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THE FLIPPED CLASSROOM: A NEW PARADIGM FOR TEACHING-LEARNING

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ABSTRACT

The study addressed the flipped classroom as an active methodology capable of transforming the teaching-learning process by prioritizing the autonomy and protagonism of students. The objective was to analyze the possibilities and challenges of this approach to promote more inclusive and effective pedagogical practices, considering different educational contexts, from basic education to higher education. Through bibliographic research, as indicated by Ruiz (2009), qualitative data extracted from academic articles, books and institutional documents were collected and analyzed, with the aim of dialoguing theories relevant to the theme. The article discussed aspects such as teacher mediation, the use of digital tools, such as Telegram, and the personalization of teaching, highlighting practical cases that illustrated the application of the methodology. Among the main results, it was found that the flipped classroom promoted greater engagement, protagonism and inclusion, especially when integrated with interactive and collaborative activities. However, challenges such as unequal access to technologies and teacher unpreparedness were identified as obstacles to the effective implementation of this methodology. The research concluded that the flipped classroom has great potential to transform contemporary education, as long as it is applied with planning, specific teacher training and appropriate public policies. Thus, it was recommended to deepen studies on the necessary adaptations for different educational realities and on the impact of emerging technologies on the personalization of learning.

Keywords: Autonomy. Role. Inclusion. Mediation. Personalization.

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Revista ARACÊ
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INTRODUCTION

The flipped classroom emerged as an innovative educational methodology, capable of reconfiguring the teaching-learning process by transferring the initial acquisition of knowledge to the extra-class environment, while the face-to-face space is reserved for practical and collaborative activities. In the contemporary context, characterized by the growing integration of Digital Information and Communication Technologies (DICT) in education, the application of this methodology has become particularly relevant to meet the demands of an audience increasingly immersed in digital and diversified environments.

The relevance of this theme lies in the need to promote pedagogical practices that prioritize student autonomy, protagonism and educational inclusion. In this sense, the study sought to analyze how the flipped classroom can be implemented to enhance learning, considering its possibilities and challenges. The research was guided by the following question: 'how can the flipped classroom methodology contribute to more inclusive and effective pedagogical practices at different educational levels?'

The methodology adopted was bibliographic research, which, according to Ruiz (2009), is the essential basis for any investigation. Qualitative data were collected from relevant sources, including academic articles, books and institutional documents, allowing the construction of a reasoned analysis. The analysis technique included the systematization of contents and the dialogue between different theoretical frameworks, enabling a critical and integrative approach to the theme.

The article was structured in a main section, subdivided into four subsections, in addition to a presentation of the results and discussions. In the subsection The Flipped Classroom: Possibilities and Challenges in Contemporary Education, the general characteristics of this methodology were discussed, highlighting both its benefits and common errors in its application. The subsection The Flipped Classroom: Teacher Mediation and Digital Tools in the Educational Process addressed the role of the teacher as a mediator and the integration of digital tools, such as Telegram, in strengthening the model.

Next, the subsection The Flipped Classroom and the Personalization of Teaching: Challenges and Possibilities in Basic and Higher Education analyzed the contextual differences in the application of the methodology between the two levels of education, highlighting practical examples and solutions to overcome structural barriers. Finally, the subsection The Flipped Classroom as a Tool for Student Protagonism and School Inclusion

Revista ARACÊ
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brought a practical case applied in basic education, emphasizing the protagonism of students and the benefits for school inclusion.

The Results and Data Analysis synthesized the main findings of the study, discussing both the advances and the challenges in the implementation of the flipped classroom. Thus, the research presented a coherent view of the potential of this methodology as an innovative pedagogical tool, while highlighting the importance of public policies, teacher training and technological infrastructure for its success.

THE FLIPPED CLASSROOM: POSSIBILITIES AND CHALLENGES IN CONTEMPORARY EDUCATION

The flipped classroom appears in the educational scenario as an innovative methodology that changes the traditional teaching dynamics, transferring the acquisition of theoretical content to the extra-class environment and reserving face-to-face time for practical and collaborative activities. According to Silva *et al.* (2024, p. 58),

> [...] The flipped classroom methodology inverts the traditional teaching model, transferring the acquisition of theoretical content outside the classroom and using face-to-face time for practical and interactive activities.

