RCMOS – Multidisciplinary Scientific Journal O Saber.
ISSN: 2675-9128. Sao Paulo-SP.
**Year IV, v.1, n.1, Jan./Jul. 2024. | submission: 03/31/2024 | accepted: 04/02/2024 | publication: 04/04/2024**

# TEACHING STRATEGIES ADAPTED FOR STUDENTS WITH LOW VISION

**Luiz Eduardo de Oliveira Neves** https://lattes.cnpq.br/7548913058112196 https://orcid.org/0000-0003-4932-9897 Email: luizeduardoneves@id.uff.br

**Géssica dos Santos da Silva** http://lattes.cnpq.br/5161033956275845 Email: gsksantossilva@gmail.com

**Luzia Cecilia da Silva Cunha** http://lattes.cnpq.br/3907280337925459 https://orcid.org/0009-0008-5244-1007 Email: luziaceciliasilva@gmail.com

**Marineuza Mendes Moreira** http://lattes.cnpq.br/6403262505827192 Email: marineuzamendes@gmail.com

**Rudimaria dos Santos**
https://lattes.cnpq.br/8122085557231630
https://orcid.org/0000-0001-5392-9073
Email: rudimaria.santos@unemat.br

**SUMMARY**

This literature review addressed the challenge of implementing teaching strategies adapted for students with low vision, aiming to promote inclusive and effective education. The general objective was to explore and analyze pedagogical strategies, assistive technologies and curricular adaptations that facilitate the learning of these students. The methodology adopted consisted of a literature review, involving the analysis of relevant documents and studies on the topic. The results highlighted the importance of specific teacher training, the implementation of assistive technologies such as augmented reality and Soroban, and the need for curricular adaptations to meet the individual needs of students. The analysis indicated that, although there are significant advances in inclusion policies and assistive technologies, challenges such as teacher training and the accessibility of educational resources persist. Final considerations emphasized the need for continued efforts to overcome these obstacles, promoting an inclusive and accessible educational environment.

**Key words:**Inclusive education. Low Vision. Assistive Technologies. Teacher training. Curricular Adaptations.

## ABSTRACT

This bibliographic review addressed the challenge of implementing teaching strategies adapted for students with low vision, aiming to promote an inclusive and effective education. The general objective was to explore and analyze pedagogical strategies, assistive technologies, and curricular adaptations that facilitate learning for these students. The methodology consisted of a literature review, involving the analysis of relevant documents and studies on the subject. The results highlighted the importance of specific teacher training, the implementation of assistive technologies such as augmented reality and Soroban, and the need for curricular adaptations to meet the individual needs of students. The analysis indicated that, although there are significant advances in inclusion policies and assistive technologies, challenges such as teacher training and accessibility of educational resources persist. The final considerations emphasized the need for continuous efforts to overcome these obstacles, promoting an inclusive and accessible educational environment.

**Keywords:**Including Education. Low Vision. Assistive Technologies. Teacher Training. Curricular Adaptations.

## INTRODUCTION

The inclusion of students with special needs in the educational system is a persistent challenge for educators and policymakers around the world. In this context, adapting teaching strategies to meet the specific needs of students with low vision represents an area of particular interest. Low vision, characterized by significant limitation of visual function that cannot be completely corrected with normal glasses, contact lenses, medication or surgery, affects the student's learning and interaction with the educational environment. Therefore, the identification and implementation of pedagogical practices that can facilitate access to quality education for these students is imperative.

The need to develop and apply adapted teaching strategies arises from the understanding that education is everyone's right and must be accessible regardless of individual limitations. Brazilian legislation, through the National Policy on Special Education from the Perspective of Inclusive Education and the Brazilian Law on the Inclusion of Persons with Disabilities, reinforces this principle, establishing guidelines for the creation of an inclusive educational system. However, despite legal advances and growing awareness about the importance of inclusion, many schools still face difficulties in adapting their teaching methodologies to the needs of students with low vision, highlighting the relevance of investigating and discussing effective strategies in this area.

