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The Use of Virtual Classrooms Post Pandemic at the National and Foreign Languages Pedagogy – UTM

El Uso de Aulas Virtuales Pos - Pandemia en Pedagogía de los Idiomas Nacionales y Extranjeros - UTM

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Resumen

La rápida expansión y avance de la tecnología han transformado significativamente la educación. En la educación superior, la educación virtual se utilizó durante la pandemia y es importante analizar su uso post pandemia. Por lo tanto, el objetivo de esta investigación es analizar las percepciones de profesores y estudiantes sobre el uso de aulas virtuales post pandemia en la Universidad Técnica de Manabí, ubicada en la ciudad de Portoviejo, provincia de Manabí, Ecuador. Esta investigación es un estudio de caso cuantitativo, aplicada a 14 profesores y 93 estudiantes pertenecientes al departamento de Pedagogía de Lenguas Nacionales y Extranjeras a través de una encuesta. Los principales resultados mostraron que los profesores consideran las aulas virtuales útiles para el proceso de enseñanza y aprendizaje en un porcentaje mayor al de estudiantes. Tanto profesores como estudiantes indicaron una percepción positiva sobre el uso de aulas virtuales; sin embargo, señalaron la necesidad de formación para un mejor uso y resultados. Se concluye que la integración de aulas virtuales es esencial en la educación superior.

Palabras clave: Aulas virtuales; Post-Pandemia; Educación Superior; PINE

Abstract

The rapid expansion and advancement of technology have significantly transformed Education. At higher education, virtual education was used during the pandemic and it is important to analyze its use post pandemic. Therefore, the objective of this research is to analyze the perceptions of teachers and students regarding the use of virtual classrooms post-pandemic at the Universidad Técnica de Manabí, located in Portoviejo city, Manabi province, Ecuador country. This research is a quantitative case study; which was conducted to 14 professors and 93 students who belong to the Pedagogy department of National and Foreign languages through a survey. Main results showed that professors in a higher percentage than students consider virtual classrooms useful for the teaching and learning process. Both, professor and students indicated a positive perception on the use of virtual classrooms; however, they indicated the need of training for a better use and positive results. It is concluded that the integration of virtual classrooms is essential at higher education.

Keywords: Virtual classrooms; Post-pandemic; Higher education; NFLP

Introduction

Information and Communication Technologies (ICT) have effectively eliminated temporal and spatial constraints in the dominion of teaching and learning. Among the alternatives, virtual education or e-learning has emerged, operating within the cyberspace, where the synchronicity or asynchronicity of professors, tutors, and students defines the learning scenario. These alternatives provide equal opportunities for resource sharing, tools utilization, self-learning methodologies, and communication for interaction and discussion spaces (Ministry of Education, 2020).

The rapid expansion and advancement of technology across various domains have significantly transformed the modern environment. ICTs have become deeply integrated into people's daily lives, with education being a sector that has particularly benefited from their contributions (Aguilar and Otuyemi, 2020). Moreira Segura et al. (2014) emphasize that the incorporation of technology in educational institutions is not merely a passing trend but a necessity to broaden academic offerings.

The evolution of the concept of virtual education has been propelled by the integration of ICT in education, utilizing online educational instruction through the communication capabilities of the internet. This shift has revolutionized distance learning, giving rise to virtual learning environments as a new paradigm (Hernández y Romero, 2011). Virtual learning environments, viewed as a potential substitute for face-to-face instruction, have led to the development of a hybrid learning strategy termed blended learning (Hernández y Romero, 2011). In contemporary learning processes, virtual environments complement traditional education, aiming to coexist coherently by leveraging their capabilities and strategies to foster meaningful learning and active participant interaction in education (Jaramillo, 2012).

The pandemic-induced transition to virtual classrooms underscored the vital role of technology in education, enabling the continuation of educational activities and transcending physical barriers. Despite challenges such as the digital divide; virtual classrooms have unveiled new possibilities, emphasizing the imperative to permanently integrate technology for a more flexible and inclusive educational approach (Jaramillo, 2012).

An analysis of this topic becomes necessary to address the evolving strategies that higher education institutions implement for the development of education in virtual classrooms. Previous research by Mota et al. (2020) focused on virtual education as a transformative agent in learning processes, highlighting its increasing prevalence and effectiveness in providing meaningful learning alternatives. Chiecher, Donolo & Rinaudo (2005) underscore the importance of training university students in new educational modalities, especially in the use of technology.

