

## The social quality of education and teacher education in Latin America: state of knowledge (2012–2025)<sup>I</sup>

Julian Silveira Diogo de Ávila Fontoura <sup>I</sup>



Júlia Pereira da Silva <sup>II</sup>



### Abstract

The quality of education and teacher education constitute a field marked by conceptual, political, and epistemological disputes, in which research communities play a relevant role in the production and resignification of counter-hegemonic knowledge, especially in the Latin American context. In view of this, this study seeks to understand the research interests present in the academic production of research communities on the theme of the social quality of education in articulation with teacher education, from 2012 to 2025. This investigation was developed as a State of Knowledge study, with a qualitative approach, mobilizing Discursive Textual Analysis in the exploration of an analytical corpus. The results highlight the complexity involved in the constitution of the debate between the articulated themes, considering different educational contexts and scenarios. The understanding of research interests was constituted from four thematic categories: Educational Policies and Education Regulation; Pedagogical Practices and Organization of Educational Work; Teacher Education and Professional Development in Education; and Conceptions of Quality and Educational Justice. The articulation between the social quality of education and teacher education reaffirms the centrality of formative projects committed to educational justice, the democratization of knowledge, and the construction of socially referenced educational practices.

**Keywords:** States of knowledge; teacher education; quality of education.

I. PhD in Education from the University of Vale do Rio dos Sinos. Assistant Professor in the field of Education Policy and Management at the Department of Specialized Studies, Faculty of Education, Federal University of Rio Grande do Sul. Porto Alegre, Rio Grande do Sul, Brazil. E-mail: julian.diogo@gmail.com

II. Undergraduate student in Social Sciences at the Federal University of Rio Grande do Sul. Scholarship holder for the research project “The social quality of education in teacher training: perspectives from/within knowledge production” at the Federal University of Rio Grande do Sul. Porto Alegre, Rio Grande do Sul, Brazil. E-mail: juliapereiraufgrs@gmail.com

## **A qualidade social da educação e a formação de professores na América Latina: um estado do conhecimento (2012–2025)**

### **Resumo**

A qualidade da educação e a formação de professores configuram um campo atravessado por disputas conceituais, políticas e epistemológicas, no qual as comunidades de pesquisa assumem papel relevante na produção e ressignificação de saberes contra-hegemônicos; especialmente no contexto latino-americano. Diante disso, este estudo busca compreender os interesses de pesquisa da/na produção acadêmica de comunidades de pesquisa sobre a temática da qualidade social da educação em articulação com a formação docente, no período de 2012 a 2025. Esta investigação constituiu-se como um Estado do Conhecimento, de abordagem qualitativa, mobilizando a Análise Textual Discursiva na exploração de um corpus de análise. Os resultados evidenciam a complexidade presente na constituição do debate entre as temáticas articuladas, considerando os diferentes contextos e cenários educativos. A compreensão dos interesses de pesquisa foi constituída a partir de quatro categorias temáticas: Políticas Educacionais e Regulação da Educação; Práticas Pedagógicas e Organização do Trabalho Educativo; Formação e Desenvolvimento Profissional na Educação; e Concepções de Qualidade e Justiça Educacional. A articulação entre qualidade social da educação e formação de professores reafirma a centralidade de projetos formativos comprometidos com a justiça educacional, a democratização do conhecimento e a construção de práticas educativas socialmente referenciadas.

**Palavras-chave:** Estados do conhecimento; formação de professores; qualidade social da educação.



## La calidad social de la educación y la formación de profesores en América Latina: un estado del conocimiento (2012–2025)

### Resumen

La calidad de la educación y la formación de profesores configuran un campo atravesado por disputas conceptuales, políticas y epistemológicas, en el cual las comunidades de investigación asumen un papel relevante en la producción y resignificación de saberes contrahegemónicos, especialmente en el contexto latinoamericano. Ante ello, este estudio busca comprender los intereses de investigación presentes en la producción académica de comunidades de investigación sobre la temática de la calidad social de la educación en articulación con la formación docente, en el período de 2012 a 2025. Esta investigación se constituyó como un Estado del Conocimiento, de abordaje cualitativo, movilizándolo el Análisis Textual Discursivo en la exploración de un corpus de análisis. Los resultados evidencian la complejidad presente en la constitución del debate entre las temáticas articuladas, considerando los diferentes contextos y escenarios educativos. La comprensión de los intereses de investigación se constituyó a partir de cuatro categorías temáticas: Políticas Educativas y Regulación de la Educación; Prácticas Pedagógicas y Organización del Trabajo Educativo; Formación y Desarrollo Profesional en Educación; y Concepciones de Calidad y Justicia Educativa. La articulación entre calidad social de la educación y formación de profesores reafirma la centralidad de proyectos formativos comprometidos con la justicia educativa, la democratización del conocimiento y la construcción de prácticas educativas socialmente referenciadas.

**Palabras clave:** Estados del conocimiento; formación de profesores; calidad social de la educación.



## Introduction

The discussion regarding the quality of education in teacher training, within the Latin American context, is situated in a field of conceptual, political, and epistemological disputes that create tension, on the one hand, between hegemonic perspectives guided by parameters of efficiency, performativity, and standardization and, on the other hand, critical approaches that conceive quality as a historical, social, and situated construction, as indicated by Campos (2006), Chaves (2009), and Tedesco and Rebelatto (2015). Within this horizon, the notion of quality shifts from a strictly technical-instrumental interpretation to a broader understanding linked to guaranteeing the right to education, social justice, and the formation of critical subjects, as indicated. This movement necessarily implies recognizing that teacher training processes cannot be analyzed in isolation from structural conditions, educational policies, and the inequalities that permeate educational systems in Latin America (Fontoura; Silva, 2025).

Reflecting on the quality of education in teacher training within this context requires considering the historical specificities and the processes of coloniality that still mark knowledge production and educational policies in the region, as explored by Fontoura and Silva (2025). The possible parallels among different countries highlight both the circulation of global models and the emergence of counter-hegemonic experiences that seek to affirm educational projects committed to equity, diversity, and the democratization of knowledge (Silva, 2009). The analysis of quality in/of teacher training necessarily assumes a relational and contextualized character, requiring the articulation between political, social, institutional, and cultural dimensions, so as to reveal not only the limits imposed by contemporary reforms, but also the possibilities for constructing alternatives that strengthen education as a right and an emancipatory practice.



In this direction, and in dialogue with the tensions already evidenced between hegemonic and critical perspectives, understanding the movements of academic research on the social quality of education in teacher training becomes an essential step toward deepening the analysis of the field itself. This is because scientific publications, while reflecting disputes surrounding the notion of quality, also actively participate in its construction, highlighting how different research communities, situated in specific historical and political contexts, have been interpreting, stressing, and resignifying this concept (Flach, 2023).

Thus, this research seeks to understand the research interests within academic production and research communities on the theme of the social quality of education from the perspective of teacher training between 2012 and 2025. To achieve this objective, we mobilize the theoretical-methodological tenets of the States of Knowledge as an investigative strategy capable of mapping, systematizing, and analyzing academic production on the quality of education in teacher training (Morosini, 2015; Morosini; Kohls-Santos; Bittencourt, 2021). This choice is not merely a technical procedure, but an epistemological stance that allows for understanding the field in its historicity, revealing trends, recurrences, gaps, and disputes that permeate research communities. By operating through this approach, we seek to grasp not only the volume and distribution of publications, but, above all, the meanings that have been attributed to the notion of quality tied to research interests in this interconnected field of study.

