
THE KEY FACTORS AND CHALLENGES OF BLENDED LEARNING: NAVIGATING EDUCATIONAL INNOVATION

EMILIO JOSÉ MEDRANO-SÁNCHEZ, JOSÉ JOSÉ BRAVO ENRIQUEZ, JOSÉ COVEÑAS LALUPU, AND MARÍA ISABEL MEDRANO-SÁNCHEZ

SUMMARY

This study examines the implementation and challenges of Blended Learning, highlighting its growing significance in modern education. Through a descriptive literature review, a total of 36 articles were analyzed, resulting in the identification of ten main research themes and fifty-two significant proposals and/or contributions. Findings reveal a concentration of studies in areas such as the factors and benefits of Blended Learning, skill development, and technological infrastructure. However, several pending challenges are also recognized, in-

cluding the need for further studies on specific strategies, the exploration of perceptions regarding the use of digital platforms, and skill development. Teacher training, digital curriculum planning, and the development of technology-based strategies are identified as key factors for the success of Blended Learning. The research emphasizes the importance of continuing to explore these topics to enrich the understanding and effective application of Blended Learning in the educational field.

Introduction

The accelerated adoption of Blended Learning, significantly propelled by the COVID-19 pandemic, has compelled educational institutions at all levels to shift towards digital environments and integrate

face-to-face learning with online modalities. Crawford *et al.* (2020) characterize this educational modality as an emerging necessity that includes both face-to-face interactions and asynchronous and synchronous digital technologies. According to So and Brush (2008), blended learning is defined as the delivery of educational methodologies that integrate direct

instruction with information and communication technologies. Similarly, Graham (2004) describes Blended Learning as an instructional approach that merges two traditionally distinct models of teaching and learning.

Wang (2019) highlights that this approach facilitates student autonomy, allowing for the personal

KEYWORDS / Blended Learning / Competency Training / Digital Platforms / Teacher Training /

Received: 05/13/2024. Accepted: 10/04/2024.

Emilio José Medrano-Sánchez (Corresponding author). Dr. in Public Management and Governance, Master Degree in Public Management, Master Degree in Environment Science, Graduate in Civil Engineer. Coordinator, Instituto de Desarrollo y Medio Ambiente (IDMA) Research Group. Universidad Cesar Vallejo, Address: Carretera Central Km. 8.2, Ate, Lima-Perú. e-mail: emedranos@ucvvirtual.edu.pe.

José José Bravo Enriquez. Dr.(c) in Education. Master in University Teaching and Educational Management. Graduate in Education. PhD student, Universidad Peruana Cayetano Heredia, Peru. e-mail: jose.bravo.e@upch.pe.

José Coveñas Lalupu. Dr. in Engineering. Master Degree in Industrial Engineering and, Industrial Engineer. Head of the Research, Innovation and Entrepreneurship Unit, Faculty of Industrial Engineering, Universidad Nacional Federico Villarreal. Lima, Peru. e-mail: jcovenas@unfv.edu.pe.

María Isabel Medrano-Sánchez. Dr. in Environment and Sustainable Development. Master in Mining Law. Graduate in Law and Political Science. Researcher, Universidad Peruana de Ciencias Aplicadas Lima, Peru. e-mail: e201300226@upc.edu.pe.

organization of learning beyond traditional classroom constraints. Grounded in the principles of cognitivism, constructivism, social learning, and connectivism, Blended Learning offers a robust framework for teaching and learning in the digital age (El Emrani *et al.*, 2022). Additionally, Al-Fadhel *et al.* (2022) point to its potential to enhance teacher and student training, as well as to adapt curricula and assessment systems, significantly increasing the reach and accessibility of educational opportunities.

However, the effective implementation of this modality faces challenges, including the need to prepare students to fully leverage these hybrid environments and meet practical learning requirements (Garcia-Ortega and Galan-Cubillo, 2021; Joji *et al.*, 2022). Considering these challenges, the following research question is posed: What factors ensure the success of Blended Learning, and what challenges still need to be addressed during its development? To this end, this article analyzes recent academic production to identify both the critical factors for the success of Blended Learning and the remaining challenges in its implementation.

Method and Methodology

In this research, a meticulous descriptive bibliographic review was conducted, focusing on "Blended Learning" as the primary term of study. Scientific articles that provided primary data were prioritized, specifically including those that explicitly mentioned "Blended Learning" in the title, abstract, or keywords. To ensure the integrity and public availability of the knowledge, precise exclusion criteria were applied, limiting the selection to original works published in open-access format.