The problematization surrounding the education of students with low vision focuses on the gap between educational inclusion policies and their effective implementation in schools. Educators are often faced with the challenge of not only recognizing the unique needs of these students, but also adapting content, teaching materials and teaching techniques in ways that promote effective learning. The lack of resources, specific training for teachers and knowledge about assistive technologies contribute to this problem, limiting educational opportunities for students with low vision.

Given this scenario, this research aims to explore adapted teaching strategies that can be implemented to facilitate the inclusion and educational success of students with low vision. The main objective is to identify pedagogical practices and teaching resources that have been recognized for their effectiveness in this context, ranging from the use of assistive technologies to curricular and methodological adaptations. Furthermore, we seek to analyze the impact of teacher training on the implementation of these strategies, as well as discuss the challenges and future perspectives for inclusive education for students with low vision. Through this study, we hope to contribute to expanding knowledge about effective inclusive practices, supporting the development of a more accessible and egalitarian educational environment.

Below is a review of the literature that addresses the definitions and diagnostic criteria for low vision, as well as the relevant legislation and educational inclusion policies. It continues with a discussion on the principles of inclusive education and the methodology adopted for this review. The results and discussions are detailed in sections dedicated to assistive technologies, curricular adaptations and teacher training, which are key elements for promoting the educational inclusion of students with low vision.

The text culminates with an analysis of challenges and future perspectives, before presenting final considerations that summarize the main findings and practical implications of the review. Throughout the document, we seek to highlight the importance of integrated approaches to meet the specific educational needs of these students, with the aim of fostering an inclusive and accessible educational environment.

## THEORETICAL REFERENCE



The theoretical framework of this work is organized to provide a solid basis for understanding teaching strategies adapted for students with low vision. It begins with an exploration of the definition and diagnostic criteria for low vision, differentiating it from other visual impairments and highlighting its relevance for inclusive education. This is followed by an analysis of educational inclusion legislation and policies, examining the impact of Brazilian laws on promoting an accessible and inclusive educational system for all students.

Subsequently, the fundamental principles of inclusive education are discussed, addressing the importance of welcoming and adaptive learning environments that respect and value the diversity of students. This theoretical segment establishes the context for subsequent sections, which focus on

specific pedagogical techniques, the use of assistive technologies and the need for curricular adaptations and teacher training. Throughout the framework, the importance of an integrated and evidence-based approach to the development of educational practices that facilitate access, participation and educational success for students with low vision is emphasized, providing the basis for the discussions and analyzes presented in subsequent chapters.

## LOW VISION DEFINITION

In the theoretical foundation of this research, it is essential to understand the conceptualization and diagnostic criteria of low vision, as well as differentiating it from other visual impairments. Low vision is defined as a condition in which visual function is significantly below the standard considered “normal”, even after standard optical treatment or correction, but which allows the use of residual vision to perform tasks (BRASIL, 2009) . This condition is distinguished from blindness by the presence of useful vision, which can be optimized with the use of visual aids, strategies or assistive technologies.

In contrast, visual impairments encompass a broader spectrum, ranging from low vision to complete blindness, including varying degrees of visual limitation. While low vision specifically refers to those who have some residual vision that may be functional for daily activities, blindness is characterized by the total loss of vision or the restriction of vision to the perception of light and shadows, without the ability to form images ( BRAZIL, 2015).

Differentiating between low vision and other visual impairments is important for adopting appropriate teaching strategies. As pointed out by Drago and Manga (2018), visual impairment does not manifest itself uniformly, requiring individualized assessments and pedagogical interventions that respect the residual visual capabilities of each student. This observation highlights the importance of a personalized approach in developing educational strategies, recognizing the diversity of needs among students with different degrees of visual limitations.

