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TECHNOLOGIES IN EDUCATION: EXPLORING THE POTENTIAL OF ACTIVE METHODOLOGIES AS PEDAGOGICAL PRACTICES

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ABSTRACT

This research aimed to explore the potential of active methodologies integrated with digital technologies as pedagogical practices in the educational context, analyzing their impacts on the development of students' cognitive, socio-emotional and creative skills. For this, a qualitative research was carried out with a sample of 23 teachers from different disciplines and levels of education, using in-depth interviews for data collection and the technique of discourse analysis for the interpretation of the results. The main findings indicate that, although active methodologies promote greater autonomy, engagement, and collaboration among students, their implementation faces challenges related to the lack of continuing education of teachers, insufficient infrastructure in schools, and resistance to change on the part of some educators and students. In addition, the support of school management and the adaptation of evaluation practices are essential for the success of these methodologies. It is concluded that, although active methodologies, when well applied, can transform the teaching-learning process, their effectiveness depends on a holistic approach that involves teacher training, institutional support and adequate infrastructure, as well as educational policies that encourage pedagogical innovation.

Keywords: Education. Technologies. Active Methodologies.

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INTRODUCTION

Education, as one of the fundamental pillars for social, economic and cultural development, has been transformed over the decades, especially with the advancement of digital technologies. The integration of new technologies into the educational process has generated discussions on how to optimize learning and make pedagogical practices more dynamic and engaging. In this context, active methodologies emerge as a proposal that aims to place the student at the center of the learning process, stimulating their autonomy, creativity and critical capacity, while technologies serve as facilitating tools for this new teaching model (Diesel; Baldez; Martins, 2017).

Active methodologies refer to teaching strategies in which the student takes a more proactive and participatory role, developing skills not only to learn content, but also to apply this knowledge in a practical and meaningful way. Among the main active methodologies, problem-based learning (PBL), hybrid teaching, flipped classroom, collaborative learning, and the design of immersive learning experiences stand out. These approaches, which differ from the traditional model of expository teaching, are considered more effective in developing essential skills for the twenty-first century, such as critical thinking, problem-solving, and teamwork (Matos; Mazzafera, 2022).

The introduction of digital technologies in the educational context plays a fundamental role in the implementation and enhancement of these active methodologies. Tools such as digital learning platforms, educational applications, interactive games, augmented reality, and virtual teaching environments offer new possibilities for the teacher and the student. At the same time, these technologies allow for a personalization of learning, meeting the individual needs and rhythms of students. Thus, technologies, when well integrated with active methodologies, have the power to transform the classroom into a more dynamic, interactive, and collaborative space (Santana; Sales, 2020).

However, despite the numerous possibilities, the adoption of active methodologies and technologies in teaching still faces significant challenges. The resistance of educators to change, the lack of adequate training, inequality in access to technologies and the deficient infrastructure in many educational institutions are obstacles that can compromise the effectiveness of these pedagogical practices. In this sense, it is essential to investigate how these methodologies can be implemented effectively, considering the diverse contexts of schools and the continuous training of teachers. In addition, it is necessary to understand the impact of these methodologies on student development (Santos, 2017).

Active methodologies, combined with digital technologies, promise not only to improve academic performance, but also to contribute to the development of socio-

emotional skills, such as collaboration, empathy, and resilience. Students, by becoming more responsible for their own learning, experience an environment that favors autonomy and critical thinking, essential skills in the contemporary world, where changes are rapid and require continuous and flexible learning (Ventura, 2021).

Research on the use of technologies in teaching, especially in conjunction with active methodologies, offers an opportunity to rethink pedagogical practices and adapt teaching to the new demands of society. The critical analysis of the implementation of these methodologies in the school daily life can provide insights into the benefits, limitations and possibilities of this teaching model. In addition, this study is relevant to subsidize educational policies that promote digital inclusion and teacher training for an efficient pedagogical use of technologies (Ventura, 2021).

In view of the above, this research aims to explore the potential of active methodologies as pedagogical practices in the contemporary educational context, analyzing how technologies can be effectively integrated into these approaches, and what are the impacts of this integration on the development of cognitive, socio-emotional and creative skills of students. To this end, experiences of application of these methodologies at different levels of education will be investigated, aiming to identify good practices, challenges and strategies for the successful implementation of these pedagogical innovations.

