LARGE-SCALE ASSESSMENT AND SCHOOL EFFECTIVENESS IN BRAZILIAN SCIENTIFIC PRODUCTION

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ABSTRACT

This article aims to systematize the state of knowledge on school effectiveness in the field of large-scale assessment. The present study analyzed 24 scientific articles written in Brazilian Portuguese, covering the period from 2012 to 2022, which were grouped into five categories: measurement tools; intra- and extra-school determinants; bibliographic studies; vulnerability; and equity. Compared to studies conducted between 2000 and 2013, which predominantly employed quantitative approaches, it was observed in the latter reviewed period a predominance of qualitative and mixed-method studies. This shift highlights an expansion and enrichment of knowledge production in this field, especially with the adoption of varied methods for data collection, selection, and analysis.

KEYWORDS   LARGE-SCALE ASSESSMENT • SCHOOL EFFECTIVENESS • EDUCATIONAL INDICATORS • PUBLIC POLICIES.

AVALIAÇÃO EM LARGA ESCALA E EFICÁCIA ESCOLAR NA PRODUÇÃO CIENTÍFICA BRASILEIRA

RESUMO

O objetivo deste artigo é sistematizar o estado do conhecimento sobre a temática eficácia escolar no campo da avaliação em larga escala. Analisaram-se 24 artigos científicos, em língua portuguesa, abrangendo o período de 2012 a 2022, agrupados em cinco categorias: ferramentas de mensuração; determinantes intra e extraescolares; bibliográficas; vulnerabilidade; e equidade. Constatou-se a predominância de estudos de natureza qualitativa e mista, se comparado com os resultados de pesquisas que abordaram o período de 2000 a 2013, nas quais prevaleciam investigações de natureza quantitativa. Esse fato sinaliza para a ampliação e enriquecimento da produção do conhecimento sobre o tema objeto deste artigo, principalmente com o aumento nas formas de coletar, selecionar e analisar os dados.

PALAVRAS-CHAVE AVALIAÇÃO EM LARGA ESCALA • EFICÁCIA ESCOLAR • INDICADORES EDUCACIONAIS • POLÍTICAS PÚBLICAS.

EVALUACIÓN EN GRAN ESCALA Y EFICACIA ESCOLAR EN LA PRODUCCIÓN CIENTÍFICA BRASILEÑA

RESUMEN

El objetivo de este artículo es sistematizar el estado del conocimiento sobre la temática de la eficacia escolar en el campo de la evaluación a gran escala. Se analizaron 24 artículos científicos en lengua portuguesa, que abarcan el período de 2012 a 2022, agrupados en cinco categorías: herramientas de medición; determinantes intra y extraescolares; estudios bibliográficos; vulnerabilidad; y equidad. Se constató la predominancia de estudios de naturaleza cualitativa y mixta, en comparación con los resultados de investigaciones que abordaron el período de 2000 a 2013, en los cuales predominaban los estudios de naturaleza cuantitativa. Este hecho señala una ampliación y enriquecimiento de la producción del conocimiento sobre el tema objeto de este artículo, principalmente con el aumento en las formas de recolectar, seleccionar y analizar los datos.

PALABRAS CLAVE EVALUACIÓN A GRAN ESCALA • EFICACIA ESCOLAR • INDICADORES EDUCATIVOS • POLÍTICAS PÚBLICAS.

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INTRODUCTION

School effectiveness is closely linked to large-scale assessments, which serve as a fundamental tool for measuring and understanding educational system performance (Bauer et al., 2015; Santos, 2015; Calderón & Borges, 2020; Alavarse et al., 2021; Pereira, 2023).

For over three decades, these assessments have been implemented in Brazil, persisting regardless of political changes, positioning them as state policies. Consequently, initiatives at the national, state, and municipal levels have expanded. These assessments have shaped governmental agendas and influenced the implementation of educational policies in Brazil, aligning with international programs, such as the Programme for International Student Assessment (Pisa), the Estudo Regional Comparativo e Explicativo [Comparative and Explanatory Regional Study] (Erce), and the Progress in International Reading Literacy Study (Pirls) (Pereira, 2023).

Assessments focus mainly on "student performance in standardized reading and problem-solving tests" (Alavarse et al., 2021, pp. 251-252, own translation), covering various educational levels and types. The results provide educational diagnostics that, in some cases, also address teacher performance, influencing the management of the educational network and schools.

Calderón and Borges (2020) refer to the use of large-scale assessments results for developing and acquiring diagnoses and information to guide and support educational policies. These outcomes can help us to obtain periodic data that will not only measure whether or not targets have been met, but also, and most importantly, for identifying positive and negative aspects that need to be adjusted within these adopted educational policies.

With the results of such assessments being used as a basis for defining educational policies and allocating resources, educational indicators have gained prominence on the agenda of both managers and leaders of educational systems. These indicators, which include approval and proficiency rates, are frequently used to assess student performance within the educational system (Pereira, 2023).

Research on school effectiveness (Murillo Torrecilla, 2003, 2005; Sammons et al., 2011) has sought to understand not only the factors related to student performance, but also the impact of schools on this performance. This involves assessing the ability of the schools to influence student progress, by measuring how much their performance is affected by the characteristics of the institution in which they are enrolled.

From this perspective, studies (Soares, 2011; Soares & Xavier, 2013; Alavarse et al., 2021; Pereira, 2023) acknowledge that the results of large-scale assessment should not be viewed as a single, universal measure of performance. However, they

can serve as a starting point for more in-depth analyses that consider the specific nuances of each educational context.

In light of the above, the present article[1] aims to systematize and organize the state of knowledge on school effectiveness in the field of large-scale assessment, referencing articles of the Brazilian scientific literature published in electronic journals, in Brazilian Portuguese, covering the period from 2012 to 2022.

METHODOLOGY

Methods are strategies used to understand problems and achieve objectives, detailing the steps for data collection, analysis, and interpretation (Creswell & Creswell, 2021). In this study, through a systematic literature review process, the aim is to discuss the concept of school effectiveness using the state of knowledge method (Vosgerau & Romanowski, 2014; Silva et al., 2020; Barry et al., 2022). This method facilitates the systematization and organization of knowledge produced in a specific area and period, enabling descriptive and analytical analyses, while emphasizing the importance of a critical understanding of the literature.

To explore this theme, a descriptive and qualitative approach is adopted, using the content analysis technique, which assesses the characteristics of content fragments in an intuitive and flexible manner, following three specific stages: a) pre-analysis, b) material exploration, and c) treatment of results and interpretations. This approach allows the identification of thematic diversity in a textual *corpus*, evaluation of the frequency of theme repetition, and facilitation of the formation of groups and categories of words (Bardin, 2011).