Furthermore, legislation and public policies play a fundamental role in guaranteeing rights and establishing guidelines for the educational inclusion of these students. The Brazilian Law on the Inclusion of Persons with Disabilities (BRASIL, 2015) establishes that the educational system must adapt to meet the needs of all students, promoting full accessibility and inclusion. This principle is reinforced by the National Policy on Special Education from the Perspective of Inclusive Education (BRASIL, 2009), which guides inclusive pedagogical practice and the development of teaching and technological resources that meet the specificities of students with low vision.

Therefore, understanding low vision and differentiating it from other visual impairments is critical to developing effective inclusive educational practices that enable students with low vision to reach their full academic and social potential.

## EDUCATIONAL INCLUSION LEGISLATION AND POLICIES

The Brazilian educational scenario has been influenced by legislation and policies aimed at the educational inclusion of people with disabilities. The analysis of the National Special Education Policy from the Perspective of Inclusive Education (BRASIL, 2009) reveals a significant milestone in the search for educational equity. This policy highlights the importance of an inclusive education system that recognizes and meets the specific needs of all students, including those with low vision. As established in this document, special education becomes part of the school's pedagogical proposal, promoting access, participation and learning for students with disabilities, global developmental disorders and high abilities/ giftedness, ensuring specialized support and services.

Following this direction, the Brazilian Law for the Inclusion of Persons with Disabilities (BRASIL, 2015), known as the Statute of Persons with Disabilities, represents another legislative advance that reinforces the country's commitment to inclusion. This law not only reiterates the right to inclusive education but also establishes clear guidelines for its implementation, ensuring that the inclusive educational system must be based on equal opportunities, providing necessary adjustments and adaptations to meet the characteristics of each student. This principle highlights the recognition of diversity as a central element in educational practice, requiring educational institutions to adapt to meet the needs of all students.

The impact of these legislations on education is vast, ranging from the physical structure of schools to

the teaching methodologies adopted in the classroom. The need to promote an accessible and welcoming educational environment for students with disabilities has led to the implementation of various pedagogical practices and the use of adapted teaching and technological resources. However, despite legislative advances, the effective implementation of educational inclusion policies still faces challenges, such as teacher training to meet the specific needs of students with disabilities and the availability of adequate resources.

Therefore, Brazilian legislation on educational inclusion establishes a solid basis for promoting quality inclusive education. However, the transition from policy to practice requires an ongoing commitment to professional training, resource development, and adaptation of educational structures to ensure that all students, regardless of their circumstances, have access to the same educational opportunities. learning.

## PRINCIPLES OF INCLUSIVE EDUCATION

Inclusive education constitutes an educational paradigm based on valuing diversity and ensuring equal opportunities for all students, including those with disabilities. This model opposes traditional practices of segregation, proposing a learning environment that welcomes all differences and promotes the integral development of students. The role of inclusive education in society transcends the school context, contributing to the construction of a more just and egalitarian community, where all individuals are valued for their potential and not limited by their deficiencies.

In the school context, inclusive practices are essential to ensure that all students have access to quality education, adapted to their individual needs. As stated in the National Policy on Special Education from the Perspective of Inclusive Education (BRASIL, 2009), specialized educational services must be provided in multifunctional resource rooms, specialized educational service centers, classes, schools or specialized services, public or affiliated. This statement highlights the importance of specific structures and resources that support the inclusion process, ensuring that students' special educational needs are met effectively.

Furthermore, the relevance of inclusive practices is manifested in promoting respect for differences, valuing individual capabilities and encouraging the active participation of all students in the educational process. The Brazilian Law on the Inclusion of People with Disabilities (BRASIL, 2015) reinforces this understanding by stipulating that inclusive education constitutes a means of social transformation, providing the development of an environment of respect and appreciation of diversity. This focus on inclusion as an instrument of social transformation highlights the need for pedagogical practices that not only meet special educational needs, but also promote a culture of acceptance and appreciation of differences.

Therefore, the principles of inclusive education are fundamental for the development of a fairer society and for guaranteeing equal rights for all individuals. The implementation of inclusive practices in the school context plays a role in achieving this goal, requiring an ongoing commitment from educational systems to adapt their structures, methodologies and resources to meet the needs of all students, thus promoting a welcoming learning environment and inclusive.

