

## ARTICLE

### BLIND STUDENTS' LITERACY: WHAT DOES THE NATIONAL PERIODICAL PRODUCTION SHOW?<sup>1</sup>

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**ABSTRACT:** This review article catalogs and analyzes Brazilian scientific articles on blind people's literacy. To this end, we carried out a systematic search by subject on the Portal de Periódicos of the Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES). As a corpus for analysis, we found only seven national scientific articles published between 2007 and 2022 in different journals, without any identifiable patterns regarding their insertion, frequency, and bibliographic dissemination. Amongst them, only three are indexed in the Scielo database. The articles, in short, show the relevance of Braille for blind learners' initial learning of reading and writing. However, their samples present limited and reduced data, mainly due to the small number of blind participants. The space-time of the inclusive standard class was absent from the articles, which mainly dealt with institutions or specialized contexts. In addition, the authors' research contexts and institutions are concentrated in the Brazilian Southeast-South regions. Furthermore, theoretical-methodological insufficiencies persist in scientific research communication. Therefore, we recommend new and broader studies exploring the interfaces between literacy and blindness in Brazil, with the dissemination of their results in scientific journals.

**Keywords:** literacy, blindness, scientific literature.

### ALFABETIZAÇÃO DE ESTUDANTES CEGOS: O QUE REVELA A PRODUÇÃO PERIÓDICA NACIONAL?

**RESUMO:** Este artigo de revisão tem como escopo inventariar e analisar artigos científicos brasileiros sobre a alfabetização de pessoas cegas. Para tanto, foi realizada busca sistemática, por assunto, no Portal de Periódicos da Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES). Obteve-se, como corpus para análise, apenas 7 artigos científicos nacionais, publicados entre 2007 e 2022, em periódicos diferentes, sem a identificação de padrões a respeito de sua inserção, frequência e difusão bibliográficas, dos quais apenas 3 estão indexados na base Scielo. Os artigos, em suma, evidenciam a relevância do braille para aprendizagem inicial da leitura e escrita dos aprendizes cegos, mas, em termos amostrais, mobilizam dados limitados e reduzidos, sobretudo porque gerados com número pouco representativo de participantes cegos. O espaço-tempo da classe comum inclusiva ficou ausente da produção periódica localizada, que abordou, principalmente, instituições ou contextos especializados. Além disso, os cenários de pesquisa e a procedência institucional dos autores são concentrados no eixo

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Sudeste-Sul brasileiro, bem como persistem insuficiências teórico-metodológicas na comunicação científica das pesquisas. Por isso, recomendam-se novos e amplos estudos, que explorem as interfaces entre alfabetização e cegueira no Brasil, com a difusão de seus resultados em periódicos científicos.

**Palavras-chave:** alfabetização, cegueira, literatura científica.

## **ALFABETIZACIÓN DE ESTUDIANTES CIEGOS: ¿QUÉ REVELA LA PRODUCCIÓN PERIÓDICA NACIONAL?**

**RESUMEN:** Este artículo de revisión tiene como objetivo inventariar y analizar artículos científicos brasileños sobre alfabetización de personas ciegas. Para ello, se realizó una búsqueda sistemática, por tema, en el Portal de Periódicos de la Coordinación de Perfeccionamiento de Personas de Nivel Superior (CAPES). Como corpus de análisis se obtuvieron solo 7 artículos científicos nacionales, publicados entre 2007 y 2022, en diferentes revistas, sin identificar patrones en relación a su inserción, frecuencia y difusión bibliográfica, de los cuales solo 3 se encuentran indexados en la base de datos Scielo. Los artículos, en definitiva, evidencian la relevancia del braille para el aprendizaje inicial de lectura y escritura de los aprendices ciegos, pero, en términos de muestra, movilizan datos limitados y reducidos, principalmente porque fueron generados con un número reducido de participantes ciegos. El espacio-tiempo de la clase común inclusiva estuvo ausente de la producción periódica localizada, que se ocupaba principalmente de instituciones o contextos especializados. Además, los escenarios de investigación y el bagaje institucional de los autores se concentran en el eje Sudeste-Sur brasileño, así como persisten insuficiencias teórico-metodológicas en la comunicación científica de la investigación. Por lo tanto, se recomiendan nuevos y amplios estudios que exploren las interfaces entre alfabetización y ceguera en Brasil, con la divulgación de sus resultados en revistas científicas.

**Palabras clave:** alfabetización, ceguera, literatura científica.

## **INTRODUCTION**

Since the end of the 20th century, extensive scientific production on the topic of literacy has been created in Brazil. In terms of investigative objects, this production has privileged the initial process, triggered by children, of teaching and learning reading and writing in school space-time; materials, manuals and pedagogical methods historically or currently adopted, as well as disputes surrounding their pedagogical uses; literacy policies and practices, including, in this context, forms of evaluation, monitoring and tensions related to the training of literacy teachers, among other resulting approaches (MORTATTI, 2007, 2011, 2013, 2018; MORTATTI et al., 2015; MORTATTI; FRADE, 2014; MORTATTI; OLIVEIRA; PASQUIM, 2014; REVISTA BRASILEIRA DE ALFABETIZAÇÃO, 2022; SOARES, 2003, 2004). Especially since the 1990s, it is important to mention that literacy began to be associated with the concept of reading and writing skills, sometimes causing disputes, implications, erasures, or conceptual ambiguities between both (MORTATTI, 2007; SOARES, 2004). Therefore, it is appropriate to consider this already famous synthesis by Soares (2004, p. 14, emphasis on the original):

Dissociating literacy and writing and reading skills is a mistake because, within the framework of current psychological, linguistic, and psycholinguistic conceptions of reading and writing, the entry of children (and also illiterate adults) into the world of writing occurs simultaneously through these two processes: through the acquisition of the system conventional writing style – *literacy* – and the development of skills to use this system in reading and writing activities, in

social practices that involve written language – *writing and reading skills*. They are not independent processes, but interdependent, and inseparable: literacy develops *in the context of and through* social practices of reading and writing, that is, through writing and reading activities, and this, in turn, can only be developed *in the context of and through* learning phoneme-grapheme relationships, that is, in dependence on literacy.

However, literacy is a concept whose use, in isolation, is not always possible or consensually adopted by scholars (MORTATTI; 2007; MORTATTI; OLIVEIRA; PASQUIM, 2014). In the case of historical research, which dates to periods before the 1980s, mentioning the term as an analytical category would sound, to say the least, anachronistic and implausible. Furthermore, official documents, public policies, didactic publications, national research on reading and writing skills by the Brazilian population, mass media news, psycho-pedagogical tests, and approaches, among other examples, also end up using the term literacy, given its linguistic-conceptual, scientific and socio-political appeal. As Mortatti, Oliveira, and Pasquim (2014, p. 16) mention, “[...] the terms 'literacy', 'reading and writing' and 'teaching reading and writing' [...] were the terms sedimented in long historical duration, being, therefore, more representative, in the semantic field”.

