School inclusion: The role of gamification as an educational mechanism for students with disabilities

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ABSTRACT

The objective of this research was to analyze the role of gamification as an educational mechanism for students with disabilities. The research was characterized as an integrative literature review. Data were collected through searches in the Google Scholar and Scielo databases, using inclusion criteria, specific keywords, and search descriptors AND and OR. As a result, it was possible to verify that gamification emerges as a promising tool in the promotion of inclusive education, especially for students with disabilities, by offering an accessible and engaging educational approach. Implementing targeted games has been shown to increase student motivation and engagement, contributing to a personalized and inclusive education. However, its effectiveness is intrinsically linked to the quality of inclusive education provided by educational institutions, emphasizing the need for proper teacher training and a welcoming school environment. Despite the recognition of its potential, the paucity of studies on its application in inclusive special education highlights the need for further research and academic publications, underscoring the continued importance of developing inclusive and effective educational practices, especially in the use of gamification, to promote truly inclusive and transformative education.

Keywords: Gamification, Education, Students with disabilities.

INTRODUCTION

In today's context, technological advancement is constantly evolving, permeating every aspect of modern life. With the rapid digital transformation, society is witnessing the emergence of innovative technologies such as artificial intelligence, virtual reality, internet of things, and blockchain. These technologies not only simplify everyday tasks, but also revolutionize entire sectors, from industry to medicine, promoting efficiency, connectivity, and accessibility in various spheres of society, especially in education (PAVINATI et al., 2022).

In education, technological advancement has provided a paradigm shift. Digital tools, such as online teaching platforms, educational apps, educational games, and virtual simulations, are redefining the learning process, making it more dynamic, interactive, and personalized. Additionally, technology is enabling access to global educational resources, enabling self-paced learning and collaboration between students and teachers around the world. This integration of technology in education not only broadens the reach of teaching, but also prepares students for an increasingly digitized future, empowering them with essential skills for the 21st century (AZEVEDO, 2022).

In the context of school inclusion, digital technology has been instrumental in breaking down barriers and providing equal learning opportunities for all students, regardless of their abilities or limitations. In addition to providing accessibility features such as screen readers and voice control devices, technology allows for the personalization of teaching, meeting individual student needs and promoting a more inclusive education (GUIMARÃES et al., 2023).

In this scenario, Giglio, Botelho and Oliveira (2017) reiterate that gamification has stood out as an effective strategy to engage students, making the learning process more interactive, fun and engaging. By transforming academic concepts into playful challenges and activities, gamification encourages active student participation, encouraging collaboration, healthy competition, and the development of social-emotional skills, while promoting inclusion and diversity in the educational environment.

Gamification has shown to be a promising tool in promoting the inclusion of students with disabilities in the educational environment. By incorporating playful and interactive elements, gamification provides opportunities for all learners to actively participate in learning activities, regardless of their abilities or limitations. Through adaptations and customizations, educational games can be designed to meet the specific needs of each student, providing an inclusive and accessible learning environment (SILVA; SALES; CASTRO, 2019).

Thus, considering such circumstances, the objective of this research was to analyze the role of gamification as an educational mechanism for students with disabilities. It is hoped that the results of this research will provide theoretical and practical subsidies for educators, managers and other

professionals in the field of education, allowing a deeper understanding of the potential of gamification in promoting school inclusion.

METHODOLOGY

The research was carried out through an integrative review, a methodology that allows the synthesis of existing studies on a given topic, aiming to gather and analyze relevant information to answer a specific question. The rationale for this approach lies in the need to comprehensively and in-depth understand the role of gamification in inclusive education for students with disabilities, exploring diverse perspectives and evidence available in the scientific literature.

For data collection, the search engines of Google Scholar and Scielo were used, using specific keywords and Boolean operators (AND and OR) to ensure the accuracy and comprehensiveness of the results. The inclusion criteria adopted were rigorous, including only Brazilian scientific articles, published in Portuguese, complete, free of charge and associated with the topic of interest. In addition, the selected articles should have been published between the years 2022 and 2024 in order to ensure the up-to-date relevance of the information.

