TRANSFORMING EDUCATION: ACTIVE METHODOLOGIES, TECHNOLOGY, AND STATION ROTATION

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ABSTRACT

Contemporary education is undergoing a significant transformation driven by innovative pedagogical approaches. This study explores the role of active methodologies as catalysts of the educational process, highlighting the active participation of students, collaboration and the practical application of knowledge as essential elements, where authors base their understanding, emphasizing the importance of student autonomy in the teaching and learning process. On another point of analysis, the technological revolution also plays a crucial role in this scenario, as digital tools and online platforms enrich the educational experience by allowing the personalization of learning, interaction between students, and access to diversified resources. Within this context, we explore Station Rotation as a specific active methodology, which emerges as a dynamic strategy to enrich the educational process. The reading offers a view of these elements, highlighting the concept of active methodologies, technology linked to it and the effectiveness of Station Rotation.

Keywords: Artificial Intelligence, Distance Education, Personalization, Educational Automation.

INTRODUCTION

The contemporaneity of education is at the epicenter of a remarkable transformation, driven by innovative pedagogical approaches that seek to redefine the traditional teaching paradigm. This article, through bibliographic research, proposes to explore the revolutionary role of active methodologies in this dynamic context, where student protagonism, collaboration and the practical application of knowledge emerge as essential elements for a more meaningful education.

In the course of the research, topic 2 seeks to support the understanding of these methodologies, highlighting the student's autonomy as a fundamental foundation in the teaching and learning process. The goal is to transcend the mere transmission of information, promoting the active construction of knowledge and cultivating critical skills that are indispensable in the contemporary educational landscape.

From the starting point, in topic 3 the research understands that the advent of the technological revolution plays a fundamental role in this evolving educational landscape. Digital tools and online platforms have become powerful allies, enriching the educational experience by enabling the personalization of learning, fostering interaction between students, and ensuring access to a wide variety of educational resources.

Finally, when presenting the results obtained in the research, in topic 4 the active methodology called Station Rotation is evidenced as a paradigmatic example of this new teaching model. Exploring the nuances of this dynamic approach, we sought not only to understand its practical implementation, but also to highlight how it harmoniously integrates with the fundamental principles of active methodologies and benefits from synergy with digital tools. The conclusion of the study explains in topic 5 the final considerations.

MULTIMEDIA RESOURCES IN EDUCATION: A THEORETICAL REVIEW

According to Morán (2015, p. 15) "educational institutions attentive to changes profoundly choose two paths, a softer one – progressive changes – and a broader one, with profound changes". Active methodologies represent a profound, in other words revolutionary, educational paradigm, distancing itself from traditional approaches that place the teacher at the center of the teaching process. In this new context, the student assumes a central role, being instigated to actively participate in his own learning.

For Barbosa and Moura (2013, p. 50), "in recent decades, the student's profile has changed a lot. The school has also changed and survives, today, in a socioeconomic context that imposes increasingly high performance expectations".

Active methodologies seek to transcend the simple absorption of knowledge, fostering critical thinking, problem-solving, and the ability to apply concepts in real situations. The educational process should be a path of active construction of knowledge, adapting to the needs and pace of each student, with their autonomy being a central pillar for such approaches. In the innovative environment, students are encouraged to question, explore, and collaborate, promoting not only the acquisition of information but also the development of essential life skills. In this aspect, it is considered that such methodologies are starting points to advance processes of reflection, cognitive integration, generalization and re-elaboration of new practices. (Morán, 2015, p. 18).

Mello, Petrillo & Almeida Neto (2022, p. 63 and 64) explain that:

> The teaching methodology cannot be erected only as a purpose, nor can it be presented with greater importance than the student, or surpass him, since it is fundamentally constituted as a mediation between teacher and student, which unfolds, having in perspective the student's education, his autonomy, his emancipation, his citizenship, his personal development.

By adopting active methodologies, educators recognize that learning is a dynamic and personalized process, and the role of the teacher evolves into a knowledge facilitator or mediator, guiding and supporting students in their educational journey. This paradigm shift reflects the understanding that true education goes beyond the mere transmission of facts. Now there is a search for the formation of critical, creative and autonomous individuals, ready to face the challenges of the twenty-first century.