Having made these explanations, it is then worth announcing the problem that will be explored in this article: if production in the field of literacy has been fertile since the end of the 20th, with so many developments, there are studies on the literacy of students with visual impairments in Brazil, particularly for blind people, assuming the idea that there may be specificities in this process? If so, what do these studies say? Raising such questions requires, from the outset, understanding that visual impairment, as a concept associated with the pedagogical universe, covers at least two categories:

#### **Visual impairment**

It consists of total or partial loss of vision, whether congenital or acquired, at a variable level. It can be classified as blindness or low vision.

#### **Blindness**

Total loss of visual function or very little ability to see. In this case, learning and using the Braille Reading and Writing System must be available to the student as early as possible, as well as accessible teaching materials, technological resources, and equipment suitable for the communication process.

#### **Low vision**

Partial loss of visual function. In this case, the students have visual residue, and their potential to use their vision for school activities and transportation is impaired, even after the best treatment or maximum specific optical correction. Therefore, the students need accessible resources and teaching materials, such as material in large print, among others. (BRASIL, 2020, p. 7, emphasis in original).

Given the above, the concept of literacy proves to be even more relevant for delimiting the announced problem. After all, this highlights not only reading and writing in social practices but also covers the specific, conventional, and non-spontaneous domain of technical procedures that lead the learner to competently carry out these activities in their culture (SOARES, 2003, 2004). However, these procedures require double attention in the case of blind literacy students, as they not only require the appropriation of “[...] a constituted linguistic object, whether one considers the alphabetic system or the orthographic system, of conventional and often arbitrary relations between phonemes and graphemes” (SOARES, 2004, p. 11), how to master the representation of this linguistic object through the Braille reading and writing system<sup>2</sup>. This will require, in addition to the linguistic-cognitive and symbolic

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<sup>2</sup> For standardization purposes, Braille will be maintained throughout the text.

dimension, spatial, motor, and perceptual-tactile skills of their own, involved in the act of reading and writing through the highlighted points of this system.

Therefore, the conceptual use of writing and reading skills is not attempted in this article, understanding that, in the current meaning of literacy, the meaning of writing and reading skills is generally implied. Furthermore, in other contexts, this is not relevant for the reasons listed. Thus, based on the hypothesis that there would be some academic production available on the interfaces between literacy and blindness - although incipient, as suggested by the previous knowledge of the author of this text and the exploratory readings about the issue - this literature review was conducted. The objective was to verify possible research and its considerations, results, or evidence, only in the context of national scientific articles, on learning to read and write by blind literacy students. The methodological procedures and findings are discussed below.

## METHODOLOGY AND RESULTS

For the development of this literature review, a research protocol was initially developed, and applied to the *Portal de Periódicos da Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (Capes)*, through the remote interface of the *Comunidade Acadêmica Federada (CAFe)*, via login user base at the Federal University of Grande Dourados (UFGD), throughout December 2022, extending until January 2023. This portal was chosen because it is not exactly a base, but, as the name says, access that, in an agile, virtual, and integrated way, leads the researcher to several databases, in which peer-reviewed scientific articles are indexed. For this reason, it is so relevant and comprehensive to consider it in the literature review, when searching for a subject in the portal's respective collection. It is worth remembering that this “[...] is one of the largest virtual scientific collections in the country, which brings together and makes content produced nationally and others signed with international publishers available to teaching and research institutions in Brazil. There are more than 49 thousand full-text periodicals and 455 databases [...]” (QUEM SOMOS, 2023, online).

Google Scholar, currently very popular, was not considered because it still has more fluid indexing criteria to retrieve works that are not always peer-reviewed or even scientifically questionable. For exploratory readings, its use, however, is fundamental. It is also worth highlighting that the aim of scientific journals to be indexed in qualified international databases mainly involves the challenge of being accepted by the Scientific Electronic Library Online database, Scielo (PEREIRA; RODRIGUES; SANTOS, 2020). In this way, as the Capes Journal Portal automatically promotes, in the search by subject, the retrieval of articles indexed in Scielo, among many other bases integrated into this portal, it becomes, for thematic study of national literature, as now proposed, repetitive and unnecessary specific consultation with international databases to map possible Brazilian articles. However, in studies that promote searches in other languages and/or with comparative bibliometric intentions, it will certainly be necessary to adopt broader consultation strategies.

Regarding the review protocol, the following leading question was adopted: “What are and what do the existing scientific articles discuss, in the Brazilian case, on literacy (initial learning of reading and writing) for blind people”? For the eligibility of these studies for the intended analysis, the following inclusion criteria were previously established: a) the text should be a scientific article and address as its main theme/object the literacy process of blind people only in Brazil, considering congenital, precocious

blindness; or, in the situation of acquired blindness, the subjects would need to be non-“conventionally” literate in childhood or adolescence; b) be available online in full and in Portuguese, in the form of open access, regardless of the indexing base. The exclusion criteria were expressed as follows: a) the text retrieved is not a scientific article, such as reviews, editorials, or annals of events, as well as not primarily addressing the object of review; b) the work is not available in full in open access, nor in Portuguese; c) already be a literature review on the researched topic, as this could lead to biased and unoriginal conclusions; d) address low vision, focus exclusively on people with acquired blindness, except as provided in item a, or, even, not be explicit in these distinctions, generically treating visual impairment; e) repeated works, with the text, in these cases, being told only once.

Under these conditions, on the Capes Journals Portal, searches were carried out from the “Collection/Search subject” menu and then the “advanced search” command was chosen. Immediately, a page was generated in which the query could be delimited based on expressions in Portuguese. So, instead of the usual AND and OR, “AND” and “OR” were used, with each word or search expression being able to appear in “Any field”, if it was exact, that is, located by the command “it is (exact)”. No other resources were used on this page, after entering the query terms, the “search” command was activated. A specific time frame was not delimited, and an attempt was made to cover, through search terms, the main possibilities of semantic combinations for locating scientific works, considering the related terminological variations. As blindness is, in some cases, addressed or indexed as a visual disability, not necessarily differentiated from it, the search terms were organized as follows:

**Chart 1:** Relationship between search terms and the number of results generated

Search terms	Total search results	Results initially debugged by search
Literacy AND blindness	7	2
Literacy AND “visual impairment”	28	4
Literacy AND blind*	0	0
Literacy AND blind	13	4
Literacy OR “reading and writing” AND blindness OR “visual impairment”	8,443, filtered for 2,281 <sup>3</sup>	3

**Source:** author organization.

Upon obtaining the total results for each search term, according to the exposed parameters, initial debugging of their quantities was carried out by reading the titles, abstracts, and keywords of the respective works, or even in full, if there were doubts. Those that deviated from the pre-established criteria were then discarded. Two literature reviews, more or less broad and with focuses close to the scope of this article, were detected. However, due to the exclusion criteria, they were disregarded in the results, although they were mobilized for discussions: Batista, Lopes, and Pinto (2017); Rangel and Victor (2022), none of them indexed in Scielo. Another text (PINTO; BARBOSA, 2022), about blind children's literacy, which articulated a literature review and “simple” didactic suggestions - not applied empirically or supported by any theory - was located in exploratory searches. This article and the magazine that published it; however, were not, at least during the research, indexed on the Capes portal, perhaps because it is still a recent journal, created in 2017, which needs to work on indexing in the databases. Therefore, it was also not treated because of systematic searches.

<sup>3</sup> Given the huge number of results generated with these terms, filters available on the portal were used for prior debugging: only peer-reviewed journals; open access; search only for articles; and in Portuguese.



