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Analysis of the flipped classroom strategy used by teachers at a university in Peru

Análisis de la estrategia aula invertida empleada por docentes de un contexto universitario del Perú

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Abstract

This qualitative research article aimed to analyze the use of the flipped classroom strategy by teachers at a university in Peru. A qualitative methodology was chosen, with an interpretive phenomenological design and inductive method. Semi-structured interviews were conducted with eight participants, university teachers from different faculties, who expressed their opinions, perceptions, and experiences on the category of flipped classroom strategy, as well as on the subcategories of digital tools, digital competence, and learning session planning. It was concluded that the successful implementation of the flipped classroom requires careful planning and adequate resources so that students can adapt to the strategy. Likewise, university teachers must select and create effective educational materials and provide guidance to support students, being willing to adjust their approach according to the needs required in the dynamics of the flipped classroom.

Keywords: flipped classroom, digital tools, skills

Resumen

Este artículo de investigación cualitativa tuvo como objetivo analizar el empleo de la estrategia de aula invertida de los docentes de una universidad del Perú. Se optó por una metodología bajo el enfoque cualitativo, con diseño fenomenológico interpretativo y método inductivo. Se empleó la entrevista en formato de guía semiestructurada, aplicada a ocho participantes, docentes universitarios de distintas facultades, quienes manifestaron sus opiniones, percepciones y experiencias sobre la categoría estrategia de aula invertida, así como sobre las subcategorías herramientas digitales, competencia digital y planificación de sesiones de aprendizaje. Se concluyó que la implementación exitosa del aula invertida requiere una planificación cuidadosa y recursos adecuados, con la finalidad de que los estudiantes se adapten a la estrategia. Asimismo, los docentes universitarios deben seleccionar y crear materiales educativos eficaces y brindar orientación para apoyar a los estudiantes, estando dispuestos a ajustar su enfoque en función de las necesidades exigidas en la dinámica del aula invertida.

Palabras clave: aula invertida, herramientas digitales, competencias

Introduction

In the ongoing quest to enhance educational excellence within university settings, particularly in a globalized and technologically advanced world, traditional lecture-based models, which place the instructor at the center of the learning experience, have become increasingly outdated. There is a growing recognition of the need to shift this paradigm, placing students at the forefront of the teaching-learning process. This shift necessitates the provision of opportunities for students to engage actively with information, collaborate with peers, and interact meaningfully with instructors, leveraging available technological tools. Today's student and faculty populations comprise both digital natives and immigrants, who are generally proficient and comfortable using technology in educational contexts. This familiarity presents opportunities for enriching and challenging educational experiences through the integration of technology in the classroom. In this backdrop, the flipped classroom strategy emerges as a potential solution to the intrinsic challenges posed by traditional instructional methods, especially within higher education contexts (Palencia, 2020).

The global university environment was notably impacted by the COVID-19 pandemic, which prompted urgent measures in response to the ensuing crisis. This resulted in a rapid transition to remote education systems. Such a sudden transformation compelled educators to adapt extensively to the use of digital platforms, innovative tools, and pedagogical approaches, all of which became essential for effective teaching (Escudero-Nahón, 2023).

According to the United Nations Educational, Scientific, and Cultural Organization (UNESCO, 2015), acquiring a quality education requires not only changes in school culture but also a transformation of courses from an innovative perspective, promoting shifts in teaching conceptions. The limited implementation of innovative models in classrooms, coupled with a lack of connection to pedagogical development, highlights opportunities for enhancing the educational process. In this context, face-to-face instruction transitions from group learning to individual engagement, creating a dynamic and interactive environment where educators assist students in applying concepts and encourage them to engage creatively with course content (Zavala, 2023).

Campos et al. (2021) noted that the implementation of the flipped classroom model offers students a wide range of choices for engaging with class materials, whether from home or other environments. This model provides a level of scheduling flexibility that is rare in traditional teaching settings. Furthermore, the flipped classroom fosters opportunities for students to develop research skills and forge their own pathways toward knowledge acquisition. Each student can progress at their own pace, utilizing available resources, which facilitates a more individualized learning experience.