The bibliographic search and exploration for this study were conducted using the Scopus and Web of Science databases, chosen for their recognized academic prestige and their ability to reflect current research trends. The strategy for selecting sources was centered on the keyword "Blended Learning," enabling the identification of 36 documents from 2008 to 2023, with a search limit set to January 9, 2024. Of these documents, 22 were retrieved from Scopus and 14 from Web of Science, using specific search formulas tailored to each database. For instance, in Scopus, the search was conducted with: TITLE-ABS-KEY ("Blended Learning") AND (LIMIT-TO (DOCTYPE, "ar")) AND (LIMIT-TO (OA, "all")), and for Web of Science,

access was gained through the link <https://www.webofscience.com/wos/woscc/summary/17445ec7-cd97-46d1-8a5f-fd-c22d80236b-c3dd880d/relevance/1>. With the initial documents identified, the 2020 Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) criteria were applied to systematically review the titles, which led to the detection of 12 duplicate documents across both databases.

After narrowing the initial set down to 24 documents, the titles were reviewed to confirm the inclusion of the term "Blended Learning" and to ensure the content's relevance to the research theme. This review resulted in the exclusion of two studies that did not directly align with the study's focus: one related to curriculum planning and the other to the evaluation system. Subsequently, the abstracts of the remaining 22 articles were analyzed to verify the inclusion of the key phrase "Blended Learning" and assess its connection to the current research context. At this stage, it was decided to retain all the documents, as each contributed significantly to the overall body of analysis.

Finally, a complete review of the selected 22 articles was conducted. During this analysis, four articles that were not directly related to Blended Learning were eliminated, including two that dealt with legislation in distance education and gamification, and two others focused on long-term retention evaluation and evaluative design and planning methodologies. This rigorous selection process resulted in the consolidation of 18 articles suitable for subsequent analysis, the details of which are illustrated in Figure 1. Once the selection process was complete, Table I was developed for the final 18 articles. This table was structured into four essential columns: author, research topic, proposals and/or contributions, and the methodology implemented in each study.

The information presented in Table I facilitated a dual organization of the findings. On one hand, a bar chart was used to visualize the distribution of the identified themes. On the other hand, a summary table detailed the frequency of various proposals and/or contributions across the analyzed articles. This dual structure allowed for a clear and

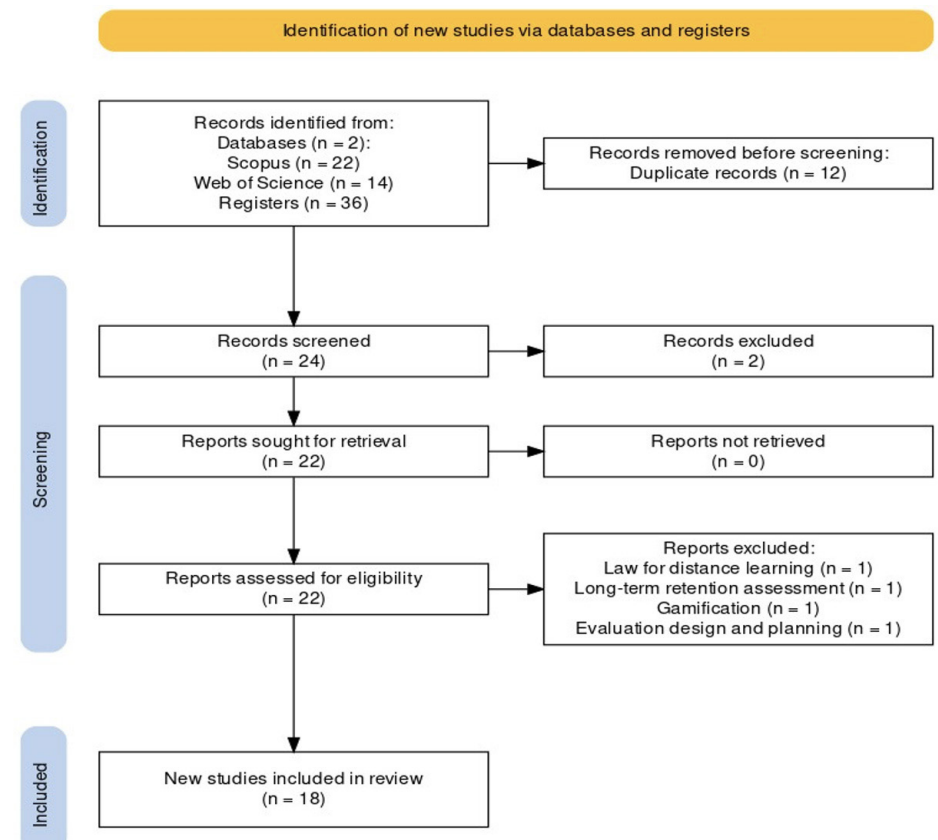


Figure 1. This figure synthesizes the procedure performed to obtain the number of documents for full-text analysis.