The process of data exploration and analysis will take place through Discursive Textual Analysis, understood as a methodological approach that enables the production of new understandings based on a systematic and interpretative movement over the investigated corpus, as indicated by Moraes and Galiuzzi (2011). In this process, the starting point is the unitization of the analytical materials, fragmenting them into units of meaning that express significant elements for the research problem, followed by a categorization



process that allows these units to be grouped into provisional analytical constructs, guided both by theoretical frameworks and by the emergence of the data.

Given this context, the present study asserts itself as a contribution to strengthening the field by proposing a critical, systematized, and contextualized reading of recent academic production on the social quality of education and teacher training, but also as a reflective possibility for building new investigative agendas committed to the valorization of teaching, educational justice, and the guarantee of the right to education. In this direction, it stresses and expands the foundational understanding of the field, contributing to theoretical consolidation and the refinement of training practices and educational policies, while reaffirming the centrality of teacher training as a strategic dimension for consolidating more democratic, equitable, and socially referenced educational systems.

### **The Social Quality of Education in Teacher Training: An Urgent and Necessary Perspective in the Latin American Context**

The discussion on the quality of education in the Latin American context has been marked by theoretical, political, and epistemological disputes that create tension among distinct conceptions of education and teacher training. This is especially true within a scenario characterized by educational reforms driven by international organizations and the intensification of logics of regulation, large-scale assessment, and accountability. Within the scope of research on research, the emergence of the concept of the social quality of education becomes evident as a critical perspective opposing approaches restricted to quantitative indicators, standardized performance, and managerial rationality, as indicated by Fontoura and Silva (2025). This perspective shifts the focus from efficiency and performativity to a broader understanding of educational processes, considering the concrete conditions of provision, the subjects involved, and the social purposes of education.



Anchored in the understanding of education as a social right and a public good, social quality articulates dimensions such as equity, inclusion, social justice, the valorization of teaching work, and the sociocultural relevance of training processes, recognizing the centrality of the historical inequalities that structure educational systems (Silva, 2009). In this direction, the notion of quality cannot be dissociated from the material and symbolic conditions of schooling, nor from the public policies that regulate access, retention, and educational success. Furthermore, it implies understanding teacher training as a situated social practice constructed at the interface among policies, institutions, and formative experiences, requiring training processes that are critical, reflective, and committed to the transformation of educational realities (Flach, 2023).

Deepening the debate on the quality of education within the perspective of social quality requires understanding it as a concept constituted through the articulation and relationship among conditions of provision, retention, and success, pedagogical processes, and the socially referenced purposes of education. As Silva (2009), Flach (2023), and Gusmão (2013) clarify, this perspective is not restricted to previously defined parameters and indicators, but is configured through a set of dimensions that express disputes surrounding the very meaning of what education is. This challenges and criticizes conceptions that have historically prioritized rankings, metrics, and the measurement of data and results to the detriment of educational conditions and processes.

Therefore, the social quality of education presents itself as a concept that recognizes and expresses the interdependence among the elements that constitute education. These include structural elements—such as issues of financing, infrastructure, and the valorization of education professionals—as well as the dynamics and relationships created within institutions, such as pedagogical practices, social relations, and the organization of work, as indicated by Flach (2023). That is, it is a conception that rejects an isolated view and evaluation of each sector and facet, asserting that a socially referenced quality education must center on the subject. This shifts the debate away



from a managerialist logic that ultimately reproduces existing inequalities, committing instead to an education dedicated to human, emancipatory, and critical development.

When situated in the Latin American context, the understanding of the social quality of education acquires a new political density, as clarified by Fontoura and Corsetti (2019), emerging intrinsically linked to the historical conditions of the region and to struggles for the democratization of education. In this context, quality is constructed in dialogue with realities marked by deep inequalities. Thus, rather than a merely descriptive concept, it establishes itself as an analytical, critical, and political category, produced and generated within disputes that challenge hegemonic models of educational regulation, reaffirming the need for educational and societal projects committed to social justice.

It is in this scenario that the indissociability between educational quality and teacher training becomes most explicit. When we understand education as a space and tool for social transformation and emancipation, we see the importance of teaching work and the institutions that train teachers in building this project. As problematized by Fontoura and Silva (2025), the realization of a socially referenced education finds one of its main sustaining pillars in teacher training, since it is within pedagogical work that the possibilities for implementing the principles guiding social quality take concrete shape. From this perspective, teacher training cannot be understood as an instrumental or peripheral dimension, but rather as a strategic space for the production of meanings about education, which is also permeated by disputes and tensions within the educational field.

Thinking about the quality of education within the scope of teacher training implies recognizing that the meanings attributed to “quality” are not neutral, but are historically produced within political, ideological, epistemological, and pedagogical disputes that traverse the educational field. Thus, teacher training occupies a central and strategic position, as training processes not only reflect



these conceptions, values, and practices, but also produce and reconfigure them. Therefore, discussing quality in teacher training involves problematizing which educational projects are mobilized in curricula, practices, and experiences, as well as which conceptions are privileged or rendered invisible in this process.

### Methodological Strategies

In constructing the methodological strategies, we situate this study within the realm of the qualitative approach, understanding it as an investigative field that privileges interpretation, the understanding of meanings, and the in-depth analysis of social phenomena in their complexity and historicity, aligning with the perceptions of Santos Filho (2013). This choice is grounded in the need to grasp academic production not only in its descriptive dimension, but above all in its meanings, intentionalities, and relationships with the sociopolitical contexts that constitute it. The qualitative approach makes it possible to explore the nuances, tensions, and contradictions present in the debate on the social quality of education and teacher training, allowing for a more dense and critical reading of the field.

This approach supports and enhances the adoption of the principles of the State of Knowledge as a theoretical-methodological strategy, insofar as it shares a commitment to an interpretative, contextualized, and critical understanding of scientific production. By articulating with this perspective, it enables not only the survey and systematization of academic works, but also the analysis of the meanings, trends, and disputes that cross the investigated field.

States of Knowledge are configured as a theoretical-methodological approach of a historical-bibliographical nature whose objective is to map, systematize, and analyze academic production on a given topic within a specific temporal and contextual framework. As Morosini (2015) points out, rather than a quantitative survey of studies, it refers to an investigative movement that seeks to understand how knowledge is produced, organized, and disputed



within a field, offering the possibility of highlighting trends, recurrences, gaps, as well as theoretical and methodological inflections.

According to Morosini, Kohls-Santos, and Bittencourt (2021), the development of States of Knowledge must be conducted across four articulated stages (delimitation of the theme and investigative scope, definition of sources and search criteria, survey and systematization of the corpus, and finally, interpretative data analysis), thus structuring a methodological path consistent with the theoretical assumptions of the methodology itself. To constitute the corpus, repositories and journals recognized in the educational field were selected, namely: the Digital Library of Theses and Dissertations of the Brazilian Institute of Information in Science and Technology (BDTD), *Revista da Avaliação da Educação Superior*, *Revista Brasileira de Política e Administração da Educação*, *Revista Internacional de Educação Superior*, and *Revista Brasileira de Estudos Pedagógicos*.

The search strategy was outlined based on descriptors directly related to the object of investigation, encompassing three languages (Portuguese, English, and Spanish) within the timeframe from 2012 to 2025, covering Latin American publications. In this regard, the following terms were utilized: *formação docente*, *formação de professores*, *qualidade da educação*, *qualidade do ensino*, *Educação Superior*, *Ensino Superior*; *teacher education*, *teacher training*, *quality of education*, *quality of teaching*, *higher education*; *formación docente*, *formación del profesorado*, *calidad de la educación*, *calidad de la enseñanza*, *educación superior*. This procedure aimed to expand the search's reach, capturing the diversity of academic production across its international interfaces.