Conversely, local contexts revealed significant deficiencies in internet coverage, raising a pertinent concern regarding the passivity of students as mere recipients of information, a barrier that impedes active participation and knowledge consolidation. Additionally, many educators lacked familiarity with the necessary technological tools and platforms for properly implementing and managing the flipped classroom, including multimedia content creation, educational platform administration, and effective use of digital resources.

In light of these challenges, there is a pressing need to investigate the application of the flipped classroom strategy in higher education. This approach serves as a response to these issues by promoting a more active and student-centered teaching model. However, limitations were identified among educators concerning their proficiency in utilizing this strategy, particularly regarding digital tools and the development of their digital competencies during learning sessions.

Consequently, the research posited the question: How do educators at a university in Peru develop the flipped classroom strategy? This led to the identification of the following specific problems: a) What digital tools do educators use in the flipped classroom strategy at a university in Peru? b) How proficient are educators in their digital competencies when applying the flipped classroom strategy at a university in Peru? c) How do educators develop learning sessions using the flipped classroom strategy at a university in Peru?

The foundation of this study rests on the necessity to understand the perceptions and experiences of university educators employing the flipped classroom strategy. In a context characterized by continual educational changes and the integration of new technologies, knowledge is constructed through experiences and active engagement with information.

Ultimately, the general objective was to analyze the use of the flipped classroom strategy by educators at a university in Peru. From this, the following specific objectives emerged: a) to analyze the digital tools employed by educators in the flipped classroom strategy; b) to examine the management of digital competencies in the application of this strategy; and c) to analyze the development of learning sessions through the flipped classroom strategy in a university in Peru.

Methodology

This study is based on a qualitative approach, oriented toward an in-depth examination and understanding of the phenomenological perspective rooted in Van Manen's theories, as referenced by Fuster (2019). The

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research sought to identify significant experiences, advocating for empirical validity as a key component in developing relevant inquiry. This involved a qualitative analysis of the implementation of the flipped classroom strategy in a public institution (Moreno et al., 2018). In summary, the research relied on experiential and qualitative frameworks, utilizing empirical validity as a foundation for exploring the effectiveness of the flipped classroom strategy within a specific educational context.

The study participants consisted of eight university educators. Inclusion criteria were restricted to educators affiliated with the university, while exclusion criteria applied to those not associated with it. Each participant underwent an interview guided by a questionnaire composed of ten questions aimed at gathering their experiences and opinions regarding the flipped classroom strategy. This qualitative research technique facilitated the gathering of insights to identify the participants' perceptions and interpret their perspectives on the phenomenon under investigation.

Relevant information was collected and processed using Atlas.ti software to systematize data through hermeneutic networks. This process included coding, identifying trends, and triangulating data, which allowed for a comparison of findings with existing theories and led to an analysis of the flipped classroom strategy within a university in Peru (Lopezosa, 2022).

Results and discussion

To address the general objective of the research, the responses provided by the participants were examined. Within the context of the flipped classroom strategy, subcategories were identified, including the use of digital tools, the development of digital competencies, and the planning of learning sessions.

The analysis of the flipped classroom strategy primarily focused on interpreting the first two questions. The first question explored how this strategy is implemented, while the second investigated the limitations encountered in its application.