There was also a repetition of results, as expected, due to the similarity between the search expressions, requiring final debugging. Once this was done, the corpus for analysis was finally obtained, accounting for only 7 national scientific articles, discussed below. They were submitted to the analysis protocol, whose items required the complete reference of each article, verification of whether or not it was indexed in the Scientific Electronic Library Online (SciELO), institutional origin of the authors, thematic objectives of the research, theoretical-epistemological reference<sup>4</sup>, methodological procedures employees, sample scope and basic characteristics of the participants, as well as analysis of the main results, considering possible interfaces between blindness, family and literacy using the Braille system.

## DISCUSSION

It was possible to verify that the selected articles were published between 2007 and 2022, in different journals, without identifying patterns regarding their insertion, frequency, and bibliographic dissemination. Given that only three of them are indexed in SciELO, even more, when 15 years is noted, it is plausible to admit that the citation, circulation, or recovery of this specialized production in research that only considers more prominent bases, journals of greater importance become obfuscated, journals of national prestige and/or that aim at internationalization, as suggested by the presence in the SciELO database. As we know, “In Brazil, SciELO is the main indexer of OA [open access] journals. Recognized for its ability to increase the visibility of articles and give prestige to journals, many editors aim to index their titles on this basis” (PEREIRA; RODRIGUES; SANTOS, 2020, p. 3). Also, the origin of the authors' institutional affiliation was diverse but concentrated in states in the Brazilian Southeast. Among the most renowned journals in the field of Special Education, only one article could be considered, available in the *Revista Brasileira de Educação Especial* (RBEE), contrary to expectations, because, if blindness refers to studies in this area, literacy among blind students was not highlighted in the RBEE, nor was it detected in the *Revista de Educação Especial*, also recognized in this field.

Even in the thematic inventory related to visual impairment – a much broader concept – based on articles published in RBEE, from 1992 to 2017, Neres and Corrêa (2018) did not identify literacy for the blind as an autonomous or frequent topic, corroborating the above. The inexpressiveness of investigations in this regard is also verifiable by the research by Valentini et al. (2019), which, in their systematic review of articles published in national and international journals regarding education (formal and non-formal), also of people with visual impairment in their entire spectrum, in the period 2005 and 2016, they show

[...] the list of the main themes covered, namely, teacher training; interaction between teachers, students with VI [visual impairment], and students without disabilities; assistive technology; guidance and mobility of students with VI; curricular components and activities of daily life at school. (VALENTINI et al, 2019, p. 7).

In journals specialized in language, reading, literacy and/or writing and reading skills - another possible niche for locating the targeted works - no articles were recovered, which indicates the distance from this vast field (MORTATTI, 2011; MORTATTI; FRADE, 2014; MORTATTI;

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<sup>4</sup> By theoretical-epistemological reference, in this text we understand theories, concepts and/or systems of thought duly explained and announced, by the authors of scientific articles, as their analytical tools of the researched reality, with these theories directly implicated in the definition and operationalization of methodological procedures. The list of authors or their sporadic citation, without defined conceptual or epistemological unity, was not considered for this purpose.

OLIVEIRA, PASQUIM, 2014) regarding the thematic focus covered here or, at least, that its interfaces and collaborations with the demands of Special Education are still not noticeable, even in a scenario of increasing school inclusion of blind students. In journals focused on the field of Psychology, covering, above all, objects from school and educational Psychology, two articles were mapped. The largest quantity, three, was identified for journals with a generic focus on the broad area of Education. Also, work was recovered from a journal with a self-designated pluralistic editorial scope, focused on the “[...] field of Social Sciences (Anthropology, Political Science and Sociology), sub-areas and related areas” (FOCO..., 2022, online).

This dispersion regarding journals, a phenomenon also recognized by Valentini et al (2019), although their study was even broader, extends to the temporality of publication, the focus of themes/objectives, the theoretical references, and the respective methodological approaches of the works. Therefore, it was not even feasible to group them by investigative categories. Chart 2 allows a synthetic verification of the above:

Chart 2 – general information about the articles analyzed

Authorship	Journal and its corresponding area of scientific publication	Indexed on Scielo?	Institutional origin of the authors, respectively	Thematic objectives	Theoretical-epistemological reference	Methodological Approach
(RABELLO; MOTTI; GASPARETTO, 2007).	Revista Brasileira de Educação Especial/ Special education	Yes	Centro de Distúrbios da Audição, Linguagem e Visão (CEDALVI), Hospital de Reabilitação de Anomalias Craniofaciais da Universidade de São Paulo (HRAC/ USP); CEDALVI, HRAC/USP; Centro de Estudos e Pesquisas em Reabilitação (CEPRE) da Faculdade de Ciências Médicas da Universidade Estadual de Campinas (UNICAMP).	To check the applicability of the Test IAR (Basic Repertory Assessment Instrument for Literacy- <i>Instrumento de Avaliação do Repertório Básico para a Alfabetização</i> ) in blind children.	Not explained, defined, or announced.	case study focused on the standardized application of the Basic Repertoire for Literacy Assessment Instrument (IAR).
(NICOLAIEWSKY; CORREA, 2009)	Paideia/ Psychology, specifically in the areas of health Psychology, Developmental Psychology, School and Educational Psychology, Social Psychology and Psychological Assessment	Yes	Universidade Federal do Rio de Janeiro; idem	To examine the relationship between cognitive and linguistic skills and the occurrence of unconventional segmentations in Braille textual production.	Not explained, defined, or announced.	Application of standardized tests: subtests of the verbal scale of the Wechsler Intelligence Scale for Children (WISC-III) and School Achievement Test ( <i>TDE-Teste de Desempenho Escolar</i> ). Interviews with blind students; written production, in Braille, of stories created by students.
(LIMA; COSTA; KLEBIS, 2013)	Colloquium Humanarum/Education	No	UNOESTE; Universidade Federal da Grande Dourados; Unoeste	To outline a brief overview of the literacy process of blind children throughout history; To present the use of the braille system as an important literacy tool for blind children; To highlight the need for teacher training and training to teach literacy using the Braille alphabetic system.	Not explained, defined, or announced	Qualitative, Exploratory, and documentary/bibliographic.



