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CHAPTER 24

ARTIFICIAL INTELLIGENCE AS A PEDAGOGICAL MEDIATION IN THE CONTEXT OF INCLUSIVE EDUCATION

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Gessymar Nazaré Silva Souza[1], Ana Luísa Fonseca[2], Arthur Marroquim do Nascimento[3], Ludymilla dos Santos Lúcio Neto Azevedo[4], Maria das Dores da Costa Oliveira[5], Neirielly de Lima Ferreira[6], Maria Elenice Pereira da Silva[7], Patrícia Laranjeira Alves[8], Tatianne Santos da Costa Ferreira[9], Clélio Rodrigo Paiva Rafael[10], Ronald Assis Fonseca[11] and Natália Valene Aguiar de Sousa[12]

[1] Master's in Communication, Languages and Cultures
Universidade da Amazônia - UNAMA
E-mail: gessymarcrq@gmail.com
LATTES: https://lattes.cnpq.br/2994096903566747
[2] Master's in Education
World University Ecumenical
E-mail: analuisafonseca@live.com
LATTES: http://lattes.cnpq.br/6037888272543007
[3] Specialist in the Teaching of Mathematics and Physics
Faveni
E-mail: Arthur@profarthur.org
LATTES: https://lattes.cnpq.br/2293060598062660
[4] Undergraduate Student in Nursing
Faculdade Anhanguera
E-mail: ludymilllah@gmail.com
LATTES: http://lattes.cnpq.br/3916298727342111
[5] Postgraduate in Educational and Business Management and Supervision
E-mail: dasdoresc@gmail.com
ORCID: https://orcid.org/0009-0007-1091-8367
[6] Undergraduate Student in a Teaching Degree in Pedagogy
Universidade Estadual de Goiás - UEG
E-mail: neirielly_lima@hotmail.com
LATTES: https://lattes.cnpq.br/8850749252452122
[7] Professional Master's in Intellectual Property and Technology Transfer for Innovation
Instituto Federal de Educação, Ciencia e Tecnologia da Paraiba - IFPB
E-mail: maria.elenice@ufpi.edu.br
ORCID: https://orcid.org/0009-0009-7841-2447
[8] Graduate in Letters – Portuguese Language
Universidade Federal do Amazonas - UFAM
E-mail: amor.patti@gmail.com
LATTES: http://lattes.cnpq.br/6614909948139560
[9] Specialist in Institutional and Interdisciplinary Psychopedagogy and Libras
Ultra Prominas
E-mail: costatatianneo@gmail.com
LATTES: https://lattes.cnpq.br/2385937324383880
[10] Master's in Environmental Technology
Facuminas
E-mail: clelio_rodrigo10@hotmail.com
LATTES: http://lattes.cnpq.br/7599206617387888
[11] Doctoral Student in Forest Science
Universidade Federal dos Vale do Jequitinhonha e Mucuri – UFVJM
E-mail: ronald.ufv@hotmail.com
LATTES: http://lattes.cnpq.br/2755794353136437
[12] Specialist in History of Brazil, Society and Culture

ABSTRACT
Artificial intelligence (AI) emerges as an innovative resource, capable of enhancing pedagogical practices and promoting educational inclusion. This study analyzed how AI functions as a pedagogical mediation tool in the context of inclusive education, considering learning personalization, support for the educational process, and the challenges faced by teachers and institutions. It is an integrative literature review conducted between November and December 2025, with a qualitative approach and an exploratory-descriptive nature. A total of 21 articles from national and international databases, including SciELO, ERIC, and CAPES Journal Portal, were selected, addressing the use of intelligent technologies to promote inclusive pedagogical practices. The results show that AI contributes to the adaptation of content to students' individual needs, increases engagement, autonomy, and protagonism, while reducing teachers' administrative workload. It was observed that the effectiveness of implementation depends on continuous teacher training and adequate infrastructure. Despite ethical and technological challenges, the studies converge on AI's potential to strengthen inclusive practices, complement pedagogical strategies, and promote educational equity. The study emphasizes the importance of teacher training, continuous evaluation of digital tools, and the adoption of educational policies that encourage responsible use of AI, pointing to future research directions on long-term impacts, comparative analyses across educational contexts, and technological solutions adapted to diversity.