METHODOLOGY

The research was conducted within a qualitative approach, since the main objective was to understand the perceptions, experiences and pedagogical practices of teachers in relation to the use of active methodologies and technologies in the teaching-learning process. Qualitative research allows for an in-depth analysis of phenomena, privileging the understanding of subjectivities, meanings, and contexts, rather than focusing only on numerical or statistical quantifications. This approach is suitable for exploring complex topics such as the implementation of new educational methodologies, which involve both individual factors (such as pedagogical beliefs and teachers' attitudes) and contextual factors (such as school infrastructure and educational policies).

The sample was composed of 23 teachers from different disciplines and levels of education (elementary, secondary and higher), all working in educational institutions located in a specific region. The choice of participants followed a criterion of intentionality, in which educators were selected who, in some way, were involved with the use of digital technologies in their pedagogical practices, or who showed interest or potential to implement active methodologies in their classes. The diversity in the sample allowed us to

capture a varied range of experiences and visions, providing a more comprehensive understanding of the different realities and challenges faced by educators.

Data collection was carried out through in-depth interviews, an instrument that proved to be adequate to explore the perceptions and experiences of teachers in detail. The interviews were semi-structured, which allowed participants to express their opinions and experiences more freely, while ensuring that key topics related to the use of active technologies and methodologies were addressed.

During the interviews, topics such as the initial and continuing training of teachers in relation to the use of technologies, the active methodologies they use, the challenges faced to implement these methodologies, the perceived impact on student learning, and the strategies adopted to overcome limitations, such as lack of infrastructure or resistance from colleagues, were discussed. The interviews were recorded with the permission of the participants and transcribed in full for analysis.

Data analysis was carried out through the discourse analysis technique, which is an interpretative approach focused on how people construct meanings through words, gestures, and practices. Discourse analysis considers not only the content of the speeches, but also the social, cultural and institutional contexts in which these speeches are produced. This technique made it possible to identify the dominant representations, ideologies and discourses related to the use of active technologies and methodologies in education, as well as the contradictions, tensions and resistances present in the process of implementing these practices.

RESULTS AND DATA ANALYSIS

The survey results revealed a number of insights into teachers' perceptions and practices regarding the use of active methodologies and digital technologies in education, highlighting both the benefits and challenges associated with adopting these practices. In general, the teachers interviewed demonstrated a positive understanding of active methodologies, recognizing their importance in developing student autonomy and promoting more meaningful learning. Teacher E3, for example, highlighted that "active methodologies are essential for students to become more critical and participative, but technology needs to be a tool that amplifies this experience, not an end in itself". This perception was widely shared by the other participants, who considered the integration of technologies as something necessary, but not sufficient, for the success of these pedagogical approaches.

Despite the enthusiasm for active methodologies, the survey also revealed a number of challenges faced by educators when trying to implement these practices. The lack of continuing education was pointed out as one of the biggest obstacles. Many teachers expressed the need for more training to properly utilize digital technologies in the classroom. Teacher E5, for example, noted that "I believe that active methodologies are great, but without good training and support from school management, it is difficult to apply them successfully." In addition, insufficient infrastructure in many schools was also mentioned as a major barrier. Teacher E8 reported that, in some classes, "I even have technological resources, but in others, it is necessary to improvise, which is not always possible". These reports indicate that, although active methodologies offer great potential for the transformation of teaching, their effective implementation depends on an adequate infrastructure and solid training for teachers.

Another relevant point highlighted by the participants was the importance of institutional support in the implementation of active methodologies. Teacher E6 emphasized that "it is essential that the school offers regular courses and workshops on the pedagogical use of technologies. Only then will we be able to take advantage of all the tools available". In addition, many teachers reported that collaboration between teachers and the creation of internal learning communities in schools have proven to be important for the successful adoption of these new methodologies. Professor E1, for example, mentioned that "we created a group for the exchange of experiences between teachers of various disciplines. This has been fundamental to develop integrated methodologies that use technologies more effectively". This report suggests that collaboration between teachers and mutual support are crucial factors for the successful implementation of active methodologies.

Regarding the impact of active methodologies on student engagement and motivation, most teachers reported positive effects. Teacher E4, for example, noted that "students become more engaged when they are challenged to solve real problems or work on collaborative projects. They feel more responsible for their own learning." This engagement was observed mainly in activities that allowed students to take an active role in the learning process. However, some teachers also pointed out that not all students are prepared to adopt this more autonomous posture. Teacher E7 pointed out that "there are students who are still used to the traditional model, and the transition to more independent learning can be a bit difficult for them." This suggests that the implementation of active methodologies requires gradual adaptation, taking into account the diverse needs and preparations of students.

