings:** The textbook is a central resource in the educational process, with multiple functions, including its ability to reflect cultural, ideological, and pedagogical values, being fundamental in curriculum implementation. The selection of textbooks must be critical and consider their pedagogical, social, and cultural impact.

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22. **Author/Year:** Gouveia and Valente (2023).  
**Title:** *Manual pedagógico para a escola moderna: rumo à matemática moderna para os primeiros anos do ensino primário.*  
**Type of Study:** Historical and documentary study.  
**Instruments Used:** Analysis of documents and historical sources on the Modern Mathematics Movement (MMM) and the use of textbooks.  
**Country:** Brazil.  
**Main Findings:** The study concludes that the Pedagogical Manual for the Modern School is an important work for analyzing the transitional period in mathematics education. It incorporated elements of Modern Mathematics peripherally, without altering the traditional organization of arithmetic.

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23. **Author/Year:** Gert Schubring, 2023.  
**Title:** *Pesquisar sobre a história do ensino da matemática: metodologia, abordagens e perspectivas.*  
**Type of Study:** Theoretical-methodological reflection.  
**Instrumentos Utilizados:** Literature review and historical analysis.  
**Country:** Portugal.  
**Main Findings:** The study identifies the need for more refined methodologies to understand the diverse historical realities of mathematics teaching. It highlights that the history of mathematics is not linear and presents challenges in comparing educational systems from different countries.

Source: prepared by the authors (2024).

The synthesis presented in Table 3 highlights the diversity of approaches, methods, and contexts found in the 23 studies analyzed. This stage of detailed characterization made it possible to identify not only the main themes addressed but also potential gaps and convergences in the field of research on textbooks, teacher education, and the assurance of learning. This finding, together with the assessment of the robustness of the studies analyzed in this integrative review, revealed not only the thematic diversity of academic production on textbooks but also disparities regarding the methodological and theoretical depth of the investigations. It was observed that the studies with a higher level of robustness are concentrated in mathematics teaching and in conceptual and historical analyses of textbooks, whereas those that directly address teacher education and the assurance of learning are less frequent and, for the most part, methodologically weaker. This finding points to a relevant gap: although the textbook is widely used as a pedagogical support tool in schools, its role in teacher education still lacks more in-depth investigation.

The absence of a solid formative basis, as suggested by authors such as Martins and Klein (2020) and Assis (2020), compromises the critical and autonomous use of textbooks by

teachers, which, in turn, directly impacts the assurance of learning. The classification of studies by robustness, based on Souza et al. (2010), allowed for a broader perspective on the potentialities and limitations of scientific production, contributing to a more qualified interpretation of the available data. As Laville and Dionne (1999) emphasize, the construction of knowledge in the human sciences requires rigor, critical awareness, and constant reflection on methods and results. Thus, this methodological stage not only grounds the findings of this research but also reinforces the need to invest in studies that consistently articulate textbooks, teacher education, and the assurance of learning.

### *Interpretative reading guided by activity theory*

The final methodological stage consisted of the interpretative reading of the studies, guided by the five principles of Engeström's (2002) Activity Theory: (1) the activity system as the unit of analysis; (2) multiple voices; (3) historicity; (4) internal contradictions as the driving force of transformation; and (5) the possibility of system expansion. This reading was conducted based on a methodological triangulation that articulated: (a) the empirical findings of each study; (b) the theoretical frameworks mobilized by the authors themselves; and (c) the conceptual framework of the research (focused on teacher education and the assurance of learning). The results of this reading were organized into specific analytical tables for each thematic category, always considering the five principles of Activity Theory as the structuring axis. The construction of each table resulted from cross-reading and consensus among the researchers, ensuring interpretative rigor and theoretical coherence. At the end of the category-based analysis, an integrative synthesis table was developed, connecting the findings of the different stages and highlighting their implications for teachers, school administrators, public policies, and other actors involved in the teaching-learning process mediated by the textbook.

### *Analysis of the findings in light of activity theory and expansive learning*

The gaps identified in the robustness analysis—particularly regarding teacher education and the assurance of learning—highlight the need for a deeper interpretative approach. To this end, Activity Theory, developed by Vygotsky and systematized by Leontiev and Engeström (1987; 2002), provides a systemic and situated approach to pedagogical practice, understanding human actions as mediated by cultural artifacts within historical and social contexts.