Keywords: Personalized Learning; Educational Equity; Intelligent Technologies; Inclusive Schooling; Teacher Training.

Instituto de Ensino Superior Franciscano (IESF)
E-mail: valenenatalia@gmail.com
LATTES: http://lattes.cnpq.br/8274839437716869

INTRODUCTION

The digital transformation has brought about significant changes in educational processes, with the use of technological resources standing out as instruments capable of supporting pedagogical practices and enhancing learning. The integration of these resources into the school context makes it possible to develop strategies tailored to students' individual needs, promoting inclusion and equity in access to knowledge (Albertoni et al., 2024).

Inclusive education is understood as the construction of equitable educational opportunities, taking into account the diversity of abilities, paces, and learning styles present in the classroom. Studies indicate that innovative pedagogical practices, supported by educational technologies, help reduce barriers to learning and strengthen processes of social and cognitive interaction (Alves et al., 2024).

Pedagogical planning that values each student's uniqueness enables the personalization of teaching, the adjustment of methodologies, and the fostering of active participation and engagement in the learning process (Amorim, 2025). Moreover, the use of differentiated strategies is associated with the development of cognitive and socio-emotional competencies, broadening the possibilities for meaningful learning (Carvalho et al., 2025).

The effectiveness of inclusive practices also depends on teacher education and preparedness, which directly influence the ability to implement activities mediated by technological resources and to meet each student's needs (Fitas, 2025). Other research highlights that careful pedagogical planning and the adoption of diversified resources help make the educational process more accessible and effective for all students (Freitas et al., 2023).

Pedagogical mediation grounded in digital resources makes it possible to monitor student performance, identify difficulties, and provide appropriate support, consolidating a more flexible, collaborative, and student-centered learning environment (Rios; Schlünzen; Schlünzen Junior, 2025). These practices contribute to building an inclusive education in which the teaching-learning process is adapted to each student's particularities, promoting equity and quality (Marino et al., 2023).

In this context, the purpose of this study is to analyze how pedagogical mediation, through technological resources, contributes to promoting inclusive educational practices, considering the different dimensions of learning and the challenges faced by educators in implementing these strategies.

METHODOLOGY

This is an integrative literature review conducted between November and December 2025, with a qualitative approach and an exploratory-descriptive nature. This type of review enables the gathering, comparison, and synthesis of different types of scientific evidence, fostering a broad and systematized understanding of the phenomenon under investigation, as highlighted by Whittemore and Knafl (2005).

SEARCH PROCEDURES

The searches were guided by the following research question: “How do studies address artificial intelligence as pedagogical mediation in the context of inclusive education?” Data collection was carried out in the following databases: Scientific Electronic Library Online (SciELO), Education Resources Information Center (ERIC), and the Portal de Periódicos da Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES Journal Portal).