(DIONÍSIO; VECTORE, 2017)	(journal) <i>Psicologia Escolar e Educacional/ School and Educational Psychology</i>	Yes	Universidade Federal de Uberlândia; idem	To build and evaluate a mediational intervention proposal with blind preschool children.	Vygotsky's concepts on defectology and the approach related to the Mediated Learning Experience (EAM- <i>Experiência da Aprendizagem Mediada</i> ), developed by Feuerstein.	Qualitative approach research, with participant observation in the classroom, semi-structured interviews with blind children, their teacher, and mothers, as well as pedagogical intervention in the format of workshops.
(CANEJO, 2018)	<i>Revista Espaço Acadêmico/ Pluralist in the field of human and social sciences</i>	No	Divisão de Diversidade e Inclusão Educacional da Fundação de Apoio à Escola Técnica do Estado do Rio de Janeiro; Universidade Veiga de Almeida (UVA) e Universidade da Gama e Souza.	To discuss the current Special Education model, more specifically, literacy and learning for blind students.	Not explained, defined, or announced	Not explained, defined, or announced
ALVARISTO et al. (2021)	<i>Revista Inter-Ação/Education</i>	No	Universidade Estadual do Centro-Oeste; Universidade do Oeste Paulista; Centro Universitário UniGuairacá; Universidade Estadual do Centro-Oeste	To analyze the contributions of Paulo Freire's method to the literacy of blind adults.	Thoughts of Paulo Freire	A qualitative approach, through a case study, field diary records, and photographic records. Pedagogical intervention activities with blind adults, according to Paulo Freire's method.
CAMARGO; AMARAL; MONTEIRO (2022)	<i>Horizontes/Education</i>	No	Universidade Federal de São Paulo; Universidade Estadual de Campinas; Universidade Federal de São Paulo	To analyze the education/literacy of a blind child during the Covid-19 pandemic.	Evidence paradigm (Ginzburg) and enunciative-discursive perspective (Bakhtin)	Collection, transcription, and analysis of a thematic report sent by a specialized teacher, via WhatsApp, to researchers.

**Source:** Author organization, based on article data.

When analyzed, although they recognize that there are no substantial differences between the ways of learning, development, and literacy of people with and without blindness, except for the demand, in the case of the latter, for unique materials, conditions, and mediations, including the use of the braille system for reading and writing, such articles do not allow the construction of generalizations or robust evidence regarding perspectives for literacy for the blind. This occurs because, as shown in Chart 2, at least two of the 7 studies have an eminently theoretical treatment of the data (CANEJO, 2018; LIMA; COSTA; KLEBIS, 2013), announcing very broad objectives that could not be effectively fulfilled within the limits of the text and/or that would require indicators for validation. Such theoretical productions did not innovate in discussions about methods, pedagogical approaches, analysis of the interaction between common and specialized teaching spaces, teaching resources, teacher training, or theoretical-methodological references for the literacy of blind people, nor about the history of these processes.

Canejo's text (2018, p. 38) even assumes essayistic propositions, based on the experiences of her “[...] professional pedagogical practice, [...] [as] a specialist teacher in the area of visual impairment with experience in the resource room [...]”. The author, however, does not support other empirical or bibliographical data, restricting herself to her professional experiences and concerns. For her, the contribution by Lima, Costa, and Klebis (2013) appears not to have been originally produced as an article, but rather as work for presentation at a scientific event, the proceedings of which were published as a special issue of the journal *Colloquium Humanarum*. It was research in the initial phase, as the authors mention that “The complete research will be carried out in two distinct stages: documentary/bibliographic and field. However, in this work, [2013] only the data will be presented [sic] referring to the first stage: documentary/bibliographical research”. The possible continuity of the study, in article format, was not recovered.

Furthermore, the theoretical-epistemological references are not always explicit, making it difficult to advance discussions based on the interfaces between the fields of literacy and Special Education/blindness, as well as their developments and the scientific legitimization of the issues raised here. A symptom of scientific fragility, the absence of this information - essential for understanding the contingencies involved in the generation and processing of data, with the due manifestation of the epistemological and axiological options assumed by the research - has been frequent in academic literature, including visual impairment/blindness (BATISTA; LOPES; PINTO, 2017; VALENTINI et al., 2019). It is necessary to go beyond pragmatism and mobilize new and promising theoretical perspectives in this thematic domain. In this regard, literacy studies, already consolidated in Brazil, can, among others, bring interesting alternatives.

From a methodological point of view, only one study failed to mention this. Even so, given that not all texts had a declared theoretical-epistemological reference, or because they dealt with it instrumentally, there was, in general, a restriction of the meaning of method or methodological approach to the presentation of formal procedures, instruments, sampling, and data collection techniques, in a pragmatic sense (MAGALHÃES; SOUZA, 2012). Thus, it is possible to observe in the selected articles “[...] the influence of the North American empirical conception on the identification that authors establish between research method and techniques, or types of research” (MAGALHÃES; SOUZA, 2012, p. 685). There is a need for greater analytical consolidation between theory and empirics. As has been recurrent in the educational field and related areas, there was a prevalence of a qualitative approach in formulating and dealing with the object. Such information, although smaller in scope, again evokes the

findings of Valenti et al. (2019). The authors (2019, p. 16) claim that “well-defined characteristics are perceived [in studies that address visual impairment], such as a greater number of qualitative research and a reduced number of participants”.

Only Rabello, Motti, and Gasparetto (2007) and Nicolaiewsky and Correa (2009) presented quantitative data and correlations in their analyses, especially because they adopted standardized tests in their empirical investigation, which could, in theory, place them in a flexible quantitative and qualitative spectrum. The authors, however, did not explicitly adopt this designation or any similar one. Similarly, Camargo, Amaral, and Monteiro (2022) did not use the expression qualitative approach or research, but this is noticeable in the conduct of the study, supported by theoretical-methodological principles of the evidentiary paradigm and the enunciative-discursive perspective, respectively attributed to theorists Ginzburg and Bakhtin. It should also be noted that, among the production and data collection procedures for analysis, there were case studies, workshops, pedagogical interventions with children, application of psycho-pedagogical tests, interviews and observations, photographic records, notes in field diaries, in addition to the usual bibliographic and documentary research. Therefore, no significant innovations were found in this area.

Regarding the sampling aspect, these same data were limited and reduced, mainly because they were generated with an unrepresentative number of participants – as found by Valenti et al. (2019). Under these conditions, for example, comparisons and generalizations between the different situations experienced in literacy by blind participants, whose main characteristics were also inventoried in this review, are unfeasible. In the case of Rabello, Motti, and Gasparetto (2007, p. 284), “A case study was carried out on three blind children, aged eight years old, treated at the Center for Hearing, Language and Vision Disorders (CEDALVI-*Centro de Distúrbios da Audição, Linguagem e Visão*), at the Hospital of Rehabilitation of Craniofacial Anomalies (HRAC) at USP, Bauru Campus, SP.” The authors clarify that

The three children attended regular education, two of which were enrolled in first grade and one in preschool. They attended a resource room and a qualification program where activities of daily living, orientation mobility, and literacy in the Braille system were developed. (RABELLO; MOTTI; GASPARETTO, 2007, p. 284, emphasis added).

Regarding blindness, “[...] the children were evaluated in an ophthalmological service, the diagnoses found were retinopathy of prematurity in two children and congenital cataracts in one of them” (RABELLO; MOTTI; GASPARETTO, 2007, p. 284). Under such circumstances, the researchers consider that:

The results of this study are limited to the children evaluated, indicating paths for a broader study that allows generalizations. It is also important to mention that the assessment enabled to identify a situation in a certain period and must be systematically redone with the same individuals so that the approach to the teaching relationship is dynamic and follows the needs and interests of these children (RABELLO; MOTTI; GASPARETTO, 2007, p. 289).

