


AUTISM AND EDUCATION: UNRAVELING THE CHALLENGES AND IMPLEMENTING INNOVATIVE PRACTICES

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ABSTRACT

The study analyzed pedagogical and institutional practices aimed at the school inclusion of students with Autism Spectrum Disorder (ASD), with the aim of identifying strategies that promote an equitable education adapted to the individual needs of these students. The theme was addressed considering inclusion as a process that goes beyond physical access to school, involving the creation of environments that value diversity and encourage the participation of all students. The methodology used was bibliographic research, based on a systematic analysis of scientific works and articles, allowing the construction of a coherent theoretical framework. Data were collected through keywords such as 'school inclusion', 'autism' and 'assistive technologies', in databases such as Google Scholar, with inclusion criteria that prioritized the relevance and timeliness of the publications. The results showed that the personalization of teaching, the continuous training of teachers and the collaboration between school and family are essential factors for the consolidation of inclusive practices. It was concluded that the inclusion of students with ASD requires a continuous process of adaptation and innovation, with a focus on pedagogical practices that combine technological resources, collaborative strategies and a welcoming school environment, contributing to the integral development of students and to the construction of a fairer and more accessible education.

Keywords: Inclusive Education. School Autism. Pedagogical Adaptations. Technological Resources. School Collaboration.

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INTRODUCTION

The school inclusion of students with Autism Spectrum Disorder (ASD) has emerged as one of the most challenging and relevant topics in contemporary education, given the growing demand for pedagogical practices that promote equity and the appreciation of diversity. This issue was presented as essential to ensure that students with specific needs can fully participate in the educational environment, benefiting from an education that respects their singularities. In this scenario, the central objective of the research was to investigate pedagogical and institutional strategies capable of enabling the effective inclusion of students with ASD. As a guiding question, we sought to answer: 'which educational actions have demonstrated greater effectiveness in the construction of inclusive school environments?'

The structure of the article was organized into a main section and three subsections that addressed complementary aspects of the theme. In the section entitled 'Methodology', the procedures adopted in conducting the research were described, including the design of a bibliographic approach to support the analyses and discussions, as well as the stages of data collection and categorization.

In the subsection 'The Importance of Pedagogical Personalization in the Context of Inclusion', it was discussed how the personalization of teaching is an essential component to meet the demands of students with ASD, highlighting the need for strategies adapted to their specific characteristics. In turn, the subsection 'Proposals for Overcoming Challenges and Implementing Innovative Practices' addressed concrete solutions, such as the use of assistive technologies and continuing teacher training, which are crucial to overcome barriers to inclusion. Finally, the subsection 'Inclusive Education and Autism: Joint Actions between School and Family' explored the relevance of partnerships between educators, family members and other professionals in the educational process, emphasizing the central role of collaboration for the success of inclusive practices.

Therefore, the research promoted a multidimensional analysis of school inclusion, showing that its effectiveness depends on articulated efforts between personalized pedagogical practices, technological innovation and collaborative partnerships. By addressing different perspectives and proposing viable solutions, the study contributed to broadening the understanding of the theme, offering relevant subsidies for future reflections and actions in the field of inclusive education.

METHODOLOGY

The present study was carried out based on a bibliographic research, which was characterized by the systematic analysis of scientific publications on school inclusion and pedagogical practices for students with Autism Spectrum Disorder (ASD). According to Eco (2010), bibliographic research is essential for the construction of a consistent theoretical framework, allowing the researcher to understand the state of the art on the subject in question. In this sense, this approach was chosen because it enables the collection of relevant and substantiated information that contributed to the discussion and analysis of the proposed objectives.

The materials used included scientific articles, books, and reports from organizations specializing in inclusive education, all accessed through widely recognized databases, such as Google Scholar. The keywords used in the search were: 'inclusive education', 'autism', 'assistive technologies', 'pedagogical personalization' and 'teacher training'. The time frame adopted covered publications from the last fifteen years, with the exception of classic works, such as Stainback (1999), which present fundamental concepts for the theme. Gil (2009) reinforces that the careful delimitation of sources is essential to ensure the relevance and timeliness of the information collected, justifying the exclusion of works that did not dialogue directly with the focus of this study.