Lozano (2021) provided an overview of the pros and cons of virtual education, emphasizing benefits such as autonomy development, utilization of technological applications, new resources, innovative class methodologies, interactive applications, and improved communication between parents and teachers. On the downside, the author

highlighted digital gaps, lack of physical interaction, and the blurring of boundaries between home and educational spaces, making it challenging to identify emotional disorders.

According to Hernández (2017), it is crucial to emphasize the utilization of the virtual environment, distinguishing between synchronous and asynchronous resources. These tools are deemed essential for enhancing undergraduate education, offering students and teachers the opportunity to engage in effective learning in the virtual world. Despite the extensive research on virtual classrooms, there is a noticeable gap in understanding the perceptions that students and professors hold about their use in higher education. Therefore, the objective of this research is to analyze the perceptions of teachers and students regarding the use of virtual classrooms post-pandemic at the Universidad Técnica de Manabí, located in Portoviejo city, Manabi province, Ecuador country.

Theoretical framework

The integration of Information and Communication Technologies (ICT) in education has proven to be efficacious in facilitating and bolstering activities associated with teaching and learning. In alignment with the stipulations outlined in the Academic Regime Regulations of Ecuador, it is mandated that educational activities adhere to the following principles: "1. learning in interaction with the instructor, 2. autonomous learning, 3. practical-experimental learning (which may or may not include the presence of the instructor)" (Academic Regime Regulations, 2019).

Pandemic

The year 2020 will be etched in history as a period during which a significant portion of the global population experienced confinement. It marks the onset of the pandemic, a viral outbreak originating in China that swiftly disseminated to numerous countries (Johns Hopkins University & Medicine, 2020). Governments implemented stringent biosecurity measures to safeguard public health, consequently restricting access to healthcare and education while curtailing investments in these domains, including science and technology (Mendieta, 2020).

Latin American governments imposed mandatory social confinements and distancing in societies marked by misery and informality (Fernández-Sánchez, Gómez-Calles and Pérez, 2020). The situation during the peak of the pandemic was desolate since many had to arrest themselves to be infected to support their families. Today the panorama is different since there are no sanitary restrictions in public spaces and biosecurity measures do not prevent the restriction of commerce and other activities, however, during the pandemic many businesses had to close, including large corporations and in many cases the reduction of personnel was crucial to maintain their stability and to date they are still inactive.

Post-pandemic

The impact of the pandemic has not only manifested at a time when education was already grappling with various pre-existing problems and challenges but has also resulted in an unprecedented disruption on a significant scale across different facets of reality. Simultaneously, efforts have been made to mitigate the damages and, throughout its duration,

the prevailing pedagogical challenge has underscored the imperative to minimize the adverse consequences following the closure of schools and higher education institutions (Américo, 2021).

Virtual classrooms

Non-traditional education, whose main quality is the lack of the time factor, is not a novelty in the world. Its beginnings date back years to the emergence of correspondence education, radio, and television. Distance education, naturally, is more susceptible to incorporating technologies than its predecessor, face-to-face education (Ruiz and Domínguez, 2007).

On the other hand, traditional education is characterized by placing the student and the teacher in the same temporal and physical space (Curci, 2003). Here the professor plays the role of the main source of information; on the other hand, in non-traditional education, he/she plays the role of a guide. Virtual education is the most recent modality of non-traditional education linked to the use of information and communication technologies for the creation of teaching-learning (Llopiz et al., 2020). All this implies the democratization of virtual education, i.e., to employ strategies so that students can interact in a virtual space.

Importance of Virtual classrooms

Intel Educación (2018) highlights the importance of virtual classrooms in providing productivity solutions for teachers and schools. These solutions include secure portals that extend the school day, improve communication between school and home, and encourage parent engagement. Additionally, there is an emphasis on collaborative technologies that help teachers reduce isolation and expand their knowledge through professional preparation communities.

Technological resources imply those tools that serve to improve school interaction; however, it should be noted that the application of ICT'S places technology as a source, i.e., the teacher does not act as a source of knowledge, but as a guide. According to Mota et al. (2020) virtual education can take place in two ways: without the presence of a teacher, through a platform of standardized answers or with the guidance of a teacher with whom students can participate continuously in different sessions. At the level of educational management, virtual education is seen as a process that is carried out through the combination of a series of systematic tasks that are framed in 4 areas: organizational, technological, educational, and social impact.