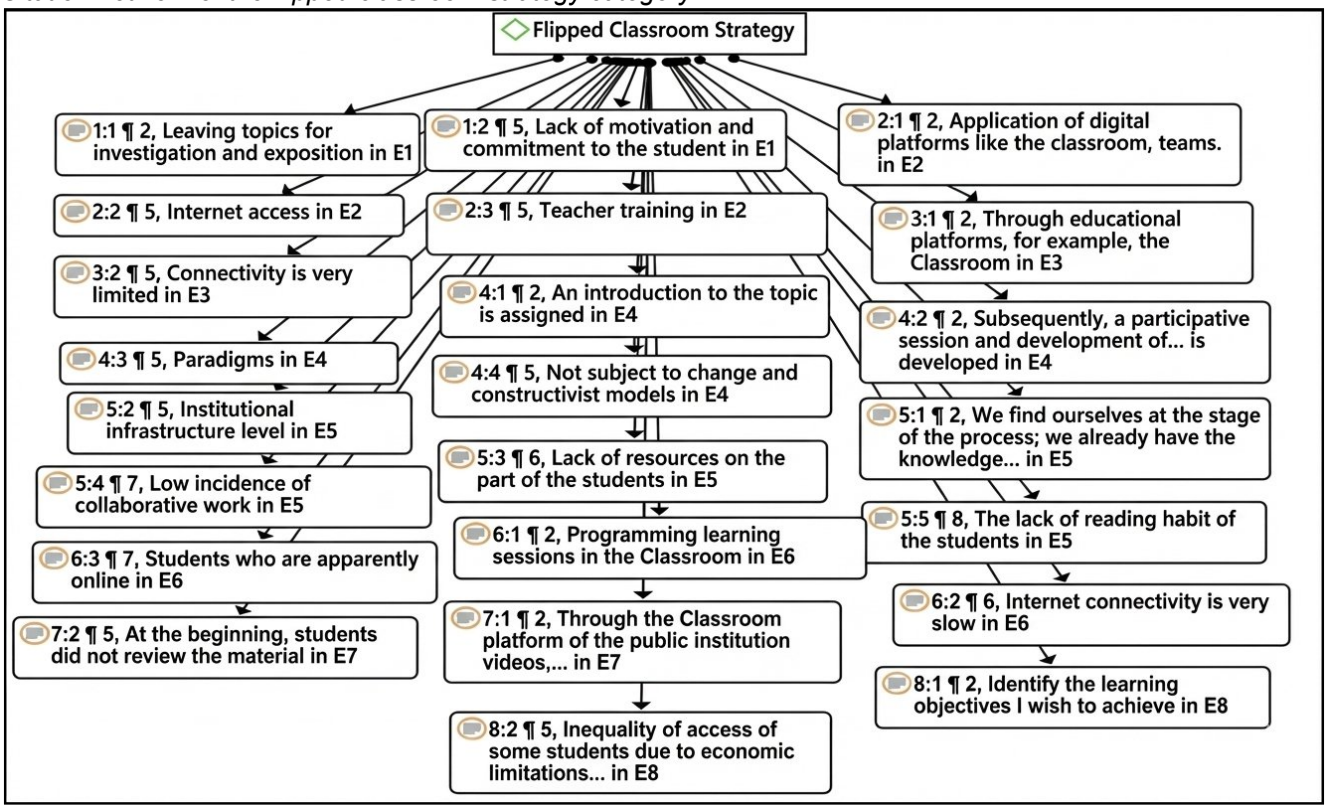
In relation to the first question, a common pattern emerged: a preparatory process was undertaken before implementing the flipped classroom approach. This process involves assigning students a research topic to review prior to class, allowing them to participate in discussions with their peers and the instructor during both virtual and in-person sessions. The most frequently used digital platforms were identified as Google Classroom and Zoom. Participant 3 noted, "Through educational platforms like Classroom, students have access to materials and resources related to the topics to be addressed, as well as to the assessments and evidence they need to present."

Among the identified limitations, the most prevalent was connectivity issues during virtual classes, attributed to geographic or economic factors. Additionally, a lack of engagement was observed among some students, who, despite being present in the virtual classroom, engaged in other activities. These observations were reflected in the words of participant 8, who stated: "Access to technology is a limitation since the flipped classroom requires technological devices and internet connectivity. This enables students to access the necessary materials and resources. There is also a noticeable disparity in access due to economic and geographical limitations."