TABLE I
MAIN THEMES, PROPOSALS AND/OR CONTRIBUTIONS OF THE REVIEWED ARTICLES

N°	Author	Research topic	Proposals / Contributions	Methodology
1	Al-Fadhel <i>et al.</i> (2022)	Teacher Training and Online Learning Strategies	<ul style="list-style-type: none"> • Blended Learning • Digital infrastructure and blended learning environments • Blended Learning Strategies • Teacher training in blended learning • Future research 	Quantitative, data review, Gulf Cooperation Council
2	Akyüz and Samsa (2009)	Blended Learning and Skill Development	<ul style="list-style-type: none"> • Blended Learning Strategies • Digital infrastructure and blended learning environments • Future research 	Quantitative, surveys, Turkey
3	Bozkurt (2022)	Factors and Benefits of Blended Learning	<ul style="list-style-type: none"> • Blended Learning • Blended Learning Factors • Future research 	Data mining, Database “Scopus”.
4	Abdul Hussein and Najeeb (2022)	Blended Learning Model	<ul style="list-style-type: none"> • Blended Learning Factors • Future research 	Quantitative, experimental, surveys - Iraq
5	Luo <i>et al.</i> (2013)	Factors and Benefits of Blended Learning	<ul style="list-style-type: none"> • Effects of blended learning • Future research 	Qualitative, experimental design - Taiwan
6	Mohsen and Shafeeq (2014)	Technological Infrastructure	<ul style="list-style-type: none"> • Digital infrastructure and blended learning environments • Teacher training in blended learning • Future research 	Mixed, surveys, interviews - Saudi Arabia
7	Hadjerrouit (2008)	Blended Learning and Learning Theories	<ul style="list-style-type: none"> • Blended Learning Factors • Learning theories 	Quantitative, case study - Norway
8	Garcia-Ortega and Galan-Cubillo (2021)	Perceptions of Blended Learning	<ul style="list-style-type: none"> • Blended Learning Factors • Effects of blended learning • Effects of blended learning • Teacher training in blended learning 	Qualitative, case study, surveys- Spain
9	Nikolaeva <i>et al.</i> (2019)	Technological Infrastructure	<ul style="list-style-type: none"> • Challenges and reflection of blended learning 	Quantitative, surveys- Ukraine
10	Wang (2019)	Factors and Benefits of Blended Learning	<ul style="list-style-type: none"> • Effects of blended learning • Blended Learning Factors 	Quantitative, experimental design - China
11	Joji <i>et al.</i> (2022)	Perceptions of Blended Learning	<ul style="list-style-type: none"> • Blended Learning • Effects of blended learning • Challenges and reflection of blended learning 	Mixed, surveys- Kingdom of Bahrain
12	Rahimzadeh and Gilakjani (2022)	Blended Learning and Skill Development	<ul style="list-style-type: none"> • Effects of blended learning • Skill Development • Future research • Blended Learning Factors • Digital infrastructure and blended learning environments 	Quantitative, quasi experimental - Iran
13	El Emrani <i>et al.</i> (2022)	Blended Learning and Learning Theories	<ul style="list-style-type: none"> • Teacher training in blended learning • Future research 	Systematic review - Morocco
14	Fang <i>et al.</i> (2017)	Blended Learning Methodology	<ul style="list-style-type: none"> • Blended Learning • Blended Learning Strategies • Blended Learning Strategies • Effects of blended learning 	Quantitative, experimental design - China
15	De Jorge-Moreno (2020)	Blended Learning Methodology	<ul style="list-style-type: none"> • Challenges and Reflection on Blended Learning 	Surveys- Spain
16	He <i>et al.</i> (2021)	He <i>et al.</i> (2021)	<ul style="list-style-type: none"> • Effects of blended learning • Blended Learning Factors • Future research 	Quantitative, experimental design - China
17	Cheng <i>et al.</i> (2023)	Cheng <i>et al.</i> (2023)	<ul style="list-style-type: none"> • Blended Learning Factors • Challenges and reflection of blended learning 	Qualitative, surveys- China
18	Geng <i>et al.</i> (2019)	Geng <i>et al.</i> (2019)	<ul style="list-style-type: none"> • Digital infrastructure and blended learning environments • Effects of blended learning • Skill Development • Technology management 	Quantitative, surveys- China

accessible interpretation of the data collected during the research.

The final stage of the methodology, depicted in Figure 2, revealed a clear trend in the methodological approaches of the documents reviewed: a dominant 72% employed quantitative methodologies, while the remaining 28% opted for qualitative approaches. It is notable that 82% of the studies gathered data using tools such as questionnaires, interviews, and online surveys, in contrast to 18% that preferred to conduct situational analyses, documentary reviews, or build mixed models. The majority of the research, a significant 94%, was conducted in university settings, compared to a modest 6% oriented toward the business sector. Regarding geographic distribution, the studies show considerable diversity: they originate from countries such as Spain (2), China (6), Turkey (1), Norway (1), Iran (1), Iraq (1), with one study covering Gulf nations like Bahrain, Kuwait, Oman, United Arab Emirates, and Qatar, as well as Taiwan (1), Saudi Arabia (2), and Ukraine (1), with one study not specifying its origin.