Connectivism.

Throughout history, various learning theories have emerged, each providing unique perspectives on how people acquire knowledge. In this research, we focus on connectivism, known as the learning theory of the digital age (Vaca-Cárdenas et al., 2020a; Vaca-Cárdenas et al., 2020b). This theory emphasizes the importance of networked connections and technology in the learning process. We will center our analysis on the integration of virtual classrooms, which aligns directly with the fundamental principles of connectivism.

According to Dougherty (2017), the design of an online course involves much more than placing a set of electronically linked documents on a page, since it must be designed to be used in an electronic and interactive medium that can integrate audiovisual information, video clips, music, voices, photographs, drawings, etc.

The importance of the use of Information and Communication Technologies (TIC) lies in the fact that it is the space for students to perform in the virtual environment, which is why the teacher guides the student to promote adequate learning. In such a way that it needs to have very good quality, to achieve motivate its accessibility, and interactivity (Stojanovic, 2009). The teacher must apply virtual teaching methods, therefore it must be immersed the learning objectives, considering that there are different types of students.

Challenges of virtual education in pandemic times

This new virtual reality as a means of production in societies brings with it many challenges to the educational system, which will have to rethink and reinvent itself in terms of the type of learning that is being established with virtual environments (Arteaga et al., 2021). It is not new to indicate that the arrival of the inhospitable pandemic caused radical changes in the productive and educational work in the latter has been increasingly experienced, i.e., it is a sample of trial and error since it became evident that the educational system is not prepared to perform education in a virtual environment (Roman, 2020).

Transformation in teaching and learning post pandemic.

The teaching learning under virtual education, must have a transformation based fundamentally on the way in which technological tools are used, that is, that the virtual education model, is socially validated, according to the quality of the teaching learning process, which is reflected in the incorporation of new pedagogical models that allow to manage the classroom making adequate use of the network (Petta et al., 2018). Virtual education requires more humane, pedagogical, didactic, and ethical teachers, since, in the physical classroom, one can be more creative, carry out work in real time, communication is established in two-way, non-verbal language can be read, etc.

Renewing teaching strategies constitutes very substantive challenges, starting with the change of the teaching axis, which has had to jump from teaching to learning, and in which guided autonomous work must be promoted, which must be organized according to competencies, and which must configure a favorable scenario for innovation and the development of new initiatives by teachers, which can only be achieved if educational institutions support the necessary training that motivates them to respond effectively to these challenges (Arteaga et al., 2021).

Materials and methods

Type of research

This research is a quantitative case study because it analyzed the case of the Department of National and International Languages Pedagogy of the Universidad Técnica de Manabí, in Ecuador. It has a quantitative approach because, this study collected and analyzed quantitative data or numercial data (Vaca-Cárdenas. 2017). Additionally, this study used a bibliographic, descriptive, and field research.

Bibliographic research. It was conducted by analyzing the literature to the use of virtual classrooms. This type of research involves the research, retrieval, and critical analysis of secondary data recorded by other researchers in documentary sources (Arias, 2006).

Descriptive research. Since it focuses on describing how virtual classrooms are used in post-pandemic and what contribution it makes to higher education. This approach involves the collection and analysis of data on the use resources in the virtual classroom and their impact on teaching, as well as the response of teachers and students. Descriptive research focuses on describing the actual nature and processes of phenomenon (Tamayo and Tamayo, 2006).

Field research. Field research involves the direct collection of data from teachers and students of the degree program in Education and National and Foreign Languages at the Universidad Técnica de Manabí to learn about their experience in the use of virtual classrooms.

Population and sampling

The research population comprised 14 academic representatives (professors) and 93 students enrolled in the language course. The sampling methodology employed was non-probabilistic. Invitations soliciting participation were disseminated through institutional email channels. The participants willingly engaged in the research process by providing their informed consent through the signing of a consent form. The significance of the research sample is noteworthy, with a substantial portion of both professors and students demonstrating agreement and voluntary involvement in the study.

Research Methods

Induction, deduction, analysis and synthesis methods were employed to examine the literature and results pertaining to the utilization of virtual classrooms. Data collection techniques encompassed surveys administered to both teachers and students through a structured questionnaire as the primary instrument.

