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RESEARCH ARTICLE

Empowering educators: Enhancing teacher engagement for excellence in virtual education

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Abstract: Virtual education in universities has been significantly influenced by technology due to the rapid evolution of various tools, which, when implemented in the educational sector, modernize the roles of learning and teaching in the digital era. This research aims to analyze the role of teacher engagement in fostering effective performance in virtual education. The study employed an interpretive paradigm with a qualitative approach and a phenomenological design, utilizing the hermeneutic method for analysis. Ten teachers and five teaching coordinators, who served as key informants, were interviewed. The findings highlight the critical importance of teacher engagement and commitment in achieving effective performance in virtual education. Such engagement enhances meaningful learning and critical thinking among students, improves the virtual educational process, elevates the quality of higher education, and supports the effective social integration of graduates.

Keywords: educational process, reflective learning, teacher engagement, educational commitment

1 Introduction

During the COVID-19 pandemic, communication between teachers and students was maintained through virtual education using Information and Communication Technologies (ICT) alongside the Internet. This shift modified the roles within the educational process, leading to an accelerated update in teaching practices and a more active participation from students. According to Papadakis (2023), this demonstrated the effectiveness of online learning by offering more flexible learning schedules, reducing economic barriers, and eliminating geographical boundaries (Karakose et al., 2023).

However, many university students now face academic burnout, characterized by physical and mental exhaustion, apathy, absenteeism, dropout, and lagging performance. According to Seperak et al. (2021), these challenges arise from excessive academic demands. For instance, in Spain, Aguayo (2022) found that burnout levels among students were higher after the COVID-19 pandemic, with a significant decline in student engagement levels.

Similarly, teachers are also experiencing burnout symptoms such as fatigue, anxiety, exhaustion, and stress, often resulting in reduced commitment to their roles. For example, Llagua (2023) noted that, in Spain, teachers adopted new methods to adapt to the evolving educational methodologies, which brought additional stress and anxiety, negatively impacting their work behavior and the overall university community. In response, Cortés et al. (2021) emphasize that the challenge of the 21st century lies in changing strategies, resources, workspaces, relationships, and evaluation systems to address these issues (Papadakis et al., 2023; Karakose et al., 2022).

Consequently, there is a pressing need for changes in the design of the global educational process (Akinbadewa & Sofowora, 2020). The unequal impacts of these challenges have led to increased student dropout rates and ineffective teaching performance (Alharthi, 2020). These effects include the presence of inexperienced teachers in virtual classrooms, as Gudmundsdottir and Hathaway (2020) point out, with many educators learning new teaching approaches through trial and error (Brandhofer & Tengler, 2024; Malan et al., 2021).

Bauman (2021) attributes these challenges to the societal framework of "liquid modernity," which characterizes the constantly changing social reality of the digital era. In this context, individuals must adapt rapidly before new habits or principles can consolidate. This "liquid life," marked by uncertainty and limitations, often leads to stress (Kalogiannakis & Papadakis, 2020). Cruz and Hernández (2021) argue that the best course of action is for individuals to stay updated, efficiently navigating the overwhelming flow of data and novelties, thereby avoiding anxiety.

Flexibility in teachers' thinking is also crucial. According to Castillo et al. (2023), teacher performance—closely linked to responsibility, commitment, and motivation—plays a vital role in improving the quality of educational organizations and fostering social, scientific, technological, and cultural progress (Guerra et al., 2024).

Given the challenges faced by university teachers who lack engagement in virtual education, which impacts their performance, student success, and the overall quality of virtual education, a key question arises: How can university teachers' engagement be strengthened to improve their performance in virtual education?

This article highlights the importance of fostering teacher engagement to enhance performance in virtual education, ultimately aiming to improve the quality of higher education and support student success. To achieve this, it proposes identifying effective strategies to increase teachers' commitment and active participation in virtual education environments. Such strategies can improve educational quality by fostering trust, communication, and meaningful interaction between teachers and students (Uygun et al., 2024). As Sposito (2022) suggests, this transformation requires balancing technological advancements with human elements, ensuring integrality and progress within the university setting (Papadakis et al., 2023).