The number of participants was more significant in the work of Nicolaiewsky and Correa (2009). According to the authors (2009, p. 343), “21 blind students enrolled in the first, second and third years of elementary school at an educational institution specializing in visual impairment participated in this research, seven participants from the first grade, six from the second and eight of the third grade”. This institution and its geographic location were not revealed. Regarding the age group, the authors report that “The average age of the first-grade participants was 10 years and 11 months. The average age of the second grade was 11 years and 11 months and the average age of the third grade was 12 years and 6

months” (NICOLAIEWSKY; CORREA, 2009, p. 344). Possible causes or peculiarities of blindness were not mentioned, except that, as the research addressed “[...] the braille system, the selected participants are all children and young people considered pedagogically blind” (NICOLAIEWSKY; CORREA, 2009, p. 344), that is, they were users of this system and its instruments for tactile reading and writing. Even having considered a more diverse and broader audience, the authors, after explaining their results - summarized below - make the reservation that:

Given the small sample size, it is not possible to generalize these results to all blind children in their first grade, nor to state that peculiar characteristics of this language representational system [braille] are the cause of the greatest initial difficulty in segmenting conventionally the texts [in the writing process] (NICOLAIEWSKY; CORREA, 2009, p. 346).

Dionísio and Vectore (2017, p. 552), in addition to mothers and a teacher, considered four blind children, aged six to seven, enrolled in “[...] an Early Childhood Education room at a Special Education School in Uberaba, Minas Gerais. This need was due to the low performance of children in reading and writing Braille. This performance was confirmed based on the observations made”. In the case of children, the researchers characterize it as follows: a) “[...] a 6-year-old boy with Norrie disease, which causes bilateral visual loss (without light perception). However, there is visual residue that must be stimulated but he is not in a position to be literate in ink [...]”; b) “[...] a 6-year-old girl, does not have a medical report regarding the pathology and the reason for the loss of vision but uses a prosthesis (glass eye) in both eyes and will be a user of the Braille Reading and Writing System”; c) “[...] a girl, 6 years old and completely blind due to diabetic retinopathy associated with a defect in the optic pathways. It has no visual residue. She will be a user of the Braille Reading and Writing System”; d) “[...] a 7-year-old boy with congenital Glaucoma. He underwent surgery in the 1st and 3rd weeks of life. He has a light perception in his right eye, but not in his left one. [...]. He is blind and will be a user of the Braille reading and writing system” (DIONÍSIO; VECTORE, 2017, p. 553).

The article by Alvaristo et al. (2021, p.1119), developed “[...] in a Special Education school in the area of visual impairment, located in a city in the Midwest region of the state of Paraná [...]”, “[...] brings as participants two blind adults, both males, one aged 61 and the other aged 63 [...]. Both lost their vision due to diabetes.” Until then, they had not been literate and started the process using the Braille system. Finally, Camargo; Amaral, and Monteiro (2022, p. 6) worked, in their article, indirectly with the case of a blind child enrolled, at the time, in the third grade of elementary school. The researchers were based on “[...] the specialized teacher’s report on the education and literacy process of Eliana [fictitious name of the blind student] in the context of emergency remote teaching as a result of the Covid-19 pandemic”. It is important to highlight that this article was part of a doctoral research, through which the girl's trajectory had been followed for a longer time in the state of São Paulo, as can be seen from the text. Probably, for this reason, more detailed information about the child and his blindness is not presented, only that “[...] he was initially enrolled in a regular private school and attended, since he was 7 months old, a specialized institution” (CAMARGO; AMARAL; MONTEIRO, 2022, p. 5).

When mentioned, the research locations are in the Southeast (three occurrences) and South (one occurrence). The configuration of participants is, directly or indirectly, made up of children or pre-adolescents, given the literacy cycle that affects this age group. The exception was the work of Alvaristo et al., whose contribution is unique. In this case, the authors reiterate the scarcity of research on literacy and blindness, even more so when the target audience is adults. According to his scientific searches on

“[...] literacy of blind adults, based on Freire, Scielo and the Capes Theses Bank, no research was found that addressed the literacy of this people, especially through this intended path” (ALVARISTO et al., 2021, p. 1115).

Once these more general aspects of the studies have been discussed, their methodological guidelines, characteristics of the participants, and indications of some of their limits, it is necessary to verify, in a synthetic way, based on their themes/objectives, glimpsed in Chart 2, which main results the articles arrived. To this end, some indicative excerpts were collected from the studies, as follows:

**Chart 3:** Synopsis of article results

Authorship	Main results
(RABELLO; MOTTI; GASPARETTO, 2007).	“The application of the adapted IAR presented no difficulties and showed that visual impairment did not interfere in the assessment of the prerequisites for literacy, as it was found that the difficulties presented were conceptual” (p. 289).
(NICOLAIEWSKY; CORREA, 2009)	“The occurrence of hypopigmentation (joining two or more words) and hyperpigmentation (undue space inserted in a word) in the written production of stories was investigated. There was a predominance of hypopigmentation. Participants who presented a greater amount of hypopigmentation in their writing had lower performance in tasks related to verbal ability, working memory <sup>5</sup> , morphological awareness, and reading. In contrast, those who committed fewer transgressions performed better on these tasks. The development of pedagogical practices that focus on cognitive and linguistic skills would facilitate the acquisition of written language in Braille” (p. 341).
(LIMA; COSTA; KLEBIS, 2013)	In addition to presenting a “[...] brief historical line on how people with disabilities were seen and treated throughout the history of humanity” (p. 1116), “The study demonstrated that the braille system is the most suitable method for the literacy of blind children. However, education professionals must be trained, as well as using different teaching strategies [...]” (1114).
(DIONÍSIO; VECTORE, 2017)	The mediational workshops “[...] collaborated in the creation of mental maps, allowed them to acquire vocabulary and, based on these acquisitions, develop reading and writing skills. Although there are criticisms regarding repetition, the blind child depends on it, not an automatic repetition but a sequence of meaningful activities, with intentionality so that the child can have time to process the information and learn” (p .558). However, “[...] due to time limitations, inherent to the research, it was not possible to verify profound changes in the children's reading and writing process, but it pointed to a possible path, which is the systematization of work with the Braille system. Therefore, it is important that the proposal is expanded and better researched, and it is desirable to establish teacher training that encompasses aspects inherent to the planning and development of meaningful activities for children, as well as guidance for families” (p. 559).
(CANEJO, 2018)	“Literacy is a complex and dynamic process that involves many factors. Therefore, the educator needs to understand ‘how the process of constructing knowledge occurs through non-visual experience and create adequate conditions for access to pedagogical content’. For these proposed conditions to materialize, we propose the return of special classes for blind children within regular schools, only for the literacy process” (p. 40).
ALVARISTO <i>et al.</i> (2021)	“The results reveal that the use of this method [by Paulo Freire] contributed to the literacy process of blind participants, in writing and reading the Braille code, as well as in the process of their awareness, enabling them to understand in social, historical and political contexts for discoveries and readings of the world” (p.1114).
CAMARGO; AMARAL; MONTEIRO (2022)	During the period of emergency remote teaching, in the case of literacy/education for blind children, the “[...] leading role assumed by the [specialized] institution in mobilizing actions that favored Eliana’s ties with the school and school content” (p. 15). In this way, “[...] the institution plays an important role in promoting and maintaining dialogue between schools and families during the pandemic. This space, assumed in the teacher's speech, in many moments, through the use of verbs in the first-person singular, stands as a primary agent of articulation between and among the other actors involved in the child's education. In addition to providing a support service, [...] it is responsible for the child’s education [...]” (p. 15). “[...] other educational dimensions assumed by the institution were also noticed. This is because the interviewee reports the guidelines given regarding personal care during the pandemic, which shows that the educational process in this context goes beyond school content” (p. 16).