The process of composing the *corpus* for this study involved three specific searches, conducted between July 11 and 18, 2022, aimed at gathering scientific articles that discuss school effectiveness and large-scale assessment, and were published between 2012 and 2022. The goal was to establish an overview of recent academic-scientific literature on the topic, and provide a comprehensive view of how the concept has been applied and discussed during this period.

The decade under study is justified by the attempt to sequence a study conducted by Karino and Laros (2017), who analyzed, through a systematic review of Brazilian literature, thirty articles on school effectiveness published in scientific journals between 2000 and 2013. Among the key findings of the present study are: a) recognition of the impacts of elements such as socioeconomic status, ethnicity,

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1   The present text is an expansion and adaptation of the findings from a master's research project (Pereira, 2023), developed within the Programa de Pós-Graduação em Educação [Graduate Program in Education] at the Universidade Municipal de São Caetano do Sul (USCS). The study was conducted by researchers from Brazil and Chile as part of the Red de Investigadores Iberoamericanos sobre Gobernanza Universitaria e Instituciones Educativas (Rigued).

and delay on academic performance; b) emphasis on the difficulties in defining and measuring internal factors within the school; and c) the predominance of quantitative studies, with an emerging trend of multimethod studies that use both quantitative and qualitative approaches.

Thus, building on the work of Karino and Laros (2017), the present article aims to provide a more comprehensive overview of the topic of school effectiveness and large-scale assessment to researchers in the field, covering a broader period, from 2000 to 2022. This approach will not only enable a better understanding of the field, but it will also facilitate the conduct of new research.

In addition to the categorizations and inferences based on Bardin (2011), the survey also benefited from automated content analysis (ACA) to extract relevant information from both the keywords and their respective abstracts and reviews, aiming to enhance the grouping of semantic content. To achieve this, the Iramuteq software (Interface de R pour les Analyses Multidimensionnelles de Textes et de Questionnaires) was used. This software, since its launch in 2011, has increasingly been employed in academic research, especially in studies where the *corpus* to be analyzed is quite extensive (Camargo & Justo, 2013; Rodrigues et al., 2021; Pereira & Trivelato, 2023).

The *corpus* relevant to the present study is composed of articles published in Brazilian Portuguese between 2012 and 2022, using the following search descriptors: "eficácia escolar" (school effectiveness) or related terms such as "escola eficaz" (effective school), "valor agregado" (added value), "aprendizagem" (learning) and "qualidade da educação" (quality of education); "indicadores" (indicators) or related terms such as "Ideb", "avaliação educacional" (educational assessment), "avaliações em larga escala" (large-scale assessments) and "desempenho educacional" (educational performance); and, "vulnerabilidade social" (social vulnerability) or equivalents such as "desigualdades educacionais ou sociais" (educational or social inequalities) and "pobreza" (poverty).

The first search was conducted on the Portal de Periódicos da Coordenação de Aperfeiçoamento de Pessoal de Nível Superior – the journal finder of the Brazilian Federal Agency for Support and Evaluation of Graduate Education – (Capes), the main platform providing access to various databases, scientific journals, e-books, and other academic resources worldwide. The initial search yielded 318 scientific articles (peer-reviewed). After applying the filter for articles published in Brazilian Portuguese, 57 titles were identified. Of those 57, only 12 articles met the criteria established for the present study.

To expand the *corpus*, a second search was conducted on the Google Scholar database using the Publish or Perish application. This search yielded 13 works. Of those 13, 4 were excluded for not meeting the established criteria and 9 additional

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studies were incorporated into the *corpus*. Google Scholar was chosen because it is a broader database that captures articles from less specialized databases, which may still be important for understanding the research topic.

In an attempt to further expand the number of articles to be studied, a final search was conducted on the Portal Brasileiro de Publicações e Dados Científicos em Acesso Aberto [Brazilian Open Access Publications and Scientific Data Portal] (Oasisbr). Oasisbr is an initiative of the Instituto Brasileiro de Informação em Ciência e Tecnologia [Brazilian Institute of Information in Science and Technology] (Ibict), which gathers scientific production and research data in open access from authors affiliated with Brazilian universities and research institutes. This search initially yielded 9 results. However, after applying exclusion criteria, such as eliminating theses and removing duplicate titles, only 2 articles were deemed suitable for inclusion in the present research.

Skimming of the material resulted in the addition of a new text, referenced in one of the selected works, bringing the total number of articles in the *corpus* to 24, as illustrated in Figure 1.

FIGURE 1
Diagram of the search mechanism for article selection
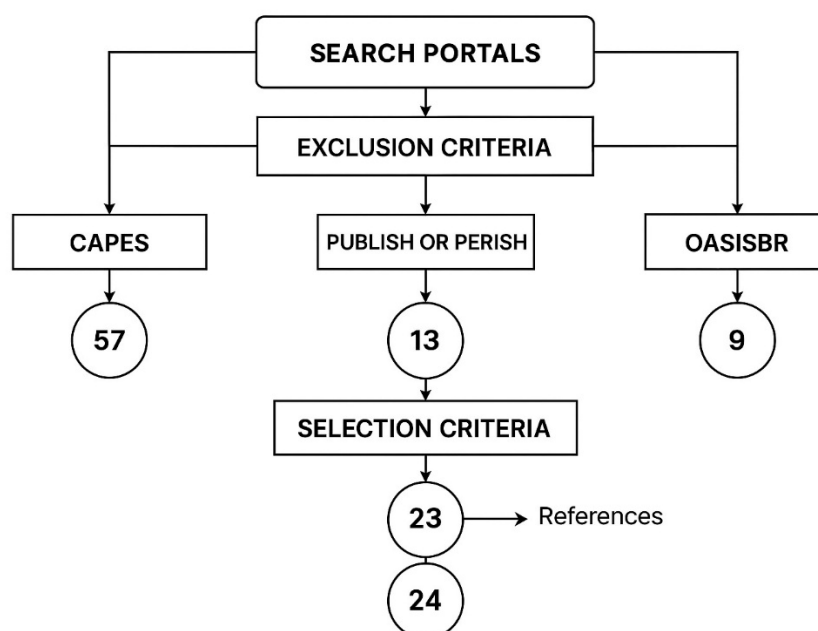
Source: Authors' elaboration.

Bibliometric mapping

Continuing the process, bibliometric analysis was employed. This is based on the quantification of attributes from a specific set of articles, aimed at managing the information and scientific knowledge of a particular topic (Lacerda et al., 2012).