Results

Analysis and Interpretation of the Survey of Teachers and Students

4.1 Level of satisfaction with the use of virtual classrooms during the pandemic

Figure 1
Professors' Level of Satisfaction

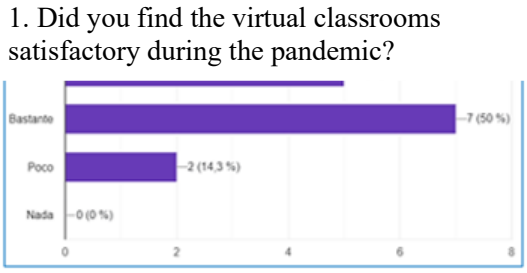
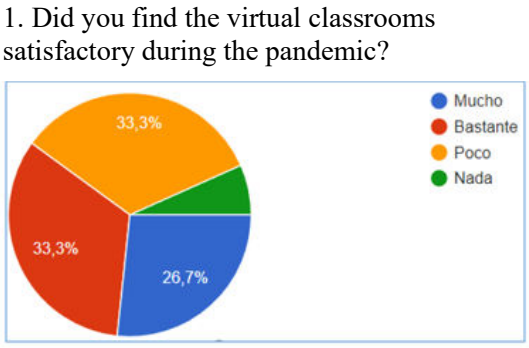


Figure 2
Students' Level of Satisfaction



Fifty percent of participating teachers quite liked using virtual classrooms during the pandemic, followed by 35.7% who liked it very much. Conversely, 14.3% of participating teachers liked it little. It can be interpreted that the majority of teachers, 85.7%, enjoyed using virtual classrooms during the pandemic (See figure 1). Thirty-three point three percent of students majoring in National and Foreign Languages Education expressed satisfaction with the use of virtual classrooms during the pandemic, followed by another 33.3% who reported being "Slightly" satisfied with virtual classrooms, while 26.7% were very satisfied with the use of this tool. These results suggest a divided opinion; however, by summing up the percentages, we find that 60% of students were "Quite" or "Very" satisfied with virtual classrooms, while the remaining were not (See figure 2).

4.2. The Impact of Virtual Classrooms on Teaching Methods and Strategies

Figure 3.

Impact of Virtual Classrooms-Teachers

2. How did the shift to virtual classrooms impact your teaching methods and strategies?

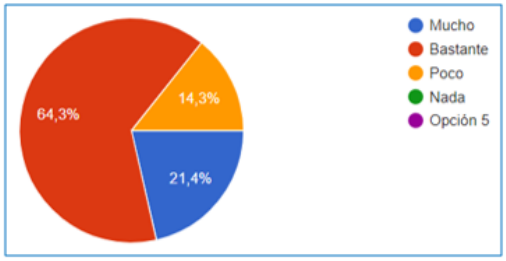
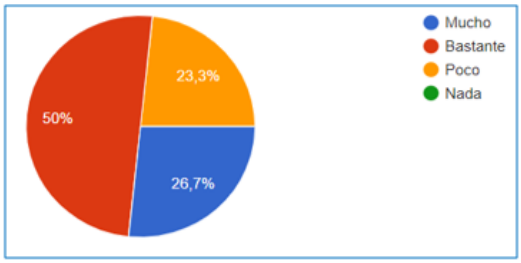


Figure 4.

Impact of Virtual Classrooms-Students

2. How did the shift to virtual classrooms impact your teaching methods and strategies?



Sixty-four point three percent of teachers stated that the transition to virtual classrooms had a significant impact on their teaching methods and strategies, followed by 21.4% who said it had a very significant impact. Finally, 14.3% mentioned that the impact was minor. No participants indicated that the change had no effect. It is interpreted that the majority (64.3%) of teachers perceived that the use of virtual classrooms had a significant impact on teaching and learning methods (See figure 3). Fifty percent considered the transition to virtual classrooms to have had a "Significant" impact on teaching methods and strategies. Twenty-six point seven percent of students stated that the impact was "Very Significant," and 23.3% indicated it had a "Minor" impact, but none considered that the change had "No" impact at all. From this, it can be interpreted that the transition to virtual classrooms significantly impacted the learning methods of students majoring in National and Foreign Languages Education, as 76.7% leaned towards the options of "Significant" and "Very Significant," while the remaining considered the impact to be "Minor" (See figure 4).