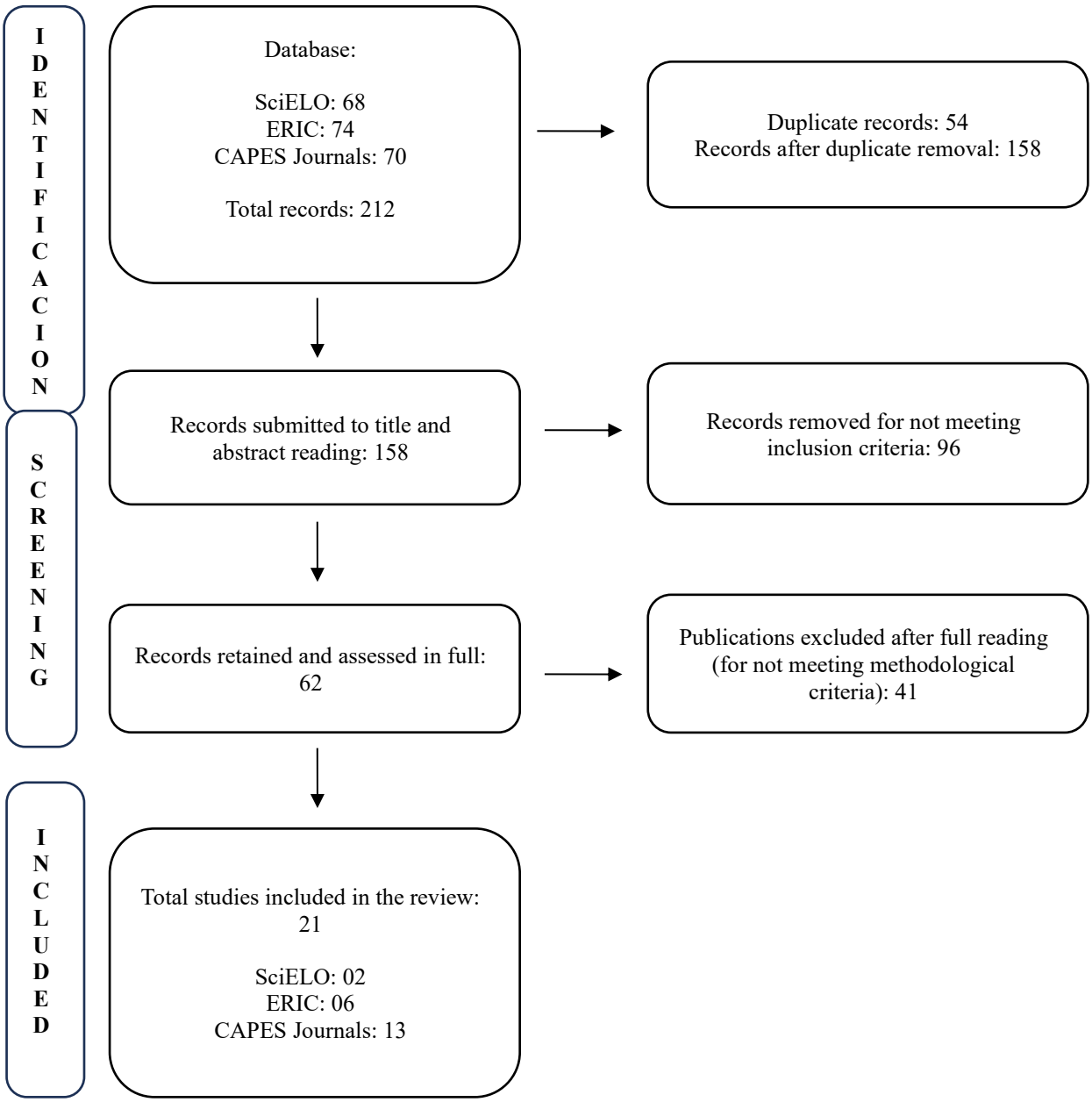
Descriptors in Portuguese and English were used, combined through the Boolean operators AND and OR, including: *(inteligência artificial), (educação inclusiva), (mediação pedagógica), (tecnologias educacionais)*, (artificial intelligence), (inclusive education), (pedagogical mediation), and (educational technologies).

Inclusion and exclusion criteria

Studies published between 2015 and 2025, available in full, that presented a direct interface among artificial intelligence, pedagogical practices, and inclusive education were included. Articles that discussed the role of artificial intelligence in supporting learning, personalizing teaching, and promoting educational inclusion were considered. Duplicate publications were excluded, as were studies with an exclusively technical or computational focus without articulation with the educational field, as well as works that addressed the theme superficially or without connection to the inclusive context.

SELECTION AND CONTENT SAMPLE

The initial search resulted in 212 studies, with 68 publications from the Scientific Electronic Library Online (SciELO), 74 studies identified in the Education Resources Information Center (ERIC), and 70 productions found in the CAPES Journal Portal.



Source: Authors (2025).