Its conceptual structure is based on five principles: (1) the activity system as a unit of analysis; (2) multiple voices; (3) historicity; (4) internal contradictions as drivers of transformation; and (5) the possibility of system expansion. Based on these principles, Engeström (2002) proposed the Theory of Expansive Learning, according to which learning occurs through the resolution of contradictions, resulting in qualitative changes in the system. This theory allows

us to understand the textbook as a mediating artifact that, when inserted into school systems composed of subjects, rules, and communities, interacts with teachers in complex ways. The contradictions between the standardized use of the material and the demands of everyday teaching practice emerge as potential drivers of transformation. Below, the findings of the analyzed texts are interpreted in light of these principles, with emphasis on the role of the textbook in pedagogical mediation, the multiple voices involved, and the tensions present in educational practices. It is important to note that these findings are embedded within the framework of Table 3, previously discussed.

### Analysis of the “teacher education” category

In the “teacher education” category, as indicated earlier in Table 1, three texts were analyzed: *A formação de professores e o livro didático: avaliação e controle dos saberes escolares* (Horikawa & Jardimino, 2010), *O livro didático como recurso formador docente na educação infantil* (Assis, 2020) and *Propostas pedagógicas em livros didáticos: reflexões sobre a pseudo-formação* (Galuch & Crochík, 2016).

These studies, analyzed in light of the principles of Activity Theory, help to understand how the textbook operates as a mediating artifact between in-service teacher education and everyday pedagogical practice. Regarding the principle of the activity system as a unit of analysis, the texts emphasize that the textbook provides a minimal structure of teaching support, especially in contexts where teacher training is fragile. In this sense, the textbook is part of a system that articulates different elements, such as teachers, public policies, and school culture (Horikawa & Jardimino, 2010; Assis, 2020).

Considering the principle of multiple voices, the studies highlight the participation of various agents in the production and use of textbooks: authors, teachers, publishers, pedagogical coordinators, and institutional bodies. This multiplicity of voices generates tensions between what is prescribed in the materials and the actual practices experienced in schools (Galuch & Crochík, 2016). Concerning historicity, it is noted that the textbook has consolidated itself as a central pedagogical tool throughout history, remaining relevant in school practices even amidst changes in format and methodological approaches (Santos & Bomfim, 2020). The contradictions identified by the studies reflect the challenges faced by teachers: there is a gap between the prescriptive use of the textbook and the ideal of autonomous and critical teaching; between the pedagogical proposals contained in the materials and the often superficial or mechanized practices observed in schools; and between the valorization of the textbook as a formative resource and its use without qualified pedagogical mediation. These contradictions reveal the limits of teacher education in the face of current complexities.

Finally, regarding expansive transformations, the studies indicate that when space for reflection and critical re-elaboration exists, the textbook can cease to function as a fixed script and instead become a flexible resource adaptable to local realities. This resignification occurs mainly in contexts of collaborative continuing education or through individual teacher initiatives, fostering the development of teacher autonomy and contributing to more meaningful pedagogical practices.

### Analysis of the category “Textbook and the Teaching of Mathematics”

In the category “Textbook and the Teaching of Mathematics,” as previously presented in Table 1, ten texts were analyzed: *A contextualização no ensino de matemática: concepções e práticas* (Reis & Nehring, 2017), *Incorporação da Álgebra Infantil na Educação Infantil* (Pincheira et al., 2022), *Dos Tabelas de Dunton às cartas de Parker* (Oliveira & Valdemarin, 2021), *Investigation of Use Cases of Mathematics Textbooks in the Teaching Process* (Yazici, 2021), *Pesquisar sobre a História do Ensino da Matemática* (Schubring, 2023), *Interdisciplinarity in Data Analysis Through the Primary School Textbooks* (Zorzos & Avgerinos, 2022), *Manual Pedagógico para a Escola Moderna* (Gouveia & Valente, 2023), *Materiais Didáticos para o Ensino de Números nos Anos Iniciais* (Paim, 2021), *O Livro Didático na Educação Infantil: Reflexão versus Repetição* (Brandão & Selva, 1999) and *Um livro sob medida como instrumento do ensino de aritmética* (Pinheiro, 2021).