<sup>5</sup> According to Mota (2000, p. 20), “Working Memory refers to a system for the temporary maintenance of information during the performance of a range of cognitive tasks, such as: problem solving, understanding, learning in general, and not only related to memorization.”



**Source:** Selected articles, organized by the author.

The analysis of this set of results indicates that none of the studies focused properly on inclusive teaching, which distances them from the common classroom and its demands in the context of Special Education from the perspective of school inclusion of people with disabilities - including those with blindness (BEZERRA, 2017; BRASIL, 2008). Therefore, there was also no focus on type II multifunctional resource rooms, which were implemented to address the specificities of students with visual impairments enrolled in regular schools (BRASIL, 2010). In the articles, only spaces-times of specialized institutions were taken as an investigative scenario, from which the implicated subjects were positioned, including the defense of special classes, in the case of Canejo (2018). Even in the article by Camargo, Amaral, and Monteiro (20022), whose target child was enrolled in a regular school and relationships with inclusive education were addressed, the discussion did not aim at the classroom or the Specialized Educational Assistance service (*AEE-Atendimento Educacional Especializado*) attended by the student in the regular school, but rather the actions triggered by a certain specialized institution during the pandemic period, which became preponderant in the child's literacy process.

However, this should not lead to a mistaken idea that there are no blind students who continue to demand literacy and progression in their studies, enrolled in basic education in Brazilian common schools. To give an idea, in research on the profile of students with visual impairment throughout basic education, according to indications from the school census promoted by the National Institute of Educational Studies and Research Anísio Teixeira (*INEP-Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira*), between the years 2008 to 2015, Silva Júnior, Brandolin and Silva (2020, p. 45) report that “Around 51 million new registrations [total] were carried out in Brazil between 2008 and 2015, of which 13.2% (53,760/406,073), 11.4% (46,319/406,073) and 1.8% (7,441/406,073)<sup>6</sup> correspond to students with VI [visual impairment], LV [low vision] and blind, respectively”. However, it is not intended here to present quantitative indices or defined statistics on the literacy of blind children in elementary school, especially because it is imperative to carry out new studies in this regard, through cross-analysis, updated and comparative, for example, between census data school and the Brazilian Institute of Geography and Statistics (*IBGE-Instituto Brasileiro de Geografia e Estatística*). This is because the population census does not address the information explicitly. As Batista, Lopes, and Pinto (2017, p. 187) quote, “[...] unfortunately, during the research, no statistical data was found on the literacy of blind children in Brazil. Those that are found concern a large class called “Visual Impaired”, but not blindness specifically”. In these terms, the National Health Survey, with data from 2019, revealed that, in the age group of 6 to 14 years, there were at least 222 thousand people with visual impairment attending school in the country, and of this total, 92 thousand were students aged 6 to 10, which would, in theory, comprise the literacy cycle (IBGE, 2019).

Thus, it is possible to conjecture that, due to the specificities of the theme and the Braille system, it is not always (sufficiently) dominated by researchers or even specialized AEE teachers, even less so by literacy teachers in common classes (BATISTA, 2018; BATISTA; AMARAL; MONTEIRO, 2018; BATISTA; LOPES; PINTO, 2017; CAMARGO; AMARAL; MONTEIRO, 2022; RANGEL; VICTOR, 2022; SILVA, 2018; VALENTINI et al., 2019), this research object, its repercussions on school inclusion and didactic work with Braille in common schools remain neglected and/or invisible. A

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<sup>6</sup> The amount 406,073 refers to the sum of the historical series (2008 to 2015) of enrollments of all students with a disability.



situation that becomes worrying, as blind students exist, arrive at schools and, *a fortiori*, lack pedagogical support in the initial process of appropriating reading and writing. We need to note that

In a technical note recently released by the organization *Todos pela Educação*<sup>7</sup>, the already observable impacts of the Covid-19 pandemic on the literacy of school-age children are highlighted. Based on data from the Continuous National Household Sample Survey (In a technical note recently released by the organization), from 2012 to 2021, there was a 66.3% increase in the number of children aged 6 to 7 who, according to those responsible, did not know how to read and write, which corresponds to 2.4 million, or, in relative terms, a percentage of 40.8% of children in this age group. [...].

There is no mention of the group of students with disabilities in the note. However, based on the studies above, which highlight the compromises in the education of children with disabilities, it is possible to estimate more intense effects on the appropriation of reading and writing by blind students. (CAMARGO, AMARAL; MONTEIRO, 2022, p. 4).

Nesse sentido – e como agravamento da situação - a literatura tem mostrado que “A formação para o ensino do braille no Brasil é bastante precária e é muito difícil encontrar professores com domínio dessa escrita e com conhecimento de métodos de ensino que garantam a alfabetização nos primeiros anos de escolarização” (BATISTA, 2018, p. 48-49). Vinculado a isso, permanece atual o alerta sobre a “[...] escassez de pesquisas brasileiras que retratem a aquisição da língua escrita em braille [...]” (NICOLAIEWSKY; CORREA, 2009, p. 346), com o conseqüente apelo pela “[...] elaboração de novas pesquisas que busquem examinar questões relativas ao aprendizado da leitura e da escrita em braille” (NICOLAIEWSKY; CORREA, 2009, p. 346). Pinto e Barbosa (2022, p. 167) realizaram “[...] uma busca de artigos sobre aquisição de escrita por crianças cegas no período de 2009 a 2021 utilizando como descritores: ‘deficiência visual’ e ‘escrita’”. As autoras, mesmo introduzindo variações nos termos de busca, não lograram êxito no Portal de Periódicos Capes e, na base Scielo, puderam selecionar, conforme seus critérios, apenas dois trabalhos de 11 recuperados. Ambos também constam como achados deste estudo (NICOLAIEWSKY; CORREA, 2009; DIONÍSIO; VECTORE; 2017). Em poucas palavras, segundo concluem Pinto e Barbosa (2022, p. 172), “[...] esta é uma temática pouco discutida”.

In this sense - and as a worsening of the situation - the literature has shown that “Training for teaching Braille in Brazil is quite precarious and it is very difficult to find teachers with mastery of this writing and with knowledge of teaching methods that guarantee literacy in the first years of schooling” (BATISTA, 2018, p. 48-49). Linked to this, the warning about the “[...] scarcity of Brazilian research that portrays the acquisition of the written language in Braille [...]” (NICOLAIEWSKY; CORREA, 2009, p. 346) remains current, with the consequent call for “[...] the development of new research that seeks to examine issues related to learning to read and write in Braille” (NICOLAIEWSKY; CORREA, 2009, p. 346). Pinto and Barbosa (2022, p. 167) carried out “[...] a search for articles on the acquisition of writing by blind children from 2009 to 2021 using the following descriptors: ‘visual impairment’ and ‘writing’”. The authors, even introducing variations in the search terms, were not successful in the Capes Periodicals Portal and, in the Scielo database, were able to select, according to their criteria, only two works out of 11 retrieved. Both are also included in the findings of this study (NICOLAIEWSKY; CORREA, 2009; DIONÍSIO; VECTORE; 2017). In a nutshell, as Pinto and Barbosa (2022, p. 172) conclude, “[...] this is a topic that is rarely discussed”.

