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Integrating technology and instructional design to enhance educational practices

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ABSTRACT

The Digital Age has brought significant challenges to education, requiring innovative approaches to keep students engaged and promote effective learning. This work aims to understand the role of instructional design in the transformation of educational practices, integrating technology to meet new learning needs. The methodology employed is based on a review of the literature on instructional design and its ability to improve the educational process. Instructional design is a field dedicated to creating effective learning experiences, involving needs analysis, goal setting, development of teaching strategies, resource selection, development of instructional materials, implementation, and evaluation. Continuous assessment is essential to identify areas for improvement and ensure that learning objectives are met. The integration of digital technologies in instructional design enhances the personalization of learning, promoting more dynamic and interactive environments. However, challenges such as teacher training, resistance to the adoption of new technologies, and digital inequality must be addressed. The conclusion points out that, despite these challenges, instructional design is a crucial tool for creating meaningful, inclusive, and accessible learning experiences. For its transformative potential to be realized, it is essential that educational policies guarantee equal access to the internet and technological tools. Furthermore, the incorporation of instructional design must be integrated into the skills and disciplines crucial for the 21st century, adapting to contemporary realities and promoting a more inclusive and effective education.

Keywords: Instructional Design, Technology, Learning, Challenges, Inclusion.

INTRODUCTION

After the beginning of the Digital Age, education has been facing significant challenges, requiring innovative approaches to keep students engaged and promote effective learning in the insertion in this new digital universe that surrounds us. In the face of this constant evolution, one of the current challenges in education is to plan and develop instructional design models that correspond to the new learning needs of students at all levels, from elementary to higher education.

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In this context, integration with technology through instructional design emerges as a possible solution to the problem, enabling the creation of a synergy between technology and instructional design that can transform educational practices, analyzing fundamentals, tools, and associated challenges.

Contextualization and flexibility are key in instructional design, adapting teaching strategies to students' needs and the local context to promote meaningful and relevant education. In addition, the integration of technologies enhances the personalization of learning, making it more dynamic and interactive, and allows the creation of learning environments that are more adaptable to contemporary demands.

However, the incorporation of technologies also presents significant challenges, such as the need for adequate training for teachers and overcoming digital inequalities, which can hinder equal access to education.

From this, our work, through a methodology based on a literature review, aims to understand about instructional design and its ability to transform the educational process, making it more structured, effective and inclusive, while analyzing its challenges in the face of contemporary needs.

THE ROLE OF INSTRUCTIONAL DESIGN IN TRANSFORMING EDUCATIONAL PRACTICES THROUGH TECHNOLOGY

INSTRUCTIONAL DESIGN AND LEARNING PROCESS

Instructional design, according to Pereira (2021), is a field that is dedicated to the creation of effective and meaningful learning experiences, being composed of a set of actions that start from the identification of learning needs and propose to design, implement and evaluate a solution based on the use of teaching methods, techniques and activities, with the support of technology.

According to Filatro (2008), instructional design involves the analysis of needs, definition of objectives, development of teaching strategies, selection of resources, development of instructional materials, implementation and evaluation, and the most used DI model is the model called ADDIE, its acronym in English forms its pillars and stages: Analyze - Design - Develop - Implement - Evaluate

> The author says that during execution and conception, the instructional designer works with professionals from different areas, and one of his main attributions is to ensure good communication between team members, so that the initial ideas come to fruition, generating quality solutions (Calegari, Silva and Silva, 2014:33).

In addition, instructional design emphasizes the importance of contextualization and flexibility in educational practices, identifying gaps in students' knowledge. For Soares (2012), the adaptation of teaching strategies to the local context and to the particularities of students is essential to promote a meaningful and relevant education.

For the concept of Dick, Carey and Carey (2015), in modern education, all the elements that make up the learning process (instructor, students, learning materials and learning environment) work as an integrated system, which occurs in a chain, playing fundamental roles. And, any change in one of these elements can affect the others and the final learning outcome.

DI helps educators systematically plan, develop, and evaluate teaching processes, making it crucial for creating meaningful, inclusive, and accessible learning experiences. According to Santos (2015), the selection of pedagogical approaches should be careful, considering not only the effectiveness in achieving the objectives, but also the engagement and motivation of the students. In addition, the implementation of these materials in the educational context, as discussed by Moran (2013), requires careful planning to ensure the effective integration of teaching strategies into the learning environment.

Continuous evaluation is one of the crucial aspects of instructional design, because "evaluation in distance education is a dynamic, open and contextualized process that occurs in a period, not being a punctual and isolated action" (Polak, 2009) and therefore, evaluation should be seen not only as a measure of performance, but as a chance to make constant adjustments and improvements in the educational process. (Kenski, 2010), as this ensures that learning objectives are achieved effectively and that teaching is tailored as needed to meet the needs of students.

Based on the needs analysis, the learning objectives are formulated to guide the teaching process, since when the learning objectives are well defined, they help to guide the teaching process and evaluate, as well as the effectiveness of learning (Dick, Carey and Carey, 2015). These objectives should be specific, measurable, attainable, relevant, and time-based (SMART), ensuring that all educational efforts are aligned with the desired goals, and teaching strategies should be selected based on students' needs and educational objectives, thus ensuring maximum effectiveness of the teaching-learning process (Merrill, 2002), which may include methods such as direct teaching, problem-based learning, collaborative learning and the use of educational technologies.