4.3. Virtual Classrooms as Complement to Face-to-Face Classes.

Figure 5.
Virtual Classrooms as Complementary - Teachers.

3. Are you currently using virtual classrooms as a complement to in-person classes?
If the answer is Yes, proceed to question 4.
If the answer is No, proceed to question 8.

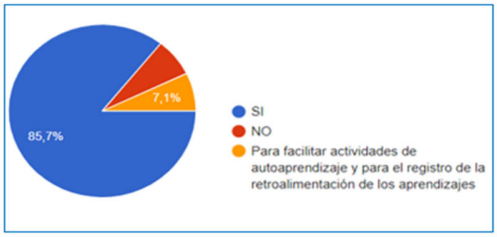
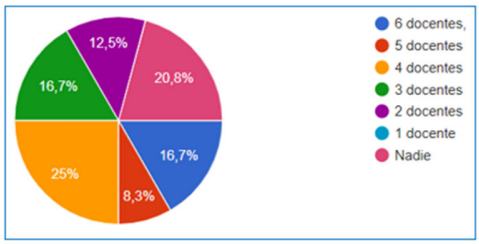


Figure 6.
Virtual Classrooms as Complementary – Students.

3. Do your teachers currently use virtual classrooms as a complement to in-person classes?



Eighty-five point seven percent of teachers utilize virtual classrooms in Higher Education. Additionally, 7.1% use virtual classrooms to facilitate self-learning activities, while 7.2% do not use virtual classrooms. It is interpreted that 85.7% of teachers do use virtual classrooms, with 7.1% indicating occasional use or as a secondary tool in education, suggesting a successful transition towards a flexible, student-centered approach (See figure 5).

Twenty-five percent of students report that four teachers use virtual classrooms, indicating widespread adoption. In 16.7% of cases, three teachers do so, and in 12.5%, two teachers. However, in 20.8% of cases, no teacher uses virtual classrooms, indicating a technological adoption gap among faculty members in the program. Based on the results, it can be interpreted that the mode tends to be the use of between 4 to 3 teachers utilizing virtual classrooms, equivalent to 41.7%. However, it is important to note that 20.8% of teachers do not use virtual classrooms (See figure 6).

4.4. The Utility of Virtual Classrooms in the Teaching-Learning Process.

Figure 7.
Utility of Virtual Classrooms - Teachers

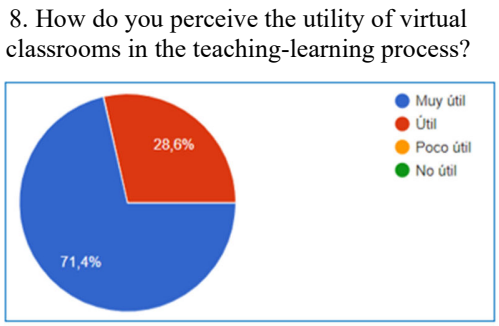
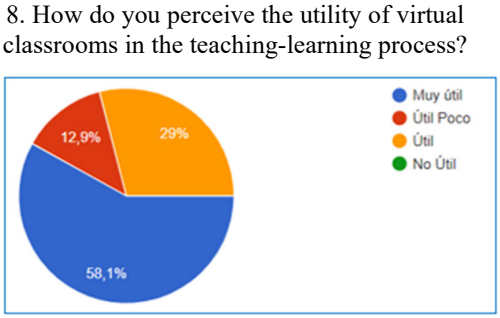


Figure 8.
Utility of Virtual Classrooms – Students.



Seventy-one point four percent of teachers consider virtual classrooms "Very useful," while 28.6% rate them as "Useful." There are no negative perceptions, as no teacher considers them "Slightly useful" or "Not useful." It is interpreted that all teachers, representing 71.4%, acknowledge the utility of virtual classrooms in the teaching-learning process. This high appraisal also suggests that virtual classrooms hold an essential and well-received position in language teaching, indicating their continued long-term importance (See figure 7).

Fifty-eight point one percent of students majoring in National and Foreign Languages Education consider virtual classrooms "Very useful," while 29% view them as "Useful." There were no negative responses, but 12.9% rate them as "Slightly useful," suggesting potential areas for improvement in the implementation of these educational tools (See figure 8). It is interpreted that 58.1% of students see virtual classrooms as very useful tools in education, with only 12.9% considering them not useful.