In this context, this paper characterizes the 21st-century university and its challenges, explores the roles of teachers and students in virtual university education, and examines teacher engagement as a tool for advancing virtual higher education. The underlying hypothesis is that teacher engagement significantly improves teaching performance in virtual higher education, contributing to both student success and the quality of education.

2 Theoretical foundations

2.1 The University in the 21st century

According to the United Nations Educational, Scientific and Cultural Organization (UNESCO, 2024), the university serves as a scientific and cultural asset that supports individuals in their personal and professional development. Its primary purpose is to drive societal change by addressing labor market demands, which requires educational institutions to stay updated. Universities must equip individuals with technical skills while fostering critical awareness of both local and global challenges. This is achieved through a genuine institutional commitment to equity, educational quality, and community outreach.

In this context, the university's mission, as noted by Ruiz and López (2019), reflects the raison d'être of the organization. It emphasizes the importance of activities such as knowledge generation, intellectual production, training, innovation, and community extension. As Cuadrado (2021) points out, Higher Education Institutions (HEIs) define their institutional identity through a clearly articulated vision, mission, values, organizational structures, and objectives.

The university's vision, according to Sánchez (2020), is forward-looking and outlines the objectives to be achieved. It emphasizes the integral formation of individuals, with ethics playing a central role within the university community (James & Fernández, 2023). This ethical foundation fosters virtues and strengthens character, enabling individuals to discern wisely and promote cooperative work grounded in responsibility, justice, and inclusion (Guillén de Romero et al., 2023). Such collaboration bridges the gap between society and individuals, fostering collective prosperity while countering the detrimental effects of individualism on social commitment.

Healthy universities, as described by Valcárcel (2020), promote values as the foundational pillars of norms and principles that guide actions and thoughts in communal living. When these values are embraced by the university community, they inspire responsibility toward others. This, in turn, cultivates organizational commitment, enabling members to achieve the mission, vision, and objectives of the university (Guillén de Romero et al., 2024). University commitment, therefore, becomes the cornerstone of its members' performance. As Vélez (2022)

explains, such commitment arises from an individual's conscious decision to act responsibly and ethically in fulfilling their duties without causing harm to others.

In this framework, teachers play a critical role by designing activities that ensure students are trained holistically to be interconnected, competent, and capable. Virtual higher education fosters students' ability to integrate knowledge, character, and social skills, preparing them for effective societal participation as graduates (Gómez et al., 2019). Consequently, continuous professional development for teachers becomes essential to address new challenges. As Núñez et al. (2022) highlight, ongoing training enables teachers to adopt a more collaborative leadership style, enhancing the quality of higher education in both its processes and outcomes (Galvis & Duart, 2020).

A lack of training, according to Llagua (2023), undermines teachers' ability to develop the necessary skills and knowledge to perform their tasks effectively within a supportive organizational climate. Additionally, adequate resources are crucial for enhancing efficiency, precision, and responsiveness to the demands of educational activities and projects. Teacher training, as Tigrero (2020) asserts, is vital for fostering innovation in virtual education. This includes leveraging technological advances such as artificial intelligence, blockchain, the Internet of Things, augmented reality, and virtual reality, which Valera (2020) identifies as transformative forces revolutionizing society's productive model while promoting freedom and eliminating outdated constraints.

2.2 Virtual education and the new educational process

According to López et al. (2022), virtual education, or e-learning, is a modality that utilizes ICT and the Internet to facilitate the learning process. Virtual classrooms emerge as digital spaces where teaching and learning occur based on students' interests, creativity, and curiosity. These environments allow students to engage with ideas while respecting established rules (Libedinsky, 2021), enabling them to learn without being physically present in a classroom. Additionally, teachers interact with students online via educational platforms (Linder & Mattinson, 2020), establishing communication (Davids, 2021), which becomes effective when proper educational direction is achieved. For this to happen, effective communication is essential. Students should participate by bringing their prior knowledge of a topic to the table, receiving support and feedback to foster meaningful learning even in the absence of a face-to-face classroom (Papadakis et al., 2021). As Cortés (2020) highlights, a positive classroom climate facilitates understanding of students' needs, expectations, and difficulties, requiring patience, guidance, and empathy, as León (2022) suggests.