On the other hand, other types of studies, such as theses, abstracts, reports, and articles in languages other than Portuguese, were excluded. Data analysis was conducted in two distinct stages: initially, the abstracts and titles of the selected articles were read to identify their relevance and adequacy to the research objectives. Then, the pre-selected articles were subjected to a thorough reading, allowing for a more detailed and critical analysis. As a result, a final sample of 4 scientific articles that were considered more pertinent to the study in question was obtained.

RESULTS AND DATA ANALYSIS

Through the integrative review, a sample of 4 scientific articles was obtained, as shown in chart 1.

Table 1. Selected articles

Authors	Objective	Methodology	Conclusion
Linhalis et al. (2024)	Highlights the effectiveness of gamification for the inclusion of autistic students	Applied research	Gamification applied to children with autism spectrum disorder (ASD) benefits both the target audience and other learners by offering an accessible and intuitive educational approach. This innovative strategy, which includes games for areas such as spelling and logic, promotes inclusive and personalized education, increasing student motivation and engagement. However, the success of these games depends on the quality of inclusive education offered by the institutions, highlighting the importance of proper teacher training and creating an inclusive school environment.
Basilio et al. (2023)	Analyze the impacts of gamification and play for the inclusion of students with disabilities	Bibliographic research	Based on the research conducted, it becomes evident that the traditional teaching model fails to promote inclusive education, especially for students with intellectual disabilities. Gamification emerges as an affordable and versatile alternative to meet the educational needs of these students. In addition, it is notable that these individuals face obstacles in mainstream education due to prejudices rooted in society regarding difference, which often manifest themselves in the school environment. In addition, schools are often not prepared to receive students with disabilities, since they are structured to serve a public considered "normal", and adaptations are necessary to ensure the effective inclusion of these students.
Silva, Coelho and Godoy (2022)	To investigate the role of gamification in learning and stimulating the cognitive ability of students with Autism Spectrum Disorder (ASD)	Bibliographic research	Gamification has become the subject of several studies, especially in the educational and clinical areas, with a focus on the public of autistic students. Although some studies suggest caution regarding excessive use of screens, such as in video games, there are no reports that categorically affirm its harmfulness to children with ASD. Gamification provides significant benefits, such as concentration, attention, engagement, and better perception of daily routines, contributing to the construction of autonomy. However, there are still gaps to be filled in the understanding of how this educational tool stimulates the teaching-learning and cognition process of these people. Therefore, the development of additional research is crucial to better understand the role of gamification in the education of children with autism, highlighting the importance of science and technology in this context.
Coelho et al. (2022)	Analyze the role of gamification in inclusive special education	Systematic review	Gamification is highlighted as a powerful strategy to promote inclusion in special education, as evidenced by the research. It offers motivational and playful stimuli to students with disabilities, contributing to the development of autonomy and the teaching-learning process. The engagement generated by gamification facilitates cooperation among students and promotes a cooperative teaching perspective, which is fundamental for inclusion. However, despite its potential, there is a dearth of studies on gamification in inclusive special education, underscoring the need for more research and academic publications to fully explore this nuanced approach to teaching.

Source: Survey data (2024).

Research conducted by Linhalis et al. (2024) investigated the benefits of gamification in the educational context, specifically its application in children with autism spectrum disorder (ASD). The authors highlight that gamification not only benefits the target audience, but also other learners, by offering an accessible and intuitive educational approach. Through the implementation of games aimed at areas such as spelling and logic, the strategy promotes an inclusive and personalized education, providing greater motivation and involvement of students in the learning process.

However, the effectiveness of these games is intrinsically linked to the quality of inclusive education offered by educational institutions. In this sense, the authors emphasize the importance of

adequate training of teachers, who must be trained to meet the specific needs of students with ASD, and emphasize the need to create an inclusive school environment that welcomes and supports the diversity of students. Therefore, the research highlights not only the benefits of gamification, but also the importance of an inclusive educational approach and the training of education professionals to promote the success of these innovative strategies.