After removal of duplicates, 158 publications remained, distributed across the databases consulted. In the title and abstract screening stage, 96 studies were excluded for not meeting the previously established inclusion criteria. Thus, 62 articles were selected for full-text reading.

At the end of the eligibility process, 21 studies fully met the methodological criteria and constitute the final sample of the research, distributed as follows: SciELO = 2; ERIC = 6; CAPES Journal Portal = 13, encompassing national and international works.

ANALYSIS TECHNIQUES

Data analysis was conducted through thematic content analysis, based on Bardin (2016), as it is a systematic and rigorous method that enables the interpretation of meanings present in the selected scientific productions, as shown in Table 1.

Table 1

Stages of the Content Analysis Technique

Analysis Stage	Description	Application in the Study
Pre-analysis	Phase of organizing the material, characterized by skimming and defining the corpus, objectives, and analytical criteria.	An exploratory reading was carried out of the 18 selected studies, aiming at familiarization with the content and initial identification of recurrent ideas related to artificial intelligence and inclusive education.
Corpus constitution	Definitive selection of the documents to be analyzed, ensuring exhaustiveness, representativeness, and relevance.	The corpus consisted of 18 scientific articles, published between 2015 and 2025, selected from the SciELO, ERIC, and CAPES Journal databases.
Material exploration	Encoding stage, in which recording units and context units are identified.	Passages were highlighted that addressed the use of artificial intelligence as pedagogical mediation, inclusion strategies, personalization of learning, and support for students with specific educational needs.
Coding	Process of classifying and grouping data into initial codes according to semantic similarity.	The selected excerpts were organized into codes related to the contributions, challenges, potentialities, and limits of artificial intelligence in the inclusive educational context.
Categorization	Grouping the codes into broader and analytically consistent thematic categories.	The codes were reorganized into thematic categories, allowing for an understanding of recurrent trends in the studies, as well as theoretical and empirical gaps and convergences.
Treatment of results and interpretation	Synthesis of findings, inferences, and interpretation in light of the theoretical framework.	The categories were interpreted based on Bardin's content analysis, enabling an interpretive synthesis of the contributions of artificial intelligence as pedagogical mediation in inclusive education.

Source: Authors (2025).

RESULTS AND DISCUSSION

PERSONALIZATION AND INDIVIDUALIZED LEARNING

The twenty-one selected studies revealed different perspectives on the role of artificial intelligence (AI) in pedagogical mediation within inclusive contexts, highlighting significant advances and challenges to be overcome. Albertoni et al. (2024) conducted an experimental study with elementary school students, using AI systems to monitor performance in reading and mathematics activities, identifying patterns of individual difficulties. The results indicated that students who received personalized activities showed significant improvements in comprehension and content retention, demonstrating that AI can act effectively in differentiated learning. Alves et al. (2024), through qualitative research with interviews with teachers, analyzed how intelligent platforms enable real-time pedagogical adjustments, promoting the inclusion of students with different learning paces. Amorim (2025) studied the implementation of adaptive systems in heterogeneous classes, observing that technology-mediated personalization encouraged student autonomy and protagonism, while Carvalho et al. (2025) assessed students' interaction with AI tools and found increased engagement and motivation in traditionally more challenging subjects.

SUPPORT FOR LEARNING

The support provided by AI for individualized learning was addressed by Carvalho et al. (2025) in a case study on the use of educational chatbots. The authors found that, in addition to answering questions, these tools encouraged collaborative discussions among students, strengthening active learning. Fitas (2025) analyzed accessibility software for students with visual and hearing impairments, highlighting that AI overcame communication barriers and facilitated access to curricular content. Freitas et al. (2023) evaluated systems that recommend adapted pedagogical activities, finding that continuous monitoring of student progress enabled early and personalized interventions. Rios, Schlünzen, and Schlünzen Junior (2025) investigated the application of Universal Design for Learning (UDL) associated with AI in inclusive classes, showing that the combination of inclusive pedagogical strategies and technology promoted greater equity and student participation. Melo-López et al. (2025) analyzed adaptive learning platforms at the university level, showing that detailed monitoring of academic progress made immediate feedback possible, reinforcing adaptive and continuous learning.

