Challenges in hybrid learning at a university in Southwestern Colombia

Desafíos en el aprendizaje híbrido en una universidad del suroccidente colombiano

Claudia-Alexandra Roldán-Morales; Andrés-Fernando Torres-Tovar

✉ **Claudia-Alexandra Roldán-Morales**
Universidad Autónoma de Occidente
Colombia
caroldan@uao.edu.co
https://orcid.org/0000-0003-2426-2008

Andrés-Fernando Torres-Tovar
Universidad Autónoma de Occidente
Colombia
aftorres@uao.edu.co
https://orcid.org/0000-0001-7484-479X

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Abstract

Higher education in Colombia faces the challenge of adapting to social diversity, expanding access, and ensuring quality through the incorporation of blended learning. In response, since 2021, a university in the southwestern region of Colombia has adopted multimodality as an academic strategy to address this challenge. This experience examines some of the emerging pedagogical and technological challenges within this framework and highlights key aspects related to blended learning. Using a qualitative phenomenological approach, surveys and focus groups were conducted with instructors teaching in these courses. Among the most significant findings, the complexity of facilitating meaningful interaction between students present in the physical classroom and those participating virtually is evident, underscoring the need to design interactive and stimulating environments that promote the collective construction of knowledge.

Keywords: Higher Education; Hybrid learning; Flexible learning; Blended learning; Interaction; Educational technology.

Resumen

La educación superior en Colombia enfrenta el desafío de adaptarse a la diversidad social, la ampliación de cobertura y el aseguramiento de la calidad, a través de la incorporación del aprendizaje híbrido. Por ello, desde 2021, en una universidad del suroccidente colombiano se ha adoptado la multimodalidad como estrategia académica para atender tal reto. Esta experiencia analiza algunos de los desafíos que empiezan a emerger a nivel pedagógico y tecnológico, en el marco de tal estrategia, y resalta aspectos clave vinculados al aprendizaje híbrido. Desde una perspectiva cualitativa de corte fenomenológico, se realizaron cuestionarios y grupos focales con profesores que enseñan en estos cursos. Entre los hallazgos más relevantes se evidencia lo complejo que es facilitar una interacción valiosa entre estudiantes presentes en el aula física y aquellos que participan de forma virtual, lo cual subraya la necesidad de diseñar entornos interactivos y estimulantes que promuevan la construcción colectiva de conocimiento.

Palabras clave: Educación Superior; Aprendizaje híbrido; Aprendizaje flexible, Aprendizaje combinado; Interacción; Tecnología educativa.

INTRODUCTION

Hybrid learning is a combination of virtual and physical learning conditions (Al-Qatawneh et al., 2020; Yu et al., 2022). It is defined as a learning strategy that integrates two different educational models, such as distance learning and traditional learning (Bonk & Graham, 2006). There are three popular definitions of hybrid learning (Bonk & Graham, 2012), which combine instructional modalities (Yu, 2015; Thomson, 2020; Ming & Yu, 2023), instructional methods (Min & Yu, 2023), and virtual learning with face-to-face education approaches (Young, 2002; Ward & La Branche, 2003).

This learning integrates the use of virtual resources and activities with face-to-face interactions (Balladares Burgos, 2018; Mera-Zambrano et al., 2021) to effectively optimize educational processes and improve students' academic outcomes (Sáiz-Manzanares et al., 2022; Bezerra de Lima et al., 2022). The aim is to leverage the benefits of both educational environments, integrating the flexibility and accessibility of virtual education with the practical experiences and direct interactions obtained in face-to-face education. Hybrid learning allows students to access learning content and activities flexibly (Wong et al., 2023; Almusaed et al., 2023; Noguera-Fructuoso et al., 2022; Mera-Zambrano et al., 2021).

In recent years, this learning process has gained recognition for its ability to adapt to students' needs and preferences, and for its potential to foster more interactive and meaningful learning (Almusaed et al., 2023; Noguera-Fructuoso et al., 2022). Studies demonstrate improved student engagement and greater knowledge retention by offering a more dynamic and student-centered learning environment (Bezerra-de-Lima et al., 2022).