TABLE 1

Articles that make up the study *corpus*, including the year of publication, authors, journal, and title
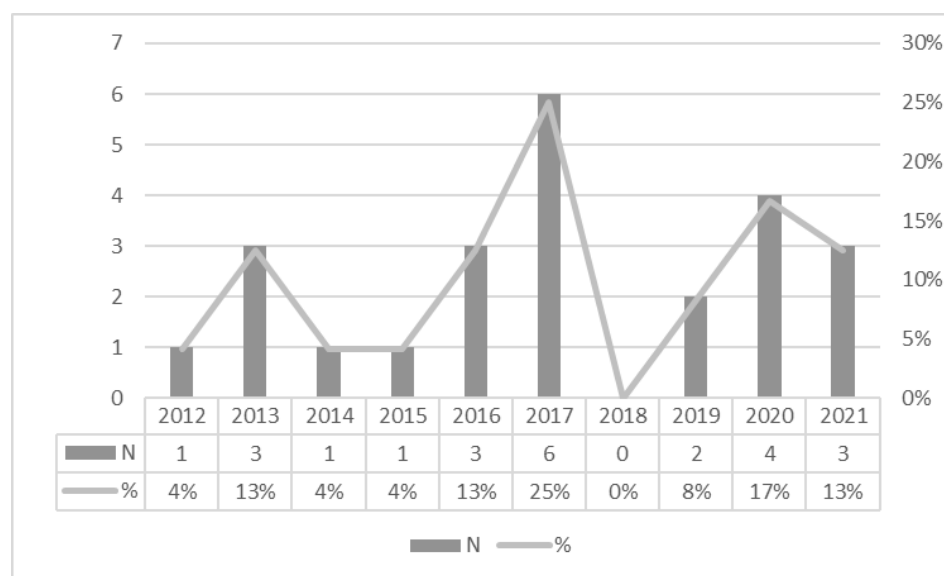
AUTHORS	YEAR	TITLE	PUBLICATION
Érnica & Batista	2012	A escola, a metrópole e a vizinhança vulnerável	*Cadernos de Pesquisa – FCC*
Alves & Soares	2013	Contexto escolar e indicadores educacionais: Condições desiguais para a efetivação de uma política de avaliação educacional	*Educação e Pesquisa*
Duarte	2013	O impacto da pobreza no Ideb: Um estudo multinível	*Revista Brasileira de Estudos Pedagógicos*
Crahay & Baye	2013	Existem escolas justas e eficazes? Esboço de resposta baseado no Pisa 2009	*Cadernos de Pesquisa – FCC*
Alves et al.	2014	Índice socioeconômico das escolas de educação básica brasileiras	*Ensaio: Avaliação e Políticas Públicas em Educação*
Santos	2015	Eficácia da escola e condicionantes do desempenho escolar dos alunos: Do modelo unidimensional de análise ao multidimensional	*Roteiro*
Martins & Calderón	2016	Boas práticas e elevado desempenho escolar em contexto de vulnerabilidade social com referência aos resultados do Ideb	*Revista Educação em Debate*
Soligo	2016	O Índice de Desenvolvimento da Educação Básica e a incidência de pobreza nos municípios de pequeno porte da região Sul do Brasil	*Contrapontos*
Oliveira & Waldhelm	2016	Liderança do diretor, clima escolar e desempenho dos alunos: Qual a relação?	*Ensaio: Avaliação e Políticas Públicas em Educação*
Garcia et al.	2016	Desempenho escolar: Uma análise do Ideb dos municípios da região do ABC	*Revista Eletrônica de Educação*
Soares et al.	2017	Modelos de valor agregado para medir a eficácia das escolas Geres	*Ensaio: Avaliação e Políticas Públicas em Educação*
Travitzki	2017	Qualidade com equidade escolar: Obstáculos e desafios na educação brasileira	*Reice – Revista Iberoamericana sobre Calidad, Eficacia y Cambio en Educación*
Karino & Laros	2017	Estudos brasileiros sobre eficácia escolar: Uma revisão de literatura	*Examen: Política, Gestão e Avaliação da Educação*
Garcia & Bizzo	2017	Um estudo sobre escolas eficazes no Brasil e na Itália: O que realmente importa na opinião dos pais, alunos, professores e gestores	*Educação*
Almeida	2017	As desigualdades e o trabalho das escolas: Problematizando a relação entre desempenho e localização socioespacial	*Revista Brasileira de Educação*
Martins & Calderón	2019	Eficácia escolar: Boas práticas à luz de estudos do governo brasileiro e das agências multilaterais	*Revista Diálogo Educacional*
Lima et al.	2019	Associação do índice e de atitudes e práticas pedagógicas ao desempenho dos estudantes na avaliação em larga escala do estado do Espírito Santo	*Educação em Revista*
Martins & Calderón	2020	Avaliação educacional: Fatores contextuais de eficácia escolar em cenários de alta vulnerabilidade social	*Pesquisa e Debate em Educação*
Borges & Castro	2020	Qualidade da educação: Os desafios de uma escola justa e eficaz	*Educação em Foco*
Calderón & Borges	2020	Avaliação em larga escala na educação básica: Usos e tensões teórico-epistemológicas	*Meta: Avaliação*
Faria & Alves	2020	Índice de Desenvolvimento da Educação Básica e eficácia escolar: Evidências de uma pesquisa comparativa	*Regae: Revista de Gestão e Avaliação Educacional*
Teodoro et al.	2021	Eficácia escolar e boas práticas em regiões socialmente vulneráveis: Um estudo de caso	*Revista Eletrônica de Educação*
Champangnatte et al.	2021	A pesquisa em eficácia escolar a partir de uma perspectiva interdisciplinar	*Instrumento: Revista de Estudo e Pesquisa em Educação*
Soares et al.	2021	Trajetórias educacionais como evidência da qualidade da educação básica brasileira	*Revista Brasileira de Estudos de População*

Source: Authors' elaboration.

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The 24 articles were identified with an order number to facilitate the categorization process, especially for automated content analysis, in accordance with the search methodology. These articles are presented in Table 1, organized by year of publication, author(s), and title, and are complemented by Figure 2, which illustrates the number of publications per year.

FIGURE 2
Evolution of the number of articles published between 2012 and 2022

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
N	1	3	1	1	3	6	0	2	4	3
%	4%	13%	4%	4%	13%	25%	0%	8%	17%	13%

Source: Authors' elaboration.

As shown in Figure 2, 2017 had the highest number of publications (n = 6), followed by 2020 (n = 4), 2013, 2016, and 2021, each one with three (n = 3) publications. However, no publications meeting the established criteria were identified in 2018 and 2022. Regarding the publication vehicle, there is a considerable diversity. Table 1 shows particular emphasis on the journal *Ensaio: Avaliação e Políticas Públicas em Educação*, published by Fundação Cesgranrio, which accounted for three publications (n = 3) during the analyzed period – 1 in 2014, 1 in 2016, and 1 in 2017.