This approach has been mediated by Digital Information and Communication Technologies (DICT), which allow flexible access to digital materials and content, facilitating autonomous learning. The essence of this methodology lies in the transfer of responsibility for the initial acquisition of knowledge to the student, as pointed out by Abeysekera and Dawson (2015). However, it is necessary that this transfer be planned strategically and accompanied by adequate support, in order to ensure that all students can access the content effectively. Andrade *et al.* (2019, p. 6) emphasize that the flipped classroom "inverts the traditional logic of teaching, in which the student attends school to receive the content through teacher exposure", but warns that its implementation requires a change in the attitude of both teachers and students.

However, the inadequate application of this methodology over the years has generated results below expectations. Often, the inversion has been limited to the mere transfer of content to videos or extra-class readings, without effective integration with face-to-face activities. When this occurs, the flipped classroom is reduced to a poorly applied hybrid teaching strategy, disregarding the principles of interaction, engagement, and personalization that should characterize this approach. This distortion in the use of the

Revista ARACÊ
ISSN: 2358-2472

methodology often results in the perpetuation of learning gaps, especially among students with access difficulties or with less autonomy.

On the other hand, when well applied, the flipped classroom can transform the educational experience. Careful preparation of materials, coupled with the planning of hands-on, collaborative activities in the face-to-face setting, can enhance meaningful learning and promote skills such as problem-solving, critical thinking, and collaboration. To achieve this goal, it is essential that teachers are trained to develop accessible and relevant content, in addition to creating dynamic and inclusive spaces in the classroom.

In addition, the adoption of this methodology requires overcoming structural challenges, such as unequal access to DICT. Andrade *et al.* (2019) emphasize that the use of the flipped classroom will only be effective if it is inclusive, considering the different realities of students. This includes not only access to devices and the internet, but also the development of digital skills that allow students to interact with the proposed materials and tools.

Therefore, the flipped classroom, as an innovative methodology, has great potential to transform teaching, as long as it is applied carefully and strategically. By acknowledging past mistakes and investing in teacher training, infrastructure, and interactive pedagogical practices, it is possible to overcome limitations and effectively explore the possibilities of this approach. Thus, it can cease to be a mistakenly applied technique to become an effective teaching model, capable of meeting the demands of contemporary education.

THE FLIPPED CLASSROOM: TEACHER MEDIATION AND DIGITAL TOOLS IN THE EDUCATIONAL PROCESS

The flipped classroom methodology has gained prominence as an innovative approach that redefines traditional teaching roles. In this model, according to Andrade *et al.* (2019, p. 14), "the teacher ceases to assume full responsibility in the teaching-learning process, becoming a mediator". This change allows the educator to guide students, promoting autonomy and engagement in learning. Instead of being a transmitter of knowledge, the teacher becomes a facilitator, creating conditions for students to take ownership of the content in an active way.

Active methodologies, such as the flipped classroom, stand out as strategies aligned with the demands of contemporary students, immersed in a digital environment and with diversified learning needs. Andrade *et al*. (2019) emphasize that this audience requires

Revista ARACÊ
ISSN: 2358-2472

approaches that incorporate technological tools into the educational process, promoting interactivity and engagement. In this context, Telegram emerges as a versatile and effective pedagogical platform for the implementation of the flipped classroom.

According to Andrade *et al*. (2019, p. 17), "the use of Telegram as a pedagogical tool proved to be effective for interaction with students". This effectiveness is related to the possibility of using the app for various activities that complement the flipped classroom model. For example, teachers can pre-share videos, readings, and other materials related to the content to be discussed in class, allowing students to prepare autonomously. In this way, face-to-face time can be directed towards deeper discussions, problem-solving, and collaborative activities.

In addition, Telegram facilitates direct communication between teacher and students, making it possible to clarify doubts and provide continuous feedback. Groups and channels on the platform can be used to promote debates on the topics studied, stimulate the sharing of ideas and expand interaction between participants. Additional tools, such as polls and *quizzes,* can also be integrated to check content comprehension and encourage active student participation.

The flexibility of the platform allows students to interact at their own pace, contributing to the personalization of learning. This is particularly relevant in the flipped classroom, where the success of the methodology depends on the involvement and autonomy of students. Therefore, by integrating Telegram into the flipped classroom model, it is possible to create a dynamic and interactive learning environment that meets the demands of the twenty-first century and promotes more meaningful learning.

In addition, the flexibility of the flipped classroom allows students to learn at their own pace, as noted by Andrade *et al.* (2019,). This characteristic is especially relevant in diverse educational contexts, where the individual needs of students can vary considerably. The possibility of reviewing materials and deepening concepts outside the face-to-face environment promotes more personalized and student-centered learning, strengthening their autonomy and responsibility.