The implementation has shown progress in student learning (Castro-Araya et al., 2024; De-La-Cruz-Porta & Orosco-Fabián, 2023; Castro-Rodríguez, 2021; Hinojo-Lucena et al., 2020; Stanley & Montero-Fortunato, 2020), reflected in the increase in motivation and autonomy during the learning process. These factors have contributed to student

participation in academic activities (Adaobi-Ubah et al., 2020; Portela, 2020; Ciudad-Gómez & Valverde-Berrocoso, 2021; Chen et al., 2023; Ruiz-Ruiz et al., 2023; López-Reyes et al., 2022). In addition, a significant development in the skills and knowledge acquired by students has been observed (Fernández-Cando et al., 2024; Castro-Rodríguez et al., 2021).

The integration of virtual resources with in-person practical activities is crucial to ensuring the development of essential competencies. This underscores the importance of designing pedagogical strategies that balance the theoretical and practical aspects of training (Ruiz-Ruiz et al., 2023; Dziuban et al., 2018); as well as the appropriate planning of content, interaction between students and teachers, the use of information and communication technologies, constant feedback (Quintana-Albalat, 2023; Viera, 2022; Viñas, 2021), and a shift in the teacher's role (Freitas-Mandarino et al., 2023). This holistic approach enables students to apply knowledge in contexts while consolidating their theoretical understanding and promotes deeper and more sustainable learning.

The lack of adequate technological infrastructure, the digital divide, and the need for teacher training in the use of educational technologies require investments to ensure the successful implementation of virtual education (Stanley & Montero-Fortunato, 2020; Galvis-Panqueva, 2019). The importance of addressing organizational challenges, such as the need to adapt administrative and management processes, is also highlighted. This entails rethinking assessment, monitoring, and student support models, as well as establishing efficient communication and collaboration mechanisms among the different stakeholders involved.

The review of the hybrid learning literature shows a positive trend towards student motivation and autonomy, and improved academic outcomes. Likewise, it highlights the need for adequate technological infrastructure and teacher training. Despite these barriers, different educational contexts and levels show that, with adequate planning and the effective use of information technologies, it is possible to achieve more interactive and meaningful hybrid learning. This combination of virtual and physical learning requires ongoing assessment and an institutional commitment to adapt to the changing dynamics of hybrid learning, ensuring quality education that meets students' current needs.

METHODS AND PROCEDURES

Methodological approach

This research is developed from a qualitative approach of a phenomenological nature, aimed at understanding the pedagogical and technological challenges associated with hybrid learning. The objective of this study is to analyze these challenges, focusing on teachers' experiences and perceptions. The guiding question is: What are the pedagogical and technological challenges teachers face in implementing hybrid learning?

Participants

The sample consisted of 23 professors assigned to teach hybrid learning courses at a higher education institution in southwestern Colombia, distributed across various academic units: nine from the Faculty of Basic Sciences; six from the Faculty of Human Sciences; three from the Language Institute; three from the Faculty of Engineering; and two from the Department of Human Development. Participants were professors with postgraduate training at the master's level and were between the ages of 26 and 45. All were informed of the confidentiality of the information collected, and their participation in the study was voluntary.

Instruments

A research protocol was designed, consisting of a structured questionnaire with four open-ended questions specifically aimed at exploring the pedagogical and technological challenges of implementing hybrid learning. The relevance of the interrogative statements was validated with three peer educators and adjusted based on their recommendations. The questionnaire was then administered selectively to a group of 23 teachers responsible for teaching this type of subject. In this context of flexibility and adaptability in question formulation, the instrument was characterized by its divergent and guiding nature. This allowed for adjusting the sequence of questions based on the conversation, requesting additional clarifications from the interviewee, and generating new questions during the flow of the conversation (Nils & Rimé, 2003). The objective was to identify conceptions and experiences regarding the challenges of approaching classroom sessions. Some of the questions included in the questionnaire are presented below.