After the characterization phase, computerized tools were employed to develop the material analysis phase, to facilitate categorization using keywords and abstract analysis. This enabled functionalities such as similarity analysis, which highlights connections between words, and the generation of word clouds, which provided a simplified way to identify the most prominent terms in the textual *corpus* (Brito & Sá, 2022).

The software analyzed a textual database containing the 24 original abstracts from each article. Using Zipf's Law,[2] it identified particular expressions that stood

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2   Zipf's Law is an empirical law from the linguistic and statistics field that describes the word frequency distribution in a linguistic *corpus*. According to Zipf's Law, the frequency of any word is inversely

out in terms of frequency. In this case, the term "escola" (school) (n = 58), followed by "escolar" (school-related) and "resultados" (results) (n = 39), was the one that stood out the most. This is illustrated by the word clouds (Figure 3).

FIGURE 3
Word cloud decoded from the abstracts of the articles (n = 24)
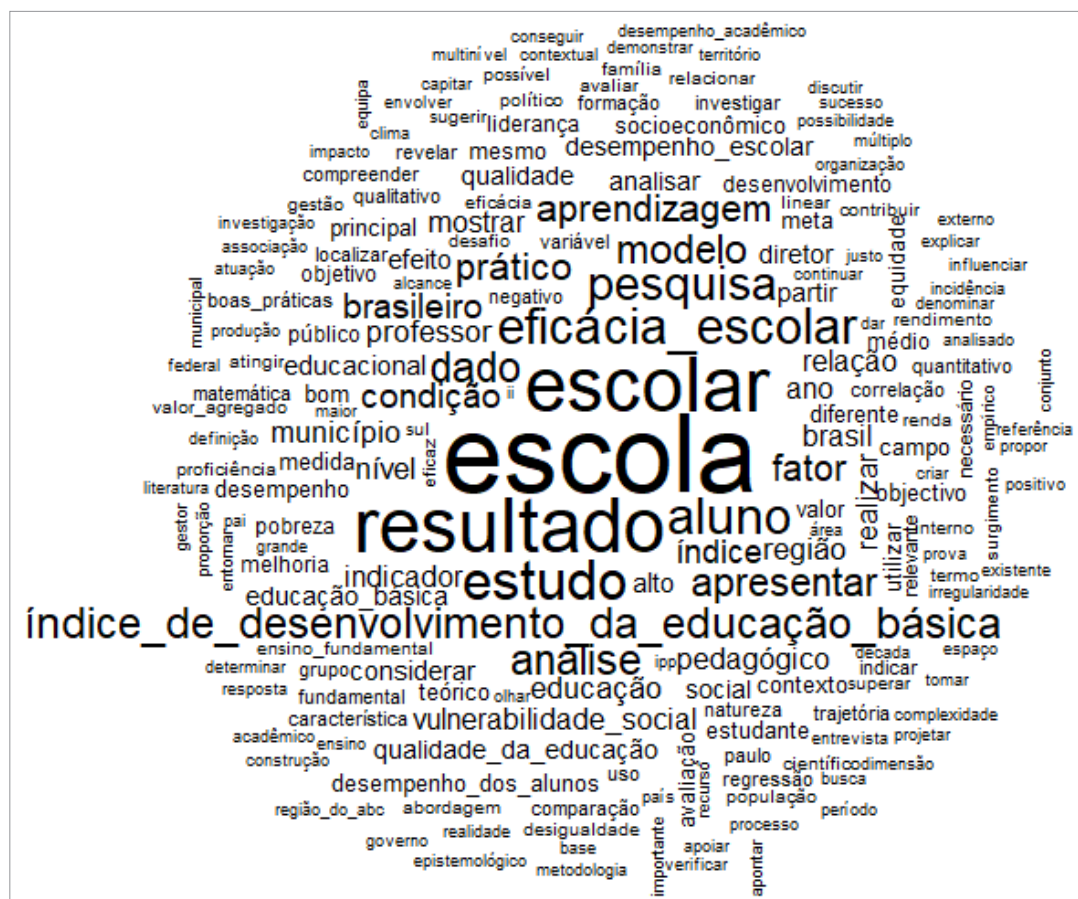
Source: Authors' elaboration based on Iramuteq software.

In addition to the word cloud, Iramuteq provides another complex visual representation of the interaction among the terms in the dataset, using similarity graphs. This representation enhances the understanding of the lexical relationships in the semantic domain, making the dynamic and multifaceted connections within the *corpus* more tangible.
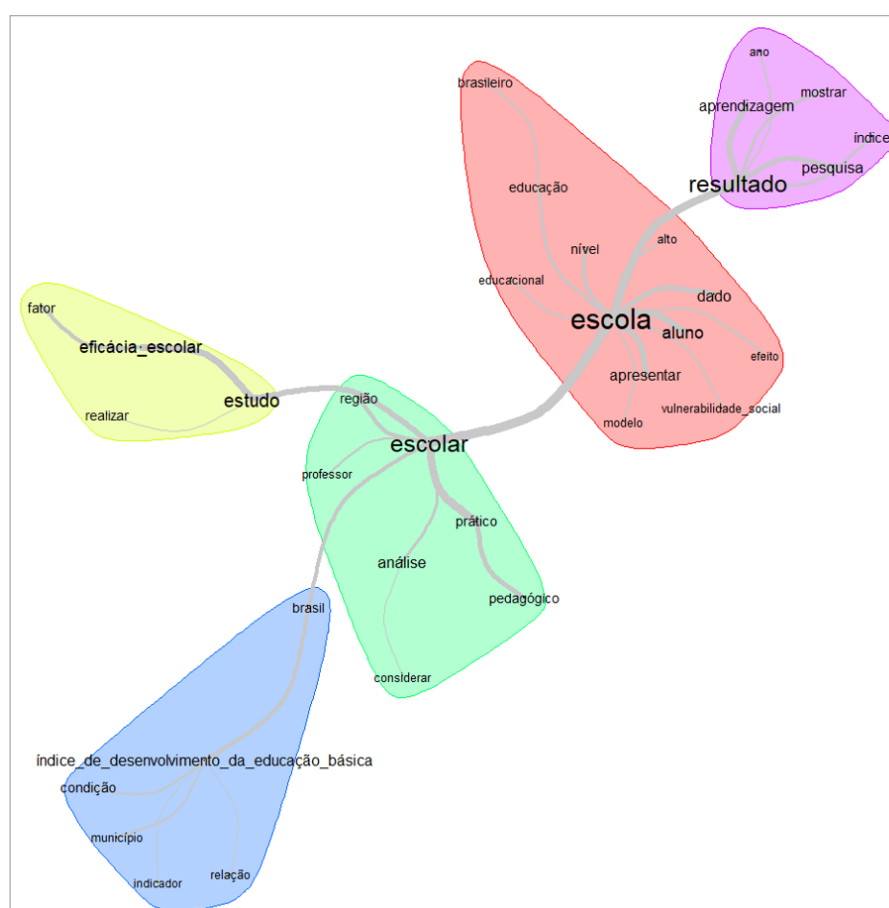
It is important to highlight that, since scientific articles follow a strict structural framework, some words were excluded from the *corpus* preparation process,