Moreover, mentoring or accompaniment in virtual classes is crucial. Taveras (2023) identifies this as a strategy of continuous, planned, and interactive training that strengthens values among the participants of the educational process. This systemic and collaborative approach benefits students, enhances teachers' performance, improves organizational management, and promotes the quality of higher education.

Participation in online classes is also vital. As Flores and Durán (2022) observe, these interactions provide opportunities for social learning through observation and collaboration. They also help develop key academic skills (Vico et al., 2021) while placing technology at the service of education with flexibility, adaptability, and a focus on academic excellence. These processes enable learning, decision-making, and reflection within digital environments (Morduchowicz, 2022).

Consequently, countries must heed the recommendations of UNESCO (2023) and the UNESCO International Institute for Higher Education in Latin America and the Caribbean (IESALAC). Their report on higher education in the digital era emphasizes that "the adoption of emerging technologies in education should not displace the importance of human interactions in learning, crucial for the development of social and emotional skills." This perspective underscores the need to avoid disconnecting from the context of human relationships. As Papagni (2021) explains through the lens of critical posthumanism, it is essential to understand the interplay between human and non-human elements in global higher education. Virtual education is not solely about technology—it also requires operational thinking within this context to foster participation and engagement among its users.

2.3 Effective teacher performance in virtual education

The effective performance of teachers in virtual education plays a critical role in achieving positive outcomes for students. According to Baque and Vigueras (2021), this begins with

creating a welcoming environment in the virtual classroom by showing empathy for students' difficulties, fostering a warm atmosphere, and planning to respect students' time, pace, and learning spaces, all supported by technology.

In this context, the advancements made by Estonia in education and the development of 21st-century skills for both teachers and students are noteworthy. Programs such as the Tiger Leap initiative, eKool, and digital platforms like Moodle, E-Schoolbag, and Stuudium have made Estonia a global reference for virtual education since 1997, driven by user commitment and strong performance. Similarly, Singapore's EdTech Masterplan 2030, an initiative launched by its Ministry of Education (MOE) in 2020, seeks to digitally empower students and prepare teachers for excellent performance in virtual education. According to Alita (2024), this plan emphasizes the responsible, ethical, and inclusive use of technology, ensuring that no one is left behind while fostering engagement and commitment among users to enhance both academic success and educational quality.

Effective planning in virtual education is essential to overcome obstacles, alleviate fears, and build confidence among students, as noted by Ferro (2021). Planning should follow a constructivist approach (Pastora & Fuentes, 2021), encouraging students to learn by doing, develop transdisciplinary thinking, adhere to schedules, and avoid procrastination, uncertainty, and frustration. It should also ensure that students meet deadlines for studying, evaluation, and submission of assignments. Planning should include asynchronous materials such as recordings, videos, slides, and summaries while promoting punctual attendance in synchronous classes and active participation in discussions and reflective activities using technology (Cáceres, 2021).

When planning virtual meetings, interactive contact is vital. According to Tipán and Jordán (2021), such interactions allow for measuring communication levels between platform users (sender and receiver), helping students process, apply, and reflect on information. This approach transforms students from passive recipients into active learners, fostering their knowledge through discussions, chats, and video comments (Bernal, 2023; Bohara, 2024).

The teacher's role in virtual education shifts from being a content provider to a learning facilitator, as Ferro (2021) observes. Teachers should employ multimedia resources, such as videoconferencing, streaming, and podcasts, to create challenging and engaging experiences for students. According to Castillo et al. (2022), virtual educators must demonstrate ethical behavior, possess a strong pedagogical foundation, and effectively deliver diverse content. They should also use technology proactively; for instance, mobile devices, as noted by Chindia and Wawire (2024), can enhance student concentration and productivity.