4.5. Advantages of Using Virtual Classrooms in Teaching and Learning.

Figure 9.
Advantages of Using Virtual Classrooms - Teachers

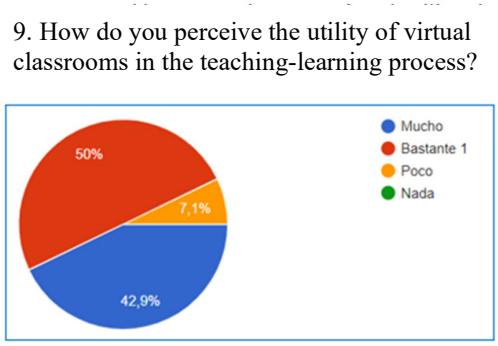
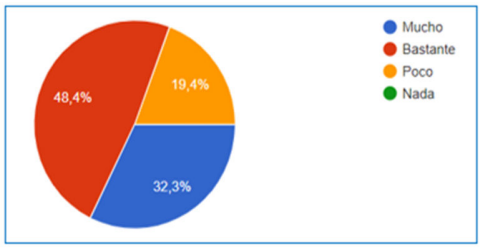


Figure 10.
Advantages of Using Virtual Classrooms - Students



Fifty percent of teachers consider that there are advantages to using virtual classrooms, selecting the option "Quite a bit." Forty-two point nine percent indicate "Very much," and only a minority of 7.1% consider "Slightly." No teacher chose the option "None."

It is interpreted that half of the sample (50%) believes that there are several advantages to using virtual classrooms in the teaching-learning process, while 7.1% express that there are few advantages (See figure 9).

Forty-eight point four percent of students report that there are "Quite a few" advantages of using virtual platforms in education, followed by 32.3% of students commenting that there are many advantages regarding the use of virtual classrooms. Conversely, 19.4% expressed a lesser perception of advantages, indicating the importance of exploring reasons behind this perception for potential improvements (See figure 10).

It is interpreted that the vast majority of students majoring in National and Foreign Languages Education (81.1%) perceive significant benefits in using virtual classrooms for teaching. Although the enthusiasm suggests effectiveness, 19.4% expressed that there are few advantages to using virtual classrooms.

4.6. Disadvantages of Using Virtual Classrooms in Teaching and Learning.

Figure 11.
Disadvantages of Using Virtual Classrooms - Teachers

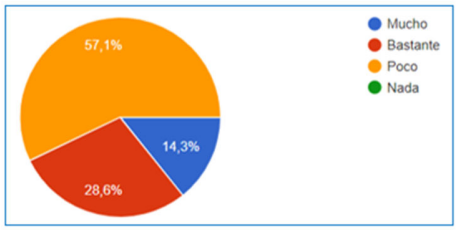
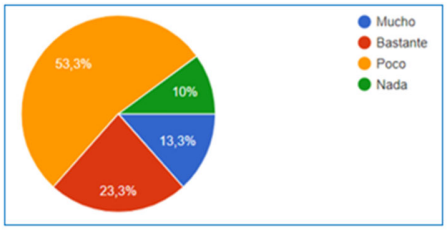


Figure 12.
Disadvantages of Using Virtual Classrooms – Students.



Fifty-seven point one percent of teachers see "Few" disadvantages in virtual classrooms, indicating moderate concern. Twenty-eight point six percent consider them "Quite a few" disadvantageous, revealing substantial concerns, while 14.3% perceive them as "Many" disadvantages, indicating intense concern. No teacher indicates that virtual classrooms are "Not Disadvantageous," highlighting the widespread awareness of challenges associated with their implementation in Higher Education post-pandemic. It is interpreted that although all teachers find disadvantages in using virtual classrooms in the teaching-learning process, the majority express few disadvantages (See figure 11).

Fifty-three point three percent of students majoring in National and Foreign Languages Education perceive "Few" disadvantages when using virtual classrooms. Furthermore, 10% consider that there are no disadvantages regarding virtual platforms. In contrast, 23.3% of students refer to there being "Quite a few disadvantages," and 13.3% categorize virtual classrooms as platforms with "Many" disadvantages (See figure 12.

It is interpreted that more than 53.3% do not observe disadvantages in the use of virtual classrooms in education. However, the remaining percentage, 23.3% and 13.3% "Quite a few" and "Many" respectively, visualize disadvantages of this study tool.)