Oliveira, Araújo and Veit (2016) corroborate this view, arguing that the flipped classroom can contribute to the development of study habits and skills related to collaborative work. Such competencies are essential not only in the academic context, but also in preparing for the professional and social challenges of the 21st century. Thus, by

Revista ARACÊ
ISSN: 2358-2472

combining face-to-face teaching with digital resources, such as Telegram, it is possible to foster a more meaningful and active interaction between students and the content.

However, the effectiveness of the flipped classroom depends on careful and contextualized implementation. Santana *et al.* (2021) emphasize that,

> As resilient beings that we are, we can observe the gain we have obtained by advancing light years in the understanding that we can no longer go back or continue using the same outdated tactics.

In this sense, the adoption of active methodologies must be accompanied by teacher training and strategic planning, ensuring that digital tools are used intentionally and in line with pedagogical objectives. Finally, Andrade *et al.* (2019, p. 19) highlight that "the project with the use of Telegram resulted in greater student engagement and better performance in essays". This example illustrates how the integration of technologies can enhance educational outcomes by promoting active student engagement and encouraging the development of essential skills. Therefore, the flipped classroom, mediated by digital tools, represents a significant opportunity to transform education, as long as it is applied with rigor and sensitivity to the needs of the contemporary context.

THE FLIPPED CLASSROOM AND THE PERSONALIZATION OF TEACHING: CHALLENGES AND POSSIBILITIES IN BASIC AND HIGHER EDUCATION

The flipped classroom, as an active teaching methodology, presents an innovative approach that promotes the personalization of learning and student autonomy. However, the implementation of this model faces significant challenges, especially in the context of basic education, where inequalities in access to technology and inadequate school infrastructure are persistent realities. According to Silva *et al.* (2024, p. 63), "inequality in access to technology represents a significant obstacle to the effective implementation of this methodology".

In basic education, the application of the flipped classroom is often hampered by the lack of digital devices and internet connection for all students. These factors limit the ability of some students to access previously available content, compromising the objective of the methodology. To overcome this challenge, a hybrid approach can be adopted, where printed materials complement digital resources, ensuring that all students have access to the necessary content. In addition, schools can establish partnerships with NGOs and companies to enable the donation of equipment or create computer labs accessible to the

Revista ARACÊ
ISSN: 2358-2472

entire school community. The use of islands or workstations within the classroom, as suggested by Andrade *et al.* (2019), can complement this strategy, promoting active and collaborative interaction among students.

In higher education, the challenges are different, but no less significant. The initial resistance of teachers and students to adopt new methodologies often results in a limited adherence to the flipped classroom. In addition, the diversity of student profiles, especially in night courses with working students, can make it difficult to align previous activities with the individual conditions of each student. However, digital platforms that offer personalization and control, as highlighted by Narciso *et al.* (2024), can be valuable allies. These platforms can provide protected and adaptable environments, allowing students with different demands, such as autistic, to learn in ways that match their interests and abilities.

A practical example of overcoming in higher education involves the application of the flipped classroom in courses that use digital platforms such as *Moodle* or Google Classroom. On these platforms, teachers can make content available in multiple formats — videos, texts, and interactive quizzes — to meet diverse learning preferences. In the face-to-face moment, the teacher assumes the role of facilitator, as highlighted by Silva *et al.* (2024), mediating discussions, guiding projects and promoting activities that consolidate the knowledge acquired. This personalization of teaching is essential to meet the individual needs of students, according to Andrade *et al*. (2019).

While the realities of basic and tertiary education are different, the potential outcomes of the flipped classroom can be equally transformative. In basic education, the methodology can contribute to engaging students in active learning, while in higher education it fosters autonomy and prepares students for professional challenges. Thus, the adaptation of the flipped classroom to different educational contexts demonstrates its flexibility and effectiveness, making it a powerful tool to promote a more inclusive and personalized education.