Results

This study has optimized the organization of information through two key formats. A bar chart was designed to visually represent the investigated themes and the corresponding number of articles. Additionally, a detailed table was created to synthesize the significant contributions from the 18 reviewed articles, identifying 52 key elements. This approach facilitates a detailed analysis of the fundamental pillars of the study's findings.

Main Blended Learning research topics

After conducting a meticulous analysis of the selected articles, the findings were documented in Table I, where ten main research themes were identified. These themes encompass a variable number of articles, specifically detailed in Figure 3.

To present the results shown in Figure 3 in a coherent and relevant manner, a descriptive orientation proceeding from right to left was adopted. This layout was intentionally chosen to facilitate an effective synthesis of the data. By avoiding value judgments on the relative importance of each theme, this approach promotes an integrated and objective understanding, ensuring clarity in the presentation of the information.

Starting with the first column on the right in Figure 3, which

addresses the theme "Blended Learning Environment," it is noted that only one article explores this area. This study, conducted by Geng *et al.* (2019), assesses the effects of self-directed learning, technological preparedness, and motivation to learn across three key dimensions: social, didactic, and cognitive. The participants in this study are students engaged in courses that employ both Blended Learning modalities and traditional formats. The article emphasizes the critical importance of providing students with hybrid learning environments that not only facilitate self-management of learning but also strengthen their cognitive and social skills, increase their motivation, and enhance their ability to effectively use technology in their ongoing education.

Moving on to the second column of Figure 3, which focuses on the "Effects of Blended Learning," a

single study investigates this topic. This analysis assessed whether a Small Private Online Course (SPOC) in neurology, implementing the blended learning model, could yield favorable outcomes and whether this experience could be extended to residents from different medical programs. Additionally, the influence of the learning group size on the educational process was examined (He *et al.*, 2021). The findings of this study highlight the significant benefits of Blended Learning, including the consolidation of knowledge acquired in-person, adaptation to individual learning paces, the promotion of critical thinking, and satisfactory academic performance.

In the third column of Figure 3, dedicated to "Perceptions of Blended Learning," two academic publications explore this area. The first study examined the perceptions of medical

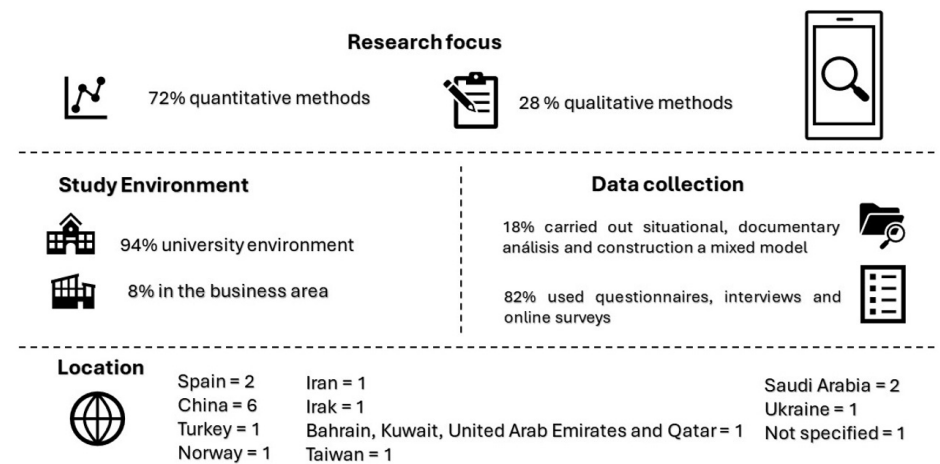


Figure 2. Blended Learning Methodology of the analyzed papers.