4.7. Training.

Figure 13.
Training for the Use of Virtual Classrooms - Teachers

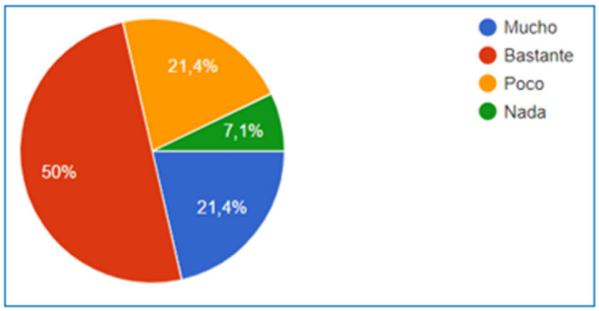
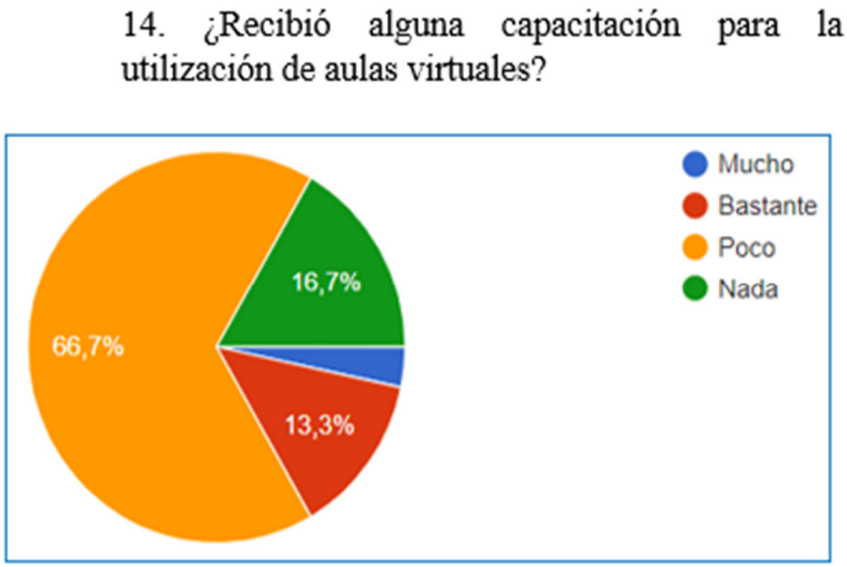


Figure 14.
Training for the Use of Virtual Classrooms – Students



Half of the surveyed teachers, representing 50%, claim to have received "quite a bit" of training. This suggests that a considerable proportion of educators feel relatively prepared to effectively use virtual classrooms in their teaching.

On the other hand, 21.4% of teachers mention having received "a lot" of training, indicating a smaller but significant group of professionals who feel highly prepared in the use of these digital tools. However, it is important to highlight that the remaining 28.5% of teachers report having received "little" or "no" training to properly use virtual classrooms. This percentage suggests that there is a considerable group of educators who may not feel fully prepared to integrate these technologies into their teaching practice (See figure 13).

Sixty-six point seven percent of students majoring in National and Foreign Languages Education received little training to use virtual classrooms, indicating a gap in their preparedness for post-pandemic virtual education. Additionally, 13.3% received "Quite a bit" of training, and a small percentage (16.7%) received no training at all. It is interpreted that the majority of the sample (66.7%) did not receive adequate training as it was scarce or "little." Only 13.3% received "Quite a bit" of training, which could have been a significant disadvantage in the teaching-learning process (See figure 14).

Discussion

1. Level of satisfaction with the use of virtual classrooms during the pandemic.

Nine out of ten teachers enjoyed using virtual classrooms during the pandemic, while only six out of ten students liked using virtual classrooms during the pandemic. These results are consistent with those found by Castellanos Ramírez and Niño Carrasco (2020) and Brown et al. (2022). These authors emphasize that synchronous virtual tutorials benefit learning by providing a participative environment that facilitates the exchange of experiences, fosters mutual support between teachers and students, and addresses emotional aspects related to practice. Arteaga et al. (2021) highlight the need to address potential challenges to improve the quality of virtual teaching in post-pandemic higher education.

