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DIGITAL MEDIA AND THE INCLUSION OF STUDENTS WITH DISABILITIES IN EDUCATION

AS MÍDIAS DIGITAS E A INCLUSÃO DE ESTUDANTES COM DEFICIÊNCIA NA EDUCAÇÃO

MEDIOS DIGITALES Y LA INCLUSIÓN DE ESTUDIANTES CON DISCAPACIDAD EN LA EDUCACIÓN

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ABSTRACT
This paper explores the importance of integrating Information and Communication Technologies (ICT) in the inclusion of students with low vision and blind people in schools. The increased use of visual resources in digital technologies represents a challenge for these students, but the appropriate use of tools such as Audio Description (AD) and assistive technology can transform the educational experience, promoting more equitable access to content. AD, by converting visual information into verbal descriptions, allows students with visual impairments to access materials that would otherwise be inaccessible. By adopting these inclusive technologies and practices, schools can overcome visual barriers and create a collaborative and accessible environment for all students. School plays a fundamental role in promoting inclusion and respect for differences, being a privileged space for discussing human rights and diversity. The integration of ICT and adaptive resources not only meets legal inclusion guidelines, but also contributes to fairer and more effective education. Commitment to innovation and adaptation of pedagogical practices is essential to ensure that all students can fully participate in the educational process and develop their potential. With a strategic and inclusive approach, educational institutions can move forward in creating a more accessible and equitable future, reflecting the value of diversity and promoting equal opportunities for all students.

Keywords: Inclusion. Digital Media. Vision. Deficiency.

RESUMO
Este paper explora a importância da integração das Tecnologias da Informação e Comunicação (TIC) na inclusão de alunos com baixa visão e cegos no âmbito escolar. O aumento da utilização dos recursos visuais nas tecnologias digitais representa um desafio para esses alunos, mas a utilização adequada de ferramentas como a Audiodescrição (AD) e tecnologia assistiva pode transformar a experiência educacional, promovendo um acesso mais equitativo ao conteúdo. A AD, ao converter informações visuais em descrições verbais, permite que os discentes com deficiência visual acessem materiais que de outra forma seriam inacessíveis. Ao adotar essas tecnologias e práticas inclusivas, a escola pode superar barreiras visuais e criar um ambiente colaborativo e acessível para todos os estudantes. A escola desempenha um papel fundamental na promoção da inclusão e no

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respeito às diferenças, sendo um espaço privilegiado para a discussão de direitos humanos e diversidade. A integração das TIC e de recursos adaptativos não apenas atende às diretrizes legais de inclusão, mas também contribui para uma educação mais justa e eficaz. O compromisso com a inovação e a adaptação das práticas pedagógicas é essencial para garantir que todos os discentes possam participar plenamente do processo educativo e desenvolver seu potencial. Com uma abordagem estratégica e inclusiva, as instituições de ensino podem avançar na criação de um futuro mais acessível e igualitário, refletindo o valor da diversidade e promovendo oportunidades iguais para todos os estudantes.

Palavras-chave: Inclusão. Mídias Digitais. Visão. Deficiência.

RESUMEN

Este artículo explora la importancia de integrar las Tecnologías de la Información y la Comunicación (TIC) en la inclusión del alumnado con baja visión y ceguera en las escuelas. El aumento del uso de recursos visuales en las tecnologías digitales supone un reto para este alumnado, pero el uso adecuado de herramientas como la Audiodescripción (AD) y la tecnología de asistencia puede transformar la experiencia educativa, promoviendo un acceso más equitativo a los contenidos. La AD, al convertir la información visual en descripciones verbales, permite al alumnado con discapacidad visual acceder a materiales que de otro modo serían inaccesibles. Mediante la adopción de estas tecnologías y prácticas inclusivas, las escuelas pueden superar las barreras visuales y crear un entorno colaborativo y accesible para todo el alumnado. Las escuelas desempeñan un papel fundamental en la promoción de la inclusión y el respeto a las diferencias, sirviendo como un espacio privilegiado para el debate sobre los derechos humanos y la diversidad. La integración de las TIC y los recursos adaptativos no solo cumple con las directrices legales de inclusión, sino que también contribuye a una educación más equitativa y eficaz. El compromiso con la innovación y la adaptación de las prácticas pedagógicas es esencial para garantizar que todo el alumnado pueda participar plenamente en el proceso educativo y desarrollar su potencial. Con un enfoque estratégico e inclusivo, las instituciones educativas pueden impulsar la creación de un futuro más accesible y equitativo, que refleje el valor de la diversidad y promueva la igualdad de oportunidades para todo el alumnado.