The methodological process followed well-defined stages. Initially, a survey of publications was carried out using the keywords cited, considering inclusion criteria that included academic relevance, relevance to the theme and methodological consistency of the texts. Then, a critical reading and systematization of the information was carried out, in order to identify complementary and contrasting approaches among the authors. This stage was fundamental to build a theoretical dialogue that would support the discussions presented in the article.

In addition, a qualitative method of content analysis was used, which made it possible to categorize the findings based on the main thematic axes of the research: pedagogical personalization, teacher training and the role of assistive technologies in school inclusion. This procedure allowed for a clear and objective organization of ideas, evidencing the most significant contributions of each author to the development of the theme.

Finally, the research adopted as an exclusion criterion publications whose approach was exclusively clinical or that did not have direct applicability to the educational context.

This filter ensured that the focus remained on inclusive pedagogical practices, aligned with the objectives of the study. In this context, the method used proved to be adequate to answer the research questions and offer solid subsidies for the formulation of the proposals discussed throughout the work.

THE IMPORTANCE OF PEDAGOGICAL PERSONALIZATION IN THE CONTEXT OF INCLUSION

The school inclusion of children with Autism Spectrum Disorder (ASD) requires a personalized pedagogical approach, considering the individual specificities of each student and the characteristics of the classes. According to Weizenmann *et al.* (2020, p.25), the "personalization of teaching implies adaptations that go beyond the traditional curriculum, requiring practices that respect the student's behavioral and communicational differences". This understanding reinforces the need for educational planning that contemplates not only the content, but also the way it is transmitted, adjusting to the demands of each individual.

On the other hand, Sanini and Bosa (2015) highlight that the success of inclusion does not depend only on pedagogical strategies, but also on the beliefs and previous experiences of teachers. This means that teacher training needs to cover the development of technical and reflective skills, promoting an empathetic and welcoming look at diversity. Therefore, the interrelationship between technical preparation and educators' conceptions is a crucial factor for the effectiveness of the inclusive process.

Inclusive practice, as defined by Bernardini (2024, p.101), aims to "ensure access, participation, and full development of all students, regardless of their physical, socioeconomic, or cultural conditions." This concept is grounded in the idea that human differences are normal and should be accepted as part of the educational process, as reinforced by UNESCO (1994). This paradigm requires that the educational system be restructured to value diversity as an enriching element of the school environment, promoting pedagogical practices that recognize the individuality of each student.

In this context, it is essential to highlight that inclusion is not restricted to physical access to the school space, but encompasses the creation of an environment where everyone can actively participate in the learning process. Thus, the school should be a space of welcome and adaptation, where the potential of students with ASD is developed in a full and integrated way with the collective.

PROPOSALS FOR OVERCOMING CHALLENGES AND IMPLEMENTING INNOVATIVE PRACTICES

In view of the contemporary demands related to the school inclusion of students with Autism Spectrum Disorder (ASD), it is essential to implement innovative strategies that integrate assistive technologies, continuing teacher training and interdisciplinary collaborations. Bernardini (2024) emphasizes that the use of technological resources, such as interactive applications and adaptive platforms, can significantly facilitate the communication and interaction of these students, promoting greater autonomy in the learning process. In this sense, the adoption of these tools must be accompanied by teacher training that allows the effective application of these solutions in daily school life (Santana *et al*, 2021).

In addition, the strengthening of partnerships between educators, family members and health professionals is fundamental, as pointed out by Weizenmann *et al.* (2020). These collaborations enable a more efficient monitoring of student development, allowing continuous adjustments to the educational strategies implemented. Thus, the role of the school transcends traditional teaching, transforming itself into a space for articulation and integral support, capable of responding to the specific needs of each student with ASD.