Evaluation and feedback are equally important in virtual education. Cabero and Palacios (2021) stress the importance of an evaluation plan that respects time constraints, allows personalized and autonomous learning, and fosters motivation, commitment, and critical thinking. This plan should improve academic performance in a timely, bidirectional manner while optimizing both learning and teaching strategies. Feedback must be respectful, consistent, and demonstrate intellectual leadership (Bracho-Fuenmayor, 2023).

Finally, the relationship between users' social reality and effective communication is a fundamental element in developing critical thinking. This involves generating reflection, interaction, and the ability to examine both sides of situations to uncover essential truths rather than superficial ones (Hooks, 2022). Active learning, guided by ethics and focused on practical solutions, supports the development of critical thinking, deeper retention, and greater engagement with technology, as Ala and Najah (2024) affirm. This approach enhances learning outcomes while ensuring thoughtful and meaningful participation (Hooks, 2022).

2.4 Engagement in virtual higher education

In today's society, individuals face a pervasive sense of uncertainty, unsure whether what they learn today will remain relevant tomorrow. As Morales (2019) notes, society, composed of various groups, encounters conflicts in the face of innovation. Education, therefore, must address and overcome challenges such as labor and academic burnout while fostering inclusion in all areas, aligned with the commitment of universities to their mission.

To achieve this, healthy expectations must be established for all. The World Health Organization (WHO, 2019) describes burnout as a syndrome representing work-related stress that is poorly managed in terms of causes and effects. It is characterized by three elements: exhaustion, cynicism or negative feelings about work, and reduced professional or academic performance. In students, burnout often leads to decreased academic achievement or even dropout, as Rico et al. (2020) observe, particularly in response to excessive teaching demands.

Alvarado et al. (2020) stress the importance of promoting positive activities in higher education to support individuals with low motivation, low self-esteem, or depression stemming from unmet goals. Universities should serve as spaces for critical and participatory dialogue, aiming to construct a committed citizenry and foster positive, stress-free learning environments. In virtual education, as Bernal (2023) explains, teachers must ensure a holistic connection with students: physical (providing access to resources, tools, and appropriate environments), cognitive (reviewing prior knowledge, structuring new knowledge, and maintaining attention), affective (motivating students), and social (fostering integration and engaged communication in safe environments).

Vélez (2022) defines educational commitment or engagement in the virtual system as the fulfillment of responsibilities by teachers and students, which leads to successful outcomes. Mohd et al. (2020) emphasize that this engagement is essential for achieving professional motivation, meaningful learning, interactivity, goal orientation, and self-discipline. Extrinsic motivation is also necessary for teachers, as Ochoa (2022) points out, to complete tasks not solely for personal satisfaction but for tangible rewards.

Examples from various countries further illustrate the importance of engagement. In Spain, Sposito (2022) highlights the need to strengthen the commitment of university teachers to face future educational challenges with ethics and responsibility. In Mexico, Aguilar (2024) underscores the role of user commitment in maintaining motivation in virtual classrooms. Similarly, in Colombia, Sarmiento et al. (2022) suggest that linking engagement with virtual education creates an appropriate learning environment, reducing anxiety, uncertainty, and dropout rates caused by shifting educational models and technological changes. This approach fosters greater academic commitment, emphasizing respectful planning and collaboration between teachers and students for success.

Professional ethics also plays a pivotal role in strengthening virtual education. Parra (2021) emphasizes its importance in creating a pleasant academic environment, while Ruiz and Garcia (2023) argue that civic commitment must guide the university community's actions, fostering collaboration and shared responsibility. Teachers, as academic facilitators, must observe and instill values such as professional ethics, principles, and accountability into the educational community's mindset (Calzadilla, 2020; Pardos, 2021). These values should translate into actions and behaviors guided by principles, supporting effective verbal and nonverbal communication (Abubakar et al., 2024).