proportional to its ranking in the frequency list. In other words, the word with more frequency in a text will appear twice as often as the second most frequent word, following by the logarithmic distribution. The linguistic George Zipf created this law, during the 20th century and it is often observed in several languages and in different types of materials, from literature to scientific and journalistic texts. Although there are variations, Zipf's Law maintains a consistent tendency in the distribution of words in a natural language (Quoniam et al., 2001).

namely: "artigo" (article), "trabalho" (work), "analisar" (analyze), "abordagem" (approach), "presente" (present), "metodologia" (methodology), "avaliar" (evaluate), and "bibliográfico" (bibliographic). As these terms are commonly found in phrases such as "this article/work aims to analyze/evaluate," "the methodology used in the bibliographic research," and "the research results highlight", including these words in the abstract analysis could obscure the precision of the results.

Similarity analysis explores all the words found in the *corpus*, as well as their interconnections. Therefore, to facilitate the understanding and visual representation of the data, it is possible to observe the semantic relationship with the most representative words: "escola" (school), "escolar" (school-related), and "resultado" (result) (Figure 4). The connection established among terms, whose grouping revealed five subgroups, converged similarly with the manual categorization process, following the steps proposed by Bardin (2011) and Barry et al. (2022).

FIGURE 4
Lexical similarity graph extracted from the abstracts (n = 24)

Source: Authors' elaboration based on Iramuteq software.

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Such representations, aligned with the careful analysis of the abstracts, were vital for establishing the initial categories of study, and allowing the identification of key elements such as methodology, objectives, and potential results of the selected articles.

Table 2 presents the methodology used in each selected article, showing that 11 of them (46%) employ a qualitative approach, which is more common in education research (Ortigão & Pereira, 2016). This is followed by 38% using a quantitative approach (n = 11), with a particular focus on multilevel studies that provide a broader understanding of the conditions influencing school effectiveness, enabling more targeted and efficient interventions in the educational environment (Murillo Torrecilla, 2005; Puente-Palacios & Laros, 2009). Finally, 16% (n = 4) use a mixed-methods approach, where the results obtained are interpreted qualitatively, based on theoretical foundations, deepening the understanding of quantitative results (Creswell & Creswell, 2021).

TABLE 2

Description of the methodology used in each selected article

METHODOLOGY	APPROACH			TOTAL	%	AUTHORS
	QT*	QL**	MX***			
Comparative analysis	1	1	2	4	16.7	(Érnica & Batista, 2012; Alves et al., 2014; Garcia & Bizzo, 2017; Faria & Alves, 2020)
Descriptive analysis	6	2	-	8	33.3	(Duarte, 2013; Alves & Soares, 2013; Crahay & Baye, 2013; Soligo, 2016; Travitzki, 2017; Almeida, 2017; Lima et al., 2019)
Exploratory analysis	-	3	2	5	20.8	(Martins & Calderón, 2016; Oliveira & Waldhelm, 2016; Garcia et al., 2016; Martins & Calderón, 2019; Teodoro et al., 2021)
Longitudinal analysis	2	-	-	2	8.3	(Soares et al., 2017; Soares et al., 2021)
Academic essay	-	1	-	1	4.2	(Calderón & Borges, 2020)
Bibliographic research	-	2	-	2	8.3	(Santos, 2015; Borges & Castro, 2020)
Literature review	-	2	-	2	8.3	(Karino & Laros, 2017; Champangnatte et al., 2021)
Total	**9 (38%)**	**11 (46%)**	**4 (16%)**	**24**	**100**	

Source: Authors' elaboration.
Note: *QT = quantitative; **QL = qualitative; ***MX = mixed.

The subsequent stage involved a thorough reading and review of each article, leading to the grouping of the articles into five categories based on areas of interest or thematic axes (Table 3).

TABLE 3
Categorization of articles by area of interest or thematic axis

AREA OF INTEREST OR THEMATIC AXIS	TOTAL	%	AUTHORS
Studies focused on measurement tools	7	29	(Alves & Soares, 2013; Alves et al., 2014; Soares et al., 2017; Soligo, 2016; Garcia et al., 2016; Lima et al., 2019; Soares et al., 2021)
Studies on determinants, intra/extracurricular factors, and/or best practices	6	25	(Oliveira & Waldhelm, 2016; Garcia & Bizzo, 2017; Martins & Calderón, 2016, 2020; Faria & Alves, 2020; Teodoro et al., 2021)
Bibliographic studies	5	21	(Santos, 2015; Karino & Laros, 2017; Martins & Calderón, 2019; Calderón & Borges, 2020; Champangnatte et al., 2021)
Studies on the issue of vulnerability or the impact of poverty	3	12.5	(Érnica & Batista, 2012; Duarte, 2013; Almeida, 2017)
Studies concerned with the principle of equity	3	12.5	(Crahay & Baye, 2013; Travitzki, 2017; Borges & Castro, 2020)
Total	**24**	**100**	

Source: Authors' elaboration.

Studies on the methodology for calculating and interpreting the Ideb

The article written by Alves and Soares (2013) highlights the failure of educational assessment policies in recognizing inequalities across schools, leading to distorted results. The authors emphasize the need for comprehensive and contextualized educational indicators that take into account the specificities of each school and community, arguing that comparing standardized results does not adequately reflect the quality of education. They suggest investigations with a mixed-methods design to identify schools with extreme performance, and using qualitative methodologies to better understand school contexts and the factors that influence educational outcomes.

The article by Alves et al. (2014) presents the development of a socioeconomic index for basic education schools in Brazil, using over 20 million student responses from federal educational assessments. The index, based on data regarding parental education and occupation as well as family income, was calculated using Item Response Theory (IRT). The results showed a high correlation with the socioeconomic reality of schools and other similar indices, validating the reliability of the index. The correlation of the index with *per capita* income of municipalities and the evaluation of experts in different regions confirmed the consistency of the index in reflecting the national socioeconomic reality.