- What pedagogical challenges have you encountered in developing these classes?
- What strategies or resources have you used to address them?
- What technological challenges have you encountered while developing these classes?
- What strategies or resources have you used to address them?

Subsequently, focus groups were held with the participants, the purpose of which was to complement and deepen the information gathered through the virtual resource. To this end, the same questioning instruments were used, allowing for the comparison and expansion of the data previously recorded in the questionnaires.

Data collection techniques

- Digital questionnaire: a form was applied from March 15 to 23, 2023, through the institutionally supplied applications, *Forms, and OneDrive*. Contact was made through emails sent to each candidate teacher, explaining the purposes and characteristics of the study and requesting their informed consent to use the data.
- Focus group: This technique was used to promote dialogue and reflection on two essential dimensions identified in the questionnaire: the pedagogical and technological dimensions. These dimensions are considered critical for analyzing and understanding the intricate interaction between teaching, technology, and operational management in the context of the educational process under hybrid learning.

Data processing

The responses were categorized according to the two dimensions indicated. Each response was subjected to a detailed discourse analysis, where emerging patterns, trends, and significant relationships within each dimension were identified. In addition, a triangulation process was conducted, in which the researchers reviewed and confirmed the categories and codes, to strengthen the robustness of the qualitative findings obtained in this study.

Content analysis (Krippendorff, 1990) was used based on a 4-category scheme and 22 codes using the qualitative analysis software Atlas.ti 23. The categories were defined *a priori* based on previous research (Galvis-Panqueva, 2019). In the "pedagogical challenges" category, the challenges that subject teachers recognized during their work with students were identified. Explicit mentions of labels related to this dimension were coded. Regarding "technological challenges," emerging current technical needs were established during educational processes with students in physical-digital environments.

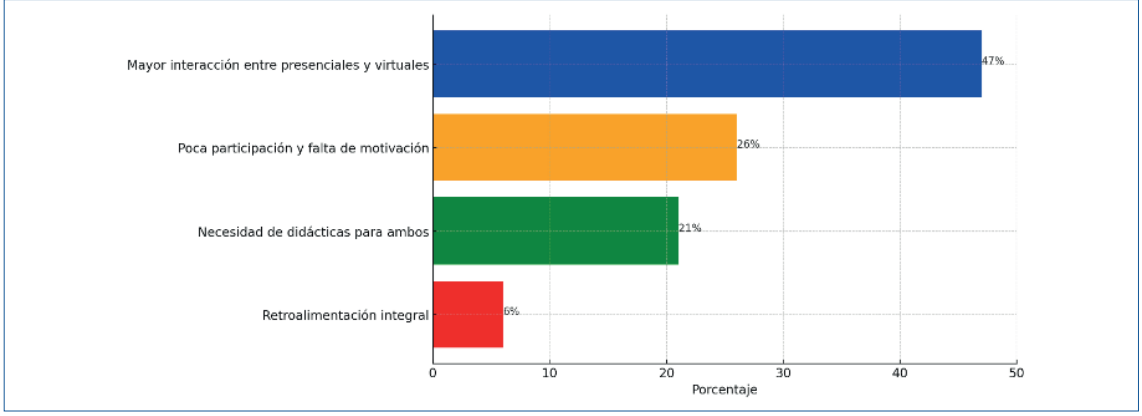
RESULTS

Forty-seven percent of teachers indicated that the most pressing challenge is the need for greater interaction between students attending in person and those participating virtually. This was followed by low participation and lack of motivation, with 26%. In third place, 21% indicated the need to implement pedagogical strategies for both, and finally, the importance of comprehensive feedback (Figure 1).

Focus group participants identified several challenges associated with the implementation of hybrid learning, highlighting the need to integrate online and in-person students, especially in collaborative activities. Teachers expressed difficulties in achieving equitable participation between in-person and online students. As one teacher noted, "One challenge was being able to engage remote students with in-person students, especially when working on collaborative activities" (P20). Other participants agreed, highlighting the complexity of managing interaction between students from both environments: "The biggest challenge has been trying to serve in-person and online students simultaneously" (P16).

Figure1 1

Pedagogical challenges reported by teachers.



