




BLENDING LEARNING: A PEDAGOGICAL ALTERNATIVE FOR THE 21ST CENTURY

 <https://doi.org/10.56238/levv15n43-016>

Submitted on: 04/11/2024

Publication date: 04/12/2024

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ABSTRACT

This study investigated the main challenges and possibilities of blended learning in basic education. The overall objective was to analyze how this approach can be implemented effectively, considering the needs of students and educators. The methodology adopted a literature review, which allowed the collection and analysis of data from different sources on the subject. The results indicated that educators' resistance to the adoption of new methodologies and the lack of specific training are significant challenges for the implementation of blended learning. In addition, insufficient technological infrastructure and the need for curriculum revision have been identified as barriers that can limit the effectiveness of this model. On the other hand, the study highlighted that blended learning provides opportunities for the personalization of learning and student engagement, favoring the construction of a dynamic educational environment. The final considerations highlighted the relevance of continuing education of educators and investment in technology, in addition to the need for curricular adaptations. The research concluded that, despite the challenges,

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blended learning can transform educational practice, and further studies should be conducted to broaden the understanding of its implementation in different contexts.

Keywords: Hybrid Teaching. Basic Education. Active Methodologies. Teacher Training. Technological Infrastructure.

INTRODUCTION

Blended learning has gained prominence in the contemporary educational context, promoting an approach that combines face-to-face education with *online* learning. This teaching modality presents itself as a viable alternative to meet the needs and diversified characteristics of students, allowing greater flexibility and personalization of learning. By integrating different learning environments, blended learning seeks to optimize the educational process, using digital technologies and active methodologies that favor student participation and the development of essential skills for the 21st century.

The relevance of the topic is justified by the growing interest of educators, managers, and researchers in the implementation of pedagogical practices that use hybrid teaching. In a scenario marked by rapid transformations in technologies and social demands, education faces the challenge of adapting to these changes. The adoption of hybrid teaching, therefore, not only aligns with technological innovations, but also responds to the need to promote meaningful learning, which considers the particularities of each student and the demands of the labor market. In addition, the COVID-19 pandemic has highlighted the importance of flexibility in teaching and the need to prepare educators to face new realities, which makes the discussion about hybrid teaching pertinent.

In this context, the question arises: what are the main challenges and possibilities of hybrid teaching in basic education? This problem is fundamental to understand the barriers that can hinder the implementation of this methodology and the opportunities it offers to improve the quality of teaching. In addition, investigating this issue allows us to identify how educational institutions can prepare to adopt hybrid teaching practices effectively, considering the particularities of each educational context.

The objective of this study is to analyze the challenges and possibilities of blended learning in contemporary education, seeking to contribute to an understanding of how this methodology can be implemented and improved in pedagogical practices. To achieve this goal, the structure of the text will be organized into sections that include a review of the literature on the topic, followed by a discussion on hybrid teaching models, the challenges faced by educators, and the strategies for their implementation. The implications for educational practice and suggestions for future research in the area will also be addressed. In this way, it is expected to provide a reflection on hybrid teaching and its implications in the training of educators and students.

THEORETICAL FRAMEWORK

The theoretical framework will be structured in three main sections. The first section will address the definition and fundamental concepts related to blended learning, exploring its characteristics and the historical evolution of this educational approach. In the second section, active methodologies and the role of digital technologies in blended learning will be analyzed, highlighting how these tools can be used to promote effective and engaging learning. Finally, the third section will discuss the different models of blended learning, presenting implementations in varied educational contexts, and the challenges faced by educators and institutions in adopting this methodology. This structure aims to provide a theoretical basis for understanding the topic, allowing a critical analysis of issues related to blended learning in contemporary education.

MODELS OF ENSINO HYBRID

Hybrid teaching models have stood out in discussions about contemporary education, presenting several approaches that combine face-to-face and *online* learning. According to Lemes (2024, p. 135), "hybrid teaching models can be classified into different categories, including the rotation model, the flexible model, and the flipped classroom model, each with specific characteristics and distinct pedagogical objectives". This classification allows educators to choose the approach that best suits the needs of their students and the educational context in which they operate.