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<sup>7</sup>The authors mention this document: *TODOS PELA EDUCAÇÃO*. Technical note: impacts of the pandemic on children’s literacy. 2022.

On the other hand, these results, if scarce, also indicate a bias in scientific production, that is, the little socialization, in national scientific journals, of research on school inclusion of blind people, especially during the initial years of elementary school, when they are basic reading, writing, and calculation skills will be worked on. A recent review study - although without differentiating between blindness and low vision in its search terms - demonstrated that research on the topic or related to it, with more significant numerical occurrences, circulates, above all, in the form of theses and dissertations, something perceived by reading of some articles included in this review. Thus, Rangel and Victor (2022, p. 75), using their own and broader search and analysis criteria, with a pre-defined time frame for the period from 1987 to 2018, developed research on “[...] production Brazilian scientific research concerning the knowledge produced about the development of written language in children with visual impairments, originating from theses and dissertations present in the Capes Catalog of Theses and Dissertations [...]”. These researchers filtered 46 academic productions related to the topic, under the following conditions:

Twenty-nine of the 46 studies were dedicated to blindness; three to low vision; 11 to blindness and low vision. Of the other research, one was dedicated to the Braille System; one to technological artifacts aimed at people with VI [visual impairment], but with an emphasis on artifacts developed for blind people, and one did not define its participants but investigated reading performance in the BS [braille system]. (RANGEL; VICTOR, 2022, p. 81).

A more detailed search for these works will be necessary at another time. Regarding the braille system, the articles were convergent in defending it as the most convenient and fruitful means for inserting blind children into the literate culture and should be presented, in varied educational and social situations, as early as possible, to read and write, mainly with the support and participation of the family. As an example, Dionísio and Vectore (2017, p. 557) argue that “[...] learning to read and write in the Braille system should not begin when the child goes to school, but rather from the time of diagnosis, in the case of babies and sensory and visual stimulation”. After all, if “[...] the sighted child, from birth, is exposed to written texts in different ways and different places, the blind child, except in some cases, has contact with Braille only during the literacy phase” (DIONÍSIO; VECTORE, 2017, p. 557). Especially in childhood, “The inclusion of blind children in regular schools must be treated as a process, in which parents and family members involved in the home environment gradually become partners in the school environment” (RABELLO; MOTTI; GASPARETTO, 2007, p. 283). Similar support, however, is more cited than researched, something was also detected by Valentini et al (2019, p. 10), according to which “Family members and colleagues tend to be little involved in research [on education and visual impairment], which reveals research potential to be better explored.”

Of all the articles, only Dionísio and Vectore (2017) interviewed the mothers of blind children and analyzed this data, claiming that more educational guidance needs to be extended to this audience. On the other hand, this mention or emphasis on family participation did not even occur in the works of Nicolaiewsky and Correa (2009) and Canejo (2018). Alvaristo et al. (2021) also did not report on the mediation of the family context in literacy. It is necessary to bear in mind that the study participants were blind adults, with another specificity. Camargo, Amaral, and Monteiro (2022), cite open interviews with family members for the research that gave rise to the article and bring specific elements about the tensions experienced during the height of the pandemic period regarding family relationships - common school - specialized institutions, did not make these procedures and information the scope of the article, centered on the teacher, as described.

In general, the articles did not mention a trend that, capable of having a great impact on the initial learning of reading and writing in Braille, has been detected by some scholars of visual impairment/blindness, namely, de-Braille. This, due to the advancement of digital information and communication technologies, is understood as “[...] underuse, or even, in certain cases, replacement of Braille by other tools [...]” (BATISTA, 2018, p. 48) in the education of the blind, which “[...] prevents the creation of conditions for their literacy and limits the formation of psychic functions, considering that writing involves abstraction and complex processes” (BATISTA, 2018, p. 7). Only the text by Camargo, Amaral and Monteiro (2022) barely raised this issue as one of the challenges inherent to the education of blind students. This corroborates the findings of Batista, Lopes, and Pinto (2017, p. 187), whose academic review study, triggered by summaries from Google and Google Scholar, in the earliest period from 2002 to 2015, having as its theme the process of literacy in Braille, the literacy of blind people and the trends of de-brailization, revealed that “[...] current discussions about de-brailization were not a concern in the studies researched, as they are not even mentioned”.

However, the trend begins to emerge, as a central object or as a secondary discussion, in theses and dissertations in recent years, as presented by Rangel and Victor (2022). It is expected that, with the intensification of digital means of reading and writing, as well as the constant Brazilian demands and inequalities surrounding literacy and its dilemmas, more scientific publications will be disseminated in this regard, with the due caution that the subject requires. It is understood, therefore, that “[...] Braille learning needs to have its place guaranteed in schools, especially in the literacy process, as, in this way, interspersed with new technologies, there is a complementation of both” (BATISTA; LOPES; PINTO, 2017, p. 188). Furthermore, there were no exhaustive arguments proposing one method or another, among those already known and practiced in general education (FRADE, 2007), to teach blind people to read and write. Some hypotheses or specific comments were made about this, which becomes relevant to the issue raised here, and deserving of future analysis. In these terms, in addition to considering the relevance of sensory and linguistic stimulation, if it is contextualized, strategic, and culturally significant, the synthetic method, in its phonetic modality, was twice remembered in the Braille literacy dynamics. Perhaps because it is the “[...] braille system, a tactile system for representing the language, which has some particularities, such as the impossibility of reading words globally [...]” (NICOLAIEWSKY; CORREA, 2009, p. 343). According to Frade (2007, p. 22, emphasis in the original),

**Synthetic methods** follow the march that goes from the parts to the whole. In the history of synthetic methods, we have the choice of different organizational principles that favor the decoration of graphic signs and phonographic correspondences. This trend includes the *alphabetic method* that takes the letter as its unit; the *phonic method* that takes the phoneme as its unit and the *syllabic method* that takes as its unit a more easily pronounceable phonological segment, which is the syllable.

In this sense, Lima, Costa and Klebis (2013, p. 1119) claimed that, in general, “[...] during this specific literacy process, the synthetic method, also called phonetic, is the most applied. This is because it enables an intimate relationship between the written symbol and its oral representation. However, this is not decisive [...]”. Camargo, Amaral, and Monteiro (2022, p. 13), when discussing literacy for blind children, reported that:

The adoption of the phonic method for literate teaching blind students is based on the idea that to decipher the Braille System, the child needs to learn the code of dots corresponding to speech sounds. According to the Basic Education Human Resources Training Program: visual

impairment (*Programa de Capacitação de Recursos Humanos do Ensino Fundamental: deficiência visual*), material published by the extinct Secretariat of Special Education of the Ministry of Education, considering the particularities of the Braille System, the phonetic or synthetic method is considered “the easiest and fastest for the literacy of blind children.” (BRUNO; MOTA, 2001, p. 58)<sup>8</sup>. However, the document warns that “deciphering the Braille System is a decoding of a perceptual-tactile nature and does not guarantee, (sic) conceptual learning and interpretation necessary for the reading process.” (BRUNO; MOTA, 2001, p. 58).