## METHODOLOGY

The methodology adopted for this research consists of a literature review, a process through which the collection, analysis and interpretation of studies and documents previously published on a specific topic are carried out.
pecific. In this case, the focus is on teaching strategies adapted for students with low vision. The review
of literature allows you to compile existing knowledge, identify trends, gaps in current research and
establish a theoretical context for new investigations.

Data collection for the literature review involves the careful selection of relevant sources, which include scientific articles, books, dissertations, theses and official documents. Academic databases and digital libraries are the main means of locating these materials. Search in these sources is guided by keywords and terms related to the topic of interest, such as “inclusive education”, “low vision”, “teaching strategies”, “assistive technologies” and “teacher training”. The selection of documents is based on criteria such as relevance to the topic, academic quality and date of publication,

prioritizing recent studies that reflect current discussions and practices in the field of inclusive education.

After collection, data analysis follows, which involves critical reading of the selected documents to extract information relevant to the research objective. This stage includes the identification of methods, results and conclusions of the studies analyzed, as well as the assessment of their applicability and impact in the context of education for students with low vision. The analysis also aims to identify convergences and divergences between studies, enabling an understanding of teaching strategies that prove to be effective, existing barriers and possible solutions for promoting educational inclusion.

The methodology used ensures a systematic and organized approach to the survey of existing literature, allowing the construction of a solid theoretical basis on which discussions, conclusions and recommendations for future practices can be based. Through this review, we seek to contribute to the advancement of knowledge in the area and to the development of pedagogical strategies that effectively meet the needs of students with low vision, promoting their inclusion and educational success.

To illustrate the current dynamics in the field of inclusive education, especially regarding the use of assistive technologies for students with low vision, we present a table that highlights both the significant advances and the persistent challenges faced by educators and students. This table was prepared based on data collected from various academic sources and reports from specialized institutions, aiming to provide a clear and quantitative view of the progress achieved and the obstacles that still need to be overcome. The graphical analysis emphasizes areas such as the implementation of augmented reality devices, the use of Soroban and the accessibility of digital resources, in addition to pointing to the need for teacher training and the availability of adapted teaching materials.

Table 1: Advances and challenges in implementing assistive technologies for students with low vision

| Author(s) | Title | Year |
|---|---|---|
| BRAZIL | National Special Education Policy from the Perspective of Inclusive Education. CNE/CEB Resolution nº 4 | 2009 |
| BRAZIL | Law No. 13,146, Brazilian Law on the Inclusion of Persons with Disabilities | 2015 |
| CAMPOS, FR | Educational Robotics in Brazil: open questions, challenges and future perspectives | 2017 |
| DRAGO, R.; MANGA, VPBB | Visual impairment and teacher training: towards a conceptual review | 2018 |
| LOPES, LMD; VIDOTTO, KNS; POZZEBON, E.; FERENHOF, H. A. | Educational innovations using augmented reality: A systematic review | 2019 |
| MAMCASZ-BIGINHESKI, LV; SHIMAZAKI, EM; DA SILVA, S. DE CR | Soroban in the learning of students with intellectual disabilities | 2023 |

Source: own authorship

It is important to highlight that, despite notable advances in the availability and use of assistive technologies in the education of students with low vision, the data also highlights significant gaps that require attention. The information presented in the table demonstrates that the effective integration of these technologies in the educational process is not only a question of access to resources, but also involves challenges complexes related to the adequate training of educators, curricular adaptation and sustainability of inclusive practices. Therefore, this framework serves as a starting point for discussions about how these assistive technologies can be better implemented and integrated into the educational system, thus ensuring that all students, regardless of their visual limitations, have equal opportunities for learning and development.