When it came to the use of digital technologies as facilitators of active methodologies, the teachers were unanimous in stating that technological tools, when well used, can enhance active pedagogical approaches. Teacher E9 reported that "I use digital platforms to carry out collaborative activities and evaluate student performance. This makes the class more dynamic and accessible". Tools like Google Classroom, Moodle, and content creation apps like Canva and Kahoot were often mentioned as valuable resources for lessons. However, some teachers also pointed out that the use of these technologies does not automatically guarantee effective learning. Professor E2 pointed out that "technology is an ally, but the methodology needs to be well structured to really make a difference", suggesting that digital tools must be integrated with well-planned pedagogical practices to obtain the best results.

In addition to the cognitive benefits, many teachers highlighted the positive impact of active methodologies on the development of students' socio-emotional skills. Teacher E6 noted that "by working in groups and solving problems together, students learn to communicate better, listen to each other, and deal with frustrations." Collaborative learning, in particular, was pointed out as an effective methodology for the development of skills such as empathy, collaboration and resilience, which are fundamental in the current educational context. These reports indicate that, in addition to favoring academic learning, active methodologies also play a crucial role in the integral formation of students.

However, the research also revealed significant resistance, both on the part of some students and educators, to the new teaching model proposed by active methodologies. Teacher E5 reported that "there are students who are uncomfortable with the flipped classroom model. They prefer me to be more directive." In addition, many teachers mentioned that they still face resistance from colleagues to adopt new methodologies, which can make it difficult to implement innovative practices at school. Teacher E2 stated that "some teachers are still afraid to use technologies in the classroom, they think they will lose control of the class. This is still a barrier that we need to overcome." These reports suggest that the implementation of active methodologies may face obstacles related to the change of mentality and the fear of losing control of the classroom, which requires continuous work of sensitization and training of educators.

School management was also pointed out as a decisive factor for the success of the implementation of active methodologies. Teacher E7 noted that "when school management is actively involved in the implementation of the new methodologies and provides logistical and pedagogical support, success is much more assured." This support can manifest itself in different ways, such as the provision of adequate technological resources, the

organization of spaces and schedules for more interactive activities, and the creation of continuous training programs for teachers. Management, therefore, has a strategic role in the implementation and consolidation of active methodologies within the school.

Finally, the teachers recognized that active methodologies, with the support of digital technologies, can be adapted to different educational contexts, as long as the pedagogical planning is adequate. Teacher E10 highlighted that "active methodologies can be applied in both public and private schools, regardless of the available infrastructure. Of course, technology can make it easier, but it is possible to apply these methodologies even in simpler situations." This report reflects the flexibility of active methodologies, which can be adjusted according to the reality of each educational institution, showing that pedagogical innovation is not restricted only to privileged contexts, but can be implemented in various conditions, as long as the needs and possibilities of the school community are taken into account.

Regarding evaluation, most teachers agreed that the traditional evaluation model, centered on tests and grades, is not adequate to measure the results of active methodologies. Professor E3 suggested that "evaluation should be continuous and formative, with a focus on the process and not just on the final product. Technology can be an ally in creating more interactive and personalized assessments." This statement reflects the need for a more flexible and adaptive assessment model, capable of measuring not only the knowledge acquired, but also the development of socio-emotional skills and the engagement of students in the proposed activities.

FINAL CONSIDERATIONS

The research carried out on the use of active methodologies integrated with digital technologies in the educational context revealed a comprehensive overview of the benefits and challenges of these pedagogical practices. The results indicate that, when well implemented, active methodologies can contribute significantly to the development of students' cognitive, socio-emotional and creative skills, in addition to promoting a more dynamic, collaborative and student-centered learning environment. The autonomy of students, the development of critical thinking and collaborative learning were some of the main positive aspects highlighted by the teachers, evidencing the impact of active methodologies in the transformation of the educational process.

However, considerable challenges were also identified that still hinder the effective implementation of these methodologies, especially with regard to the continuing education of teachers, school infrastructure and institutional support. The lack of adequate training of

teachers for the pedagogical use of digital technologies, the resistance on the part of some educators and students, and the inequality in access to technological tools are obstacles that require attention and specific strategies. The integration of technologies should be seen as a tool that enhances active methodologies, but which, alone, does not guarantee a significant educational transformation.

The research showed that the success of the implementation of active methodologies depends on a collaborative approach, which involves not only teachers, but also school management, students and public policies. The support of school management was pointed out as a fundamental factor for the success of innovative pedagogical practices, including the provision of continuing education, the provision of adequate technological resources and the creation of an environment that favors pedagogical experimentation. In addition, the adoption of new evaluation practices, which consider the learning process in a continuous and formative way, was highlighted as essential for the effectiveness of active methodologies.

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