Figure 1 presents the most relevant responses, offering insight into how educators implement the flipped classroom strategy.

Figure 1

Citation network of the flipped classroom strategy category



According to Cuenca et al. (2021), this classification provides numerous advantages in the digital age, such as using social media to facilitate student collaboration from home and emphasizing video editing to enhance illustrative presentations. Meanwhile, the study conducted by Gonzales and Segura Abad (2020) aims to provide relevant information on the use of this teaching strategy in higher education, including the utilization of social media to promote collaboration. Their systematic review allowed for the analysis of studies demonstrating how active learning approaches contribute to developing autonomy, critical thinking, and acquiring digital skills. This research asserts that the flipped classroom has the potential to improve student engagement and participation by critically addressing both its limitations and challenges, which facilitates effective implementation. Achieving this requires careful planning, providing accessible resources, and ensuring active support from both educators and students.

Regarding the first specific objective, responses concerning the use of digital tools were reviewed. For this purpose, the objective is divided into three parts: the first analyzes the digital tools applied in the flipped classroom; the second identifies which digital tools educators use to interact with their students; and finally, the third assesses which tool is employed for student evaluations.

Among the most significant responses from the first part of the study, participants indicated that the most widely used digital tool was Google Classroom, followed by Google Meet. This preference arises from the ability of these platforms to facilitate class organization and interaction with students in both synchronous and asynchronous formats. Institutional agreements with Google were highlighted, as noted by participant 6: “Currently, at the university, we are utilizing the entire Google Workspace suite due to an agreement established with the company.”

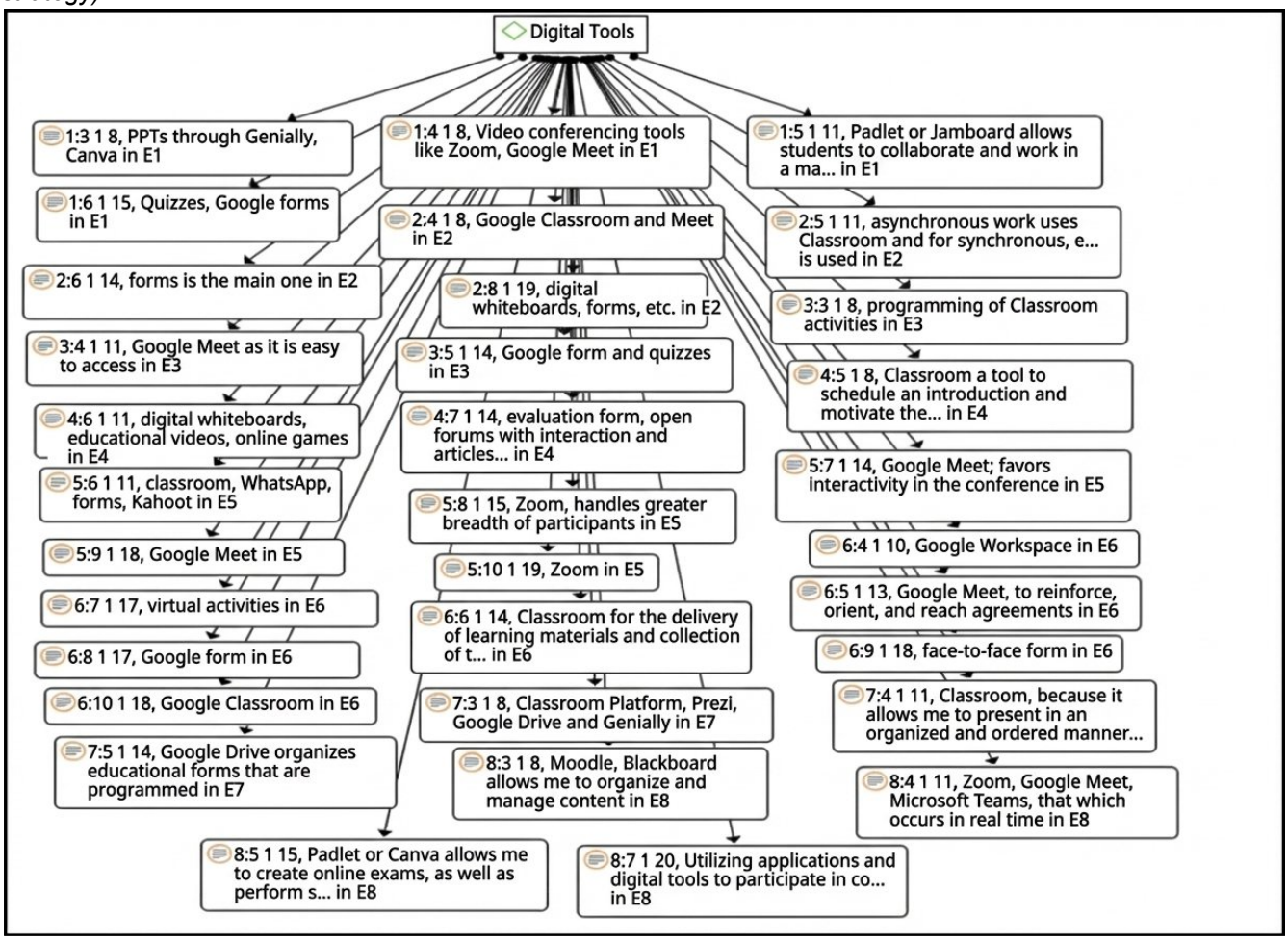
Concerning interaction between educators and students, virtual whiteboards were emphasized as the main communication tool. Among these, Jamboard was mentioned as a notable option, allowing educators and students to create engaging digital content that can be exported in PPT format. Google Meet was also frequently used to enable direct communication between students and educators, as participant 7 stated: “Primarily with Classroom, as it allows me to present information to students in an organized and structured manner regarding the topic we will cover in the session.”