The data analysis process was conducted through Discursive Textual Analysis, described by Moraes and Galiuzzi (2011) as a methodological approach that fosters simultaneous movements of deconstructing and reconstructing the empirical material, enabling the generation of progressively denser and interpretative understandings. Initially, the corpus underwent a



process of unitization, in which the texts comprising the bibliographical survey were fragmented into units of meaning aligned with the research objectives. Subsequently, these units were examined and grouped based on their semantic and conceptual affinities, allowing for the formation of broader thematic sets. This enabled not only the identification of research interests, but also the explicit highlighting of absences, investigative gaps, tensions, and disputes traversing the field.

As a result of this analytical path, analytical categories were constructed that not only summarize, but interpret the main axes of knowledge production regarding the relationship between the social quality of education and teacher training. These categories emerge from the dialogue between empirical data and the theoretical frameworks mobilized, making it possible to reveal regularities, shifts, tensions, and disputes that cross the field. In this sense, rather than merely organizing academic production, these categories operate as interpretative lenses that allow for an understanding of how certain themes, approaches, and issues gain centrality, while others remain marginalized or under-explored. These categories enable a critical, situated, and thorough understanding of the dynamics that structure this investigative domain in the Latin American context, while simultaneously contributing to revealing the disputes over meaning, the predominant frameworks, and the gaps that permeate the field, thereby fostering the enhancement of the academic debate on the social quality of education and teacher training.

### **Research Findings: Approaches to Knowledge Production Articulated Between “Teacher Training” and “Quality of Education”**

The presentation of the research findings begins with the description of the analytical corpus, understood as the set of academic works selected based on rigorously delimited theoretical and methodological criteria. This step seeks to systematically detail the composition of the investigated material, highlighting its scope, the adopted temporal frameworks, the sources mobilized, and the



inclusion and exclusion criteria that guided its construction. As Morosini, Kohls-Santos, and Bittencourt (2021) state, this is a fundamental stage within the State of Knowledge methodology, insofar as it confers transparency to the investigative path and defines the empirical foundations upon which subsequent analyses rest. By characterizing the corpus, the aim is not merely to describe the set of analyzed studies quantitatively and formally, but above all to situate it within the dynamics of knowledge production articulated between the quality of education and teacher training.

The initial survey of academic publications linking the themes of teacher training and quality of education within the 2012–2025 timeframe yielded 617 works. In alignment with the analytical and investigative stance of this research, as well as the applied methodology, this initial number does not constitute the final and definitive analytical corpus. During the process of refining this total, several inconsistencies were identified in the database indexers, such as duplicate works across multiple databases, incomplete information, and publications that did not align with the descriptors and research objectives.

Subsequently, an inclusion and exclusion process was conducted to establish the definitive analytical corpus using well-defined and explicit criteria, thereby ensuring rigor and consistency. The inclusion criteria were: academic publications centrally addressing the relationship between teacher training and the quality of education, published in research repositories between 2012 and 2025. The exclusion criteria were: duplicate academic works, studies with missing information, and works lacking or presenting only marginal engagement with the descriptor themes. Consequently, following this process, the total number was reduced from 617 works to 280 rigorously and carefully selected studies, which constitute the final corpus of analysis, as shown in the table below (Table 1).



**Table 1** – Synthesis of the construction of the analytical corpus from bibliographic sources.

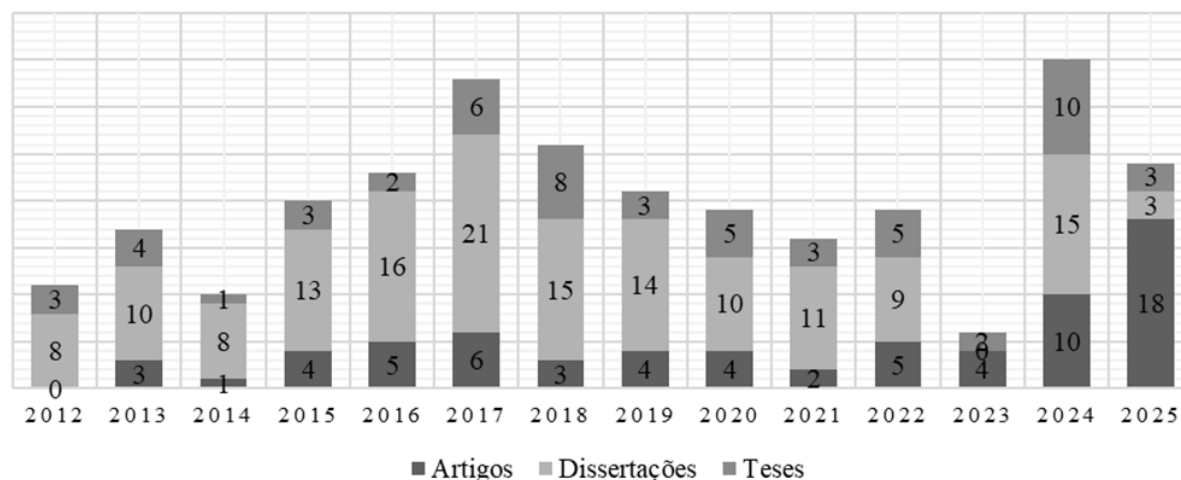
| Data Repositories                                                                                                         | Search Descriptors          | Search Criteria        | Studies Found | Studies Used |
|---------------------------------------------------------------------------------------------------------------------------|-----------------------------|------------------------|---------------|--------------|
| Brazilian Digital Library of Theses and Dissertations of the Brazilian Institute of Information in Science and Technology | Social quality of education | Period:<br>2012 – 2025 | 357           | 211          |
| Revista Brasileira de Política e Administração da Educação                                                                | Quality of education        | All Fields             | 79            | 25           |
| Revista da Avaliação da Educação Superior                                                                                 | Quality of teaching         | Subject:<br>Education  | 79            | 20           |
| Revista Internacional de Educação Superior                                                                                | Teacher training            | Search Matching:       | 52            | 17           |
| Revista Brasileira de Estudos Pedagógicos                                                                                 | Teacher education           | All Terms              | 50            | 7            |
| TOTAL                                                                                                                     |                             |                        | 617           | 280          |

**Source:** Prepared by the authors.

The analysis of the distribution of these works across the temporal timeframe represented in Graph 1 allows us to visualize shifts in the academic community's interest regarding the intersection of teacher training and educational quality. The data demonstrate that the articulation of these two themes has consolidated into a central and structural axis in educational research, rather than serving as an isolated or sporadic phenomenon, given that it maintains a constant and significant volume of publications for over a decade. We can thus understand that the conceptualization of educational quality has assumed a prominent position within institutional discourses and public agendas, directly impacting policies and processes in teacher training and drawing the attention of academic research communities.