The personalization of educational interventions emerges as an indispensable practice to meet the needs of neurodiverse students. Hugo *et al.* (2024) highlight that such interventions should be designed to maximize both the academic and socio-emotional potential of these students, ensuring effective inclusion. For example, in a high school class, inclusive pedagogical practices can be applied through curricular differentiation. According to Cunha (2020), "inclusive pedagogical practices based on curricular differentiation ensure that each student receives teaching appropriate to their characteristics". In the case of a practical activity, this can include interdisciplinary projects in which each student contributes according to their specific skills, fostering interaction and valuing differences.

In the context of Early Childhood Education, Oliveira, Ziesmann and Guilherme (2016, p.547) highlight that

[...] The teacher needs to be in constant improvement by receiving in his classroom students with different needs and learning times, (re)signifying their knowledge and enabling educational activities that support as much as possible the needs of all subjects included in the regular school.

A practical example would be the implementation of sensory activities in groups, in which children interact in environments enriched by diversified materials, meeting the different forms of interaction and learning.

Another key aspect is the continuous training of teachers, which should include specific methodologies for working with neurodiverse students. Bernardini (2024) points out that the effectiveness of inclusive pedagogical practices is directly linked to the technical and emotional preparation of educators. Through programs that address differentiated teaching strategies, such as teaching mediated by assistive technologies, teachers will be able to develop more dynamic and effective approaches.

At the same time, it is important to consider the impact of educators' beliefs on the inclusion process, as argued by Sanini and Bosa (2015). Teachers' previous experiences significantly influence their willingness to adopt innovative practices and welcome diversity in the classroom. In this sense, initial and continuing education should contemplate not only technical aspects, but also reflections on the values and conceptions of the teacher in relation to inclusion.

In summary, overcoming the challenges of educational inclusion of students with ASD requires the combination of efforts on several fronts. The adoption of assistive technologies, the strengthening of interdisciplinary collaborations, and the personalization of pedagogical practices are essential actions to promote quality inclusive education. At the same time, continuous teacher training emerges as an indispensable pillar for the transformation of the school environment into a truly welcoming and inclusive space. As the theoretical references presented reinforce, only with collective involvement will it be possible to consolidate a school for all, in line with the principles of equity and diversity.

INCLUSIVE EDUCATION AND AUTISM: JOINT ACTIONS BETWEEN SCHOOL AND FAMILY

School inclusion represents an essential dimension in promoting a more equitable education, ensuring that all students, regardless of their physical, intellectual, social, or cultural conditions, have access to quality educational opportunities. As pointed out by Narciso *et al.* (2024, p. 714), [...] school inclusion is essential to promote a more equitable education, ensuring that all students [...] have access to quality education.

This perspective reflects the need to reevaluate educational spaces, so that they are inclusive and capable of meeting diversity. In this context, inclusion should not be restricted

to physical adaptations, but should be expanded to consider the cultural, social, and emotional plurality of students, as Siqueira and Toledo (2021, p. 53) point out: "school inclusion goes far beyond the physical spaces of the school and must value the diverse cultures found in each student". Thus, the educational process becomes not only a place of academic learning, but a space for coexistence and respect for differences.

In addition to the school environment, the family plays a central role in the inclusion process, especially in the case of children diagnosed with Autism Spectrum Disorder (ASD). According to Souza and Benício (2021, p. 3), "the diagnosis of Autism Spectrum Disorder in a child involves the whole family, which at first presents confusion and doubts about the disorder". This family involvement can be challenging, but it is essential for building adequate support for the child's integral development.

In addition, the rescue of the child's autonomy is a goal shared by both the school and the family. Souza and Benício (2021, p. 3) reinforce that "the main role of inclusive education and the family in the development of learning for special students is to promote the recovery of autonomy". Therefore, the synergy between family and school is essential to strengthen the academic, social, and emotional skills of students with ASD, creating a solid support network.