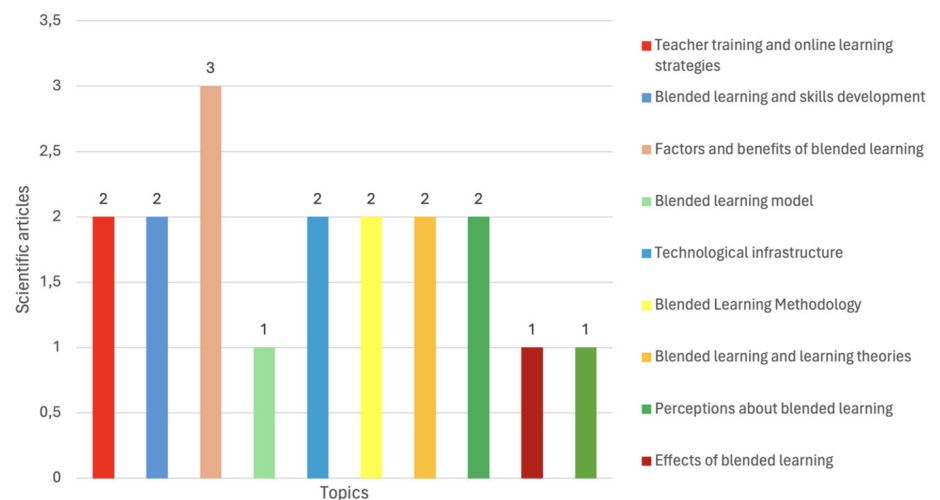


Figure 3. Classification of Blended Learning research topics.

students and faculty staff from the microbiology department of the Arabian Gulf University regarding laboratory sessions, both online and face-to-face (Joji *et al.*, 2022). The second article researches the perceptions of students from a Postgraduate Master's in the Cosmetic Industry at the University of Valencia, which was conducted in a blended format. This study addresses the experiences of students who have participated, or not, in remote online learning environments, with the aim of identifying strategies to improve this educational modality (Garcia-Ortega and Galan-Cubillo, 2021). Both studies provide valuable insights into Blended Learning, highlighting a preference for face-to-face modalities in practical activities and emphasizing the utility of prior experiences in blended environments to facilitate the educational process.

The fourth column of Figure 3 also delves into the theme "Blended Learning and Learning Theories," covered by two notable studies. The first analyzes the design, implementation, and evaluation of a Blended Learning model specifically tailored for teaching computer programming, exploring its pedagogical implications (Hadjerrouit, 2008). The second study examines empirical findings from previous research on the integration of MOOC platforms in Blended Learning contexts, assessing their impact and interrelationships (El Emrani *et al.*, 2022). Both papers highlight how Blended Learning extends beyond the technological dimension, incorporating principles from various educational theories such as cognitivism, constructivism, social learning, and connectivism, thereby contributing to the development of a robust and coherent pedagogical framework.

Similarly, the "Blended Learning Methodology" is explored in the fifth column of Figure 3, represented by two articles. The first, conducted by Fang *et al.* (2017), proposes a statistical analysis of the use of online learning platforms. Meanwhile, the second article, authored by De Jorge-Moreno (2020), focuses on describing the learning process and deep thinking through the game of chess, and its connection with knowledge acquired in strategic management by university students in their final years during the academic years 2017/18 and 2018/19. Both works illustrate the application of Blended Learning methodology using digital platforms, highlighting how this educational modality is enhanced by integrating it with chess teaching and promoting strategic thinking.

Likewise, the sixth column of Figure 3 is dedicated to the theme "Technological Infrastructure" and is addressed through two articles. The first, by Mohsen and Shafeeq (2014), aims to examine teachers' perceptions regarding the use of digital whiteboard applications in teaching English as a foreign language. On the other hand, the study by Nikolaeva *et al.* (2019) seeks to determine whether the dynamics of English language skill development and student autonomy are influenced by the content and activities proposed by teachers in training in the blended course "Teaching English as a Foreign Language to Students with Special Educational Needs." Both articles focus their analysis on the interaction with digital platforms, exploring how the contents and activities specifically designed for these platforms contribute to enhancing student autonomy, improving their linguistic skills, and increasing their motivation for continuous learning.

The seventh column of Figure 3 highlights the theme "Blended Learning Model," addressed by a single scientific study. The main purpose of this research, conducted by Abdul Hussein and Najeeb (2022), is to explore a predictive model that clarifies the application of blended learning both during and after the COVID-19 pandemic, focusing on creating a model with the minimum number of errors. This article emphasizes the essential elements that must be considered when developing a blended learning model, ensuring its relevance and effectiveness to adequately complement both face-to-face and online teaching.

Similarly, the eighth column of Figure 3 addresses the theme "Factors and Benefits of Blended Learning," examined by three different studies. The first, led by Bozkurt (2022), focuses on blended learning, applying data analysis and mining techniques to discern bibliometric trends and thematic patterns, aiming to reveal the underlying intellectual structure of this educational modality. This paper highlights the crucial factors that contribute to the success of Blended Learning and the formation of its structural model. The second study, by Wang (2019), seeks to define a blended learning approach that achieves effective integration between online learning and face-to-face teaching, based on the network learning space specifically implemented in digital arts education. Meanwhile, the third article, by Luo *et al.* (2013), details the development and application of a Blended Learning model in training within the food and beverage preparation sector. These last two works demonstrate that by

refining the methodology of Blended Learning, educational benefits are extended to both teachers and students, providing them the opportunity to review materials, design activities that delve into theoretical concepts, and manage their own learning process, which facilitates socialization and the exchange of knowledge among peers, thus creating a collective knowledge base.