Similarly, teachers emphasized the need to provide equal opportunities for all students, regardless of the participation environment (virtual or in-person), which poses an additional challenge in hybrid teaching. As one teacher expressed, "One challenge is ensuring that students present in the classroom and those participating remotely have equal opportunities and conditions to interact" (P8).

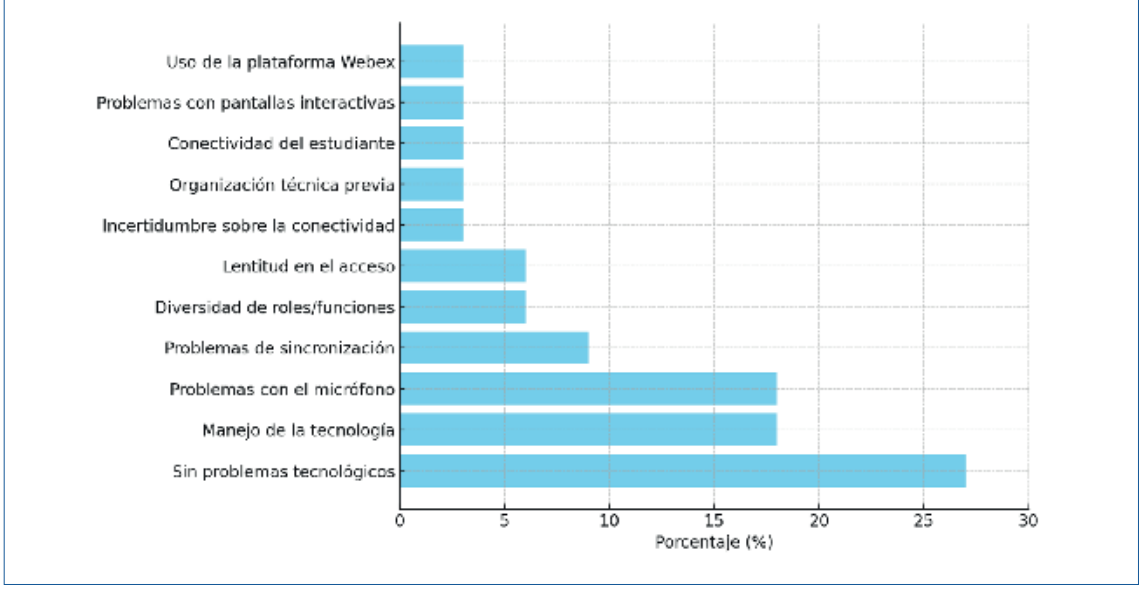
They also pointed out obstacles associated with low participation and lack of motivation among students, as well as differences in pedagogical strategies for serving both groups: "(...) the biggest challenge is lesson planning. As an English teacher, active student participation is essential, especially in oral and written production activities" (P7); "detailed lesson planning and carrying out activities that involve both in-person and virtual students" (P8). Similarly, they highlighted the additional demand in the selection of tools and the development of activities that involve all students: "(...) it becomes more demanding in terms of the selection of tools and the development of activities (...)" (P2).

Regarding technological challenges, the quantitative data obtained through the questionnaire were confirmed during the focus groups, which provided a space for validation and deepening of the shared experiences. In these groups, participants confirmed that 27% did not experience technological problems.

18% mentioned difficulties in using the technology, and another 18% reported problems with the microphone. The feedback from the focus groups provided a deeper understanding of these challenges. It highlighted how the use of technological tools varied depending on users' level of familiarity with the platforms used.

Figure 2

Technological challenges reported by teachers.



In addition, 9% reported having faced synchronization issues, and 6% highlighted challenges related to the diversity of roles and functions, as well as slow access to platforms. These difficulties were further explored in the focus groups, which revealed that many of these problems were related to the structure of the virtual sessions and the lack of clarity in assigning permissions and roles within the platforms. This discussion allowed for an exploration of how technological challenges impacted learning activities and group work dynamics.