Lastly, Google Forms were regularly employed to assess students' learning development, according to participant 3: “The Google form and quizzes facilitate the creation of various assessments.”

Figure 2 will show the citation network related to the first specific objective, supporting this analysis.

Figure 2

Citation network for specific objective 1 (analysis of the digital tools used by teachers in the flipped classroom strategy)



In this context, Carrasco (2022) argues that the appropriate use of digital tools is essential for promoting effective learning, as it transforms the classroom into a dynamic and interactive environment rather than a monotonous one, particularly in hybrid or virtual settings. On the other hand, Tandazo (2023) indicates that the results of her study show that educators actively use digital tools to complement learning activities, enhance practice, and foster interaction in the classroom, contributing to a more inclusive and collaborative atmosphere. Both authors concur that the use of digital tools is beneficial, dynamic, and enhances student collaboration. However, it is crucial to emphasize that educators need to learn about and evaluate various digital tools to enhance learning to a higher level.

According to Piaget (1975), knowledge is actively constructed through experience and interaction with the learning environment, enabling students to engage, explore concepts, and develop their own understanding. Consequently, teachers can leverage online platforms, simulations, and multimedia resources to support and enhance students’ knowledge construction processes.

Regarding the second specific objective, responses pertaining to the mastery of digital competencies were examined. This analysis was subdivided into three parts: first, assessing the level of development of digital

competencies; second, the use of information and communication technologies (ICT) by educators to enhance these competencies; and finally, the virtual platforms employed in the flipped classroom strategy.