## RESULTS AND DISCUSSION

The results and discussion section of this study is structured based on the understandings obtained from

based on the word cloud and data presented in Table 1, providing a detailed analysis of the trends and challenges identified in the education of students with low vision. This approach allows for an understanding of the key areas that have emerged as fundamental to promoting effective inclusive education.

In this section, the implications of assistive technologies, the importance of teacher training, strategies for curricular adaptations, and the need for accessible educational resources are examined, as highlighted by the frequency and relevance of terms in the word cloud. Furthermore, discuss - how the data in Table 1 corroborates these focal areas, highlighting both the progress made and the obstacles that still persist in the field of special education. Through a critical and reflective analysis, this section seeks not only to synthesize the results obtained, but also proposes directions for future research and pedagogical practices that can overcome the identified challenges and improve the quality of education offered to students with low vision.

To complement the analysis of teaching strategies adapted for students with low vision, a word cloud was created that highlights the terms most frequently mentioned in the literature on the topic. This visual representation was generated from the compilation of reviewed texts, studies and relevant documents, allowing us to quickly identify the focus areas and key concepts discussed by inclusive education researchers and professionals. The most prominent terms in the cloud, such as “inclusive education”, “assistive technologies”, “teacher training”, “curriculum adaptations” and “low vision”, reflect the priorities and challenges faced in the field of special education. This visual tool offers an intuitive and accessible perspective on the most discussed and emphasized aspects in the literature, facilitating understanding current trends and areas that require greater attention.


Source: own authorship

The centrality of certain concepts and the interconnection between them in the context of educating students with low vision is evident. The predominance of terms such as “assistive technologies” and “teacher training” in the word cloud reinforces the need for continuous investment in technological resources and teacher training as pillars for implementing inclusive educational practices. Furthermore, the recurrence of the term “curricular adaptations” highlights the importance of personalizing the teaching process- - learning to meet individual student needs. This visual analysis therefore highlights the areas that require joint efforts and integrated strategies on the part of educators, policymakers and the academic community, aiming to promote a more inclusive and accessible educational environment for all students, especially those with low vision.



## ASSISTANT TECHNOLOGIES

Teaching strategies for students with low vision include meaningful use of technology assistive, which play a fundamental role in facilitating access to the curriculum and promoting the independence of these students. The incorporation of assistive technologies in the education of students with low vision reflects a commitment to inclusive education, offering ways for these students to overcome the barriers imposed by their visual limitations and actively participate in the learning process.

Examples of assistive technologies that have shown promising results in the education of students with low vision include augmented reality and Soroban. Lopes*et al*. (2019) highlight the potential of augmented reality as an innovative educational tool, stating that augmented reality can offer students with low vision enriched visual experiences, which expand their perception of educational content, thus facilitating understanding and engagement with teaching material. . This position illustrates how augmented reality can be adapted to meet the specific educational needs of students with low vision, providing them with a more accessible way to interact with learning content.

Furthermore, the use of Soroban for learning for students with intellectual disabilities, as explored by Mamcasz-Biginheski*et al*. (2023), serves as a relevant example of how assistive technologies can be used to support the educational development of students with low vision. Although Soroban is traditionally used for teaching mathematics, its application to students with low vision demonstrates the versatility of assistive technologies and their ability to be customized to meet educational and sensory needs.

The use of technology in the education of students with low vision is, therefore, an essential strategy that not only facilitates access to knowledge, but also promotes the inclusion of these students in the educational environment. The selection and implementation of assistive technologies should be based on a careful assessment of each student's individual needs, ensuring that the tools chosen are effective in meeting those needs and promoting an enriching and accessible learning experience.

## CURRICULAR ADAPTATIONS

Curricular adaptations are essential to meet the needs of students with low vision, involving modifications in content, process, product and learning environment. These adaptations allow the curriculum to be accessible to all students, ensuring that those with special needs can fully participate in the educational process. Individualized pedagogical strategies play a role in this context, as they recognize and meet the unique needs of each student, promoting a more inclusive education.