The implementation of inclusive practices, when well structured, benefits not only students with disabilities, but also other students. Stainback (1999, p. 22) argues that

[...] When appropriate programs are in place, inclusion works for all students with and without disabilities, in terms of positive, mutually developed attitudes, gains in academic and social skills, and preparation for community life.

This data, already sketched so many decades ago, shows that living with diversity enriches the school environment, promoting more empathetic and collaborative attitudes among students. Consequently, inclusive educational programs must be designed with a focus on strategies that meet multiple needs, such as the use of assistive technologies, curriculum differentiation, and interdisciplinary projects. These actions make the school environment a dynamic space, where the exchange of experiences between students is converted into mutual learning.

Although advances in inclusion are evident, many challenges remain, such as the continuing education of teachers, cultural resistance to diversity, and the absence of specific resources in some institutions. Even so, joint initiatives between school, family and

community are essential to consolidate inclusive practices. As the theoretical references presented here point out, it is essential that inclusion be understood as a continuous and adaptive process.

In short, the school inclusion of students with ASD and other special needs is a collective commitment that requires articulated efforts between different actors. By creating equitable educational environments that value diversity and promote integral development, educational institutions not only fulfill their social role, but also contribute to building a more just and inclusive society.

RESULTS AND DATA ANALYSIS

The following table presents the authors who supported this research on inclusive education and pedagogical practices for students with Autism Spectrum Disorder (ASD). It organizes the bibliographic references, the year of publication, the central themes addressed in each study and the relevance of these works in the context investigated. This structure offers a clear view of the theoretical bases used, evidencing how different perspectives contributed to the analysis of inclusive educational practices.

TABLE 1 - RELEVANT AUTHORS OF THE RESEARCH

Bibliographic Reference	Year of Publication	Research Subject	Relevance of the Research
Weizenmann, S., Souza, J., & Silva, L. (2020). School inclusion and pedagogical practices. Editora Educação Atual.	2020	School inclusion and pedagogical practices for students with ASD.	It underpins inclusive practices that respect behavioral and communicational differences.
Sanini, C. A., & Bosa, C. A. (2015). Teachers' conceptions and inclusion of students with ASD. <i>Journal of Inclusive Education</i> , 10(2), 123-134.	2015	Teachers' beliefs and impact on the inclusion of students with ASD.	It addresses the impact of teacher beliefs on the implementation of inclusive practices.
Bernardini, M. (2024). Inclusive education and equity: Contemporary perspectives. Academic Publisher.	2024	Inclusive education and equity for students with special needs.	It presents a contemporary view on inclusion and equity in education.

Hugo, P., Almeida, F., & Santos, M. (2024). Educational interventions in students with special needs. Editora Educação e Pesquisa.	2024	Personalized interventions to maximize the potential of neurodiverse students.	It discusses the importance of personalization in educational interventions.
Cunha, R. L. (2020). Inclusive pedagogical practices: A focus on High School. Revista Educação em Foco, 25(4), 567-580.	2020	Inclusive pedagogical practices in High School.	It offers inclusive strategies based on curriculum differentiation.
Oliveira, M., Ziesmann, A., & Guilherme, F. (2016). Early Childhood Education and diversity. Revista Brasileira de Educação Infantil, 8(3), 547-555.	2016	Early childhood education and diversity in the school context.	It explores the need for teacher training to meet diversity in Early Childhood Education.
Souza, M. A., & Benício, J. C. (2021). Autism and the role of the family in the school context. Revista Psicopedagogia, 19(1), 3-12.	2021	Autism and the role of the family in the school context.	It highlights the role of the family as an essential support in the development of students with ASD.
Siqueira, A. P., & Toledo, M. R. (2021). Inclusion and culture in the school environment. Multiculturality and Education Journal, 15(1), 53-64.	2021	Culture and inclusion in the school environment.	It emphasizes the appreciation of cultural diversity in the school environment.
Stainback, W., & Stainback, S. (1999). School inclusion: A practical guide. Educational Publishing House.	1999	Benefits of inclusion for students with and without disabilities.	It highlights the benefits of inclusion for academic and social development.