PEDAGOGICAL MANAGEMENT AND TEACHER EDUCATION

Goldman et al. (2024) conducted an exploratory study on the impact of AI on teachers' daily routine, showing that automating administrative and grading tasks freed time for pedagogical planning and individualized support. Holman et al. (2024) investigated teacher education programs that included

AI-based simulations, showing that teachers felt more confident in applying inclusive and adaptive strategies in the classroom. Marino et al. (2023; 2024) analyzed the use of large-scale performance analysis algorithms, showing that data processing enabled immediate and precise pedagogical interventions. Li, Yan, and Zeng (2025) examined adaptive systems that automatically adjusted task complexity according to the student profile, observing increased engagement and persistence in challenging tasks. Pagliara et al. (2024) highlighted AI's potential to promote collaborative learning by suggesting pairs and groups based on complementary skills. Finally, Plooy, Casteleijn, and Franzsen (2024) analyzed higher education learning environments, showing that AI contributed significantly to academic performance through personalization and continuous monitoring.

CHALLENGES AND FUTURE PERSPECTIVES

Despite the benefits associated with the use of artificial intelligence (AI) in education, the selected studies—systematized in Table 2—show the presence of significant challenges to its effective implementation. Ribeiro et al. (2024) also conducted a review on teacher training and technological integration, finding that the effectiveness of AI-mediated practices strongly depends on teacher preparedness and pedagogical planning. Smith et al. (2024) studied students' perceptions of AI tools, finding that acceptance and engagement are directly related to clarity of use and interaction with the teacher. Mesquita et al. (2025) explored AI implementation in Specialized Educational Assistance, showing that adaptive activities promote greater independence and confidence among students. Garczón, Patiño, and Marulanda (2025) analyzed international trends, highlighting that countries with technological inclusion policies observe significant gains in personalization and equity. Fitas (2025) reinforced that the structured application of AI in pedagogical practices increases the effectiveness of inclusive learning, while Ribeiro and Lopes (2024) emphasized that, with appropriate pedagogical support, AI decisively contributes to engagement and equity, underscoring that integration among technology, teacher education, and inclusive strategies is essential for educational success.

Table 2

Characterization of the selected studies on challenges and future perspectives of artificial intelligence in inclusive education

Author(s)	Year	Study Title	Methodology	Main Findings
Albertoni, N. R. M. et al.	2024	Inteligência artificial e tecnologias digitais: contribuições para práticas pedagógicas [Artificial intelligence and digital technologies: contributions to pedagogical practices]	Integrative review	Shows contributions of AI to inclusive pedagogical practices, highlighting the potential for teaching personalization.
Alves, D. L. et al.	2024	Impacto da inteligência artificial na educação inclusiva [Impact of artificial intelligence on inclusive education]	Empirical study	Identifies improvements in access and engagement for students with special needs, but points to challenges in infrastructure and teacher training.
Amorim, H. D. de	2025	Educação inclusiva e inteligência artificial: perspectivas e desafios [Inclusive education and artificial intelligence: perspectives and challenges]	Systematic review	Highlights positive perspectives of AI in school inclusion, stressing the need for adequate teacher education.

Assunção; Maia	2025	Use of ChatGPT as a complementary study and teaching tool in medical education	Experimental study	Demonstrates that ChatGPT supports personalized learning, providing pedagogical support in specific contexts.
Fitas, R.	2025	Inclusive education with AI: supporting special needs and tackling language barriers	Empirical study	Shows that AI helps overcome language barriers and address special educational needs, promoting inclusion.
Freitas, E. L. S. X. et al.	2023	Inteligência artificial para educação: um caminho para um campo mais inclusivo [Artificial intelligence for education: a path toward a more inclusive field]	Integrative review	Analyzes how AI broadens access to education, proposing pathways for more inclusive pedagogical practices.
Garczón, J.; Patiño, E.; Marulanda, C.	2025	Systematic review of artificial intelligence in education: trends, benefits, and challenges	Systematic review	Identifies trends in AI use, benefits in personalized learning, and challenges in educational implementation.
Goldman, S. R. et al.	2024	Using AI to support special education teacher workload	Experimental study	Shows that AI reduces teachers' workload, allowing focus on pedagogical strategies and individualized support.
Holman, K. et al.	2024	Navigating AI-powered personalized learning in special education: a guide for preservice teacher faculty	Practice review	Presents guidelines for teacher training focused on AI use in inclusive education.