Palabras clave: Inclusión. Medios Digitales. Visión. Discapacidad.

1 INTRODUCTION

The inclusion of blind and visually impaired people in the school environment is a topic of increasing relevance in contemporary education, especially with the advancement of Information and Communication Technologies (ICT). These technologies, which are often associated with a large volume of images and visual content, can present significant challenges for visually impaired students. However, when used appropriately and accompanied by assistive technology resources and practices such as Audio Description (AD), ICT has the potential to transform the educational experience of these students. The judicious integration of these tools can not only facilitate access to the content of the curriculum base, but also promote access and opportunity for more collaborative and inclusive learning. The combination of ICT and AD can overcome visual barriers, allowing all students to actively participate in the educational process, building knowledge in an interactive and accessible way.

The school plays a crucial role in promoting an inclusive and fairer community, functioning as a prominent space for reflection on respect for differences and human rights. By integrating ICT in an innovative way and adapted to the needs of visually impaired students, the educational institution not only contributes to the academic training of these students, but also prepares them to act effectively in an increasingly technological social environment. The school's responsibility goes beyond simply complying with legal inclusion standards, it involves building an environment that values diversity and promotes equity in access to knowledge. Therefore, the strategic use of ICT, combined with inclusive practices, is essential to ensure that all students, regardless of their visual abilities, can enjoy a rich and complete education.

2 INTEGRATING THE FUTURE: THE IMPORTANCE OF DIGITAL MEDIA IN CONTEMPORARY EDUCATION

Digital media is a type of communication that uses the internet as a means of distribution and is formed completely by digital codes or binary numbers. Unlike analog media, which relies on physical devices to record and reproduce information, digital media allows for immediate user interaction. Key examples of digital media include online communication tools such as websites, blogs, and social media platforms. In this way, it covers any content or communication channel available on the network. Education, as a field of study and practice, has been transformed over the years and, with the advent of digital

media, this change has accelerated. The development of education and the introduction of digital media have aroused great interest among researchers and educators, since the inclusion of these technologies in teaching has changed the way students absorb knowledge and how teachers transmit their classes, bringing new opportunities and also challenges to be faced (SILVA, ESCOBAR, SILVA, MEROTO NARCISO, 2023).

Still for the authors cited, The current scenario of digital media is quite varied, especially if we consider that the society of the twenty-first century is in constant transformation; we have entered the information age or the so-called interconnected society. Thus, it can be seen that these media have a role that is becoming increasingly important in education, collaborating for the design of pedagogical materials in the school environment and providing students with different experiences, by offering new ways of teaching and learning, in addition to allowing greater interaction and cooperation between students and teachers. Among the analog media used in the teaching-learning process, printed materials, television/video and radio stand out. However, with rapid technological progress, interesting alternatives emerge to streamline teaching in schools. In addition, there has been a major change with regard to the physical space, as previously the classroom was limited to a closed environment, and now it integrates new multimedia elements, which reflects the transformation caused by digital in education. Schools need to innovate to keep up with this technological evolution.

Different languages are necessary to expand literacy practices, as Rojo (2019) argues. Digital media, due to their versatility, allow the use of various languages, including visual, which is crucial for digital learning, promoting interaction and connection with technologies.

Considering the fundamental role of the school in the formation of visual readers, capable of interpreting the visual messages that surround them, digital technologies are configured as indispensable tools in the teaching-learning process. The predominant visual language in virtual social networks, for example, directly influences the textual production of high school students.

3 NEW TECHNOLOGIES AND EDUCATION: THE EVOLUTION OF THE TEACHING AND LEARNING PROCESS IN CONTEMPORARY SOCIETY

According to Silva and Correa (2014), it is indisputable that human beings are in a continuous process of evolution, and this constant movement has raised many questions, especially with regard to "information" and its connection with progress. In fact, this vast and

growing amount of information emerged during the Industrial Revolution, when access to books and knowledge was limited, but suddenly it became possible to share and acquire intellectual productions from different regions for various people. In the 1980s, with the rapid advance of industrialization, post-industrial capitalism emerged, popularizing the term "information society", which came to be widely used. Technology has allowed human beings to control information, since it is a fundamental component of any human activity, whether individual or collective. Today, it is not possible to imagine development without the presence of technology.