**Graph 1** – Distribution of the analytical corpus in absolute numbers over time.

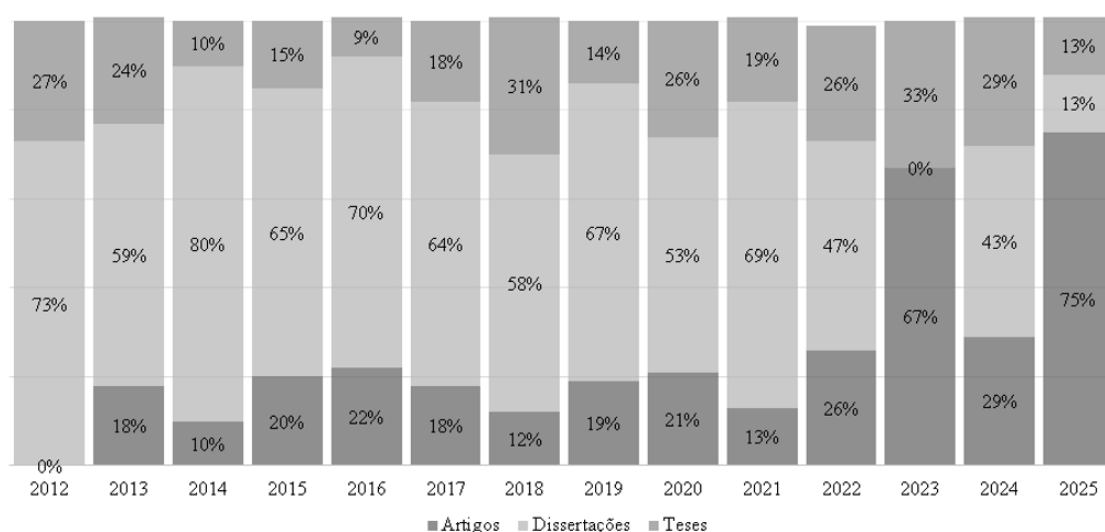


**Source:** Prepared by the authors.

The data demonstrate the sustained presence of this theme throughout the historical series, indicating that the relationship between educational quality and teacher training has established itself as a structural axis of contemporary educational research rather than a circumstantial interest. Even in years with lower quantitative incidence, such as 2012 (11 publications), 2014 (10), and 2023 (6), research within the field was maintained, revealing the continuity of investigative agendas tied to the topic. At the same time, periods of intensified academic production are identifiable, particularly in 2017 and 2024, with 33 and 35 publications respectively, as well as in 2018 (26), 2016 (23), and 2019 (21). This movement toward expanded investigative interest can be understood in conjunction with the heightening of disputes surrounding Latin American educational policies, particularly those related to large-scale assessment, curricular regulation, teacher appreciation, and discussions on the democratization of education, as pointed out by Lopes and Cabral Neto (2020).



**Graph 2** – Distribution of the analytical corpus by document type over time.



**Source:** Prepared by the authors

Graph 2 highlights the distribution of academic publications according to the bibliographic types that constitute the investigated corpus, providing insight into how knowledge production on educational quality and teacher training has been institutionally organized over time. The data demonstrate a significant predominance of master's theses and doctoral dissertations across virtually the entire historical series, revealing the leading role of *stricto sensu* graduate education in consolidating this investigative field. In several years, master's theses represent the largest percentage of analyzed works, reaching prominent levels, such as in 2014 (80%), 2016 (70%), and 2021 (69%). Doctoral dissertations, although smaller in absolute volume, maintain a continuous presence throughout the period, evidencing the execution of studies with greater theoretical-methodological density and analytical depth.

The data indicate that Graduate Programs (PPGs) constitute central spaces in the production and dissemination of knowledge on educational quality and teacher training, shaping investigative agendas, consolidating theoretical frameworks, and generating epistemological debates over the meanings attributed to educational quality. Concurrently, a continuous presence



of scientific journal articles is observed, with more pronounced growth in recent years, particularly in 2024 and 2025, signaling an expansion in scholarly communication and the sharing of research in specialized journals—a movement similar to that identified by Fontoura and Corsetti (2019; 2021). This scenario demonstrates the strengthening of the research field and the intensification of debates regarding the social quality of education, particularly within a context marked by disputes over educational assessment, accountability policies, and the valuation of teaching.

**Chart 1** – Distribution of the analytical corpus by Higher Education Institutions (HEIs).

| HEI                                                                                                                                                                                        | Region         | Bibliographic Publications (N) | Approximate Value (%) |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|--------------------------------|-----------------------|
| IFMG; PUC-GO; PUC-MG; UAB; UFG; UFMG; UFMS; UFMT; UNB                                                                                                                                      | Midwest        | 59                             | 21,09                 |
| IFPA; IFRO; UEMA; UFAM; UFOPA; UFPA; UFPA; UFT                                                                                                                                             | North          | 11                             | 3,92                  |
| IFCE; UFBA; UFC; UFCG; UFMA; UFPB; UFPE; UFRN; UFS; UFSC                                                                                                                                   | Northeast      | 27                             | 9,64                  |
| EST; PUC-PR; UCPEL; UEL; UEPG; UESC; UFFS; UFPEL; UFRGS; UFSC; UFSM; UNILASALLE; UNIOESTE; UNIPAMPA; UNIRITTER; UNISINOS; UNISUL; UNIVALE; UPF; URI; UTFPR                                 | South          | 58                             | 20,71                 |
| FGV; PUC-CAMPINAS; PUC-SP; UCP; UERJ; UFABC; UFES; UFJF; UFMG; UFRJ; UFRRJ; UFSCAR; UFTM; UFU; UMESP; UNESA; UNESP; UNICAMP; UNICID; UNIFESP; UNINTER; UNISANTOS; UNISO; UNIVESP; UPM; USP | Southeast      | 118                            | 42,14                 |
| U-LISBOA; ULAGOS; UNAM; UNLP; UPM; UPN                                                                                                                                                     | International* | 7                              | 2,5                   |
| <b>TOTAL</b>                                                                                                                                                                               |                | <b>280</b>                     | <b>100</b>            |

**Source:** Prepared by the authors.

The analysis of the distribution of the analytical corpus, systematized according to the Higher Education Institutions (HEIs) affiliated with the publications (Chart 1), reveals a pronounced regional asymmetry in knowledge production regarding the social quality of education and teacher training. The data indicate that the Southeast region concentrates the highest level of research activity on the topic, accounting for 42.14% of all selected studies,



with 118 publications distributed across a robust network of public and private universities. At a second tier of academic density, a virtual balance is observed between the Midwest and South regions, which account for 21.09% (59 publications) and 20.71% (58 publications) of the research corpus, respectively.

This scenario severely contrasts with the representation of the Northeast (9.64%) and North (3.92%) regions, whose combined participation does not reach 15% of the total investigated, highlighting the need to foster research networks that decentralize and horizontally distribute scientific production in these territories. Lastly, the residual presence of international publications (2.5%), originating from institutions located outside the country, demonstrates cross-border circulation and the external reach of the debate within the Latin American context; nevertheless, it points to a field of study primarily built around demands, institutional fronts, and political arrangements that are strongly territorialized within the national setting.

We understand research communities as dynamic collectives of knowledge production, whose configuration can be further understood through the contribution of Fontoura (2022), who highlights them as socially organized spaces for the circulation, validation, and dispute of knowledge. From this perspective, these communities are formed through the articulation among individuals, theoretical frameworks, and methodological choices, while also materializing institutionally within Graduate Programs (PPGs), which operate as structural hubs of these networks. It is within these spaces that investigative agendas are organized, researchers are trained, and intellectual traditions are consolidated, while simultaneously generating hierarchies, convergences, and tensions within the scientific field. Research communities not only guide investigative methods, but also express the historical, institutional, and political conditions that shape knowledge production (Chart 2).