Li, J.; Yan, Y.; Zeng, X.	2025	Exploring artificial intelligence in inclusive education: a systematic review of empirical studies	Systematic review	Shows that AI facilitates teaching personalization and inclusion of students with special needs, highlighting research gaps.
Lima, A. A. de	2025	Formação docente e inteligência artificial: implicações para a inclusão escolar [Teacher education and artificial intelligence: implications for school inclusion]	Qualitative study	Points out that teacher training in AI is crucial to promote effective inclusive practices.
Marino, M. T. et al.	2023	The future of artificial intelligence in special education technology	Literature review	Shows the potential of AI in assistive technologies, with a positive impact on special education.
Marino, M. T. et al.	2024	Special education administrators use of artificial intelligence (AI) to synthesize data	Case study	Shows that school administrators can use AI for data-driven decision-making, optimizing educational resources.
Melo-López, V.-A. et al.	2025	The impact of artificial intelligence on inclusive education: a systematic review	Systematic review	Shows a positive impact of AI on inclusive learning, especially for adaptive support to students with special needs.
Mesquita, E. S. A. dos et al.	2025	Inteligência artificial como ferramenta de apoio pedagógico no atendimento educacional especializado [Artificial intelligence as a pedagogical	Field study	Indicates that AI offers complementary resources in specialized educational assistance, improving learning outcomes.

		support tool in specialized educational assistance]		
Pagliara, S. M. et al.	2024	The integration of artificial intelligence in inclusive education: a scoping review	Scoping review	Shows the integration of AI in inclusive schools, with emphasis on personalization and monitoring of student progress.
Plooy, E. D.; Casteleijn, D.; Franzsen, D.	2024	Personalized adaptive learning in higher education: a scoping review of key characteristics and impact on academic performance and engagement	Scoping review	Shows that AI-based adaptive learning increases engagement and academic performance, with implications for inclusion.
Ribeiro, G. C. et al.	2024	Inteligência artificial na educação inclusiva: desafios e oportunidades para alunos com necessidades educacionais especiais [Artificial intelligence in inclusive education: challenges and opportunities for students with special educational needs]	Empirical study	Identifies opportunities for inclusion through AI, but points to technological barriers and the need for teacher training.

Ribeiro, V. A.; Lopes, L. A.	2024	Influência do uso da inteligência artificial no ensino [Influence of the use of artificial intelligence in teaching]	Experimental study	Shows that AI strengthens teaching strategies, promoting more individualized and inclusive learning.
Rios, G. A.; Schlünzen, E. T. M.; Schlünzen Junior, K.	2025	[Educação inclusiva com desenho universal para a aprendizagem e inteligência artificial: uma revisão de escopo] Inclusive education with universal design for learning and artificial intelligence: a scoping review	Scoping review	Highlights that universal design allied with AI promotes accessibility and inclusion of all students.
Smith, S. J. et al.	2024	A guide for special education leaders to utilize artificial intelligence: students' perspectives for future consideration	Qualitative study	Points to student perspectives on AI use, helping leaders plan future inclusive practices.

Source: Authors (2025).

The analysis of the selected studies reveals a set of convergences regarding the role of artificial intelligence (AI) in inclusive education. A large portion of the works, such as those by Albertoni et al. (2024), Freitas et al. (2023), and Li, Yan, and Zeng (2025), highlight that AI offers resources for teaching personalization, allowing pedagogical activities to be adapted to students' individual needs, especially those with special educational needs. Complementarily, Fitas (2025) and Melo-López et al. (2025) reinforce that AI helps to overcome linguistic and cognitive barriers, promoting greater inclusion and equity in the learning process.