Emotional aspects are equally significant, as every cognitive act is accompanied by an emotional component that impacts academic performance (Hinojo et al., 2023). Teachers must create virtual classes that promote both internal and external motivation to support goal achievement with engagement and responsibility (Rovira, 2024). Affectivity, as Vílchez et al. (2023) note, is critical in managing emotions and fostering a positive learning environment.

Kaplan (2022) emphasizes that positive emotions, combined with motivation, enable individuals to take assertive actions in the face of challenges, fostering a sense of belonging and emotional well-being. Caring for others and oneself requires cultivating ethics as an art to support one another (Mortari, 2022). Similarly, Abubakar and Yunusa (2024) argue that students can develop motivation, commitment, and interest in learning through the responsible use of ICT (Adablanu et al., 2024).

Ultimately, the call is for teachers in virtual university education to embrace continuous professional development, motivation, ethics, commitment, and responsibility. As humanized leaders, educators play a vital role in fostering genuine learning for the benefit of individuals and society (Guerra et al., 2024).

3 Materials and Method

From a methodological perspective, this study is grounded in the interpretive paradigm with a qualitative approach (Petousi & Sifaki, 2020). According to Hernández et al. (2014), this paradigm enables researchers to explore, describe, and understand individuals' experiences related to the phenomenon under investigation. Specifically, the study adopts a phenomenological approach, which is used to "understand people's experiences of a phenomenon or multiple perspectives on it" (Hernández & Mendoza, 2018, p. 529). In this case, the phenomenon explored is the commitment of virtual education teachers in Higher Education Institutions (HEIs), as interpreted through the narratives of key informants.

Data were collected using interviews, a technique aimed at understanding phenomena from

the perspectives of the interviewees (Lazarus, 2021). This method focuses on the lived experiences of participants to derive meaning. Four core questions were structured around teacher commitment, virtual education, ethics, and teaching performance. These questions guided the conversations and allowed for additional, varied inquiries. The interviews involved 10 teachers and 5 teaching coordinators from various public and private universities in Zulia state, Venezuela. These participants, all engaged in virtual education, provided rich data that were interpreted using the hermeneutic-phenomenological method. This approach emphasizes qualitative interpretation and acknowledges subjectivity in knowledge construction (Núñez et al., 2021).

The sample was selected using a non-probabilistic, convenience-based approach, considering the availability, opportunity, and relevance of informants, as well as the time and context of the study (Galeano, 2020). The sampling technique employed was the snowball method, which facilitated the establishment of trust and cooperation among participants. In this process, one case or subject led to another until data saturation was reached, meaning no new information was emerging. This ensured the sample was representative for in-depth analysis of the phenomenon, without including excessive cases, and avoided overgeneralization (Hernández & Mendoza, 2018).

The demographics of the key informants, as described by Galeano (2020), included 10 teachers and 5 teaching coordinators aged between 40 and 65 years. The participants were predominantly mestizo (7), with others identifying as white (4), black (2), or indigenous (2). Their educational qualifications included master's degrees (4), doctorates (7), and postdoctorates (4). The group consisted of 6 females and 9 males, all with experience in virtual education and demonstrating characteristics such as openness to dialogue, lucidity, reflexivity, and being well-informed.

The materials used for data collection included scientific articles from English and Spanish journals, as well as texts by various authors with diverse perspectives on the research topics. These sources informed the development of interview questions and supported triangulation during the analysis phase. The responses from informants were analyzed by reading and rereading transcripts, listening to audio recordings, and applying techniques of analysis, synthesis, and interpretation. Additionally, annotations were made to incorporate findings into new insights and future research (Hernández & Mendoza, 2018).

4 Results and discussion

The interviews conducted with key informants were transcribed, with teachers coded as E1 to E10 and coordinators as C11 to C15. These interviews addressed questions on the characteristics of educational commitment demonstrated by teachers in virtual higher education. From this analysis, four main categories emerged: *The University in the 21st Century, Virtual Education and the New Educational Process, Effective Teacher Performance in Virtual Education,* and *Engagement in Virtual Higher Education.*

Several coinciding subcategories were identified during the interpretation, including university mission and vision, ethics, commitment, responsibility, training, resources, new technologies, effective communication, empathy, online classes, participation, planning, teaching strategies, feedback, critical thinking, burnout, educational commitment, professional ethics, motivation, and affectivity.