THE FLIPPED CLASSROOM AS A TOOL FOR STUDENT PROTAGONISM AND SCHOOL INCLUSION

The flipped classroom is widely recognized for transforming the traditional dynamics of teaching, moving the student from a passive position to the role of protagonist in the process of knowledge construction. This approach, according to Andrade *et al. (2019), promotes the active participation of students, while the teacher assumes the role of*

Revista ARACÊ
ISSN: 2358-2472

mediator, facilitating learning. The practical example of the Nestor Gomes State School of Elementary and Secondary Education (EEEFM), located in the rural area of São Mateus, illustrates how this methodology can be successfully implemented in different educational contexts, even benefiting Special Education students (Government of the State of Espírito Santo, 2020)

After carrying out diagnostic evaluations to identify gaps in learning, teacher and coordinator Douglas Vicente used the flipped classroom methodology with 8th grade students. This initiative aimed to work on the content related to the descriptor D23, of the reference matrix of the Basic Education Evaluation Program of Espírito Santo (Paebes). In this context, the students themselves built, painted and assembled puzzles representing animal and plant cells, culminating in presentations made by themselves in the classroom. This practice demonstrated that, by involving students in manual and collaborative activities, it is possible to promote engagement and meaningful learning.

As highlighted by Silva *et al.* (2024, p. 62), the teacher acts as a facilitator in the flipped classroom model, promoting the mediation of activities that value social interactions and collaborative work. The experience conducted at EEEFM Nestor Gomes showed the positive impact of this approach, especially in the development of student protagonism. By actively participating in the elaboration of pedagogical materials, students have become central agents of the teaching-learning process. According to Andrade *et al.* (2019), active methodologies, such as the flipped classroom, are particularly suitable to meet the demands of the contemporary student, immersed in a digital environment and in constant transformation.

In addition, the case presented a significant advance with regard to school inclusion. One of the most expressive results reported was the active participation of a Special Education student, who, even with limitations, fully integrated into the proposed activities. This interaction underscores the inclusive potential of the flipped classroom, which creates spaces for all students to contribute according to their capabilities. Digital platforms and practical activities, such as the construction of pedagogical materials, offer alternatives for inclusion to be effectively implemented, in line with the perspective of Narciso *et al.* (2024, p. 409), which highlight how protected and stimulating environments are essential for the learning of students with special needs.

Finally, the experience at EEEFM Nestor Gomes exemplifies the importance of collaboration between different school actors. The involvement of coordinators,

Revista ARACÊ
ISSN: 2358-2472

pedagogues and the school principal was fundamental for the success of the initiative. As emphasized by Santana *et al.* (2021), the advancement of contemporary education requires collective efforts that consider the demands of the modern student and incorporate innovative technologies and strategies. Thus, the flipped classroom model not only promotes student protagonism, but also strengthens inclusion, making education more participatory, dynamic, and equitable. This practical approach demonstrates that, even in challenging contexts, it is possible to achieve transformative results through active methodologies that respect the particularities and potentialities of each student.

RESULTS AND DATA ANALYSIS

The following table can be used to consult the main contributions of the authors used in the research on the flipped classroom, highlighting its areas of study and impacts on contemporary education.

Table 1 - Main authors of the research

Author(s)	Year	Research subject	Relevance of the research
Silva *et al.*	2024	Flipped classroom methodology	They highlight the role of the teacher as a facilitator and the challenges of access to technology.
Artaxerxes; Dawson's	2015	Learner responsibility in acquiring knowledge	They emphasize the transfer of responsibility to the student in the initial learning.
Andrade *et al.*	2019	Flipped classroom and TDIC	They emphasize the use of digital tools, personalization and teacher mediation.
Olive tree; Araújo; Veit	2016	Development of study habits and collaborative work	They argue that the flipped classroom promotes essential skills for the 21st century.
Narciso *et al.*	2024	Digital platforms and personalization for the inclusion of autistic people	They highlight how technologies can offer protected and personalized environments.
Santana *et al.*	2021	Democratization and digital inclusion	They defend the need for innovation to overcome outdated methods.

Source: author himself.

The analyses carried out in the study allowed us to identify the main conclusions about the effectiveness and challenges of the implementation of the flipped classroom methodology in the contemporary educational context. First, it was concluded that this methodology promotes a significant transformation in the dynamics of teaching, transferring the focus from the teacher to the student, who becomes the main agent of the learning process. This approach favors the development of critical skills, such as

Revista ARACÊ
ISSN: 2358-2472

autonomy, collaboration, and responsibility, in addition to improving engagement and content retention, especially when combined with appropriate technological tools.

The significance of these findings is particularly relevant in the current scenario, in which education faces the challenge of meeting the demands of a connected and constantly changing society. The flipped classroom emerges as a response to the limitations of the traditional model, allowing for greater interaction between students and greater depth in learning. In addition, by creating spaces for personalization and inclusion, this methodology has the potential to reduce educational disparities and provide equitable opportunities for students with different profiles and needs.