The implementation phase is when the instructional design plan is put into practice, and there must be careful planning for implementation, ensuring the effective integration of teaching strategies into the learning environment, whether face-to-face, online or hybrid (Moran, 2013).

TECHNOLOGY IN THE CONTEXT OF INSTRUCTIONAL DESIGN ENRICHING THE TEACHING AND LEARNING PROCESS

As a result of the social transformations arising from digitalization, since the 90s, educational policies have been committed to incorporating digital technologies in schools. This integration is mainly aimed at renewing traditional teaching practices and improving student performance in various disciplines. With the insertion of these technologies in classrooms, it is intended to foster more constructivist practices, in which students play an active role as researchers and knowledge builders, promoting the development of more advanced cognitive skills (Jara, 2008).

The use of digital technologies in instructional design enhances the personalization of learning, adapting to the individual needs of students and promoting active and self-directed learning. According to Gomes and Souza (2011), "the integration of digital technologies in the educational process allows the creation of more dynamic and interactive learning environments, which meet the various forms of learning of students". This aspect is crucial for the development of critical and creative skills, necessary in the contemporary context.

E-learning platforms and learning management applications (LMS) play a vital role in providing easy access to educational materials. Bates (2017) highlights that "online learning platforms allow greater flexibility in teaching, as students can access materials anytime and anywhere, promoting continuous learning". This flexibility is particularly important for students.

CHALLENGES OF USING TECHNOLOGY IN THE TEACHING AND LEARNING PROCESS

The integration of technologies in instructional design, while beneficial, presents significant challenges, ranging from equitable and inclusive accessibility to teacher training.

> Digital technologies are, without a doubt, resources that are very close to students, because the speed of access to information, the form of random access, full of connections, with countless possibilities of paths to follow, as is the case of the internet, for example, are much closer to the way the student thinks and learns. Therefore, using such technological resources in favor of education becomes the challenge of the teacher, who needs to appropriate such resources and integrate them into their daily classroom life (Jordão, 2009, p.10).

In this context, teachers may need significant training to use new technologies effectively (Ertmer and Ottenbreit-Leftwich, 2010), not to mention that there may be resistance to the adoption of new technologies, as some educators are more familiar with traditional teaching methods (Cuban, 2001).

Among the main challenges, we must also highlight the digital divide, which can accentuate differences in access to education. Selwyn (2011) points out that the lack of access to adequate technology can exclude students from technology-based educational activities, perpetuating and even expanding existing inequalities. All in all:

> (...) The digital divide prevents the reduction of social exclusion, since the main economic and governmental activities and a good part of society's cultural production are migrating to the network, being practiced and disseminated through informational communication. To be outside the network is to stay out of the main flows of information. To be unaware of its basic procedures is to embitter the new ignorance (Silveira, 2001, p. 18).

Digital inclusion is crucial to establish a new citizenship, which goes beyond improving employability, as it contributes to the development of communities, helping to solve local problems, promoting active participation and critical autonomy in political practices and thus favoring social inclusion and people's ability to make significant changes in their lives and in society (Assumpção and Mori 2006 apud Grossi, Costa and Santos, 2013).

In this context, it is crucial to ensure that educational materials are not only accessible but also of high quality. To this end, there is a need for a rigorous review of the concepts and principles of instructional design for online courses, in order to maintain the relevance and effectiveness of the content, including thinking about ethical and privacy issues, as the analysis of educational data must be conducted carefully to protect the privacy of students and ensure the ethical use of information (Dubugras, 2022; Guimarães Junior et al., 2023)element.

In addition, according to Claro, M. and Castro-Grau, C. (2023), recent studies indicate that in recent years digital technologies have been predominantly employed to assist conventional teaching methods, without conclusive evidence on their impacts, positive or negative, on the learning process. The analyses show that the various types of digital technologies have different relationships with performance, depending on the subject and the country in which the student is located. In this sense, as with other educational resources, the contribution of digital technologies will depend on who uses them, for what purposes, and in what context (Courtney et. al, 2022; Odell, Cutumisu and Gierl, 2020).

Finally, creating an inclusive environment that meets the needs of all students is an ongoing challenge, as we cannot forget that people with special needs must also be included. However, despite so many challenges, instructional design is an important tool so that "people with disabilities, or even with differences, in relation to the averages presented by a large part of

the population, can use the same environments, services and products, as this not only provides inclusion but can bring people together (Calegari, Silva and Silva 2014:36)."

FINAL CONSIDERATIONS

Instructional design emerges as an essential approach to improving educational quality and plays a crucial role in preparing students to meet modern challenges and achieve academic and professional success. This field not only facilitates teaching and learning, but also promotes an educational environment that values personalization, student engagement, and the efficient use of resources, seeking a more inclusive, accessible, and adapted education

In summary, instructional design offers a promising framework for modern education, but its effective implementation faces significant challenges, and for it to realize its transformative potential, it is essential that educational policies not only ensure equal access to the internet and technological tools, ensuring that all students have equal learning opportunities, However, the incorporation of this aspect should not be seen as an isolated competency, but integrated with other skills and disciplines crucial for the 21st century. For this, it is essential to make adaptations in the curricula, which can go beyond the simple operation of hardware and software and explore, in a comprehensive way, the transformations of digital technologies in education and in the construction of knowledge in all areas of study.

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