In light of Activity Theory, these studies allow for the understanding of the textbook as a fundamental mediating artifact between teacher, student, and content. Regarding the principle of the activity system as a unit of analysis, the texts reveal that the textbook acts as an organizing instrument for didactic sequences, functioning as a link between pedagogical practices, learning objectives, and content, whether presented in a traditional or contextualized manner (Paim, 2021; Reis & Nehring, 2017).

In terms of multiple voices, the studies highlight the participation of different agents in the development, validation, and use of textbooks: authors, mathematics education researchers, pre-service and in-service teachers, as well as assessment and certification institutions. This diversity of voices results in conceptual and methodological disputes that affect the quality and approach of the materials. While some works encourage critical and reflective practices, others continue to reproduce a mechanized and decontextualized teaching logic (Yazici, 2021; Pincheira et al., 2022). The historicity of school mathematics is widely explored in the texts, which point to the evolution of methods and conceptions over time. Examples such as *Nossa Aritmética* and the *Tabelas de Dunton* illustrate how teaching materials have shaped teaching practice in different periods, carrying the marks of educational policies and the dominant pedagogical theories of each era (Oliveira & Valdemarin, 2021; Schubring, 2023).

The most recurrent contradictions concern the gap between the ideal of contextualization and the reality of a teaching practice still strongly centered on mechanical repetition. In some cases, the textbooks themselves provide innovative proposals that, in practice, are not fully implemented by teachers; in others, the materials themselves limit the development of deeper skills through excessively simplified or poorly explored activities. Finally, in the field of expansive transformations, the studies indicate that qualitative changes in the use of textbooks occur when teachers use them as a starting point but adapt their proposals to the realities of their students. In contexts of reflective training or pedagogical workshops, teachers demonstrate the ability to critically reinterpret the content, creating more investigative and meaningful approaches to learning. These initiatives signal processes of expansive learning and contribute to the reconfiguration of the educational system.

### *Analysis of the category “Textbook and Teaching-Learning”*

In the category “Textbook and Teaching-Learning,” as previously described in Table 1, seven texts were analyzed: *A relação do uso de materiais didáticos multimodais com a aprendizagem* (Zardo & Porto, 2022), *O livro didático ao longo do tempo: a forma do conteúdo* (Freitas & Rodrigues, 2008), *Argumentação nos projetos integradores do Programa Nacional do Livro Didático 2021* (Santos, 2022), *O livro didático e sua (sub)utilização* (Martins & Klein, 2020), *Livro Didático como Recurso Pedagógico: Conceito, Função, Escolha e Uso* (Perovano & Amaral, 2023), *Textbooks and Students’ Knowledge* (Pavešić & Cankar, 2022) and *Uma Caracterização das Finalidades dos Materiais Didáticos como um Elemento do Saber Profissional do Professor que Ensinava Matemática* (Nascimento, 2022).

In light of Activity Theory, the analyzed studies highlight the textbook as an integral part of the teaching-learning system, functioning as a mediator between teacher, student, and knowledge. Regarding the principle of the activity system as a unit of analysis, the texts show that the textbook is presented both as a facilitator of learning and as support for teaching practice, in some cases being articulated with technologies and multimodal resources that expand its functions. In other contexts, its use remains traditional and poorly intentional, revealing gaps in teacher training and in the clarity of pedagogical objectives (Perovano & Amaral, 2023; Pavešić & Cankar, 2022).

In terms of multiple voices, the studies indicate that authors, teachers, administrators, students, and government bodies actively participate in the production, selection, and use of textbooks. These multiple voices generate tensions between the original proposals of the materials and the ways in which they are interpreted and applied in schools. While some studies identify the textbook as a catalyst for learning, others report its underuse or mechanical use, often resulting from a lack of alignment between the material and the pedagogical objectives

defined by teachers (Zardo & Porto, 2022; Santos, 2022). It is noteworthy that the student perspective is also addressed in some texts, albeit less emphasized, highlighting the need for a more active listening to this group.

Regarding historicity, the texts highlight the evolution of textbooks over the decades, both in terms of design and language, as well as content and methodological approaches. Despite these changes, many practices associated with textbooks remain deeply rooted, such as transmissive, memorization-centered teaching, even in proposals that ostensibly seek modernization (Freitas & Rodrigues, 2008). The emerging contradictions are mainly concentrated in the gap between the potential of the textbook as a learning resource and its automated or limited use in the classroom. Tensions also appear in attempts to combine innovations, such as multimodal materials or integrative projects, with still rigid pedagogical structures. The coexistence of traditional conceptions with more interactive or investigative proposals signals the need for a critical review of textbook use practices.