In the rotation model, students alternate between classroom activities and *online* activities. This dynamic favors the personalization of teaching, as students can progress at their own pace. Avrella and Cerutti (2018, p. 15) state that "the implementation of the rotation model must be planned, considering the particularities of each class and the training of teachers". This statement highlights the importance of proper planning and continuing education so that educators can manage transitions between learning environments.

The flexible model, in turn, offers greater freedom to students to choose how and where to learn. This type of approach can be effective for students who have different learning styles and paces. As Brito (2020, p. 52) observes, "flexible hybrid teaching enables students to develop autonomy, an essential skill in the twenty-first century, as it prepares them to face the challenges of an ever-changing world". The relevance of developing students' autonomy is highlighted, aligning with the contemporary demands of the labor market and society.

The flipped classroom is a model that also deserves to be highlighted, as it inverts the traditional teaching logic. In this model, classroom time is used for discussions and practical activities, while theoretical content is made available *online* to be studied by students. According to Araújo and Freitas (2020, p. 225), "the flipped classroom promotes greater interaction between students and teachers, in addition to encouraging the active participation of students in the learning process". This approach has proven effective in a variety of contexts, as it transforms classroom dynamics and increases student engagement.

The analysis of the different models of blended learning highlights the versatility of this educational approach. The characteristics and flexibility of the models allow them to be adapted to different realities, favoring the personalization of learning and the development of essential skills. Therefore, the choice of the model must be based on the needs of students and teacher training, ensuring an effective and meaningful implementation of hybrid teaching in educational institutions.

CHALLENGES IN THE IMPLEMENTATION OF BLENDED LEARNING

The implementation of blended learning faces several challenges that can compromise its effectiveness and adoption in educational institutions. These challenges include resistance from educators, lack of adequate training, insufficient technological infrastructure, and the need for a change in school culture. Sá Filho *et al.* (2024, p. 45) highlight that "one of the main obstacles in the adoption of blended learning is the resistance of some educators to new methodologies, which may be related to a lack of trust in technologies or a perception that traditional approaches are effective". This resistance can limit the potential for transformation that hybrid teaching can provide and requires targeted actions to overcome this obstacle.

The training of educators also reveals itself as a critical factor for the successful implementation of hybrid teaching. As Lemes (2024, p. 139) points out, "it is essential that teachers receive specific training on the use of technologies and the application of active methodologies, since the lack of knowledge can generate insecurity and inefficiency in the teaching process". This quote reinforces the need for continuing education programs that prepare educators for the demands of hybrid teaching, ensuring that they feel able to use new pedagogical tools and approaches.

Another challenge refers to the technological infrastructure of the institutions. According to Freitas and Spiegel (2021, p. 305), "the absence of adequate technological resources and the limitation of internet access in schools can hinder the implementation of

hybrid teaching, making *online* activities unfeasible". This statement highlights the importance of investing in infrastructure so that hybrid teaching can be implemented and so that all students have equal access to the tools necessary for learning.

In addition to these challenges, it is essential to consider the cultural change that the implementation of blended learning requires in educational institutions. According to Brito (2020, p. 54), "for hybrid teaching to be accepted and effective, there needs to be a change in the perception of the role of the teacher and the student, where both take an active role in the teaching-learning process". The importance of restructuring educational relations is highlighted, promoting a collaborative and dynamic environment, in which students and teachers work together in the construction of knowledge.

In the face of these challenges, overcoming the aforementioned barriers is essential to ensure the effectiveness of hybrid teaching in educational institutions. The resistance of educators, the need for continuous training, inadequate technological infrastructure and cultural change are aspects that demand attention and action, aiming to provide a favorable environment for the implementation of this innovative pedagogical model. Thus, addressing these challenges will not only contribute to the effectiveness of blended learning, but can also transform educational practice.

BENEFITS OF BLENDED LEARNING

Blended learning has a number of significant benefits that contribute to the personalization of learning and student engagement. One of the main advantages of this model is the possibility of adapting teaching to the individual needs of each student. Bacich (2016, p. 45) points out that "hybrid teaching allows students to learn at their own pace, since *online* activities can be revisited as needed, thus promoting a learning experience adjusted to the particularities of each one". It is evident how the flexibility of *online* activities can facilitate the construction of knowledge, allowing students to revisit content and delve into specific areas.