The study conducted by Basilio et al. (2023) offers important insights into the relationship between the traditional teaching model and the promotion of inclusive education, especially for students with intellectual disabilities. The authors point out that the traditional teaching model has significant flaws in this aspect, evidencing the need for alternative approaches. In this context, gamification emerges as a viable and versatile solution to meet the educational demands of these students, providing an affordable and innovative alternative.

In addition, the study highlights the obstacles faced by students with intellectual disabilities in the regular school environment, highlighting the prevalence of prejudices rooted in society that are often reflected in interactions within the school. These biases, in turn, can compromise the effective inclusion of these students, highlighting the need to create a more welcoming school environment adapted to their specific needs. It is concluded, therefore, that the study not only identifies the challenges faced by students with intellectual disabilities, but also points to the importance of structural and cultural reforms in educational institutions to promote a truly inclusive education.

The authors Silva, Coelho, and Godoy (2022) offer an insight into gamification, highlighting its increasingly prominent role in research, especially in the educational and clinical context, with an emphasis on the audience of autistic students. The authors address a common concern related to excessive screen use, as occurs in video games, but underscore the lack of concrete evidence about its harmfulness to children with ASD.

When exploring the benefits of gamification, the authors highlight positive aspects, such as improved concentration, attention, engagement, and insight into daily routines, all of which contribute to the development of students' autonomy. However, they acknowledge that there are still gaps in the understanding of how this educational tool impacts the teaching-learning process and cognition of people with autism, underscoring the need for additional research to fill these gaps.

Finally, the authors emphasize the importance of science and technology in this context, suggesting that further research development is crucial for a deeper understanding of the role of gamification in the education of children with autism. This approach highlights the ongoing need for research and development of inclusive and effective educational practices for this specific audience.

Coelho et al. (2022) highlight gamification as an effective strategy to promote inclusion in special education, offering motivational and playful stimuli to students with disabilities. The authors show that this approach contributes significantly to the development of autonomy and the teaching-

learning process of these students, emphasizing the engagement generated by gamification as a facilitator of cooperation among students and promoter of a cooperative teaching perspective, which is fundamental for inclusion.

However, despite the potential of gamification, the authors highlight a paucity of studies on its application in inclusive special education. This gap in the literature underscores the pressing need for more research and scholarly publications to fully explore this nuanced approach to teaching. Therefore, the study by Coelho et al. (2022) underscores the continued importance of investigating and developing inclusive and effective educational practices, especially in the use of gamification, to meet the needs of students with disabilities.

FINAL THOUGHTS

Based on this study, it was possible to verify the role of gamification as a promising tool in the context of inclusive education, especially for students with disabilities. The reviewed studies highlight that gamification not only offers tangible benefits for students with disabilities, but can also be advantageous for other students by providing an accessible and engaging educational approach. The implementation of games targeted at specific areas, such as spelling and logic, has been shown to promote inclusive and personalized education, increasing students' motivation and engagement in the learning process.

However, the effectiveness of these games is intrinsically linked to the quality of inclusive education offered by educational institutions. It is critical that teachers receive adequate training to meet the specific needs of students with disabilities, ensuring a welcoming and supportive school environment for student diversity. The studies emphasize the importance of not only gamification, but also an inclusive educational approach and the professional development of educators for the success of these innovative strategies.

In addition, the survey also highlighted the challenges faced by students with disabilities in the mainstream school environment, highlighting the need for structural and cultural reforms in educational institutions to promote true inclusion. Gamification emerges as a viable solution to overcome the deficiencies of the traditional teaching model, offering an accessible and innovative alternative that promotes the development of autonomy and the teaching-learning process of these students.

While the reviewed studies recognized the potential of gamification, they also underscored a dearth of research on its application in inclusive special education. Therefore, there is a pressing need for further research and scholarly publications to fully explore this differentiated approach to teaching. Continuous research and development of inclusive and effective educational practices,

especially in the use of gamification, are key to meeting the needs of learners with disabilities and promoting a truly inclusive and transformative education.

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