**Chart 2** – Relationship between the Research Communities in the analytical corpus and the quantity of academic publications linking teacher training and educational quality.

| Research Communities                                              | N   | %     |
|-------------------------------------------------------------------|-----|-------|
| Graduate Program in Arts                                          | 1   | 0,47  |
| Graduate Program in Religious Studies                             | 1   | 0,47  |
| Graduate Program in Human Movement Sciences                       | 1   | 0,47  |
| Graduate Program in Human Development                             | 1   | 0,47  |
| Graduate Program in Sustainable Development                       | 1   | 0,47  |
| Graduate Program in Economics                                     | 1   | 0,47  |
| Graduate Program in Strategic Management                          | 1   | 0,47  |
| Graduate Program in History                                       | 1   | 0,47  |
| Graduate Program in Environment and Rural Development             | 1   | 0,47  |
| Graduate Program in Social Policy                                 | 1   | 0,47  |
| Graduate Program in Social Work                                   | 1   | 0,47  |
| Graduate Program in Public Policy Evaluation                      | 2   | 0,95  |
| Graduate Program in Human Rights                                  | 2   | 0,95  |
| Graduate Program in Physical Education                            | 2   | 0,95  |
| Graduate Program in Nursing                                       | 2   | 0,95  |
| Graduate Program in Geography                                     | 2   | 0,95  |
| Graduate Program in Literature / Modern Languages                 | 2   | 0,95  |
| Graduate Program in Psychology                                    | 2   | 0,95  |
| Graduate Program in Sociology                                     | 2   | 0,95  |
| Graduate Program in Theology                                      | 2   | 0,95  |
| Graduate Program in Management and Evaluation in Public Education | 3   | 1,42  |
| Graduate Program in Educational Manager Training                  | 4   | 1,90  |
| Graduate Program in Business Administration                       | 5   | 2,37  |
| Graduate Program in Linguistic Studies                            | 7   | 3,32  |
| Graduate Program in Science and Mathematics Education             | 8   | 3,79  |
| Graduate Program in Education                                     | 155 | 72,99 |
| TOTAL                                                             | 211 | 100   |

**Source:** Prepared by the authors.

In the survey presented in Chart 2, bibliographic works of the master's thesis and doctoral dissertation type are accounted for, and a reading of the data highlights a strong concentration of academic production within Graduate Programs in Education, which gather 155 of the 211 analyzed publications,



corresponding to 72.99% of the corpus. This finding confirms that the articulation between the quality of education and teacher training remains predominantly situated within the educational field, which aligns with the nature of the investigated phenomenon. Graduate Programs in Education thus emerge as central research communities in defining agendas, theoretical frameworks, and approaches to problematizing educational quality, especially when understood in relation to training processes, teacher policies, pedagogical practices, and institutional schooling conditions.

At the same time, the data reveal that this debate is not exclusively restricted to the field of Education; there is a presence, albeit minority, of programs linked to fields such as Science and Mathematics Education (3.79%), Linguistic Studies (3.32%), Business Administration (2.37%), Educational Manager Training (1.90%), and Management and Evaluation in Public Education (1.42%), in addition to areas such as Psychology, Sociology, Geography, Literature/Languages, Nursing, Physical Education, Human Rights, Social Work, Economics, and Social Policy (0.95% each). This dispersion indicates that the quality of education, as linked to teacher training, constitutes a cross-cutting phenomenon mobilized by different scientific communities based on specific interests: management, evaluation, curriculum, language, inclusion, human development, public policy, teaching work, and social justice.

It is observed, however, that this cross-cutting nature occurs quite unevenly, considering that most programs outside Education show residual participation with only one or two publications, representing percentages below 0.5%. These include programs in Arts, Religious Studies, Human Movement Sciences, Human Development, Sustainable Development, Economics, Strategic Management, History, Environment and Rural Development, Social Policy, and Social Work (0.42% each). This suggests that while the topic dialogues with multiple fields, its consolidation as a systematic agenda still occurs primarily within Graduate Programs in Education.



## Between Recurrences and Emerging Meanings: Research Interests in Perspective

The construction of analytical categories constitutes a structural moment in the methodological itinerary of this research, insofar as it enables the interpretative organization of a broad, diverse corpus marked by distinct theoretical and epistemological orientations. In accordance with the assumptions of the States of Knowledge, these categories are conceived as dynamic analytical constructs produced at the interface between empirical data and the adopted theoretical framework, rather than fixed typologies. Their formulation expresses the developmental movements of the investigated field, highlighting trends, recurrences, and disputes traversing academic production, while simultaneously making it possible to grasp the interests and inflections of research communities focusing on the social quality of education and teacher training.

Within the universe of the 280 analyzed publications, four major analytical categories were delimited, responsible for synthesizing the structural axes of the investigated field. These categories unfold into subcategories defined on the basis of thematic recurrences, conceptual affinities, and specificities identified within the corpus. This process of analytical refinement favored the explicit identification of nuances and variations present in the publications, rendering visible different emphases and perspectives shaping the debate. Thus, the articulation between categories and subcategories enables a deeper and more systematized reading of the field by simultaneously revealing its points of convergence, internal tensions, and the processes of dispersion and reconfiguration marking the discussion surrounding the social quality of education and teacher training.

The category **“Educational Policies and Regulation of Education,”** representing 30.71% of the analytical corpus, gathers studies focusing on the analysis, formulation, implementation, and effects of educational policies at various scales (national, state, and municipal), as well as the institutional

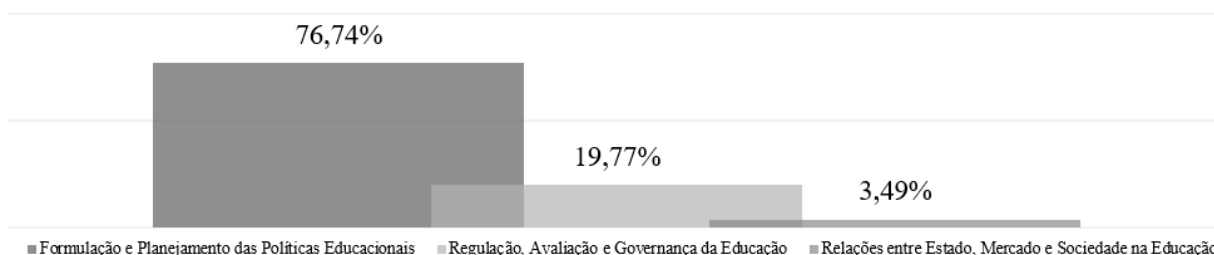


mechanisms that structure and regulate educational systems. It also includes research discussing educational legislation, educational planning, educational financing, curricular policies, large-scale assessment, and the regulatory and accountability mechanisms present in contemporary policies. Furthermore, investigations examining the relationships between State, society, and private actors in defining educational agendas are encompassed, bringing to light political, economic, and ideological disputes traversing the field of education. We anchor the construction of this category in Saviani (2008) and Frigotto (2010), based on the understanding of educational policy and its regulation as a field of struggle between educational projects—at times guided by social rights and holistic development, at others strained by the logic of accumulation and managerial governance.

Within this category, three subcategories expressing complementary analytical dimensions of educational policies are identified: the subcategory **“Formulation and Planning of Educational Policies”** (76.74%) highlights the centrality of studies on policy design, legislation, and guidelines, emphasizing the definition of agendas and priorities in the field. **“Regulation, Assessment, and Governance of Education”** (19.77%) gathers research analyzing regulatory mechanisms, large-scale assessments, and accountability mechanisms impacting system management. Finally, **“Relationships between State, Market, and Society in Education”** (3.49%) problematizes the interactions between public and private actors and the political-ideological disputes crossing educational policies; together, these subcategories demonstrate the complexity and constitutive tensions of the field (Graph 3).



**Graph 3** – Quantitative distribution of subcategories within the category “Educational Policies and Regulation of Education.”