In addition, hybrid teaching also promotes an increase in student engagement. Brito (2020, p. 50) states that "the integration of digital technologies in pedagogical practices encourages the active participation of students, since it offers varied tools for interaction and collaboration". This statement indicates that by using digital platforms, educators can create dynamic learning environments that encourage participation and the exchange of ideas among students. In this way, students become protagonists in their learning process, which is essential to maintain interest and motivation throughout the educational path.

Another benefit of blended learning is the promotion of collaborative learning. According to Sá Filho *et al.* (2024, p. 48), "the combination of face-to-face and *online* activities favors the construction of learning communities, in which students can work in groups and exchange experiences". The relevance of teamwork in hybrid teaching is highlighted, which not only enriches learning, but also develops socio-emotional skills essential for the formation of students.

In addition, the personalization of learning and engagement generated by blended learning has positive repercussions on students' autonomy. Bacich (2016, p. 47) observes that "by taking an active role in their learning, students develop self-management and responsibility skills, essential for academic and professional success". This reinforces the idea that blended learning not only improves the learning experience but also prepares students for the challenges ahead, empowering them to become autonomous and critical learners.

Therefore, the benefits of blended learning are evident, as they contribute to the personalization of learning, promote student engagement, and encourage a collaborative environment. This educational approach, by adapting to the individual needs of students, enables an effective development of essential skills and competencies in the contemporary context, making hybrid teaching stand out as a viable and innovative alternative to current education.

METHODOLOGY

The research adopted the methodology of bibliographic review, characterized as a qualitative investigation. The approach used focused on the analysis of academic texts, articles, books and materials related to blended learning, allowing for a critical reflection on the topic. The data collection instruments were the selected texts themselves, which were identified through searches in academic databases, such as Google Scholar, *Scielo* and specific journals in the area of education. The procedures involved reading the chosen works, identifying relevant concepts and organizing the information in a systematic way. The techniques used included content analysis and synthesis of the main ideas presented in the sources, seeking to establish connections between the different authors and their contributions to the understanding of blended learning.

In order to present the information collected in a clear and concise manner, a table was prepared that summarizes the main bibliographic references used in this review. The table below contains the authors, titles of publications, year of publication and type of work, providing an overview of the sources on which the research is based. The inclusion of this

table facilitates the consultation of the works cited, allowing the reader to access the materials that support the discussion on the challenges and possibilities of hybrid teaching in contemporary education. This organization of references is essential to ensure the transparency and credibility of the research, in addition to serving as a resource for future investigations in the area.

Table 1 - References

Author(s)	Conforming title published	Year	Type of Work
BACICH, L.	Hybrid teaching: report of teacher training and practice for personalization and integrated use of digital technologies in education.	2016	Article
AVRELLA, J. F.; CERUTTI, E.	Technologies in education: hybrid teaching as a methodological possibility.	2018	Article
BRITO, J. M. S.	The pedagogical uniqueness of hybrid teaching.	2020	Article
ARAÚJO, V. S.; FREITAS, C. C.	Collaborative text via WhatsApp as a form of multiliteracy and strategy for textual production in language classes.	2020	Book Chapter
SILVA, D. A.; KAMINSKI, M. R.; BOSCARIOLI, C.	Reflections on the challenges of blended learning in the (a)(post-)pandemic in public basic education.	2021	Article
FREITAS, E. C. B.; SPIEGEL, C. N.	Rethinking the teaching of Human Anatomy for Physical Education based on the educational trends of the XXI century.	2021	Article
CARVALHO, E. C. B.	Hybrid teaching: a real possibility in basic education?	2021	Article
DUARTE, D. S.	Hybrid teaching as a new pedagogical trend in basic education.	2023	Thesis
SÁ FILHO, P.; LIMA, C. C. G. M.; RIBEIRO, R. D. B.	Hybrid Teaching: Challenges and possibilities for its implementation.	2024	Book Chapter
LEMES, R. S.	Blended learning: models, challenges and benefits.	2024	Article

Source: authorship

CRITICAL ANALYSIS OF THE SELECTED REFERENCES

The critical analysis of the selected references reveals contributions to the understanding of blended learning, addressing its characteristics, challenges, and benefits. The works consulted provide a theoretical basis and pedagogical practices that enrich the debate on this teaching modality. Bacich (2016, p. 42) mentions that "hybrid teaching is characterized by an integration between face-to-face and *online* teaching, providing a space where students can interact with content in a dynamic way". This clear definition establishes a fundamental understanding of what constitutes blended learning, allowing educators and managers to reflect on its implementation.