The ninth column of Figure 3 addresses the theme "Blended Learning and Skill Development," explored through two studies. The first, conducted by Akyüz and Samsa (2009), focuses on evaluating how a blended learning environment, supported by course management systems, influences students' critical thinking abilities. On the other hand, the study by Rahimzadeh and Gilakjani (2022) investigates the effect of Blended Learning on the reading proficiency of Iranian intermediate-level students of English as a foreign language. The findings from both studies converge on the conclusion that Blended Learning enhances the development of key skills in students, such as reading comprehension and critical thinking, demonstrating the added value of this educational modality in the learning process.

The tenth column of Figure 3 discusses the theme "Teacher Training and Online Learning Strategies," explored through two contributions. The first study, led by Al-Fadhel *et al.* (2022), seeks to ascertain the level of technological preparedness of higher education institutions and to examine the impacts of an online education system on both faculty and students. On the other hand, the analysis by Cheng *et al.* (2023) aims to understand educators' perceptions of blended learning, with the goal of assessing the effectiveness of teacher training programs. These studies highlight the importance of training university teachers in blended learning techniques and in adopting specific strategies to effectively promote this educational modality.

In summary, the aspects of Blended Learning that have received the most attention include factors and benefits, competency development, and teacher training with online learning strategies, with multiple studies dedicated to each area. Themes such as technological infrastructure, methodology, learning theories, and perceptions of Blended Learning have also been extensively researched. On the other hand, areas like the Blended Learning model, its direct effects, and the learning environment represent the least explored sectors, standing out as promising fields for future research that could

further enrich the understanding and application of this educational modality.

Main proposals and/or contributions on Blended Learning

As a result of the analysis carried out on the 18 selected scientific articles, 52 proposals and/or contributions related to Blended Learning were identified. These findings were carefully categorized and subsequently grouped, allowing for the establishment of specific frequencies for each category. The details of this classification and the corresponding frequencies are presented in an organized manner in Table II.

Delving deeper into the analysis of Table II reveals a range of proposals and/or contributions intrinsically linked to Blended Learning, varying in frequency of mention from single instances to a notable maximum of nine occurrences. This variability underscores the wide range of perspectives and methodologies that enrich the academic dialogue surrounding this educational modality, highlighting the interest and relevance that Blended Learning holds within the research community.

To break down the information contained in Table II, the category "Blended Learning" is located in the first row, which records a frequency of four mentions. This initial data underscores how the blended learning methodology has been stimulated and promoted, particularly in the context of the COVID-19 pandemic, as a strategy to adapt to the emerging characteristics and needs of students. Furthermore, the importance of maintaining and extending the use of Blended Learning over time is highlighted, focusing on continuous research, refinement of its practices, and effective integration with educational policies, stakeholders in the educational field, and training processes.

Continuing with the analysis, the second row of Table II introduces the category "Digital Infrastructure and Blended Learning Environments," which records a frequency of five mentions. These findings highlight that the blended learning modality is grounded in the use of digital platforms. These platforms facilitate student interaction within a learning environment designed not only to enhance their cognitive and social skills but also to prepare them for autonomous and continuous learning in a variety of contexts.

Additionally, the third row of Table II highlights the category "Teacher Training in Blended Learning," with a frequency of four mentions. This

category underscores several fundamental ideas for the effective implementation of this educational methodology. Among them, the need for ongoing training for teachers and instructors in Blended Learning is emphasized, as well as the creation of forums for exchange that allow educators to share experiences, identify strengths, and areas for improvement in applying this modality. Finally, it is crucial to integrate this knowledge and practices substantially into teacher training curricula, thus ensuring their transmission, and deepening in future generations of education professionals.

Similarly, located in the fourth row and mentioned five times, the category "Blended Learning Strategies" encompasses key contributions from the studies analyzed. Among these contributions, it is emphasized that the activities and strategies implemented online should serve to reinforce and complement face-to-face teaching. Among the educational tactics highlighted, the Flipped Classroom approach stands out. This methodology involves providing students in advance with materials in various digital formats—such as PDFs, videos, podcasts, and tutorials—for their independent review. Subsequently, these contents are addressed and deepened in the classroom environment, with the aim of consolidating and expanding the acquired knowledge.