Other technological issues, identified by 3% of respondents in each case, included uncertainty about connectivity, prior technical arrangements, student connectivity, problems with interactive screens, and the use of the Webex educational platform. In the focus groups, these issues were explored through detailed discussions about perceived difficulties, possible solutions, and recommendations for improving technical support and technological infrastructure. Participants agreed that these limitations impacted both the flow of sessions and the interaction between students and faculty. They also suggested the need for specific interventions to address connectivity and platform access difficulties.

ANALYSIS AND CONCLUSIONS

The results indicate the presence of educational challenges in hybrid learning, including interaction between in-person and virtual students, low participation and lack of motivation, the adaptation of pedagogies for both environments, and the importance of comprehensive feedback. The findings are consistent with previous research that underlines the challenges of teaching in hybrid educational environments (Bates et al., 2020; Garrison & Kanuka, 2004), as well as the importance of providing comprehensive teacher training, both in curriculum development and in the use of technology to ensure successful implementation (De-la-Paz-Sánchez & Navarrete-Radilla, 2024; Bozkurt, 2022; Méndez-Carpio & Pozo-Cabrera, 2021; Cuesta-Medina, 2018).

First, the demand for more intense interaction between students attending in person and those attending virtually highlights the difficulty of establishing a unified learning environment in a hybrid format. This challenge is compounded by technical and logistical challenges that hinder smooth integration, which could adversely impact group dynamics and collaboration (Kahu & Nelson, 2018).

On the other hand, the low participation and lack of motivation reported by 26% of teachers highlight the need to implement strategies that promote student engagement. Participation is key to meaningful learning, especially in activities that require both oral and written interaction (Dörnyei & Ryan, 2015). This result contrasts with previous research, which has observed that student motivation and autonomy tend to increase, which translates into consistent participation in academic activities (Adaobi-Ubah et al., 2020; Portela, 2020; Ciudad-Gómez & Valverde-Berrocoso, 2021; Chen et al., 2023; Ruiz Ruiz et al., 2023; López-Reyes et al., 2022).

The adaptation of pedagogies highlights the demands placed on teachers to plan and implement appropriate activities in both face-to-face and virtual settings. This challenge

requires a careful selection of tools and methodologies that can be applied in an inclusive and accessible manner (Means et al., 2013).

Finally, although less mentioned, the importance of comprehensive feedback highlights the need to provide constructive and timely comments to students, regardless of their environment. Formative feedback (Quintana-Albalat, 2023; Viera, 2022; Viñas, 2021) can improve students' self-confidence and professional identity, which are key to their academic success and persistence (Hattie & Timperley, 2007).

Regarding technological challenges, implementing teacher training (Bozkurt, 2022; Cuesta-Medina, 2018), optimizing the use of technological tools, and providing ongoing technical support are essential measures to overcome these challenges (Stanley & Montero-Fortunato, 2020; Galvis-Panqueva, 2019). This type of learning increases the need for access to better technological and pedagogical training for teachers, which implies the need to generate innovative and relevant training programs. By addressing these situations, progress can be made towards a better quality experience for students and increase the overall satisfaction of teachers in hybrid environments. These findings inform future research and practices in hybrid learning to promote more inclusive learning in diverse educational contexts.

The percentage of participants who did not face technological problems suggests that, in general terms, technical conditions were favorable for teachers responsible for hybrid learning subjects. However, more data are needed, given the significant role played by representations (Ibáñez, 2001), in this case, those of teachers, regarding what constitutes an obstacle or not in their educational practice. Likewise, some research (Fernández-Cruz & Fernández-Díaz, 2016; Mercader & Gairín-Sallán, 2017) indicates that the integration of technologies remains a challenge in teaching.

In conclusion, synchronization issues, slow access, and role diversity on technology platforms suggest difficulties in managing permissions and functions, as well as in connection speeds. While these problems occurred in a minority of users, they need to be addressed to ensure an equitable experience for all users. Implementing ongoing technical support systems and optimizing equipment and software will be essential to improving technological activities in future educational and professional environments. Addressing these challenges will improve not only the user experience but also overall productivity and satisfaction.

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