The text by Soares et al. (2017) highlights the effectiveness of value added (VA) models compared to Status models, which only consider the socioeconomic condition of the school or students. The authors report that about 80% of schools show stability in VA measures over time, suggesting that the model is useful for comparing schools and defining interventions in elementary education. The authors

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argue that the level of student proficiency at the end of each educational stage is the information that is most relevant for society, and this data should be explained pedagogically and contextualized with factors such as students' socioeconomic conditions and school processes.

Soligo (2016) begins his article by exploring the relationship between the Índice de Desenvolvimento da Educação Básica [Basic Education Development Index] (Ideb) and the incidence of poverty in small municipalities in the southern region of Brazil. Using linear regression, the author identifies an inversely proportional relationship between Ideb and poverty, suggesting that improving the quality of education could contribute to reducing poverty. However, the regional analysis shows a weaker association in the south, possibly due to the dilution of specificities in the dataset. The author emphasizes that poverty involves more than the lack of financial resources, it also involves limited access to essential cultural goods necessary for intellectual development. Therefore, government policies aimed at reducing poverty should address aspects such as health, food, security, and leisure, in addition to education, to improve the population's quality of life and, consequently, the quality of education.

The study developed by Garcia et al. (2016) investigates the Ideb situation in the municipalities of the Greater ABC region of São Paulo, considering state and municipal elementary schools (EFI) and middle schools (EFII). The results indicate gradual progress in EFI but stagnation or minimal growth in EFII, with specific challenges in mathematics learning. The lack of continuity between the EFI and EFII results was attributed to differences in segment characteristics, such as the number of teachers, teaching methods, and school management. The analysis of Ideb, along with contextual factors, is highlighted as essential for identifying opportunities to improve the quality of education.

Lima et al. (2019) investigate the relationship between the Ideb and the attitudes and teaching practices (IPP) of teachers, as it relates to student performance on large-scale assessments in Espírito Santo. The quantitative research conducted with elementary school teachers revealed a strong influence of teaching practices on student performance and a positive correlation with the Ideb. The study suggests that identifying and mapping these practices can enhance teacher training programs and encourage reflection on pedagogical practices to improve student learning. Additionally, it highlights grade retention as a practice that negatively affects the expected proficiency of the students.

Soares et al. (2021) analyze the educational trajectory of Brazilian students between 2007 and 2015, using data from the School Census, the Pesquisa Nacional por Amostra de Domicílios [National Household Sample Survey] (Pnad), and the Sistema de Avaliação da Educação Básica [Basic Education Assessment System]

(Saeb). The authors highlight regional and socioeconomic inequalities that affect student performance, revealing that some social groups are more likely to follow a regular school trajectory, while others face higher risks of grade retention or dropping out. The study points out that Ideb may present high scores even with a significant number of students experiencing irregular trajectories, demonstrating the selectivity of the indicator. The authors suggest that a "new Ideb" should consider not only the accumulated learning at the end of each school stage but also the trajectory of each cohort entering the educational system.

There is consensus on two key points among the studies (n = 7) that have addressed indices and/or indicators extensively: first, both external evaluations and the Ideb are recognized as important benchmarks for understanding and monitoring education in the country. Second, the broad and intense use of this indicator should not reduce it solely to a ranking of schools and educational systems, a practice often perpetuated by the media, which ultimately overlooks the comprehensive educational efforts involved.

However, each of these articles, with their contributions in different contexts and techniques, presents interpretative perspectives that go beyond simply categorizing the index or the evaluations in terms of "good" or "bad." They all highlight the need to adopt a kaleidoscopic view that considers not only students entry but also their continuity in the educational system (Soares et al., 2021), taking into account various contexts (Alves & Soares, 2013), regional realities and particularities (Garcia et al., 2016; Soligo, 2016), especially those related to socioeco-nomic conditions (Alves et al., 2014; Soligo, 2016). This perspective should also assess the proficiencies achieved by the students (Soares et al., 2017), and identify effective pedagogical practices (Lima et al., 2019). Such approach will enhance the understanding of school communities and their surroundings and, most importantly, will enable these insights to inform and guide more comprehensive educational policies.

Studies on determinants

Oliveira and Waldhelm (2016) investigate the relationship between leadership of the school principal, school climate, and student performance in the state of Rio de Janeiro. Using data from the contextual questionnaires of the Prova Brasil 2013, the authors conducted a quantitative study to analyze the teachers' perceptions of leadership of the school principal and school climate, as well as the relationship between leadership of the school principal and the performance of 5th grade students in mathematics. The linear regression analysis revealed that schools in which the perception of leadership of the school principal was more positive had better results in mathematics tests, even after controlling for the socioeconomic level of the students. Although the study has limitations and it is exploratory, the

results suggest an important connection between school management, as perceived by teachers, and student academic performance, thus encouraging the replication of this research in other contexts.

Martins and Calderón (2016, 2020) show an update in the data presented in the 2020 article, compared to the 2016 document, wherein the authors discuss the influence of internal and external factors on school performance in contexts of high social vulnerability. They highlight the importance of structured pedagogical practices, such as the absence of vacant teaching hours and the presence of teaching assistants, in improving learning. The research, based on qualitative approaches and content analysis of interviews and focus groups, concludes that pedagogical work focused on learning and adherence to the curriculum are fundamental for building a school oriented toward learning and improving school performance. The studies contribute to the debate on educational assessment in contexts of social vulnerability, showing that good internal pedagogical practices can influence school results positively.

Similarly, Teodoro et al. (2021) examine the practices adopted by a successful school, in a region of high social vulnerability of a small city of São Paulo. Their study emphasizes the importance of pedagogical strategies tailored to the specific needs of students and the environment in which they live. Among the identified practices are the development of a flexible curriculum, creation of a welcoming and inclusive school environment, establishment of partnerships with the local community, and continuous teacher training. The authors suggest that these good practices could be replicated in other schools located in socially vulnerable regions to improve school effectiveness.

Another research that also employed a case study methodology is by Garcia and Bizzo (2017). They investigated school factors contributing to the high academic performance of two schools, one in Brazil and another in Italy, from the perspectives of different groups involved in the educational process. Using both qualitative and quantitative methods, including interviews and Likert-scale questionnaires, they identified multiple factors relevant to school effectiveness, with 12 factors in the Brazilian context and 11 in the Italian context. The authors highlight the importance of understanding the factors that influence student development from the perspectives of those involved in the educational process, in order to analyze the behavior and intensity of these factors throughout the academic year. These data are valuable for school managers as a source of information to improve the school and student performance.