The article by Alvaristo et al. (2021) defended, as an emancipatory possibility, Paulo Freire's method for blind adults' literacy, considering the political-pedagogical principles of the famous educator. In other words, “Paulo Freire’s method proposes teaching and learning to read and write, to consider history, work, culture and education for man, as a practice of freedom” (ALVARISTO et al., 2021, p. 115). Although not detected in this review, there is news of other research that reports on the advantages of the analytical method, as it allows “[...] the blind children to have a notion of what writing is like through different words that have a meaning for them, enabling them to grasp the written code naturally, just like sighted people [...]” (PINTO; BARBOSA, 2002, p. 174), whose experience with writing has been going on since before formal education. For advocates of this aspect, “[...] blind children can assimilate writing more quickly, as it allows tactile memory of the written code before learning each letter [...]” (PINTO; BARBOSA, 2002, p. 174).

Regarding the analysis of writing in the initial phase, Nicolaiewsky and Correa (2009, p. 346), despite recognizing “[...] similarity between the factors related to the process of acquisition of written language by visually normal and blind children, except for the influence of working memory [...]”, provide data that, although lacking in depth, suggest “[...] a higher number of hypopigmentation in the writing of blind children in the first year”. According to the authors, it is likely that:

[...] this fact is due both to less exposure of the blind child to Braille texts and to the possibility that the perception of Braille spaces is not as clear as it is for visually normal people, who obtain a more global perception of the words and their demarcations. (NICOLAIEWSKY; CORREA, 2009, p. 346).

It must also be considered that, for blind children, in the earliest stages of literacy, working memory “[...] seems to have a more significant role in the development of lexical segmentation in Braille, possibly due to greater cognitive processing necessary when using this written representation system” (NICOLAIEWSKY; CORREA, 2009, p. 346). Thus, it is expected, that “[...] because it is a tactile system, there is a greater demand for cognitive processing during reading than what happens regularly in the conventional writing system” (NICOLAIEWSKY; CORREA, 2009, p. 345-346). Under such contingencies, unintentional errors by the literacy student cannot be ruled out, which can lead, given the writing using combinations of six tactile points of Braille, to the transformation of one letter into another and, consequently, to mistakes. Due to their relevance, these “facets of literacy” through Braille require new, extensive, and comparative research. As Nicolaiewsky and Correa (2009, p. 343) explain,

These characteristics give greater complexity to this system in the printed system, since, due to the similarity between the letters, learning the language written in Braille demands a refined development of fine motor coordination and spatial orientation. [...].

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<sup>8</sup> The authors of the article refer, in this excerpt, to a publication in visual impairment, sponsored by the Brazilian Ministry of Education, namely: BRUNO, M. M. G.; MOTA, M. G. B. da. Elementary School Human Resources Training Program: visual impairment (*Programa de Capacitação de Recursos Humanos do Ensino Fundamental: deficiência visual*). Vol. 2. Issue IV. Brasília, DF: Secretariat of Special Education/Ministry of Education, 2001.

Standardization in the location of Braille dots and cells, fundamental for reading comprehension, is guaranteed by the instruments used in writing. Such standardization prevents, however, the correction of errors related to lexical segmentation when reviewing the text as it is not possible to insert or remove spaces. For this reason, it is of fundamental importance that conventional word segmentation is carried out when the text is first written.

The other articles did not mention specific literacy methods or other propositions around practices that relate the specificities of the braille system with possible hypotheses, “errors”, modes of lexical segmentation, and/or knowledge mobilized by blind children to read and write in initial stages. Therefore, the theme remains open, lacking theoretical-epistemological, empirical, and didactic deepening, especially when aiming for an inclusive school and advancing technological possibilities, which, far from replacing Braille, can be a powerful ally. Ignoring this appeal is producing or worsening inequalities regarding the education of blind people, because if related research shows that “[...] there is a consensus on the importance of the inclusion and learning of blind students in school [...]” (BATISTA; LOPES; PINTO, 2017, p. 187), how “[...] the literacy of these subjects has been carried out nor how Braille is used and/or its consequences in the academic development of these subjects” (BATISTA; LOPES; PINTO, 2017, p. 187). Along this path, specialized and periodic scientific production needs to advance in the country, without disregarding, from now on, dialogue with international debates on the subject.

## FINAL CONSIDERATIONS

In this text, only scientific articles, indexed in national journals, on literacy for blind people were inventoried, with no intention, as is appropriate to assert, of promoting any value judgments or discrediting the selected material, although every analysis has limits, subjectivities, arbitrariness and is susceptible to the risk of schematic simplifications. Precisely as a way of minimizing the above, this inventory occurred from a systematic search on the Capes Periodicals Portal, which, as described, returned few results (n=7). This means both the continued scarcity of scientific production on the subject, as already detected in similar studies, and a certain predominance of this production being distributed to the more restricted universe of theses and dissertations, according to the evidence presented. This fact limits the communication and periodic repercussions of the studies carried out, in addition to producing some biases in scientific assessments. Thus, new review studies can be carried out, including, with the criteria announced here, master's and doctoral research in Education and related areas, which should provide an even more complete and accurate panorama, as taken as an investigative object blindness in the strict sense, well defined in visual impairment, as the literature reviews found tend not to make this distinction. International work on literacy and blindness also needs to be reviewed. As an investigative possibility, historical research on the topic has clear room for development. From an empirical point of view, research on literacy among blind children also seems very concentrated in the Southeast-South axis, so it would be beneficial for interested scholars, from other regions of the country, to invest more in this issue in their localities and institutions there, as appropriate.

In these circumstances, it is worth considering that the space-time of the common class is not preponderant in the targeted journal production, perhaps because, as discussed here, Braille, as the main means of reading and writing, continues to be taught or prioritized in specialized institutions, where there are traditionally professionals trained to teach it. There were, for example, no studies addressing



blind students and the work of the literacy teacher in the school/common class, nor even of the AEE teachers, or on teacher training and/or for the literacy training of blind people. Thus, there are more questions than answers: What role/place has braille occupied in common classes and schools in terms of school inclusion? How do literacy teachers and/or specialists relate to this system in the initial process of reading and writing for blind children? How have digital technologies been related to braille in the context of literacy? (How) Do multifunctional resource rooms work with braille? Why do specialized institutions, apparently, still maintain prominence in this work? Does this emphasis persist when analyzing theses and dissertations or expanding the investigative focus? How is or how to promote the participation of colleagues and family in blind children's literacy? Who, after all, are these blind children in the country and what are their characteristics? Have the different origins, temporalities, and manifestations of blindness impacted reading and writing in any way? Thinking about such questions can lead to qualitative research in different regions of Brazil. Together with such research, it is necessary to organize and disseminate frequent and specific statistical data that also give more visibility to blind people and their literacy, and not just to the more generic category of visual impairment. This means promoting new and broad articulations between the field of policies, research, theories, training, and practices in literacy/reading and writing skills and that of Special Education/blindness. This article is a small step in this direction, and new contributions are expected to provide perspective on the path.

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## **DECLARATION OF CONFLICT OF INTEREST**

The author declare that there is no conflict of interest with this article.