**Source:** Prepared by the authors.

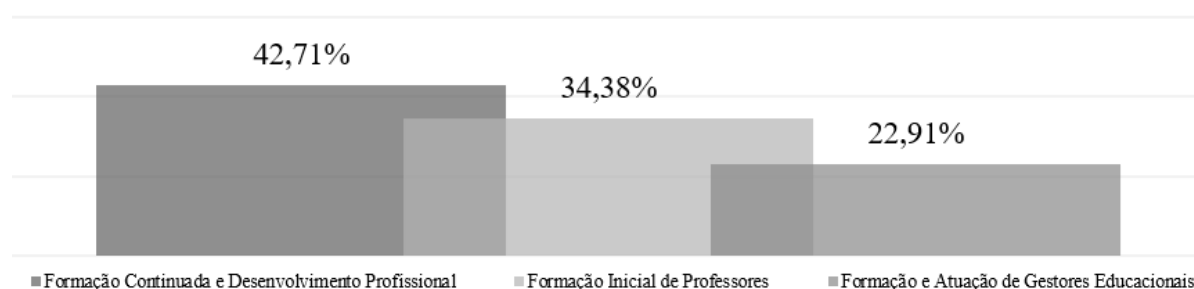
We also constructed the category **“Teacher Training and Professional Development in Education,”** drawing from the readings of Pimenta (2012) and Nóvoa (2017), in which teacher training is conceived as a continuous social and professional process articulating experiential knowledge, identity, and institutional conditions, thereby challenging technical and prescriptive training models. This category represents approximately 34.29% of the total analytical corpus, bringing together investigations addressing initial and continuing education processes for teachers and educational managers, understanding teacher training as a permanent, situated process tied to the concrete demands of educational practice.

The studies gathered here focus on aspects such as undergraduate teacher-education curricula (*licenciaturas*), supervised internships, institutional teacher training programs, formative spaces, and professional development initiatives throughout teaching careers. Likewise, analyses concerning teacher identity, professional knowledge, and the objective and subjective conditions of teaching practice stand out. From a critical perspective, these investigations problematize technical models of training and advocate proposals that value reflection on practice, the intellectual autonomy of educators, and the social commitment of the teaching profession, recognizing training as a central element in building an education of social quality.



Accordingly, subcategories expressing different dimensions of training processes emerge: the subcategory **“Continuing Education and Professional Development”** (42.71%) holds the greatest representation, gathering studies that analyze training processes throughout teaching careers, including institutional programs, learning communities, and professional development practices. Next, **“Initial Teacher Training”** (34.38%) encompasses research focused on undergraduate degree programs, curricula, supervised internships, and the formation of professional teacher identity. In **“Training and Performance of Educational Managers”** (22.91%), we find investigations regarding the training of school principals, pedagogical coordinators, and other management professionals, with an emphasis on educational leadership development (Graph 4).

**Graph 4** – Quantitative distribution of subcategories within the category “Teacher Training and Professional Development in Education.”



**Source:** Prepared by the authors.

We situate the emergence of the category **“Pedagogical Practices and Organization of Educational Work”** based on the perspective of Freire (2011) and Libâneo (2007), under the understanding that pedagogical practices and the organization of educational work are inseparable dimensions in which formative intentionality, didactic mediation, and the political-pedagogical project are articulated. This category represents 17.57% of the analytical corpus, combining studies that investigate daily school life and teaching and



learning processes, focusing on pedagogical practices developed by teachers and modes of organizing educational work in institutions.

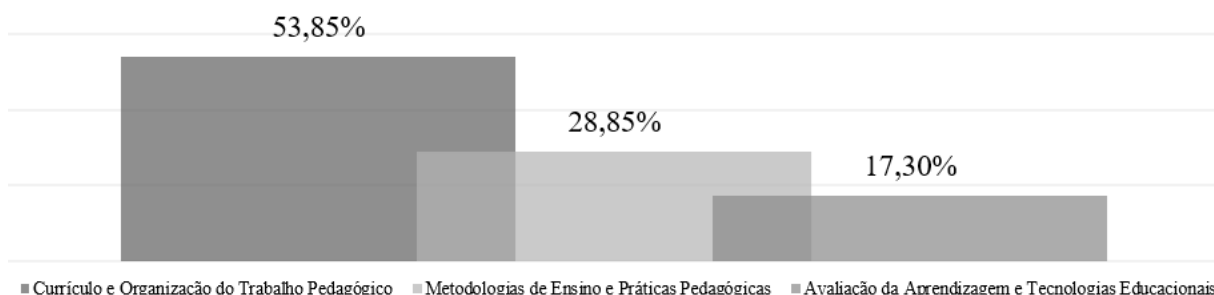
The research addresses topics such as teaching methodologies, pedagogical planning, curriculum, learning assessment, the use of educational technologies, and classroom management. Analyses regarding the relationship between theory and practice in teaching performance are also included, conceiving pedagogical practice as an ethical, political, and formative dimension of educational work. The studies emphasize how pedagogical practices are constructed in dialogue with institutional pedagogical projects, teaching work conditions, and directives stemming from educational policies, revealing tensions, possibilities, and limits in constructing educational processes committed to students' holistic development.

In this category, subcategories expressing fundamental dimensions of pedagogical practices are observed: **“Curriculum and Organization of Pedagogical Work”** (53.85%) exhibits the highest incidence, gathering studies analyzing pedagogical projects, curricular arrangements, interdisciplinary proposals, and modes of organizing teaching work in institutions. Next, **“Teaching Methodologies and Pedagogical Practices”** (28.85%) aggregates research focused on didactic strategies, pedagogical mediation, and teacher-student relationships in learning processes.

The subcategory **“Learning Assessment and Educational Technologies”** (17.30%) encompasses investigations into evaluative practices and the use of digital technologies and educational resources in teaching. Together, these subcategories highlight the centrality of pedagogical practices in materializing educational processes, linking curricular, methodological, and evaluative dimensions (Graph 5).



**Graph 5** – Quantitative distribution of subcategories within the category “Pedagogical Practices and Organization of Educational Work.”



**Source:** Prepared by the authors.

Concluding this process, we position the category **“Conceptions of Quality and Educational Justice,”** representing 16.43% of the analytical corpus, bringing an understanding of educational quality as a polysemic concept, historically constructed and marked by theoretical and political disputes. This category aligns with what Silva (2009) and Flach (2023) term the social quality of education—that is, a view of quality understood as a social and political construct linked to educational justice, equity, and the realization of the right to education, as opposed to narrow and managerialist conceptions.

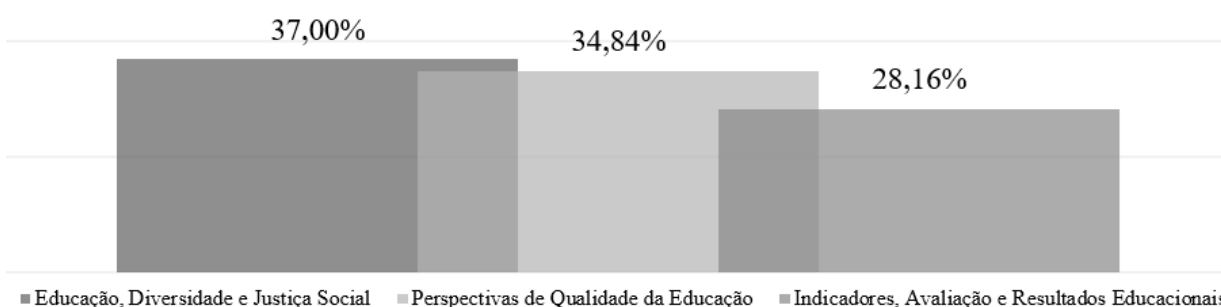
The investigations demonstrate the coexistence of distinct perspectives, ranging from technical-instrumental approaches centered on performance and efficacy to critical conceptions articulating quality with social justice, equity, and the guarantee of the right to education. Within this movement, quality is understood as a social construct linked to historical contexts, actors, and competing societal projects. Furthermore, studies highlight its connections with broader social processes (such as inequalities, ethnic-racial relations, gender, and diversity), problematizing both evaluation and regulatory mechanisms and counter-hegemonic perspectives committed to democratizing access, retention, and recognition of differences.