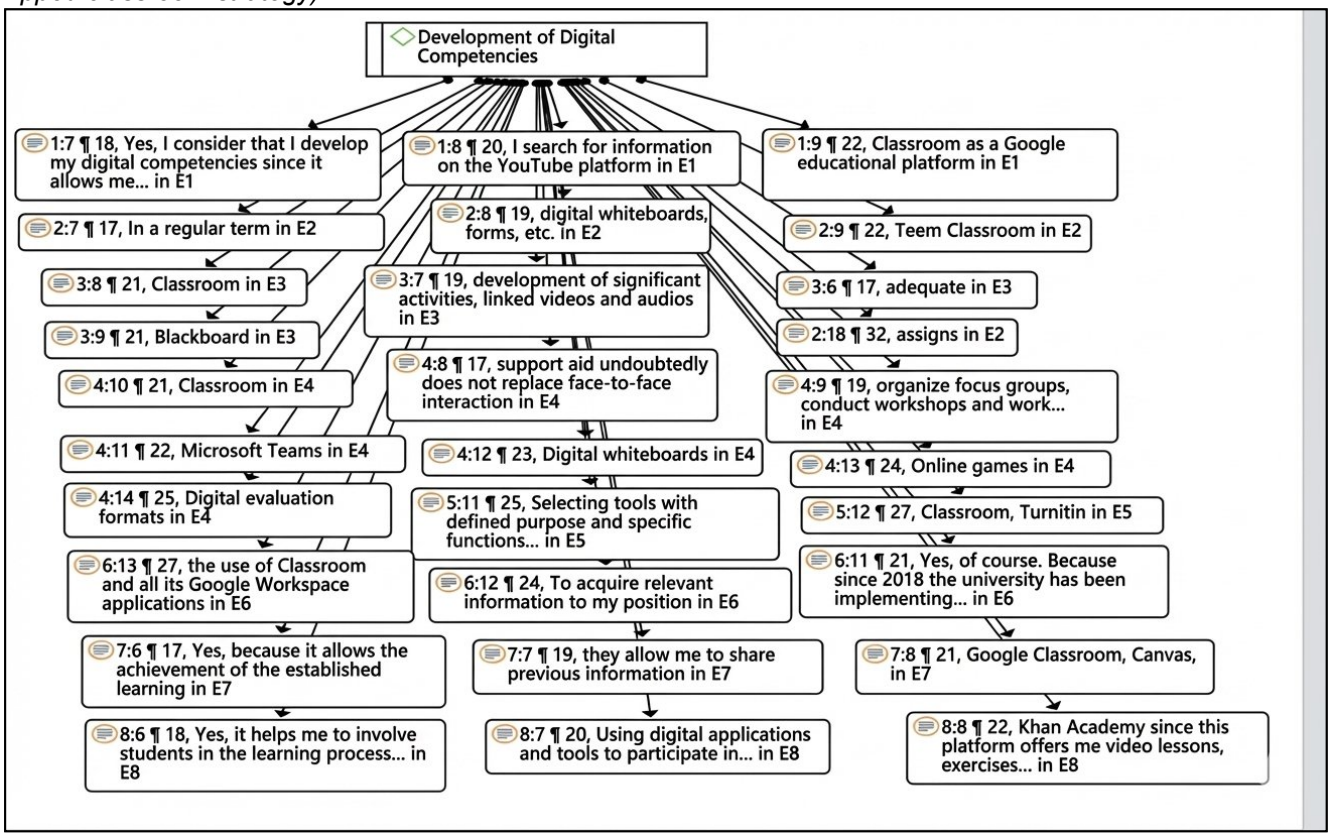
In the first section, the analysis of responses indicated that educators perceive their digital skills as intermediate, acknowledging there is still room for improvement. This sentiment was reflected in the comments of participant 6: “At a regular level, it can be considered an effective strategy given the inherent limitations of its use.”

Concerning the second section, educators demonstrated a self-directed approach to improving their digital competencies by actively seeking information and audiovisual resources, primarily on YouTube. As participant 1 noted, “I consult material on YouTube to guide myself and reinforce my knowledge of new technological strategies, which I can later apply with my students.”