The teacher needs to follow face-to-face communication with students, but also digitally, with mobile technologies, treating an equivalence of interaction with each and every one. The student at the center of the learning process and inserted in an amplification of resources, tends to promote a holistic view of education, which goes beyond the memorization of contents. It is now sought to create an environment where students become protagonists of their own intellectual and personal development. This approach is based on the idea that learning is not a passive act, but rather an active and participatory enterprise. (Morán, 2015, p. 16)

Exploring these methodologies, it is noticeable that the classroom environment is transformed into a dynamic space for the exchange of ideas, discussions and joint construction of knowledge. Barbosa and Moura (2013, p. 51, as cited in Cadwell and Spinks, 1998) bring considerations directed to the future of education and the school throughout the twenty-first century, foreseeing profound changes in the organization and functions of the school, where many of them reflect on its main agents, these being teachers and students. These revolutionary approaches no longer seek to just convey

information but also cultivate transversal skills such as effective communication, teamwork, critical thinking, and problem-solving.

In summary, active methodologies represent paradigm shifts in education, promoting a broader and more interactive view of the learning process, centered on the student as an active agent in the construction of knowledge.

THE TRANSFORMATIVE ROLE OF TECHNOLOGY IN ACTIVE METHODOLOGIES: THE THEORETICAL REVIEW IN CONNECTION SEQUENCE

The intersection between education and technology redefines the contemporary educational landscape, establishing a true integration between advanced pedagogical methods and technological innovations. In active methodologies, technology emerges as a driving force, transcends the status of a mere instrument and is intrinsically incorporated into the educational process, shaping a more dynamic and effective learning experience.

For Morán (2015, p. 16):

> What technology brings today is the integration of all spaces and times. Teaching and learning take place in a symbiotic, deep, constant interconnection between what we call the physical world and the digital world. They are not two worlds or spaces, but an extended space, an expanded classroom, which is constantly blended, hybridized. That is why formal education is increasingly blended, mixed, hybrid, because it does not only take place in the physical space of the classroom, but in the multiple spaces of everyday life, which include the digital ones.

Based on the author, it is clear that educational technology is not just a complement; It is a vital component for the effective application of innovative methodologies. Digital tools, online platforms, and interactive resources converge to create an educational environment that goes beyond traditional methods. The impact of technology is not in the introduction of devices, but in the redefinition of teaching methods, promoting a substantive change in the dynamics of the classroom.

The personalization of learning finds a powerful ally in technology. Adaptive platforms and online resources enable educators to tailor content to students' individual needs, creating highly relevant and meaningful learning experiences. However, in another point of analysis and more critical view, Barbosa and Moura (2013, p. 53, as cited in Barbosa, 2012, p. 21), list other dimensions related to the inclusion of Information and Communication Technologies (ICT) in education:

> There are other dimensions of the appropriation of ICT in educational processes that also need to be measured and evaluated: skills in the use of technology, the main motivating elements and the main limitations that prevent its use by the actors of the educational system. [...] For schools and educators, applying new technologies in teaching-learning processes is still a challenge. The future of pedagogy itself and

> teaching methods as we know them from the adoption of ICT is still a question without a clear answer.

According to the authors, there is a concern with the development of skills necessary for the mastery of the tools and technologies themselves, in addition to thinking about how to motivate a professional staff aligned with different generations and with different experiences in the relationship of apparent limitations or involvement in the process of acquiring new skills.

Even so, in a critical analysis of the points of consideration above, relating Morán (the latter, presenting a more adept defense of technologies) and Barbosa and Moura (the latter, presenting a more worrying defense of technologies), with a personal view, it is possible to consider that technology today crosses geographical borders, providing expanded access to a diversity of educational resources. By strategically integrating technology into active methodologies, it is possible to achieve a wider range of learning experiences, enriching students' educational background. Morán (2015, p. 18) explains that "challenges and activities can be dosed, planned, monitored and evaluated with the support of technologies". There are more benefits to the search for dominance than getting caught up in the limitations detected. It is up to the most experienced professionals to understand the context that is being presented in the world and seek to specialize more and more, both personally and in integrated training promoted by the institutions or bodies in which they work.

The crucial point for this defense once again brings Morán's idea (2023, p. 23):

> In schools with fewer resources, we can develop meaningful and relevant projects for students, linked to the community, using simple technologies such as cell phones, for example, and seeking the support of more connected spaces in the city. Although having good infrastructure and resources brings many possibilities to integrate face-to-face and online, I know many teachers who can carry out stimulating activities in minimal technological environments.

In summary, the convergence between technology and active methodologies does not represent only an evolution, but a revolution. By harmoniously exploring the synergy between these two elements, educators can unlock the maximum potential of an active, innovative education adapted to the challenges of the contemporary era.

DEVELOPMENT AND DISCUSSION: EXPLORING STATION ROTATION AS AN ACTIVE METHODOLOGY IN FOCUS

Station Rotation, a dynamic and engaging approach, stands out among active methodologies as a pedagogical model that aims to promote more personalized and

interactive learning. By directing attention to different learning stations, each with distinct approaches offers an educational experience rich in diversity and adaptability.