It is essential to highlight that, in a social environment flooded with information from everywhere, it is common for young people, often unprepared to deal with the challenges of this era, to end up becoming alienated. According to Silveira and Bazzo, "it is essential to carry out a critical analysis of technology, considering its historical formation and its social function, in order not only to understand the meaning of technology, but also to reassess and redefine its role in society" (2009, p.183).

Also for Silva and Correa (2014), several conceptions about technologies as educational tools were in fact materialized. Examples of this are distance education, e-books, videoconferences, ATMs, and electronic mail, among others. However, it is crucial to recognize that technological advancement has also brought a number of social problems. Today's society needs to be aware of the challenges it faces, which encompass economic, cultural, social, political and ethical dimensions. Among these issues are poverty, the exposure of privacy on social networks, unemployment, the violation of privacy, the lack of identity and visual pollution, among other aspects that add complexity to contemporary reality. These challenges lead us to reflect on how technologies are used and their effectiveness in the field of education, guidance and exploration of knowledge.

If, before the advent of technologies, education already aimed to enrich the knowledge transmitted and discussed in the classroom, the introduction of technologies offered a qualitative contribution that would not only boost the economic growth of a nation, but also promote the critical and participatory development of human capacities. According to França (2010), transformations are taking place more and more rapidly, fueled by the continuous evolution and expansion of information and knowledge. These changes directly affect our contemporary reality, shaping and adjusting the way we communicate and interact with the media and the world. They arouse curiosity and the desire to create new habits, adapt and follow this progress.

4 DIGITAL TECHNOLOGIES AND VISUAL IMPAIRMENT: THE CONTRIBUTION OF ICT TO PEDAGOGICAL PRACTICE IN THE CONTEXT OF THE BRAZILIAN INCLUSION LAW

Bonilla, Silva and Machado (2018) point out that, for several decades, the movement in defense of the rights of people with disabilities has driven the formulation of public policies in Brazil. However, it was only in 2015 that the country was awarded legislation specifically aimed at inclusion in all its spheres. The Brazilian Inclusion Law (LBI), also called the Statute of Persons with Disabilities (Law No. 13,146/2015), was enacted on July 6, 2015, entering into force on January 2, 2016. With regard to school inclusion, the LBI ensures the right of people with disabilities to access conventional education. However, the LBI is not limited to the educational field, but also covers issues such as the right to habilitation and rehabilitation, as well as rights related to culture, sports, tourism, and leisure. It is especially significant to highlight that, in the current scenario of Information and Communication Technologies (ICT) development, the LBI covers sections dedicated to assistive technology, accessibility, and the right to communication and information.

According to the authors, the inclusion of these topics in the legislation highlights the importance of Information and Communication Technologies (ICT) in the daily lives of people with disabilities and demonstrates their usefulness for those who seek to implement inclusion actions in the school environment. ICT has the ability to naturally introduce issues related to disability, accessibility and human rights into classroom activities; stimulate collaboration among students; and to ensure the effective participation of a group of historically marginalized students: those with visual impairments.

According to Piletti (2014), it is essential to exercise sensitivity and commitment when working with students who have visual impairment. It should be considered that the progress of technologies, such as photography, cinema, television, videos and digital platforms, has resulted in an expansion in the use of visual elements. Currently, most materials (whether written or oral) are accompanied by some kind of visual resource (graphs, diagrams, figures, videos, etc.) or are transmitted exclusively by visual means. However, for students who are blind or have low vision, these representations can constitute a barrier to the full assimilation of information. Furthermore, even if part of the content is presented verbally, if it is only projected or displayed on screens, it will remain inaccessible to this audience. Thus, for the inclusion of these people to be effective, it is crucial to ensure their rights, not only through legislation, but also through concrete practices in the daily life of society.