Finally, regarding expansive transformations, the studies show that progress occurs when teachers adapt textbooks for more dialogical, reflective, and student-centered practices. In contexts of continuous teacher training or where greater pedagogical openness exists, teachers reinterpret the materials, integrating them with other resources and the real learning needs of students. The analyses suggest that expansion occurs when the textbook is understood not as an end in itself, but as a tool serving more meaningful teaching practices.

### *Analysis of the category “Historical and Functional Aspects of the Textbook”*

In the category “Historical and Functional Aspects of the Textbook,” as previously presented in Table 1, three texts were analyzed: *O livro didático como objeto da história da educação brasileira* (Santos & Bomfim, 2020), *A eficiência e/ou ineficiência do livro didático no processo de ensino-aprendizagem* (Oliveira, 2021) and *Livro didático: um (quase) manual de usuário* (Lajolo, 1996).

In light of Activity Theory, these studies allow for an understanding of the textbook as a central element in structuring the Brazilian educational system, acting as a mediator between school knowledge, teachers, and students. Regarding the principle of the activity system as a unit of analysis, the texts indicate that the textbook fulfills didactic, ideological, political, and formative functions, being both a product and a determinant of curricular guidelines, public policies, and teaching practices (Santos & Bomfim, 2020).

From the perspective of multiple voices, the studies show that the textbook is constructed and reinterpreted by a diversity of agents, including publishers, authors, the State, teachers, students, and curriculum specialists. This multiplicity of voices reveals disputes over meanings and functions attributed to the textbook, which is alternately treated as a prescriptive guide or

as supportive formative material. This plurality also highlights the complexity of relationships among the different actors involved in the production, evaluation, and use of textbooks.

Regarding historicity, all analyzed texts establish a strong anchoring in the historical trajectory of the textbook in Brazil. They show how this resource has remained, over the decades, a central pedagogical tool while evolving in formats, content, and intentions. The texts also highlight how the textbook accompanied educational reforms, public policies, and cultural transformations, consolidating itself as a symbolic artifact of the school, while remaining linked to logics that tension innovation and tradition (Souza et al., 2010).

The contradictions identified in the studies are evident in the tension between the intention for the textbook to function as a learning facilitator and the problems resulting from its rigid, superficial, or uncritical use. Tensions also emerge between the official proposals of the textbook and its reception and application in teaching practice, in addition to the frequent gap between what the manuals propose and what is effectively implemented in the classroom. These contradictions highlight the textbook as simultaneously a powerful and limited object.

Finally, regarding expansive transformations, the historical and critical analysis of the texts suggests that there is room to transform the role of the textbook, provided that teachers are trained to understand it as a flexible, critical tool, articulated with the context. When used reflectively, the textbook can become a catalyst for changes in teaching practices. System expansion occurs, therefore, when the actors involved—teachers, authors, and administrators—recognize its limitations and reconfigure the pedagogical use of the material with greater intentionality and responsiveness to the needs of schools.

To enhance the practical applicability of this review and facilitate dialogue between theory and pedagogical practice, Table 4 was developed, synthesizing the research findings in light of the five principles of Activity Theory. The aim is to provide an integrated view that connects the analyzed dimensions (teacher training, teaching practices, learning assurance, and textbook selection policies), translating the review results into concrete guidance for teachers, school administrators, and educational policymakers. The table also seeks to demonstrate how the contradictions and multiple voices present in the school system can be recognized and transformed into opportunities to improve textbook use, strengthen in-service training, and more effectively guarantee students' right to learning.