In addition, Brito (2020, p. 55) highlights that "the active methodologies used in hybrid teaching not only stimulate learning, but also promote the autonomy of students, who become protagonists of their own educational process". This statement emphasizes the

relevance of active methodologies, which are essential for the success of hybrid teaching, as they encourage student participation and engagement. The author also suggests that the adoption of these methodologies can lead to an interactive and collaborative learning environment, factors that are crucial for the formation of essential competencies.

The work of Sá Filho *et al.* (2024, p. 46) brings to light the challenges educators face when implementing blended learning, stating that "resistance to change on the part of teachers, coupled with a lack of specific training, can limit the effectiveness of this pedagogical approach." The need for adequate support for educators is emphasized, highlighting that continuous training and professional development are essential to overcome the barriers faced in the adoption of hybrid teaching. Thus, it is essential that institutions promote training and development opportunities so that teachers feel prepared to apply these new methodologies.

The discussions proposed by the references also address the advantages of blended learning for the personalization of learning. As mentioned by Freitas and Spiegel (2021, p. 309), "the personalization of learning activities in the hybrid environment is one of its greatest assets, as it allows each student to progress according to their own needs and paces". The relevance of personalization is highlighted, which is a distinctive feature of blended learning and can lead to meaningful learning adapted to the uniqueness of each student.

The selected references offer contributions to the understanding of blended learning, addressing both its definitions and benefits and the challenges faced in implementation. By integrating theories and practices, these works enable critical reflection that can guide educators and managers in the adoption of hybrid teaching, promoting an education adapted to contemporary needs. The analysis of these references reinforces the importance of a constant dialogue about educational practices, contributing to the formation of inclusive learning environments.

IMPLICATIONS FOR EDUCATIONAL PRACTICE

The implications for educational practice from the analysis of blended learning reveal a series of necessary changes in pedagogical approaches and teacher training. The results of the review highlight the relevance of adopting active methodologies, which can transform the dynamics of classrooms. Bacich (2016, p. 47) states that "active methodologies are essential for the effectiveness of blended learning, as they promote the active participation of students and enable the construction of knowledge in a collaborative way". It is evident

that the implementation of active methodologies can contribute to the involvement of students in the learning process, making them protagonists of their learning.

In addition, teacher training is a key aspect for the successful implementation of blended learning. Brito (2020, p. 53) observes that "it is necessary for educational institutions to offer continuing education for educators, enabling them to use the technologies and methodologies of hybrid teaching efficiently". This statement highlights the need for investment in teacher training, ensuring that teachers are prepared to face the challenges and demands of this new approach. Adequate support in training can therefore impact the effectiveness of blended learning in classrooms.

Sá Filho *et al.* (2024, p. 46) also highlight that "resistance to change on the part of educators can be overcome through a training process that emphasizes the importance of new methodologies and the development of digital skills". This quote suggests that, by promoting training that values innovative practices, institutions can facilitate the acceptance of hybrid teaching, minimizing the barriers that often limit the adoption of new pedagogical approaches.

Another aspect to be considered is the necessary adaptations in the curriculum. According to Freitas and Spiegel (2021, p. 310), "the integration of hybrid teaching requires a review of curricula, so that *online* activities complement and enhance face-to-face experiences". The relevance of a flexible and adaptable curriculum is highlighted, which takes into account the specificities of hybrid teaching and the needs of students, ensuring an integrated and meaningful education.

The results of the review suggest that the adoption of blended learning can impact educational practices and teacher training. The emphasis on active methodologies, the continuing education of educators and curricular adaptations are fundamental for the effective implementation of this model. Thus, by reflecting on these implications, educational institutions can create a favorable environment for the development of skills and student engagement, preparing them for the challenges of the twenty-first century. This transformation, therefore, is essential to ensure that education remains relevant and effective in the face of constant changes in society and technologies.