Under the first category, *The University in the 21st Century,* the subcategory of *University* reflects, as stated by E9, that "it must implement changes in accordance with social demands and its mission and vision." C11 added that a university's purpose must align with those of all its stakeholders to achieve shared goals.

Regarding *mission* and *vision,* E1 highlighted the stress and exhaustion faced by teachers, which negatively affects educational practices, making them inconsistent with institutional missions and visions. E4 emphasized that teacher principles and training play a vital role in fulfilling institutional goals responsibly. Similarly, C11 pointed out the need for "apt and committed personnel" to align organizational objectives with mission and vision.

E4, E5, E7, and E8 collectively agreed on the importance of planning with ethics, responsibility, and commitment to achieve positive societal outcomes. This aligns with Escalona (2022), who stated that higher education management must prioritize entrepreneurship, innovation, and social commitment to generate and apply knowledge effectively. C12 added that teachers should "develop academic processes consistent with quality and ethics" within technological

frameworks, promoting societal values.

E2 noted that committed teachers are characterized by enthusiasm and creativity, ensuring students' success through proper planning and accompaniment. E5 reinforced this by describing many teachers as highly responsible and capable of designing strategies, using resources, and providing feedback to optimize the educational process. C12 underlined the importance of ongoing teacher training to enhance their performance.

Responsibility was frequently mentioned, with E7 and E8 stating it is "critical to respond appropriately to new challenges." C15 emphasized the importance of designing effective learning experiences tailored to digital environments. C13 highlighted that responsible teachers promote ethics and respect in virtual classrooms, creating inclusive and motivating spaces. E10 added that teachers must remain updated to fulfill their roles effectively, particularly in integrating ICT and active technologies to engage students.

C11 stressed the need for suitable human capital through continuous training and resource allocation to improve education quality and teaching performance. C14 noted significant challenges, such as the lack of specialized training and adequate resources, including internet access and devices, which exacerbate digital divides and limit education quality. E10 concluded that "capturing students' attention with new content, strategies, and technologies is essential for their success in virtual education."

E3 emphasized the importance of availability and continuous support for students, demonstrating teacher responsibility. This aligns with Mota et al. (2020), who argued that virtual education facilitates goal achievement and knowledge construction without physical presence. E5, E7, and E10 noted that virtual education fosters creativity and critical thinking through activities such as evaluation and feedback. C13 proposed using "effective positive communication" strategies to enhance interaction between students and teachers.

Empathy was highlighted by E3, who stressed the importance of adapting to students' individual needs and providing understanding in challenging circumstances. E7 agreed, stating that teachers must approach new challenges with empathy to create secure and supportive learning environments.

E2 and E3 identified feedback, critical thinking, and multimedia resources as key elements of effective teacher performance. E5 and E6 emphasized the importance of planning and organization in maintaining effective communication and ensuring successful outcomes. C15 reinforced that planning helps prevent procrastination, uncertainty, and frustration, enabling teachers to respect schedules and provide timely responses to student inquiries.

Interactive contact was described by E4 as essential for fostering trust and engagement. E6 warned against disengaged teaching practices that fail to retain student interest. C15 highlighted the importance of creative and resilient teachers who promote participation and active learning.

Multimedia resources were also seen as crucial. E3 noted that tools such as videos, interactive quizzes, and discussion forums can motivate students to engage more deeply. This view aligns with Guamán (2024), who argued that innovative activities enable students to transition from passive recipients to active learners.

Effective evaluation was emphasized as a cornerstone of meaningful learning. E7 stated that timely feedback enhances educational processes, while E8 and E10 stressed the need for constant feedback to help students track their progress. C15 added that teachers must establish strong relationships with students to achieve the best results.

E3 highlighted the importance of teachers being accessible for clarifications outside class hours. Additionally, fostering collaboration and critical thinking through group activities was seen as integral to achieving success (Piatro et al., 2024).