It is important to note that in the fifth row of Table II, the category "Future Research" is located, achieving the highest frequency of mentions with a total of nine. This category illuminates key areas for future exploration in the realm of Blended Learning. Among the suggested research lines are the deepening of the Flipped Classroom model, the stimulation of studies focused on teachers' perceptions regarding digital platforms, the analysis of the connection

of Blended Learning with various competencies, and the investigation of innovative strategies that enhance practical learning. These proposed directions underscore a field rich in potential for the advancement of knowledge and educational practice in the context of Blended Learning.

With similar importance, the category "Blended Learning Factors" is found in the sixth row, also achieving a notable frequency of nine mentions. The reflections drawn from this category underscore crucial points for the success of Blended Learning: the importance of integrating technology into curriculum planning as a fundamental support pillar is emphasized; the value of participants' prior experience is recognized as a decisive element for effectively navigating this learning methodology; and it is highlighted that, to achieve the proposed educational objectives, it is essential for students to exercise autonomy and become proactive managers of their own learning process.

Additionally, in the seventh row, the category "Effects of Blended Learning" stands out with a frequency of nine mentions. The ideas emerging from this analysis emphasize the positive impact of Blended Learning on student education. It is evident that this educational modality promotes student autonomy, giving them the flexibility to review content or classes as often as necessary for their studies. Moreover, it is highlighted that Blended Learning facilitates the consolidation of cognitive, social, and pedagogical competencies, allows for effective time management, increases motivation to continue the learning process, promotes interaction among peers, and stimulates the creation of learning communities, thus enhancing the comprehensive development of the student.

TABLE II
FREQUENCY OF THE PROPOSALS AND/OR CONTRIBUTIONS MADE
IN THE ARTICLES

Category	Frequency
Blended Learning	4
Digital infrastructure and blended learning environments	5
Teacher training in blended learning	4
Blended Learning Strategies	5
Future research	9
Blended Learning Factors	9
Effects of blended learning	9
Challenges and reflection of blended learning	3
Skill development	2
Technology management	1
Learning theories	1

The category "Challenges and Reflection on Blended Learning" occupies the eighth row, exhibiting a frequency of three mentions. This section highlights critical considerations for the effective implementation of Blended Learning. The main ideas drawn emphasize the need for careful digital and contextualized planning of this educational modality. Moreover, it underscores the importance of reviewing and adapting pedagogical strategies that align with the needs of practical learning, thereby ensuring that Blended Learning meets the comprehensive training objectives of students in an increasingly digitalized environment.

Additionally, the category "Skill Development" is positioned in the ninth row, with a frequency of two mentions. This section highlights the significant contribution of Blended Learning to the process of training and strengthening essential skills. Among the notable aspects is the improvement of reading competence, considered a key skill for learning. Furthermore, it is emphasized that this educational modality facilitates the design of learning activities that allow students not only to understand but also to develop and exercise their critical thinking skills, demonstrating the versatility and positive impact of Blended Learning on the acquisition of fundamental competencies.

Similarly, the category "Technology Management" is located in the tenth row, recording a frequency of one mention. The key observation in this context is that students with pre-existing technological knowledge and skills enjoy a significant advantage in effectively participating in Blended Learning activities. This advantage contrasts with the experience of those students who lack such preparation, highlighting the critical importance of technological competence as an essential facilitator for fully capitalizing on the opportunities offered by this educational modality.

Next, the category "Learning Theories" appears in the eleventh row, with a frequency of a single mention. The fundamental premise of this study is that Blended Learning is based on cognitive, constructivist, and social learning theories. This theoretical foundation enables students to familiarize themselves with key concepts, actively construct their own learning, and then interact with peers to consolidate the knowledge gained. This approach reflects how Blended Learning not only focuses on content delivery but also promotes an interactive and constructive learning process.

In summary, the analysis of frequencies related to Blended Learning reveals the following trends: the most prominent categories are future research, factors of Blended Learning, and effects of Blended Learning, all with a frequency of 9. The categories of intermediate interest include Blended Learning and teacher training in Blended Learning, both with a frequency of 4; in addition to digital infrastructure and Blended Learning environments, and Blended Learning strategies, each with a frequency of 5; followed by challenges and reflection on Blended Learning, with a frequency of 3. On the other hand, the less explored areas are skill development, with a frequency of 2; and technology management and learning theories, each with a frequency of 1, illustrating the diversity and priority focus of research in this field.

Discussion

The results highlight key areas for researchers focusing on Blended Learning, emphasizing its relevance in technological, educational, and social spheres. This approach prepares teachers and students to expand their learning into new contexts while addressing significant challenges in the effective use of technology, despite widespread access to these resources. This underscores the need for a well-structured methodology that promotes essential skills for the educational process (Luo *et al.*, 2013; Rahimzadeh & Gilakjani, 2022).