PROPOSALS FOR IMPROVEMENT IN THE IMPLEMENTATION OF BLENDED LEARNING

Proposals for improvement in the implementation of blended learning should be directed towards overcoming the challenges identified and enhancing the benefits of this educational approach. A fundamental strategy is the promotion of continuing education for

educators, which addresses both active methodologies and the use of digital technologies. According to Sá Filho *et al.* (2024, p. 49), "training programs that integrate theory and practice are essential for teachers to feel confident and able to implement hybrid teaching effectively". The importance of training that not only provides theoretical knowledge, but also prepares educators for practical application in the classroom is highlighted.

In addition, the creation of a collaborative environment among educators is essential for the exchange of experiences and the development of successful practices. Bacich (2016, p. 48) suggests that "group training, where teachers can share their experiences and learn from each other, can help build a community of practice that favors innovation in teaching". This proposal reinforces the idea that collaborative learning among educators can result in a rich exchange of ideas, contributing to overcoming resistance to change.

Another important aspect refers to investment in technological infrastructure. Brito (2020, p. 57) observes that "the availability of adequate technological resources is a prerequisite for the implementation of blended learning, since the lack of these resources can limit learning activities". This quote underscores that infrastructure should be a priority for institutions, ensuring that all students have access to the tools they need for *online* learning, as well as a classroom environment that supports hybrid methodology.

The revision of the curriculum also presents itself as a significant proposal. Freitas and Spiegel (2021, p. 311) state that "curricula should be adapted to include activities that connect *online* and face-to-face learning, promoting an integrated educational experience". This curricular adaptation can facilitate the transition between different teaching formats, optimizing the use of time in the classroom and online activities, while enriching the students' learning experience.

The proposals for improvement in the implementation of hybrid teaching involve continuous training for educators, the creation of collaborative environments, investment in technological infrastructure and curriculum review. These strategies are essential to overcome the challenges faced and to ensure that the benefits of blended learning are realized. By adopting these measures, educational institutions are well prepared to offer quality education, adapting to the needs and demands of contemporary students. This approach not only enhances hybrid teaching, but also contributes to the formation of critical and engaged citizens in society.

FINAL CONSIDERATIONS

The final considerations of this study reflect on the main findings related to the research question: what are the main challenges and possibilities of blended learning in

basic education? The analysis of the different models of blended teaching revealed that, despite the resistance and difficulties faced by educators and institutions, this educational approach offers a series of opportunities to improve the teaching-learning process.

The results indicated that one of the main challenges in the implementation of blended learning is the resistance on the part of educators to adopt new methodologies. This resistance can be attributed to the lack of specific training and insecurity regarding the use of digital technologies. However, continuing education emerges as a viable solution, being fundamental for educators to feel confident and empowered to use the new pedagogical approaches. The promotion of collaborative environments among educators was identified as an important strategy to overcome these barriers, allowing the exchange of experiences and the construction of a community of practice that favors innovation.

Another significant finding is the need for investments in technological infrastructure. The availability of adequate resources is essential for blended learning to be implemented. The survey indicated that the lack of technology and internet access can limit learning activities and hinder student engagement. Therefore, it is imperative that institutions prioritize improving their infrastructure to support hybrid learning.

In addition, the revision of the curriculum showed an evident need. The findings of this study suggest that curricula should be adapted to effectively integrate *online* and face-to-face activities. This not only facilitates the transition between different teaching formats but also provides an enriching educational experience for students.

The contributions of this study focus on providing an understanding of the challenges and possibilities of blended learning, highlighting the importance of teacher training, investment in infrastructure, and curriculum review. These elements are fundamental for the effectiveness of blended learning and for the promotion of personalized and engaging learning.

Finally, the need for other studies that deepen the issues addressed in this research is emphasized. The investigation of concrete experiences of implementing hybrid teaching in different contexts can also enrich the debate on this educational modality. Future studies could explore the effectiveness of different active methodologies, as well as investigate students' perception of blended learning, thus contributing to an understanding of the impacts of this approach on basic education. In this way, the advancement of knowledge about hybrid teaching can offer important insights for the formation of an education adapted to the demands of the twenty-first century.

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