Engagement in virtual higher education was described as essential for addressing social demands. E1 noted that stress and burnout among teachers often result in practices misaligned with institutional missions. E2 observed a dual reality, with some teachers showing exemplary commitment and others struggling with the virtual modality's demands.

E8 characterized educational commitment in virtual environments as "excellence," while C14 emphasized that committed teachers guarantee access to education. E7 called for continuous updates to help teachers face challenges with empathy and innovation.

Professional ethics and motivation were also key themes. E5 linked commitment to ethics, stating that virtual educators must demonstrate flexibility and adaptability to meet goals. E1 emphasized the importance of affectivity in creating active, participatory, and meaningful

learning environments.

E6 noted that teacher motivation often influences students' ability to achieve their goals, while E9 highlighted its role in improving socioemotional development. E1 concluded that affectivity and socioemotional well-being should be priorities in virtual education to foster holistic student development.

5 Conclusions

The analysis conducted through triangulation—incorporating the perspectives of the interviewees, insights from authors, and the researchers' position—leads to the conclusion that higher education faces the ongoing challenge of dynamically responding to societal demands. This challenge is compounded by the rapid evolution of concepts and actions in daily life. To remain relevant, higher education must overcome obstacles that threaten its sustainability, particularly in the realm of virtual education. The results of this study suggest that the success of 21st-century virtual education hinges on the commitment and engagement of teachers. Achieving effective teacher performance requires continuous professional development and pedagogical innovation as integral parts of a culture of continuous improvement.

The findings offer a unique vision of the role of universities in fostering an organizational culture rooted in ethics, values, strategic planning, teacher development, and the adoption of engagement and technology. This culture aims to address the challenges of virtual teaching while enhancing the quality of learning. By embracing technology, ethics, and commitment, universities can maintain a horizontal knowledge-construction approach that considers the needs of both students and teachers, prioritizing their well-being.

Teachers in virtual education must be equipped with advanced digital skills to facilitate collaborative and meaningful learning. Effective planning that respects individual learning paces and rhythms is essential, as it promotes emotional and mental well-being. Teachers should demonstrate affectivity and commitment, fostering meaningful learning within an environment of belonging and respect. This approach must be supported by adequate resources and favorable working conditions to achieve educational goals. Technological support and ongoing training play a critical role in strengthening teacher engagement in virtual education.

To address the challenges of virtual higher education—such as student participation, engagement, and efficient teacher performance—the following strategies are recommended:

(1) Continuous Teacher Training: Implement ongoing professional development programs focused on technology and virtual pedagogies to enhance teacher capabilities.

(2) Recognition and Constructive Evaluations: Establish systems to recognize teacher efforts and provide constructive feedback that supports growth.

(3) Institutional Support: Offer robust institutional backing, including resources, tools, and policies that prioritize teacher and student well-being.

(4) Community Engagement: Organize workshops, forums, and talks for the broader educational community, alongside regular monitoring, evaluation, and feedback sessions.

These measures aim to improve learning outcomes, reduce student dropout rates, and foster motivation, trust, communication, and collaboration. By minimizing frustration, stress, and burnout, universities can create healthy, safe, and supportive environments that enable meaningful learning and support life projects. Such environments connect the educational community with the organization's broader goals and values.

This inductive study presents a valuable perspective on the engagement of virtual education teachers in a Venezuelan region, emphasizing that effective teaching performance is key to enhancing educational quality and achieving student success. However, further research is needed to deepen the understanding of this subject. Future studies could:

(1) Explore the perspectives of students and administrative staff on teacher engagement.

(2) Expand the geographical scope by conducting similar research in other regions of the country.

(3) Incorporate a quantitative approach to generalize findings and contribute to the progress of virtual education.

Additionally, the study recommends implementing teacher development and stress management programs in universities. Such initiatives would enable educators to effectively manage their responsibilities, enhancing their performance and well-being while advancing the quality of virtual education.

Conflicts of interest

The authors declare that they have no conflict of interest.

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