These findings dialogue directly with the contributions of other authors in the literature. For example, Andrade *et al.* (2019) highlighted the effectiveness of the flipped classroom in promoting collaborative and interactive practices, while Narciso *et al*. (2024) emphasized the potential of digital platforms to create inclusive environments for students with specific needs, such as autistic people. The study also corroborated the analysis of Silva *et al.* (2024) on the challenges posed by inequalities in access to technology, showing that these barriers still represent a significant obstacle to the effective implementation of the methodology.

However, some limitations of the findings must be acknowledged. One of them is the dependence on technological infrastructure, which is not uniformly available in all educational contexts. In rural regions or in schools with limited resources, access to digital devices and the internet is restricted, making it difficult to apply the flipped classroom. In addition, the resistance of some teachers to adopt this methodology, as pointed out by Andrade *et al*. (2019), may limit its impact. Many educators still lack adequate training to plan and execute activities that effectively integrate the virtual and face-to-face components.

Surprising results also emerged during the study, such as the positive impact of the methodology on school inclusion. The example of EEEFM Nestor Gomes demonstrated that, even in a challenging context, the flipped classroom can promote the protagonism of Special Education students, integrating them into the learning process in a meaningful way. This evidence, unexpected in a scenario with so many structural limitations, highlights the transformative potential of the approach when well planned and implemented. On the other hand, the initial resistance of experienced teachers to adopt the methodology revealed that

Revista ARACÊ
ISSN: 2358-2472

the success of the flipped classroom depends on a cultural and pedagogical change, as well as continuous institutional support.

Based on these analyses, it is suggested that future research explore strategies to overcome inequalities in access to technology, investigating, for example, how printed materials can complement digital resources in contexts with limited infrastructure. Longitudinal studies would also be valuable in assessing the long-term impacts of the methodology on the formation of students' skills, such as autonomy and critical thinking. In addition, investigations into the effectiveness of different digital tools, such as Telegram and learning management platforms, can offer insights to improve the integration of technology in the flipped classroom.

Therefore, the discussions raised in the present study reaffirm the central role of the flipped classroom as an innovative and inclusive methodology. However, to maximize its potential, it is necessary to address the challenges identified, promoting investments in infrastructure, teacher training and continuous research that contribute to transforming teaching into a more equitable and effective process.

CONCLUSION

This article analyzed the flipped classroom methodology, highlighting its possibilities and challenges in the contemporary educational context. The central objective, to investigate how this approach can transform pedagogical practices and promote a more inclusive and effective education, was fully achieved. From an analysis, the benefits of the methodology were identified, such as the promotion of student protagonism, the encouragement of autonomy and the strengthening of collaboration in the classroom. In addition, challenges were highlighted, such as inequalities in access to technology and the need for continuing education for teachers.

Research has also shown that, when well applied, the flipped classroom can overcome structural and cultural limitations, creating a more dynamic and participatory learning environment. The practical examples discussed throughout the article illustrated the feasibility of this methodology in different educational contexts, from basic education to higher education. However, it was evident that its effectiveness depends on strategic planning, investments in technological infrastructure and adequate training of the professionals involved.

Revista ARACÊ
ISSN: 2358-2472

On the other hand, the challenges highlighted, such as the resistance of some teachers to the adoption of new methodologies and the technological limitations in less favored regions, reinforce the need for public policies and institutional actions that promote educational equity. Overcoming these barriers is essential for the flipped classroom to be implemented effectively and reach its full potential as a tool for pedagogical transformation.

Thus, the research contributed to broaden the understanding of the flipped classroom and its role in contemporary education, but also opened new perspectives for future investigations. It is encouraged that more research be carried out on strategies to integrate technology in environments with limited infrastructure, as well as on the impact of the methodology on the formation of students' socio-emotional and professional skills. Additional studies could also explore the adaptation of the flipped classroom in different cultural and institutional contexts, broadening its reach and effectiveness.

Therefore, it is concluded that the flipped classroom represents a significant opportunity to transform education into a more inclusive, interactive process aligned with the demands of the twenty-first century. However, its success requires an integrated approach, involving quality teacher training, accessible technological resources, and a collective commitment to rethink traditional educational practices. These actions are essential to consolidate this methodology as an effective alternative to face the challenges and take advantage of the opportunities of contemporary education.

Revista ARACÊ
ISSN: 2358-2472

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