2. Impact of virtual classrooms on teaching methods and strategies.

Six out of ten teachers perceived that the impact of using virtual classrooms was significant and had repercussions on teaching-learning methods. On the other hand, 5 out of 10 students considered that it greatly impacted learning methods.

These results reflect that the shift to virtual classrooms impacted all teachers in their teaching methods and strategies, with 85.7% stating that it had a significant impact. These results highlight the ongoing need to adjust pedagogical practices, even for those with previous experience in online teaching. Dougherty (2017) asserts that there is a general recognition of the influence of virtual classrooms on the evolution of teaching and learning methods and strategies in post-pandemic Higher Education.

3. Virtual classrooms as a complement to face-to-face classes.

Nine out of ten teachers do use virtual classrooms, while seven out of ten students indicate that they use them, but occasionally or as a secondary tool in education. These results align with the perspective of Zapata and Cano (2021), emphasizing the importance of maintaining and strengthening the use of interactive methodologies.

These methodologies have the potential to transform the group into a collaborative team, willing to learn together. Additionally, it demonstrates the immersion of education in connectivism (Vaca-Cárdenas et al., 2020). The high adoption of virtual classrooms by teachers in Higher Education suggests that education is evolving towards a more flexible and student-centered model.

4. The Utility of Virtual Classrooms in the Teaching-Learning Process

Seven out of ten educators acknowledge the utility of virtual classrooms in the teaching-learning process. Meanwhile, six out of ten students view virtual classrooms as highly valuable tools in education.

The findings presented align with the perspectives articulated by Castellanos Ramírez & Niño Carrasco (2020) and Brown et al. (2022). Both underscore that synchronous virtual tutorials offer advantages for the learning process by creating a participative environment that facilitates the exchange of experiences, fosters mutual support between teachers and students, and addresses the emotional aspects linked to teaching.

Advantages of using virtual classrooms in teaching and learning.

Nine out of ten teachers consider that there are advantages to using virtual classrooms, highlighting the importance of exploring reasons behind this perception for possible improvements. Meanwhile, eight out of ten students indicated that they perceive significant benefits in the use of virtual classrooms for teaching.

Virtual classrooms enhance the educational process comprehensively, facilitating the dissemination of numerous audiovisual resources, a feature not typically found in traditional classroom settings. Santos (2022) mentions that virtual classrooms allow for constant updating of grades, continuous communication and practice, time and resource optimization, 24/7 access, and reduction of school dropout rates. These benefits underscore the importance of these platforms in the teaching-learning process in higher education.

5. Disadvantages of using virtual classrooms in teaching and learning.

Six out of ten teachers perceive "Few" disadvantages in virtual classrooms, indicating a moderate level of concern. On the other hand, five out of ten students indicated that they do not perceive any disadvantages of using virtual classrooms in education. The fact that 57.1% of teachers view "Few" disadvantages in virtual classrooms can be interpreted through the lens of gradual adaptation and the mitigation of issues as experience unfolds.

6. Training

Seven out of ten teachers claim to have received extensive training. This suggests that a considerable proportion of educators feel relatively prepared to effectively utilize virtual classrooms in their digital teaching. Meanwhile, eight out of ten students stated that they received inadequate training to use virtual classrooms, highlighting a gap in their preparedness for post-pandemic virtual education.

Continuous and high-quality training for teachers, as emphasized, is crucial for enhancing pedagogical practice and improving student performance. This underscores the importance of investing in professional development programs to support educators in their roles. The significance of training in the integration of educational technologies is evident, considering the diverse needs, challenges, and preferences of students (Vaca-Cárdenas et al., 2020).

Conclusion

The use of virtual classrooms in higher education post-pandemic has largely proven to be positive, with a majority of students and teachers expressing satisfaction. This high level of acceptance aligns with previous research supporting the benefits of synchronous virtual tutoring in knowledge exchange and educational progress. The identified challenges, such as the lack of complete technological integration between teachers and students, coupled with the need for stronger training for students, require specific actions.

Considering the accelerated transition to virtual environments during the pandemic, it is crucial to emphasize the importance of teacher training in the effective use of post-pandemic educational technologies. This will contribute to enhancing the quality and effectiveness of virtual education in the future, ensuring that this modality becomes a valuable and well-utilized tool in the educational process.

In summary, the research highlights the positive reception of virtual classrooms at the Technical University of Manabí post-pandemic, but also underscores the need to address potential challenges and continue improving.

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