According to the legislation, educational systems need to "[...] ensure conditions for access, continuity, participation and learning, through the provision of accessibility services and resources that remove obstacles and promote complete inclusion" (BRASIL, Law No. 13,146, 2015, art. 28). This implies that they must be offered "[...] appropriate services and adjustments to meet the needs of students with disabilities and ensure their full access to the curriculum in equivalent conditions, encouraging the achievement and exercise of their autonomy" (BRASIL, Law No. 13,146, 2015, art. 28). Thus, when planning their classes, the teacher who wants to use or ask students to use slides, videos, internet access, blogs, among others, must develop dynamics and activities that ensure the full participation of all students, without exception. Otherwise, a "communication and information barrier" will arise, which refers to an "impediment, obstacle, attitude or behavior that hinders or makes impossible the transmission or reception of messages and information through communication systems and information technology" (BRASIL, Law No. 13,146, 2015, art. 3).

Leme (2003) describes that vision is the result of the integration of several functions, including visual acuity, visual field, binocular coordination, contrast sensitivity, light adaptation, dark adaptation, and color perception. This combination allows you to distinguish shades, sizes, distances, shapes, arrangements, and movements within a field of approximately 180º. In addition, the author points out that the difference between blindness and low vision is more functional than medical. People with low vision are those who, despite being officially classified as blind, are able to use residual vision to carry out daily activities, especially at school. In summary, even if an individual's residual vision is within the parameters of low vision, if they are unable to use this vision and need guidance in braille, they will be considered blind.

Vygotsky [...] highlighted that the challenge of blindness is basically instrumental and, by providing the blind with alternative methods of access to cultural elements that are inaccessible due to lack of vision, the problem can be overcome, as occurs with the braille system, which allows the blind to access writing (VYGOTSKY, 1997 apud LEME, 2003, p.20).

An effective practice to sensitize both teachers and colleagues of visually impaired students is to use the computer (or smartphone) with screen reading software and browse various websites on the internet. These activities can be used to introduce the issue of disability and human rights, as well as foster productive discussion in the classroom. Another very useful activity for this purpose is the exhibition of film excerpts without the presentation of the images, that is, only with the audio. What is the level of understanding of the content

of the film by students in this way? This practice is especially useful for introducing an assistive technology that deals with information that cannot be accessed by screen readers, such as images. This feature is called Audio Description (AD). Audio description makes visual content such as photographs, paintings, sculptures, textbook illustrations, classroom posters and slide presentations accessible, as well as audiovisual content such as films, plays and television programmes, for people who are blind or have low vision. It consists of converting images into words to ensure that crucial information, transmitted predominantly in a visual way, is not lost (BONILLA, SILVA, MACHADO, 2018).

According to the authors, Information and Communication Technologies (ICTs) can play a crucial role in the inclusion of blind and low-vision people in the school environment. While the use of digital technologies often involves a large amount of images, and the inappropriate use of these technologies can create challenges for these students, the application of these tools can have substantial benefits for the classroom. By integrating assistive technology resources with the principles of Audio Description (AD), and employing ICT in a way that goes beyond conventional teaching methods, it is possible to facilitate collaborative work between students with and without visual impairment. This promotes the construction of knowledge in an inclusive, interactive, autonomous, and creative way. The school, being an essential environment for social coexistence, offers a privileged space to address topics such as human rights and respect for differences. It is essential that the school helps students understand the importance of developing a fairer and more inclusive society, while preparing them for an increasingly technological world.

5 FINAL CONSIDERATIONS

In summary, the proper implementation of ICTs in the school environment can be decisive for the inclusion of blind and low-vision students. Effective use of tools such as AD and assistive technology resources provides a valuable opportunity to overcome visual barriers, providing more equitable access to educational content. When these technologies are applied in a thoughtful and strategic way, they not only facilitate the full participation of these students in school activities, but also enrich the learning experience for all. In this way, ICT becomes essential allies to promote a more inclusive and collaborative teaching environment, ensuring that all students can develop their academic and personal potential.

In addition, the school, as the fundamental nucleus of educational and social formation, plays a crucial role in the construction of a more just and inclusive society. By

adopting educational practices that integrate adaptive technologies and promote accessibility, educational institutions not only meet legal requirements but also move towards equity and respect for diversity. The effort to adapt education to the needs of all students is significant, but the gains in terms of inclusion and opportunities are immeasurable. With a firm commitment and an innovative approach, schools have the potential to be transformative agents in creating a more equitable and accessible future for all.

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