Furthermore, digital platforms have become fundamental components in advancing Blended Learning, facilitating the creation of conducive educational environments where teachers can monitor students' progress and apply appropriate evaluative methodologies. Interacting with digital tools not only enriches learning by allowing knowledge to be tailored to individual needs, but it also fosters the development of critical skills such as reading comprehension and critical thinking. Simultaneously, this interactive environment promotes collaboration among peers, contributing to the effective consolidation of the learning acquired (Geng *et al.*, 2019).

Additionally, the importance of comprehensive teacher training in Blended Learning is emphasized, which goes beyond purely intellectual and technological competencies to include personal, social, and communicational aspects. This fosters a collaborative environment that enables the modeling of successful practices and the joint development of strategies to overcome challenges, highlighting the importance of equipping

educators with the necessary support to effectively integrate these tools into their pedagogical practice (Al-Fadhel *et al.*, 2022; Mohsen & Shafeeq, 2014).

Lastly, while the benefits of developing and implementing Blended Learning are recognized, the inherent challenges of this modality must also be considered. Practical learning requirements, especially in fields that require physical interaction, and a lack of prior experience with digital tools, are critical factors for educational success. These challenges underscore the need to adapt Blended Learning strategies to address both the limitations and opportunities in the teaching and learning process (Garcia-Ortega & Galan-Cubillo, 2021; Joji *et al.*, 2022).

Conclusions

The key elements for the development and effectiveness of Blended Learning include ongoing teacher training in this methodology, curriculum planning adapted to the digital environment, and the implementation of strategies and activities through digital platforms. Additionally, communicative interactions between teachers and students in the digital realm are identified as fundamental, as well as personalized assessment and group feedback, teacher reflection on pedagogical practice, student monitoring, and continuous review of the Blended Learning process for its qualitative improvement and educational expansion.

Regarding the challenges, there are areas that continue to require attention and future study, such as the exploration of specific strategies within Blended Learning, especially in the Flipped Classroom, perceptions about the use of digital platforms or Learning Management Systems (LMS), the assessment of critical thinking under this modality, and the relationship between Blended Learning and the development of learning competencies. These areas present opportunities for research that delves into the adaptation and improvement of Blended Learning, thereby responding to the emerging practical and theoretical needs in the current educational context.

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LOS FACTORES CLAVE Y DESAFÍOS DEL *BLENDED LEARNING*: EXPLORANDO EN LA INNOVACIÓN EDUCATIVA

Emilio José Medrano-Sánchez, José José Bravo Enriquez, José Coveñas Lalupu y María Isabel Medrano-Sánchez

RESUMEN

Este estudio examina la implementación y los desafíos del Blended Learning, destacando su creciente importancia en la educación moderna. A través de una revisión descriptiva de la literatura, se analizaron un total de 36 artículos, lo que resultó en la identificación de diez principales temas de investigación y cincuenta y dos propuestas y/o contribuciones significativas. Los hallazgos revelan una concentración de estudios en áreas como los factores y beneficios del Blended Learning, el desarrollo de habilidades y la infraestructura tecnológica. Sin embargo, también se reconocen varios

desafíos pendientes, incluyendo la necesidad de realizar más estudios sobre estrategias específicas, la exploración de percepciones respecto al uso de plataformas digitales y el desarrollo de habilidades. La formación docente, la planificación curricular digital y el desarrollo de estrategias basadas en tecnología se identifican como factores clave para el éxito del Blended Learning. La investigación enfatiza la importancia de continuar explorando estos temas para enriquecer la comprensión y la aplicación efectiva del Blended Learning en el ámbito educativo.

OS FATORES CHAVE E DESAFIOS DA *BLENDED LEARNING*: EXPLORANDO A INOVAÇÃO EDUCACIONAL

Emilio José Medrano-Sánchez, José José Bravo Enriquez, José Coveñas Lalupu e María Isabel Medrano-Sánchez

RESUMO

Este estudo examina a implementação e os desafios do Blended Learning, destacando sua crescente importância na educação moderna. Através de uma revisão descritiva da literatura, foram analisados um total de 36 artigos, resultando na identificação de dez temas principais de pesquisa e cinquenta e duas propostas e/ou contribuições significativas. Os resultados revelam uma concentração de estudos em áreas como os fatores e benefícios do Blended Learning, desenvolvimento de habilidades e infraestrutura tecnológica. No entanto, vários desafios pendentes

também são reconhecidos, incluindo a necessidade de mais estudos sobre estratégias específicas, a exploração de percepções em relação ao uso de plataformas digitais e o desenvolvimento de habilidades. A formação de professores, o planejamento de currículos digitais e o desenvolvimento de estratégias baseadas em tecnologia são identificados como fatores chave para o sucesso do Blended Learning. A pesquisa enfatiza a importância de continuar explorando esses tópicos para enriquecer a compreensão e a aplicação efetiva do Blended Learning no campo educacional.