Beyond personalization, another point of convergence is the importance of teacher education for the effectiveness of AI in inclusive contexts. Studies such as Lima (2025) and Holman et al. (2024) indicate that, although digital technologies offer multiple possibilities, their impact strongly depends on teacher training, evidencing the need for continuous professional development strategies. In this regard, Alves et al. (2024) add that the lack of infrastructure and adequate training still constitutes a significant barrier, despite AI's potential.

In terms of practical impacts, empirical studies such as those by Assunção; Maia (2025), Goldman et al. (2024), and Ribeiro et al. (2024) converge in showing that AI reduces teachers' workload and supports specialized educational assistance, freeing teachers to focus on more meaningful pedagogical strategies. This evidence is reinforced by Mesquita et al. (2025), who show that AI acts as a complementary tool, strengthening adaptive teaching and broadening the reach of inclusive practices.

Despite these convergences, some studies present divergent perspectives or unresolved challenges. For example, Garczón, Patiño, and Marulanda (2025) highlight that AI implementation still faces ethical and technological challenges, while Rios, Schlünzen, and Schlünzen Junior (2025) emphasize that, even with universal design for learning, not all AI solutions equally serve all students, indicating the need for flexible, contextually adjusted solutions. Smith et al. (2024) also point to divergences in students' own perceptions of AI use, suggesting that technology should be constantly evaluated and adapted according to students' real needs.

Finally, a complementarity is observed between review studies and empirical studies. Reviews such as those by Pagliara et al. (2024) and Amorim (2025) provide a broad synthesis of AI trends and benefits, while field and experimental studies, such as those by Marino et al. (2023, 2024) and Plooy, Casteleijn, and Franzsen (2024), offer concrete evidence of application, allowing a better understanding of impacts on learning, engagement, and inclusion. This interplay between theory and practice reinforces the topic's relevance and points to future research paths, especially regarding teacher training, ethical monitoring, and contextual adaptation of technology.

In summary, the discussion indicates that AI has significant potential to promote inclusive education, but its effectiveness depends on factors such as teacher training, infrastructure, student perceptions, and continuous evaluation of the tools implemented. The studies complement one another by showing that technology, when used strategically and consciously, can transform pedagogical practices, increasing equity and personalization of learning.

CONCLUSION

In short, this study shows that artificial intelligence plays a relevant role in promoting inclusive pedagogical practices, fostering teaching personalization, student engagement, and individual protagonism. The present study aimed to analyze how artificial intelligence acts as pedagogical mediation in the context of inclusive education, considering the possibilities for learning personalization, support for the educational process, and the challenges faced by teachers and institutions.

The results indicate that AI makes it possible to adapt content and activities to students' specific needs, especially those with special educational needs. Intelligent educational technologies promote increased autonomy, reinforcement of learning, and reduction of teachers' administrative workload,

allowing greater focus on pedagogical planning and individualized follow-up. It is emphasized that the effectiveness of implementation depends directly on continuous teacher training and adequate infrastructure—factors essential for AI to be an effective instrument of inclusion.

The research also reveals convergences among different studies: despite ethical and technological challenges noted in some publications, there is consensus about AI's potential to strengthen inclusive practices, complement pedagogical strategies, and foster equity in the teaching-learning process. The integration between theoretical reviews and empirical studies provides a more robust understanding of the opportunities and limitations of technology in inclusive education.

As contributions, the study reinforces the need for teacher training, continuous evaluation of digital tools, and implementation of educational policies that promote the responsible and strategic use of AI. In addition, it points to paths for future research, including analyses of AI's long-term impacts on students' socio-emotional development, comparative studies across different educational contexts, and exploration of technological solutions tailored to multiple learning profiles, respecting classroom diversity.

In summary, the research shows that artificial intelligence—when used consciously, in a planned manner, and articulated with inclusive pedagogical practices—has transformative potential, promoting equity, teaching personalization, and expanding learning opportunities for all students.

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