Faria and Alves (2020) analyze the relationship between the Ideb and school effectiveness in three schools in Minas Gerais. The study compares the Ideb, based on student performance in standardized assessments, with school effectiveness

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indicators, such as approval, dropout, and repetition rates, supplemented by interviews with school professionals. Although a positive correlation between Ideb and school effectiveness was found, the authors argue that schools with high Ideb scores are not necessarily more effective in terms of educational outcomes. They emphasize the importance of considering multiple factors, such as school management and family involvement, for a better understanding of school performance.

Since the Coleman et al. report (1966),[3] there has been a tendency in the literature to estimate the size of school effects, exploring the variation of these effects across different groups of students and their persistence over time. In this regard, some articles (Oliveira & Waldhelm, 2016; Martins & Calderón, 2016, 2020; Faria & Alves, 2020; Teodoro et al., 2021) have emphasized the importance of defining the extent of these effects, analyzing not only their scientific foundations but also their consistency across different areas of study or outcome measures (Garcia & Bizzo, 2017), including their stability over time.

Studies with an emphasis on bibliographic research

Santos (2015) discusses the limitations of the unidimensional model of school effectiveness analysis, which focuses solely on standardized test results. The author proposes a multidimensional approach that considers additional factors such as the quality of teachers, the school environment, and the curriculum structure, while also emphasizing the importance of recognizing individual differences and the context of the students. The study advocates for a more comprehensive assessment of school effectiveness, grounded in solid arguments and concrete examples.

Karino and Laros (2017) present a systematic literature review on school effectiveness in Brazil, covering fundamental concepts and methodological approaches. Analyzing thirty articles published between 2000 and 2013, organized into categories such as school effect, equity and equality, and associated factors, the paper emphasizes the need for more in-depth investigations into equality and equity. It also compares Brazilian production with international studies, revealing various trends and parallels in the field of school effectiveness, among which, as emphasized at the beginning of the present article, is the predominance of quantitative studies, with an emerging trend of studies using both quantitative and qualitative approaches or mixed-methods.

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3   The Coleman Report, officially titled Equality of Educational Opportunity, was published in 1966 in the United States by sociologist James S. Coleman and his team. Commissioned by the federal government, the study sought to analyze educational inequalities across racial and socioeconomic groups. One of his key findings was that the most significant factor in student performance was not school infrastructure, but rather the socioeconomic background of families and the social composition of the student body. This report had a significant impact on educational policy, influencing debates on racial integration and equality of opportunity, and it remains relevant to the discussion of equity in education.

Martins and Calderón (2019) analyzed school effectiveness in Brazil through a bibliographic review of ten publications, focusing on successful practices identified in Brazilian schools and studied by multilateral agencies. The authors discuss recent educational policies and the need to assess school performance through active methodologies, parent involvement, continuous teacher training, the use of educational technologies, among other practices. They also include data from the case study published in their 2016 article.

Calderón and Borges (2020) investigate different approaches and tensions related to large-scale assessment in basic education, highlighting the dichotomies and Manichaeism resulting from this conflict. They present theoretical frameworks that group these confrontations into two epistemologies (objectivist and subjectivist), the importance of external assessment of learning outcomes, and the role of external assessments in ensuring the right to learn. The authors defend objectivist epistemology, emphasizing the technical nature of implementing policies aimed at ensuring the right to education and aligning teaching practices with learning objectives.

"Research on school effectiveness from an interdisciplinary perspective", by Champangnatte et al. (2021), addresses the importance of school effectiveness in educational management and the need for an interdisciplinary approach to studying this phenomenon. The authors argue that an interdisciplinary perspective, with contributions from sociology, psychology, economics, among other disciplines, can provide more detailed insights into the factors that influence student performance. Additionally, they advocate for the use of ethnography as a methodology to capture the school reality in all its complexity. Their article emphasizes the historical importance of research on school effectiveness and the need to consider public policies and state strategies to improve education quality.

The works dedicated to investigate the bibliographic field have done so in a diverse manner, presenting everything from literature reviews, with important compilations of studies on effectiveness (Karino & Laros, 2017), to the importance of connections with other disciplines in the humanities (Champangnatte et al., 2021). These authors argue that research on school effectiveness requires an interdisciplinary approach to understand the various factors affecting the quality of education. In addition, they suggest ethnographic research as a comprehensive option for understanding school life, including culture, routines, and the stories of those involved. In a more empirical-rational sense regarding studies on this theme, the researches of Martins and Calderón (2019) and Calderón and Borges (2020) connect by arguing the relevance of studies for a better understanding of public policies, including those from the perspective of multilateral agencies, which complement the contribution and evolution of multilevel study methods presented

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by Santos (2015) and highlight a beneficial and more comprehensive evolution in research on school effectiveness.

Studies that address the issue of vulnerability or the impact of poverty

Érnica and Batista (2012) discuss the results of a study from the Centro de Estudos e Pesquisas em Educação, Cultura e Ação Comunitária [Center for Studies and Research in Education, Culture, and Community Action] (Cenpec), which explores the "territory effect" in education. The authors address the economic and cultural inequalities in metropolitan areas, and how spatial segregation reinforces these inequalities, influencing the production and reproduction of educational disparities. Their article correlates data on social vulnerability in the areas surrounding schools with performance on the Ideb in São Miguel Paulista/SP, showing that the level of social vulnerability affects school performance on the Ideb. They also discuss the relationship between schools and the institutional management model, as well as its implications for the quality of educational provision, using data from Prova Brasil and Ideb from 2007.

Duarte (2013) investigates the impact of poverty on the Ideb in Brazilian public schools, using multilevel regression to analyze the hierarchical structure of the data. The study defined poverty based on eligibility for the Bolsa Família Program, with school attendance monitored by the Ministério da Educação [Ministry of Education] (MEC). The results revealed a significant negative effect of poverty on the Ideb, highlighting the relationship between social education policies and school failure among populations living in poverty. The author discusses the "invisibility of poverty" (Duarte, 2013, p. 357, own translation), a concept that describes how schools may adopt practices that label and stigmatize poor students, reinforcing negative stereotypes and contributing to the reproduction of social inequalities.

Almeida (2017) analyzes the influence of external factors, such as socio-economic level and social conditions, on the academic performance of students. The research compares the performance of four municipal schools in Campinas/SP, considering different zones of social vulnerability. The results show that external factors continue to impact school performance, even after children enter school. The author questions educational evaluation policies that focus only on the school, ignoring the working conditions and social context. The researcher concludes that external factors have a "dual incidence" (Almeida, 2017, p. 376, own translation) on school performance, and emphasizes the need for strategies that take into account the school's working conditions and the state's commitment for more positive outcomes.