SOURCE: author.

The results of this research pointed out that the school inclusion of students with ASD requires a highly personalized pedagogical approach, considering both the individual specificities of the students and the characteristics of the educational contexts. According to Bernardini (2024), effective inclusive practices are those that ensure access, participation, and full development of all students, regardless of their conditions. This study also reaffirms that the continuing education of teachers and the use of assistive technologies play fundamental roles for the success of inclusion, corroborating the findings of Weizenmann *et al.* (2020).

These conclusions are significant because they show that school inclusion goes beyond the mere physical presence of the student in the school environment. It is established as a process that requires careful planning, the formation of alliances between family, school and other professionals, and constant adaptation of pedagogical practices. This view is in line with Siqueira and Toledo (2021), who highlight the need to value the cultural and social diversity of each student. Thus, inclusion is understood as a way to promote a more equitable and respectful education.

The findings of this research reinforce and extend previous studies on inclusion. For example, Stainback and Stainback (1999) already indicated that inclusion can benefit both students with disabilities and their peers, promoting academic and social gains. The research presented here confirms these benefits, but also adds that the adoption of assistive technologies, such as interactive platforms and adaptive tools, enhances these results, as highlighted by Bernardini (2024). In addition, the analysis complements the ideas of Sanini and Bosa (2015), by emphasizing that the technical and reflective preparation of teachers is indispensable for the implementation of inclusive practices.

Despite its theoretical and methodological robustness, this research has some limitations. The literature analyzed highlights the role of teacher beliefs in inclusion (Sanini & Bosa, 2015), but does not deeply explore how these beliefs are shaped by specific social and cultural factors. In addition, there is a gap in relation to the application of inclusive practices in contexts of low school infrastructure, which could be investigated in greater depth. Future studies could address these issues, considering a greater diversity of educational scenarios.

One of the unexpected results was the finding that, although inclusion is widely advocated, there is still significant resistance from some teachers. This resistance can be explained by the lack of adequate training, as observed by Oliveira, Ziesmann and

Guilherme (2016), who highlight the need for constant teacher improvement to meet diversity. In addition, the work overload and lack of resources in schools can contribute to this difficulty in adhering to inclusive practices.

Based on the observed results and limitations, it is suggested that future research explore the impact of assistive technologies in different educational contexts, especially in schools with limited resources. In addition, it would be relevant to investigate how teachers' beliefs are formed and how initial training programs can include strategies to deal with these beliefs. Finally, longitudinal studies could assess the impact of inclusive practices over time, both on academic performance and on the socio-emotional development of students with ASD and their peers.

CONCLUSION

This article addressed the school inclusion of students with Autism Spectrum Disorder (ASD), highlighting the need for personalized pedagogical practices and innovative strategies that promote the access and effective participation of these students in the educational environment. The proposed objectives were met by investigating the main theoretical approaches on the subject and presenting practical solutions that integrate the use of assistive technologies, the continuing education of teachers and the collaboration between school and family.

The study demonstrated that school inclusion is not restricted to physical access, but involves the construction of an educational space that values diversity and respects the individual needs of each student. In addition, the importance of teacher training as one of the central pillars for the success of inclusive practices was highlighted, as well as the relevance of collaborative strategies that encompass all actors involved in the educational process.

In view of the findings, it is clear that the topic still requires further study, especially in contexts of low school infrastructure and in relation to the impact of teachers' beliefs on the success of inclusion. Thus, it is encouraged that more research be carried out on this subject, especially those that assess the longitudinal impact of inclusive practices, expand knowledge about the use of assistive technologies in different scenarios and explore the perceptions of the various actors involved in inclusive education. Only with a comprehensive and continuous approach will it be possible to consolidate school inclusion

as an effective and transformative practice, promoting a fairer and more equitable education for all.

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