In this model, moments in which students can work collaboratively and also individually are valued. In one of the groups, the teacher can be present more closely, ensuring the monitoring of students who need more attention. The model also makes it possible to work on a variety of resources that can be used, such as: videos, texts, audios, images, individual or collaborative work, equipment such as cell phones, tablets, notebooks, favoring the personalization of teaching. There is an understanding that not all students learn in the same way. And after the teacher agrees on a predetermined time with the students, they change groups or rotate to another station. This relay takes place until everyone has passed through all the groups. (Mello, Petrillo & Almeida Neto, 2022, p. 76)

The method represents a practical unfolding of active methodologies, where students are led through different stations, each designed to address specific aspects of the content. This approach aims to cater to the variety of learning styles, allowing students to explore, collaborate, and apply knowledge in diverse ways.

For Quintilhano, Tondato and Barreto (2021, p. 8, as cited in Silva, et al., 2018) the Rotation by Stations methodology also defined as a sustained innovation:

> It aims to show the student that the understanding of a certain discipline can be achieved not only through traditional classes (expository), but in several ways in which, at least in one of them, he will feel easier to learn. In this methodology, the environment is divided into several groups, each focused on a different activity in which at least one of the groups contemplates technology as a didactic resource.

It is clear that by incorporating it, educators seek to create a more flexible learning environment, where each station offers a unique opportunity for engagement. This not only encourages student autonomy but also allows the educator to tailor teaching to individual needs, promoting a deeper and more lasting understanding of concepts. Regarding the number of stations, the definition will always depend on the size of the class of students, which can positively or negatively influence the class. It is suggested that each group has a maximum of five members. It should be noted that the maximum total per group may contain less than five students, but always considering a balance of distribution in relation to the total of the class. (Mello, Petrillo & Almeida Neto, 2022, p. 76)

By exploring the benefits of this active practice, the individualization of learning, the promotion of autonomy, and the variety of educational experiences stand out. Quintilhano, Tondato and Barreto (2021, p.10, as cited in Lorenzoni, 2016), considers three moments that are special in this methodology, such as: interaction between student and teacher (with the teacher being more mediator), collaborative development of the activity (debates,

suggestions for ideas, development of projects) and technology (with some online exercise). In this regard, there should be concern about the need for adequate technological resources and careful planning to ensure a smooth transition without loss of focus between stations.

In summary, Station Rotation emerges as a vibrant and adaptable active methodology, providing a flexible and personalized approach to learning. By exploring this systematization, not only was its practical implementation related, but also a critical analysis involving criteria on how technology can expand and improve the benefits of this innovative method.

FINAL CONSIDERATIONS

The innovative approach to active methodologies in contemporary education reflects not only a paradigm shift, but a revolution in the way we conceive and implement teaching. The present paper explored this transformation, highlighting the fundamental importance of placing the learner at the center of the educational process.

By closely examining active methodologies, it became evident that they are not just abstract theories, but rather practical guidelines that seek to promote active student participation, collaboration, and the practical application of knowledge. And with the integration of technology into them, an additional dimension to the educational process was noticeable. Digital tools and online platforms enrich the educational experience, enabling personalization of learning, global collaboration, and access to diverse resources. Its strategic implementation not only facilitates but revolutionizes teaching methods. Accurately exploring Station Rotation as a specific active methodology, its dynamic approach to meeting the diversity of learning styles was highlighted. By integrating it with technology, such a methodology becomes a vivid example of how they can adapt and innovate. However, it is recognized that, despite the substantial benefits, challenges still persist. The need for robust technological infrastructure, adequate training of educators and care in implementation are critical aspects that demand attention.

Finally, the transformative impact of active methodologies and technology on contemporary education was not only described, but also contextualized and critically analyzed. As we move into the future, it is imperative to continue exploring new approaches, adapting to technological change, and maintaining a firm commitment to creating educational environments that empower students to become critical thinkers, effective collaborators, and active agents in their own learning.

The integration of Artificial Intelligence into education, both face-to-face and remote, offers a transformative opportunity to reimagine teaching and learning. This article highlighted the benefits of AI, such as the personalization of teaching and the automation of tasks, and presented an example of success in a higher education institution. While the advantages are clear, it is essential to address the challenges associated with its implementation with collaborative and inclusive practices. The successful use of technology, such as GPT-4, exemplifies the potential of AI to enrich the educational environment, encouraging the academic community to explore new ways to apply these technologies for more effective and personalized learning.

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