Adapting content may include simplifying texts, using more accessible language or including supporting materials that complement the student's understanding of the topic. As for process, it refers to the way content is taught, which may involve alternative teaching methods such as the use of assistive technologies or multi-sensory teaching techniques, which are especially beneficial for students with low vision.

Modifications to the final product expected of students are also a form of curricular adaptation. This may mean accepting oral rather than written responses or utilizing alternative presentation formats that better align with the abilities of students with low vision. Furthermore, the learning environment must be organized in a way that promotes accessibility and inclusion, which may involve the physical reorganization of the classroom, the use of adequate lighting and the provision of teaching materials in accessible formats.

As highlighted by Drago and Manga (2018), visual impairment imposes specific challenges that require adapted pedagogical responses, which must be carefully planned and implemented to ensure student educational success. This fact highlights the importance of careful planning and the implementation of pedagogical strategies adapted to the needs of students with low vision, emphasizing the need for a learning environment that is both welcoming and stimulating.



Therefore, curricular adaptations and individualized pedagogical strategies are fundamental components for promoting inclusive education. By modifying the content, process, product and learning environment, educators can create equitable educational opportunities for all students, including those with low vision, ensuring they have access to a quality education

adapted to your specific needs.

## TEACHER TRAINING

Teacher training is a fundamental aspect for the success of inclusive education, especially with regard to the education of students with low vision. The need for specific training for educators is emphasized by Drago and Manga (2018), who argue that preparing teachers to work with students with visual impairments is essential, since such professionals need to be able to develop and apply teaching methodologies. adapted to meet the specific needs of these students. The authors highlight the importance of empowering teachers with specific knowledge and skills to create an inclusive and effective learning environment.

Specific training for educators must cover various training and professional development strategies. This includes, but is not limited to, initial and continuing training courses that offer theoretical and practical knowledge about visual impairment, use of assistive technologies, adaptation of teaching materials and techniques to make content accessible to students with low vision. Furthermore, it is important that teachers develop skills to assess students' individual needs and plan appropriate pedagogical interventions.

Workshops, seminars and professional development programs that promote the exchange of experiences between teachers are also essential. Such programs can facilitate discussion of cases, reflection on pedagogical practices, and sharing of effective resources and strategies. Collaboration with professionals specialized in special education, such as occupational therapists, psychologists and specialists in assistive technologies, can enrich the training process, offering educators an understanding of the possibilities of supporting students with low vision.

Therefore, teacher training for inclusive education for students with low vision is a pressing need. Investing in the training and professional development of educators is essential to ensure that all students, regardless of their visual limitations, have access to quality education that promotes their full participation and learning. This commitment to teacher training is a step towards building truly inclusive educational systems.

## CHALLENGES AND FUTURE PERSPECTIVES

The implementation of adapted strategies for the education of students with low vision faces several challenges, ranging from the lack of specific teacher training to the lack of resources and accessible assistive technologies. Drago and Manga (2018) highlight one of these challenges when they state that the training of teachers who work in inclusive education often does not sufficiently include the development of skills to work with the diversity of students' needs, including those with visual impairments. The references highlight the critical need to invest in teacher training as one of the main obstacles to be overcome for effective inclusion.

In addition to issues related to teacher training, limited financial resources and the scarcity of adapted teaching materials constitute additional barriers. The physical infrastructure of schools is often not prepared to meet the specific needs of students with low vision, which can hinder their full participation and access to knowledge.

However, future prospects in the education of students with low vision are promising, thanks to the continuous advancement of technological innovations and the growth of research in the area. Assistive technology, for example, has evolved rapidly, offering new tools that can facilitate access to the curriculum and promote autonomy for students with low vision. Lopes *et al.* (2019) illustrate this potential by discussing the use of augmented reality in education, suggesting that the integration of innovative technologies, such as Augmented reality can transform the educational process for students with visual impairments, making it more accessible and engaging.

Furthermore, there is growing recognition of the importance of research to better understand effective educational strategies for students with low vision. Continuous research and development of evidence-based practices are key to adapting and improving teaching methods. As more studies are conducted and shared, it is hoped that schools will be able to implement more effective practices supported by data and research findings.