Social vulnerability, present in studies focused on indicators (Alves & Soares, 2013; Soligo, 2016) or in case studies where this factor was predominant for analysis (Martins & Calderón, 2016, 2019, 2020; Faria & Alves, 2020; Teodoro et al., 2021),

was discussed in greater depth in the work of Érnica and Batista (2012), who highlighted the challenges of addressing this theme in metropolitan areas. According to their 2012 study, the proximity and disparity of the realities encountered in large cities often reinforce generalized views about peripheral areas and hinder the analysis of the nuances that arise within these boundaries. This consideration was also present in the results of the schools in Minas Gerais, analyzed by Faria and Alves (2020), though from a different perspective related to the lack of assertiveness in the Índice do Nível Socioeconômico [Socioeconomic Status Index] (Inse), when not all responses are computed in the analysis.

Both Duarte (2013), who used Bolsa Família as a vulnerability criteria in her quantitative study, and Almeida (2017), who addressed socio-spatial vulnerability, criticize educational assessment policies, arguing that these are more focused on measuring results than on evaluating processes. They also argue that it is essential to analyze the elements of the social context that influence school work, emphasizing the need to rethink the debate about the real capacities of schools and their limitations in the pursuit of improvement. They suggest going beyond student performance in standardized tests, and – more appropriately – considering the quality standards offered by educational institutions to the population they serve.

Studies that highlight concern with the principle of equity

Crahay and Baye (2013) investigate the possibility of achieving both justice and effectiveness in schools. The authors define fair schools as those that treat all students equally, regardless of their social, ethnic, or economic background. They define effective schools as those that achieve positive learning outcomes. They emphasize that achieving both objectives is challenging and requires coordinated actions from various stakeholders, including appropriate public policies, continuous teacher training, parental involvement, and active student participation. The authors conclude that, although difficult, it is possible to achieve justice and effectiveness in schools by eradicating unfair and ineffective teaching practices through collaboration and appropriate policies.

Travitzki (2017) analyzes quality and equity in Brazilian education, using linear regression and multilevel analysis to identify obstacles and challenges in the pursuit of these ideals in an unequal society. The author highlights barriers such as the lack of financial resources, low teacher qualification, inadequate school infrastructure, and regional inequality, while also emphasizing the importance of civil society participation. The author also reveals that family nível socioeconômico [socioeconomic status] (NSE) continues to influence student performance throughout their schooling and, although it is not possible to determine the exact responsibility of schools in this scenario, some institutes manage to provide more

equitable education.

Borges and Castro (2020) emphasize the importance of quality education for the social and economic development of the country. They highlight that there are still many obstacles to overcome such as the lack of resources, social inequality, inadequate teacher training, and the absence of effective public policies. Their study stresses the need to ensure equitable education that offers the same opportunities to all students, regardless of their background, emphasizing the importance of parental involvement, community participation, and the role of the state in building a fair and effective school system. The authors also emphasize that the quality of education should be aligned with the goal of forming individuals who are capable of interacting effectively with society.

The works of Crahay and Baye (2013), Travitzki (2017), and Borges and Castro (2020) highlight that, although there has been significant progress in indicators related to access to basic education in Brazil – such as the near universalization of elementary education, the increase in completion rates in basic education, and the expansion of early childhood education –, considerable challenges remain. Borges and Castro (2020) emphasize the importance of greater state intervention. Travitzki (2017) warns that the greater challenge lies in maintaining equity over the years of schooling, highlighting that inequality can increase as students progress in their education. Crahay and Baye (2013) caution that it is necessary to reduce or abolish grade repetition, as it disproportionately affects disadvantaged students, even when their competency is comparable to that of their more privileged peers.

FINAL CONSIDERATIONS

The bibliographic survey – conducted to capture the "state of knowledge" – selected 24 studies published between 2012 and 2022. The theoretical robustness of those studies revealed the predominance of qualitative approaches (46%) – which explored the nuances and complexities of the topic, particularly in the exploration of determinants of school effectiveness and large-scale assessments – compared to quantitative approaches (38%), which presented objective and measurable perspectives. Additionally, 16% of the studies used mixed approaches, that is, they were qualitative-quantitative studies.

This finding takes on greater significance when it is noted that, in the study by Karino and Laros (2017) covering the period from 2000 to 2013, quantitative research was predominant. The present article reveals a reversal in the predominant type of research: qualitative studies have gained greater prominence among the analyzed studies, leading to greater diversity in how the issue of school effectiveness and large-scale assessment is understood, particularly with the increase in data collection,

selection, and analysis methods. The fact that 16% of studies used mixed approaches may also signal a trend toward overcoming the traditional dichotomy between qualitative and quantitative research; that is, between sociocritical approaches and empirically rational approaches.

In addition to this major finding, the present article also reveals important trends such as: a) advances in research using multilevel methods, which provide a more holistic picture of the results of large-scale assessment; b) new perspectives observed in the increase of qualitative research dedicated to understanding the on-site realities of school communities; c) bibliographic analyses that contribute to a better understanding of knowledge production; d) more pragmatic views of school effectiveness linked to large-scale assessment results; e) the understanding of Ideb as a valid indicator for monitoring assessment results but which, for a more comprehensive analysis of the educational reality in multiple scenarios, demonstrated the imperative need to be complemented by other forms of evaluation and qualitative insights.

The categorization of the articles by units of registration and context followed the second stage of content analysis (Bardin, 2011), highlighting specific selection criteria. However, there was congruence between the themes developed by the authors and, in this regard, the use of programs like Iramuteq was especially helpful as it allowed for a more precise and efficient analysis of the frequency of terms and their relationships in the textual *corpus*. This facilitated the interpretation of the data and promoted a broader understanding of the analyzed discourses.

An example of such congruence is the set of studies that brought to light themes related to equity (Crahay & Baye, 2013; Travitzki, 2017; Borges & Castro, 2020), which were linked both to articles that addressed indicators (Soares et al., 2017; Lima et al., 2019) and those that questioned the topic, addressing issues related to poverty as a determinant of students' academic performance (Alves et al., 2014; Soligo, 2016). There is also a strong connection among Garcia et al. (2016), who studies schools in the Greater ABC region of São Paulo; Crahay and Baye (2013), who presented considerations on Latin American countries in relation to Pisa; and Travitzki (2017), with findings from schools in the South of Brazil. These studies, although categorized in distinct groups, allow for dialogues by presenting similar results, even in different geographical contexts.

Finally, a lower occurrence of articles discussing effectiveness related to social vulnerability or equity was observed, a fact also noted by Karino and Laros (2017). This does not mean that these themes are treated in isolation or that they are unrelated. Rather, within the context of the 24 publications, there was a greater tendency to address school effectiveness or performance without necessarily discussing issues related to vulnerable contexts or equitable practices.

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