**Table 4.** Characterization of selected studies

	<b>Influence of the Textbook on Teacher Training (In-Service)</b>	<b>Impact on Teaching (Classroom Practices)</b>	<b>Consequences for Learning Assurance (Students and Families)</b>	<b>Implications for Textbook Selection and Adoption Policies in Schools</b>
<b>Activity System as a Unit of Analysis</b>	The textbook is a structuring artifact of continuous teacher training, even in contexts with a wide availability of face-to-face training.	It serves as a basis for lesson planning and the organization of instructional sequences.	When well used, it expands opportunities for meaningful learning. When poorly used, it reinforces transmissive practices.	Choose textbooks that demonstrate didactic clarity, alignment with the curriculum, and provide pedagogical guidance for teachers.
<b>Multiple Voices</b>	Teacher training must acknowledge the voices of the State, publishers, pedagogical coordinators, and the teachers themselves in the selection and use of the textbook.	Voices manifest in methodological disputes (traditional vs. investigative).	Conflicts between what is prescribed and what is experienced can compromise students' actual learning.	Involve teachers in the selection of textbooks and value the PNLD as a participatory process.
<b>Historicity</b>	Training programs should include a historical reflection on the role of the textbook in Brazil.	Many textbook usage practices reflect methodological legacies from previous decades.	Students may be affected by outdated practices if teachers do not update their use of the textbook.	Schools should evaluate whether the adopted textbooks are methodologically and pedagogically up to date.
<b>Contradictions</b>	Contradictions exist between the desired training (autonomous, critical) and the reliance on ready-made materials.	Teachers fluctuate between passive use and active mediation of the content.	Learning is hindered when the textbook becomes the sole resource, used mechanically.	Professional development programs should address these contradictions, creating spaces for teacher reflection on the critical use of textbooks.
<b>Expansive Transformations</b>	Collaborative and reflective continuing education is key to transforming textbook use into innovative practice.	Teachers who reinterpret the textbook better adapt its proposals to their students, creating more meaningful lessons.	Students have a greater chance of appropriating knowledge and applying it in real contexts.	Schools can encourage in-service training practices aimed at reinterpreting instructional materials, promoting training cycles based on the textbooks themselves.

Source: prepared by the authors (2024).

## FINAL CONSIDERATIONS

The present study aimed to understand how the textbook can function as a source of in-service teacher training and contribute to ensuring the learning of Basic Education students. Starting from the observation that the textbook remains one of the main pedagogical resources in Brazilian schools, the research revealed that, despite its historical and functional centrality, its use still lacks a more consistent articulation between teacher training, pedagogical mediation, and the effective learning of students. The integrative analysis showed that the scientific production on the subject, although diverse, presents significant gaps.

Studies with greater theoretical-methodological robustness focus on historical, conceptual aspects or on mathematics teaching, while research directly addressing in-service teacher training and the relationship between textbook use and learning assurance is scarce and, in many cases, methodologically weak. Furthermore, it was observed that much of the literature still treats the textbook in isolation, without considering its insertion into a broader and more complex activity system that includes subjects, rules, instruments, and contradictions.

Based on the interpretative reading grounded in Activity Theory, it was possible to identify that the textbook can indeed function as a mediating artifact capable of driving qualitative transformations in teaching practices. However, this potential is realized only when the teacher is recognized as an active subject in the educational process, capable of reinterpreting, adapting, and expanding the possibilities offered by the instructional material. Contradictions such as the tension between prescriptive use and critical mediation, between tradition and innovation, and between large-scale public policies and local realities emerged as central factors that must be addressed.

In light of this, future research needs to advance in at least three complementary and urgent directions: (1) interactive investigations with practical intervention: there is a lack of longitudinal studies following continuous training processes that specifically focus on the critical and intentional use of textbooks. Pedagogical interventions based on reflective cycles, collaborative training, and expansive learning can provide stronger evidence of how to transform textbook use into a practice that ensures learning; (2) integrated analyses between policy, training, and classroom practice: there is a gap in the literature regarding the joint analysis of public textbook policies (such as PNLD), school-level selection practices, and the concrete effects on teacher training and student learning. Future research should explore how these levels interact and how they can be better aligned; (3) focus on teacher protagonism and student voice: the field lacks studies that more directly capture the voices of teachers and students regarding the use of textbooks in their daily realities. Investigations employing participatory methodologies and emphasizing the lived experiences of subjects can provide richer insights for teacher training policies and the development of instructional materials.

It can be concluded, therefore, that the textbook will continue to occupy a strategic position in Brazilian schools, but its transformative potential will be effectively realized only when educational policies, in-service training processes, and pedagogical practices are articulated in a more intentional, critical, and reflective manner. More than discussing the textbook itself, it is necessary to address the teacher training and teaching-learning system that surrounds it and which, through its contradictions, can generate genuine expansions toward ensuring learning for all students.

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