Therefore, although there are significant challenges in implementing strategies adapted for

education of students with low vision, future prospects are optimistic. With the advancement of assistive technology, increased investment in teacher training and the continued focus on research, it is expected that barriers to inclusion will be progressively overcome, allowing all students, regardless of their visual limitations, to have access to a quality education that meets your needs and enhances your development.

## FINAL CONSIDERATIONS

The final considerations of this literature review on teaching strategies adapted for students with low vision reflect on the importance of educational inclusion and the challenges and advances observed in the area. The analysis of national policies, such as the National Policy on Special Education from the Perspective of Inclusive Education and the Brazilian Law on the Inclusion of People with Disabilities, highlights a legislative commitment to promoting an inclusive educational system. These legislations support the need for curricular adaptations, teacher training, use of assistive technologies and individualized pedagogical strategies, aiming to guarantee access and effective participation of all students, especially those with low vision, in the educational process.

The implementation of assistive technologies, such as augmented reality and the use of Soroban, demonstrates the potential for innovation in supporting these students' learning. Such technologies not only facilitate access to curricular content, but also promote the autonomy and inclusion of students with low vision, allowing for more active and equal participation in the educational environment.

However, challenges remain significant, especially with regard to teacher training. Teacher training is identified as an element for the effectiveness of adapted teaching strategies, as it is through adequate preparation that educators can respond to the specific needs of their students. The lack of specific training and adequate resources emerges as an obstacle to the full implementation of inclusive practices, pointing to the need for continuous investment in professional training and the development of accessible teaching materials and resources.

Future prospects for the education of students with low vision are encouraging, given the growing attention to technological innovations and the development of research focused on effective pedagogical practices. Continuing investigations and sharing knowledge and experiences are essential for improving teaching strategies and promoting a truly inclusive educational environment.

In short, this review highlights the complexity of inclusive education for students with low vision and the need for approaches that integrate legislation, pedagogical practices, teacher training and assistive technologies. The journey towards a fully inclusive education is continuous and requires the commitment of everyone involved in the educational process. The advances made to date provide a solid foundation for future improvements, but it is imperative that collective and dedicated efforts persist in the search for innovative and effective solutions that guarantee equal educational opportunities for all students, regardless of their visual limitations.

## REFERENCES

BRAZIL. National Special Education Policy from the Perspective of Inclusive Education. CNE/CEB Resolution No. 4, of October 2, 2009. Available at: http://portal.mec.gov.br/arquivos/pdf/politicaeducespecial.pdf.

BRAZIL. Law No. 13,146, of July 6, 2015. Brazilian Law on the Inclusion of People with Disabilities. Available level at: https://www.planalto.gov.br/ccivil_03/_ato2015-2018/2015/lei/l13146.htm.

CAMPOS, FR Educational Robotics in Brazil: open questions, challenges and future perspectives. Ibero-American Journal of Education Studies, v. 12, no. 4, p. 2108–2121, 2017. https://doi.org/10.21723/riaee.v12.n4.out/dez.2017.8778.

DRAGO, R.; MANGA, VPBB Visual impairment and teacher training: towards a conceptual review. Educational Criticism, v. 3, no. 3, p. 292–310, 2018. https://doi.org/10.22476/revcted.v3i3.239.

LOPES, LMD; VIDOTTO, KNS; POZZEBON, E.; FERENHOF, HA Educational innovations using augmented reality: A systematic review. Education in Magazine, v. 35, e197403, 2019. https://doi.org/10.1590/0102-4698197403.

MAMCASZ-BIGINHESKI, LV; SHIMAZAKI, EM; DA SILVA, S. DE CR Soroban in the learning of students with intellectual disabilities. Diversa, 2023. Available at: https://diversa.org.br/artigos/Soroban-- in-the-learning-of-students-with-intellectual-disabilities/.