For the third part, all educators, with the exception of participant 8, identified Google Classroom as the primary virtual platform for implementing the flipped classroom strategy. However, participant 8 highlighted another platform: “I use Khan Academy, as it offers video lessons, practical exercises, and assessments on a variety of topics. I can leverage the resources available on Khan Academy to complement the teaching of this strategy”.

Figure 3

Citation network for specific objective 2 (analysis of digital competency management in the implementation of the flipped classroom strategy)



In addressing the competencies mentioned, the analysis revealed three parts to assess the effectiveness of developing these competencies. For example, George et al. (2022) state in their studies that educators express the need to implement continuous learning strategies tailored to their specific needs. They emphasize the importance of creating technological content that is adaptable to the context in which it will be implemented. Additionally, Salazar (2023) argues that digital competencies are essential for educators in higher education given the demands of technology and communication. Their impact on university education speaks to the current realities and expectations of educators. These findings align with the understanding that mastering digital competencies not only enhances the quality of the teaching-learning process but also equips educators to adapt to a constantly changing educational landscape, preparing students for today's digital world. It is agreed that digital competencies are continually evolving, necessitating that university educators remain current through continuous training.

Regarding the third specific objective, responses concerning the development of learning sessions were analyzed. This analysis was divided into two parts: the first describes how learning sessions have been developed in the flipped classroom, and the second addresses the pedagogical procedures employed.

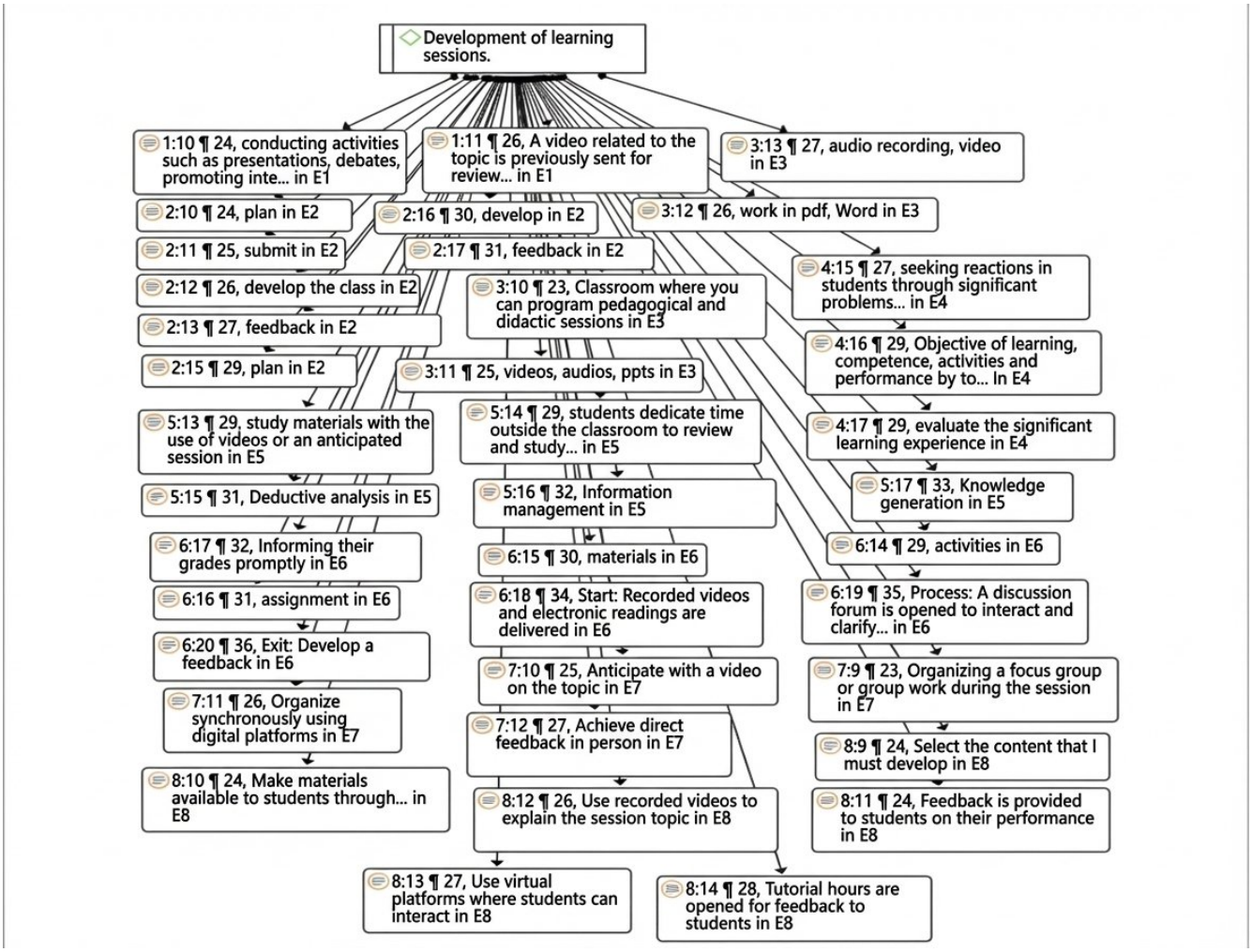
In relation to the first section, most educators follow a similar process for designing learning sessions. Participant 8 provided a detailed description: "I select the content that I need to cover and create study materials for students to acquire the necessary knowledge before class. I then make these materials available to students through an online platform, allowing them time to review them and reinforce their learning with videos and reading materials. During discussion forums, I provide feedback to students on their performance, highlighting positive aspects and suggesting improvements in their competencies."