Thus, we indicate subcategories expressing distinct approaches toward the social quality of education and its implications in the educational field: **“Education, Diversity, and Social Justice”** (37%) displays the highest



representation, gathering studies connecting education to social inequalities, cultural diversity, ethnic-racial relations, gender, and human rights, highlighting the centrality of equity and inclusion in the quality debate. **“Perspectives on Educational Quality”** (34.84%) aggregates investigations discussing different conceptions of quality, from indicator- and performance-centered approaches to critical perspectives anchored in the notion of social quality of education. Meanwhile, the subcategory **“Indicators, Evaluation, and Educational Results”** (28.16%) encompasses research analyzing system quality through metrics and indicators, such as performance on standardized tests, promotion rates, and dropout rates (Graph 6).

**Graph 6** – Quantitative distribution of subcategories within the category “Conceptions of Quality and Educational Justice.”



**Source:** Prepared by the authors.

The construction of these analytical categories (Chart 3) not only organizes the investigated corpus, but also reveals how the field of social quality of education and teacher training has been structuring, straining, and reconfiguring itself over time. By highlighting recurrences, emphases, and disputes present in the analyzed publications, this movement allows for the understanding that these categories transcend a merely classificatory function, constituting interpretative devices that illuminate research interests, mobilized theoretical frameworks, and competing agendas within academic communities, as previously indicated by Fontoura and Silva (2025). In this sense, they contribute to a denser and more critical reading of the field, revealing its central hubs as well as its zones of tension and emergence.



**Chart 3** - Synthesis of research interests across the entirety of the investigative corpus based on the quantitative distribution of analysis categories and subcategories.

| ANALYTICAL CATEGORIES                                              | FOUNDATIONAL AUTHORS              | ANALYTICAL SUBCATEGORIES                                   |                                                              |                                                                       |
|--------------------------------------------------------------------|-----------------------------------|------------------------------------------------------------|--------------------------------------------------------------|-----------------------------------------------------------------------|
| Educational Policies and Regulation of Education(30.71%)           | Saviani (2008)<br>Frigotto (2010) | Formulation and Planning of Educational Policies (76.74%)  | Regulation, Assessment, and Governance of Education (19.77%) | Relationships between State, Market, and Society in Education (3.49%) |
| Teacher Training and Professional Development in Education(34.29%) | Pimenta (2012)<br>Nóvoa (2017)    | Continuing Education and Professional Development (42.71%) | Initial Teacher Training (34.38%)                            | Training and Performance of Educational Managers (22.91%)             |
| Pedagogical Practices and Organization of Educational Work(17.57%) | Freire (2011)<br>Libâneo (2007)   | Curriculum and Organization of Pedagogical Work (53.85%)   | Teaching Methodologies and Pedagogical Practices (28.85%)    | Learning Assessment and Educational Technologies (17.30%)             |
| Conceptions of Quality and Educational Justice(16.43%)             | Silva (2009)<br>Flach (2023)      | Education, Diversity, and Social Justice (37.00%)          | Perspectives on Educational Quality (34.84%)                 | Indicators, Evaluation, and Educational Results (28.16%)              |

**Source:** Prepared by the authors.

It is reaffirmed that the categorization process is inscribed within a continuous movement of analytical construction and reconstruction, in which research findings feed back into the interpretative tools themselves, as well noted by Moraes and Galiazzi (2011). This perspective implies recognizing that categories do not operate as fixed or rigid structures, but rather as heuristic devices that make it possible to interrogate the corpus, reveal relationships, and generate new understandings of the investigated field. Thus, while organizing and systematizing the analysis, the categories also invite an expansion of the research lens, allowing for the incorporation of new problems, the revision of theoretical frameworks, and the refinement of methodological paths in accordance with the transformations and disputes that mark knowledge production in education.



## Concluding Remarks

The execution of this study, grounded in the theoretical-methodological framework of the State of Knowledge, allowed for the mapping and interpretation of Latin American scientific production concerning the social quality of education in its inseparable relationship with teacher training during the period from 2012 to 2025. The integrated analysis of quantitative and qualitative data reveals the consolidation of this investigative field as a structural and permanent axis in contemporary educational research, moving beyond a state of mere circumstantial interest or thematic fluctuation driven by temporary governmental agendas.

The findings highlight the centrality of research communities structured within Graduate Programs (PPGs), with particular prominence given to programs in the field of Education, which gathered the vast majority of the analyzed corpus (72.99%). These institutional spaces establish themselves as vital cores for formulating research agendas, enhancing theoretical depth, and offering epistemological resistance to neoliberal reforms affecting educational systems. Concurrently, an interdisciplinary cross-cutting nature was identified, expanding the debate into fields such as Business Administration, Science and Mathematics Education, and Linguistic Studies, although this insertion still occurs within significant limits and in a residual manner across most areas outside Education.

The organization of the field into thematic axes yielded four major analytical categories: “Educational Policies and Regulation of Education”; “Teacher Training and Professional Development in Education”; “Pedagogical Practices and Organization of Educational Work”; and “Conceptions of Quality and Educational Justice.” A clear predominance of investigations focused on the macro-structural dimensions of regulation and professional teacher development was observed, which together concentrate the primary focus of scientific communities at the expense of daily and micro-structural school-level dynamics.



In light of the mapping performed, the analytical role of the research categories established throughout the investigation emerges with great relevance. Far from functioning as mere descriptive, static, or classificatory typologies, these categories operated as potent, dynamic heuristic and interpretative devices capable of illuminating research interests, mobilized theoretical frameworks, and competing agendas within academic communities. By capturing simultaneous movements of deconstruction and reconstruction, these tools brought to light how the meanings attributed to “quality” are historically produced and reconfigured. In this manner, the analytical role of these categories consisted in unveiling theoretical points of convergence and tensions within the educational field, operating as interpretative lenses that render visible absences and asymmetries in the knowledge production process within Latin American reality.

Profound conceptual tensions regarding the quality of education permeate the entire spectrum of the examined literature. The study reveals an ongoing conflict between hegemonic perspectives, centered on productivity metrics, managerial efficiency, and large-scale assessments, and critical approaches grounded in social quality and educational justice. The latter conceives education as an inalienable right, a public good, and an emancipatory human practice, repositioning the individual at the center of the training process and emphasizing equity, diversity, and sociocultural commitment in opposition to the inequalities that mark the region.

The results point to an urgent need to expand and deepen the investigated field. Although the topic maintains historical permanence and analytical vigor across the studied time series, severe gaps and asymmetries persist that challenge future directions of academic production. The pronounced geopolitical concentration of knowledge production—with an absolute prominence of the Southeast region of Brazil to the detriment of the North and Northeast regions—calls for the urgent establishment of research networks that horizontally distribute and decentralize the flow of knowledge across



these territories. Similarly, the residual presence of international publications underscores the need to transcend national borders, fostering greater cross-border reach and cooperation to link political demands within the broader Latin American context.

The cartography produced by this State of Knowledge demonstrates that the debate on the social quality of education and teacher training constitutes a field of theoretical and political struggle, marked by tensions among competing educational projects. By revealing that a significant portion of academic production is organized in opposition to the neoliberal and managerial rationales guiding contemporary educational reforms, the study reaffirms that educational research is not a neutral exercise, but an ethical-political stance committed to defending education as a social right. On the other hand, the persistence of regional asymmetries in knowledge production and the gap between certain academic debates and school realities underscore the need to strengthen more horizontal research networks deeply connected to local contexts.

## References

CAMPOS, Maria Malta. Que qualidade buscamos na América Latina? In: **CAMPANHA NACIONAL PELO DIREITO À EDUCAÇÃO**. A educação na América Latina: direito em risco. São Paulo: Cortez; Campanha Nacional pelo Direito à Educação, 2006. p. 23-27.

CHAVES, Orlando Pulido. La cuestión de la calidad de la educación. **Boletín del Foro Latinoamericano de Políticas Educativas**, Buenos Aires, n. 26, p. 1-11, abr. 2009.

FLACH, Simone de Fátima. O debate em torno da qualidade da educação: interesses em disputa. **Cadernos CEDES**, Campinas, v. 43, n. 121, p. 9-18, set./dez. 2023.

FONTOURA, Julian. A linha de pesquisa “Educação, História e Políticas” do PPGEduc/UNISINOS: perspectivas na/da pesquisa em Educação. **Cadernos de Pós-Graduação**, São Paulo, v. 21, n. 1, p. 51-67, jan./jun. 2022.



FONTOURA, Julian; CORSETTI, Berenice. A centralidade no debate sobre a qualidade social da educação: a produção do conhecimento (2009-2019). **Educere et Educare**, Cascavel, v. 16, n. 40, p. 467-487, 2021.

FONTOURA, Julian; CORSETTI, Berenice. A qualidade da educação superior em contexto emergente: uma aproximação na perspectiva da produção acadêmica recente (2007-2017). **Revista Brasileira de Política e Administração da Educação**, Brasília, v. 34, n. 3, p. 711-726, set./dez. 2018.

FONTOURA, Julian; SILVA, Julia Melo da. A qualidade social na perspectiva da educação superior: alguns fundamentos para a compreensão. In: FONTOURA, Julian; SILVA, Julia Melo da (org.). **A qualidade social da educação**: diálogos, contextos e perspectivas. São Paulo: Pragmatha, 2025. p. 32-56.

FREIRE, Paulo. **Pedagogia da autonomia**: saberes necessários à prática educativa. 43. ed. São Paulo: Paz e Terra, 2011.

FRIGOTTO, Gaudêncio. **A produtividade da escola improdutiva**: um (re) exame das relações entre educação e estrutura econômico-social capitalista. São Paulo: Cortez, 2010.

GUSMÃO, Joana Buarque. A construção da noção de qualidade da educação. **Ensaio: Avaliação e Políticas Públicas em Educação**, Rio de Janeiro, v. 21, n. 79, p. 299-322, apr. 2013.

LIBÂNEO, José Carlos. **A organização e a gestão da escola**: teoria e prática. Goiânia: Alternativa, 2007.

LOPES, Wiama de Jesus Freitas; CABRAL NETO, Antônio. Políticas educacionais na América Latina: uma reflexão sobre as suas diretrizes. **Revista Educação em Questão**, Natal, v. 58, n. 56, e-21017, 2020.

MORAES, Roque; GALIAZZI, Maria do Carmo. **Análise textual discursiva**. 2. ed. Ijuí: Ed. Unijuí, 2011.

MOROSINI, Marília Costa. Estado de conhecimento e questões do campo científico. **Revista Educação**. Santa Maria, v. 40, n. 1, p. 101-116, jan./abr. 2015.

MOROSINI, Marília Costa.; KOHLS-SANTOS, Pricila.; BITTENCOURT, Zoraide. **Estado do Conhecimento**: Teoria e Prática. Curitiba: Editora CRV, 2021.



NÓVOA, Antônio. Firmar a posição como professor, afirmar a profissão docente. **Cadernos de Pesquisa**, São Paulo, v. 47, n. 166, p. 1106-1133, out./dez. 2017.

PIMENTA, Selma Garrido. Professor reflexivo: construindo uma crítica. In: PIMENTA, Selma Garrido; GHEDIN, Evandro (org.). **Professor reflexivo no Brasil: gênese e crítica de um conceito**. 7. ed. São Paulo: Cortez, 2012. p. 20-62.

SANTOS FILHO, José Camilo dos. Pesquisa quantitativa versus pesquisa qualitativa: o desafio paradigmático. In: SANTOS FILHO, José Camilo dos; GAMBOA, Silvio Sánchez (org.). **Pesquisa educacional: quantidade-qualidade**. 8. ed. São Paulo: Cortez, 2013. p. 13-59.

SAVIANI, Demerval. Política educacional brasileira: limites e perspectivas. **Revista de Educação PUC-Campinas**, Campinas, n. 24, p. 7-16, 2008.

SILVA, Maria Abádia da. Qualidade social da educação pública: algumas aproximações. **Cadernos CEDES**, v. 29, n. 78, p. 216-226, maio/ago. 2009.

TEDESCO, Anderson Luiz; REBELATTO, Durlei Maria Bernardon. Qualidade Social da Educação: um debate em aberto. **Perspectivas em Políticas Públicas**, Belo Horizonte, v. 8, n. 16, p. 173–197, 2015.

## Note

- 1 Statement on the Use of Artificial Intelligence – Gemini, an artificial intelligence tool developed by Google, was used to assist in translating this article into English. The translated version was fully reviewed and adjusted by the editorial team to ensure fidelity to the original text, terminological accuracy, and compliance with the journal’s editorial standards. The tool was not used to generate the article’s arguments, analyses, or academic content.





## How to cite

FONTOURA, Julian Silveira Diogo de Ávila; SILVA, Julia Pereira da. A qualidade social da educação e a formação de professores na América Latina: um estado do conhecimento (2012–2025). **Educação em Análise**, Londrina, v. 11, p. 1-34, 2026. DOI: <https://doi.org/10.5433/1984-7939.2026.v11.55292>.

Submitted on: May 15, 2026

Accepted on: July 4, 2026

Published on: August 18, 2026



| CRediT                |                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Acknowledgments:      | Not applicable                                                                                                                                                                                                                                                                                                                                                                                         |
| Funding:              | Not applicable                                                                                                                                                                                                                                                                                                                                                                                         |
| Conflict of Interest: | The authors certify that they have no commercial or associative interests that represent a conflict of interest in relation to the manuscript.                                                                                                                                                                                                                                                         |
| Ethical Approval:     | Not applicable                                                                                                                                                                                                                                                                                                                                                                                         |
| Author Contributions: | <p>FONTOURA, J. S. D. Á. declares having performed conceptualization, formal analysis, investigation, methodology, writing – original draft; supervision, validation, visualization, and writing – review and editing.</p> <p>SILVA, J. P. declares having performed conceptualization, formal analysis, investigation, visualization, writing – original draft, and writing – review and editing.</p> |

## Editorial Team

|                         |                                                                   |
|-------------------------|-------------------------------------------------------------------|
| Section Editor:         | Luiz Gustavo Tiroli                                               |
| Production Team Member: | Ana Luiza Marques Pedraçoli                                       |
| Editorial Assistant:    | Giovanna Martins Capaci Rodrigues                                 |
| Layout and Typesetting: | Carolina Motter Pizoni - Escritório de Apoio ao Editor Científico |