In the second section, the pedagogical approach is divided into three stages: initiation, process, and closure. In the initial stage, digital content intended for presentation in class is prepared, which students must research. During the process, students interact with one another regarding the topic they studied beforehand. In the final phase, feedback is provided to ensure the effectiveness of the learning session in the flipped classroom.

Figure 4 presents the development of learning sessions and its corresponding citation network.

Figure 4

Citation network for specific objective 3 (analysis of the development of learning sessions using the flipped classroom strategy)



According to Alastor et al. (2023), innovative approaches enhance the learning process and strengthen student motivation by addressing their individual needs. These methods are particularly relevant in graduate programs, where students are concerned about their future careers and the goal is to develop professional skills

through their active participation in the educational process. The article describes and evaluates the implementation of innovative practices in formal higher education.

In this context, Herrada et al. (2022) identified key characteristics of the flipped classroom approach that can be beneficial in university teaching. These include increased student participation in teaching and learning processes through a flipped classroom approach that utilizes tools such as Facebook and Google Drive.

Recognizing these findings, it is crucial to acknowledge that students require a high degree of self-discipline and intrinsic motivation to review materials before classes, as a lack of engagement may limit the benefits of the model. Additionally, the digital divide and socioeconomic disparities may restrict some students' access to the necessary digital resources for prior learning, which could exacerbate inequities in academic performance if not adequately addressed.

Conclusions

The flipped classroom strategy promotes closer and more relevant communication between educators and students. It can be inferred that as educators dedicate time to support and guide students, the latter are able to identify their weaknesses. This necessitates educators providing timely feedback and addressing students' interaction difficulties.

The use of digital tools by instructors fosters a more active and accessible educational experience, enabling all students to adapt and participate effectively. Therefore, it is crucial for university educators to receive training in the proper use of digital tools to enhance their application and ensure the success of the teaching-learning process.

Concerning digital competencies, it is essential to equip educators with the necessary skills to refine their teaching practices, thereby facilitating meaningful learning and addressing the challenges associated with hybrid education.

Finally, planning sessions in a virtual classroom requires reflection on various aspects that ensure an effective educational experience. It was also observed that some instructors use videos as an introduction to classes, while assessments rely predominantly on basic tools within Google Classroom.

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