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RESEARCH ARTICLE

Didactic Strategies Mediated By Information and Communication Technology for Preparation of Virtual Classes in University Professors in Lima, Perú

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ABSTRACT

This work aimed to describe the didactic strategies mediated by information and communication technology for the preparation of virtual classes for professors from universities in Lima-Peru. It was based on a qualitative approach with a phenomenological method. The selected sample was intentional and consisted of 15 professors with educational experience in teaching virtual classes. The information was collected through a semi-structured interview of 18 questions. As a result, the professors adapted their didactic strategies for delivering virtual classes, leveraging technological tools to develop new strategies aligned with the virtual environment. Moreover, the professors demonstrated high level of proficiency in information technologies, enabling them to design instructional materials and enhance their performance. Regarding the use of technological resources for virtual class development, professors effectively utilized the tools available on platforms and integrated suitable devices for both synchronous and asynchronous activities. Lastly, the use of appropriate software facilitated effective communication with students.

INTRODUCTION

Education has transformed over time, and in the context of the COVID-19 pandemic, professors have faced unprecedented challenges: adopting new methodologies and initiating changes in their teaching practices by incorporating various technological tools to achieve the objectives of the teaching-learning process. Globally, professors have had to adapt, seeking new ways to improve their technological competencies. This is why integrating technology into teaching-learning has become today's primary challenge for educational systems (Boulahrouz Lahmidi et al., 2019).

Virtual education has become the new educational paradigm—a reality here to stay. Digital transformation is redefining the world, making it necessary to acquire competencies to face these changes, where technology plays a central role (Ortiz Aguilar et al., 2020). In this new context, technology has provided new tools in the educational field, enabling learning in diverse ways and adapting to current needs. Today's professors face a new perspective on education, requiring them to develop new skills, including a shift in their role as educators and teaching methodologies. They

must improve and acquire new teaching strategies that enable them to use information technology effectively to prepare virtual classes as part of the teaching-learning process (OCDE, 2020).

Professors must now be trained in technology to face new challenges. However, this raises the question: What digital competencies do professors possess? Understanding this aspect is crucial, as technology is changing how we perceive learning and has transformed all forms of education. Adding to this scenario is the widely recognized fact that university professors generally lack pedagogical training, complicating the situation further and often transferring this issue to the virtual classroom (Rodríguez Hernández & Juanes Giraud, 2021).

Information technology can enhance and support the teaching-learning process, claims UNESCO (2023). Therefore, becoming familiar with technology strives to provide everyone with access to a complete education using technical resources. Professors are the most important active component in Peru, according to the Ministry of Education (Minedu, 2022). The best preparation is necessary for their position in this new normal in a world that is changing so quickly. Professors must create instructional techniques for virtual class development as pedagogical leaders. Professors of today need to be ready and possess the requisite skills. This necessitates a more thorough consideration of integrating technology with specific goals, especially in higher education. According to the European Commission (2005), educators need ongoing training and a developing repertoire of digital tactics that change as technology does.

Professors must 0be well-equipped to handle the more dynamic, individualized, and demanding reality of today. To implement cutting-edge teaching strategies and establish student-centered pedagogy, they must gain new skills and knowledge. Furthermore, they need to become proficient in using technology tools like platforms, presentations, videos, recorded classes, and certain programs that help with the teaching-learning process (Chong-Baque & Marcillo-García, 2020; Jam et al., 2016).

Given this, it is imperative to consider whether Peruvian higher education offers the prerequisites for offering high-quality online courses. Developing the competencies that university professors must acquire represents a challenge in this new reality. It is not just about addressing difficulties, such as ensuring access to essential technological devices like personal computers, specialized tablets, laptops, and internet connectivity. It is also about equipping professors with the knowledge to use new software and platforms. Furthermore, it is unclear if educators have received the necessary training to effectively handle and control this new technology.

Virtual learning has changed significantly, moving beyond conventional teaching techniques. Today, the student assumes a very active, central role, serving as the center of technologically mediated processes and activities (Moreno Garay et al., 2021; Phayap et al., 2024). In this regard, this study aims to understand and interpret the technology-mediated teaching strategies employed by university professors in developing their virtual classes. The analysis focuses on three main aspects: strategies and preparation of teaching materials, the management of technological resources, and the use of specific programs to facilitate the teaching-learning process.

Didactic strategies in virtual environments

Since it directs classroom activities, a strategy is a crucial part of the teaching-learning process. As a way to focus efforts on reaching predetermined goals while including creativity and innovation into the teaching process, it is connected to the activities that each professor sets for the development of each session. For this reason, it is fundamental to have a highly flexible didactic methodology capable of adapting to change (Ortiz Aguilar et al., 2020).

Regarding the digital skills that professors should possess, González Calatayud et al. (2022) states that these are integrated in a way that enables efficient information management, optimized communication, information storage facilitation, content creation, problem-solving, and especially, fostering innovation.

Strategies consist of various types of activities planned by professors to facilitate student learning. For this purpose, they rely on different resources (Casasola Rivera, 2020). In the context of virtual classes, one of the main resources is technological tools (ICTs) used for information transmission. Additionally, professors' methods of instruction are designed to inspire pupils to conduct independent inquiry and produce their knowledge. Students' autonomy, control over the learning pace, and control over the sequences that create their educational experience are fostered by the many pedagogic tactics that are tailored to their requirements and interests. Additionally, by linking formal education and enabling new learning methods, digital technology provides up possibilities for creative learning settings (Boulahrouz Lahmidi et al., 2019).

Verbal activities, which emphasize communication, are a type of learning activity. These include tools available in different programs and presentations made with platforms like Zoom or Blackboard in virtual education (Machuca Vivar et al., 2021). Participatory activities make use of interactive multimedia materials, such as blogs, forums, and gaming. It is important to highlight that all materials provided to students should be carefully evaluated to ensure alignment with content competencies. Group knowledge construction should be based on the prepared materials (Delgado Vaca Guzmán et al., 2022).

Academic procedures in a virtual classroom must take into account visual aids like presentations, videos, e-books, and platforms. According to Fernández Martín (2020), effective information transmission and upholding excellent communication encourage teamwork and, via engaged student participation, empower them.

Digital didactic materials

Didactic materials are tools created to assist interaction during the educational process and aid in the teaching-learning process. These resources support effective learning outcomes by carrying out a number of pedagogical tasks related to the dissemination of knowledge.
The unique features of digital didactic materials are anchored in technology. Thanks to the internet, they are instantly accessible from anywhere, enabling students to make interactive presentations. Furthermore, they facilitate peer contact, and teamwork, and—above all—allow students to produce their own knowledge (Area Moreira, 2019).

There are many programs available now that enable educators to produce creative didactic materials that are formative in nature and have the didactic elements required for each subject taught. Additionally, educational resources must adaptable so that students can use them in real time and change or adjust them to suit their own needs (Díaz Borges et al., 2021).

Managing technological resources in the educational context

The goal of a virtual classroom is to establish a setting in which students can participate in all of the activities that are essential to the teaching-learning process. Technology facilitates contact between educators and students and creates an atmosphere that is favorable to process growth. Platforms and other tangible resources offer online access, enabling an interactive process (Zurita Cruz et al., 2020).

Students now have a way to communicate thanks to the use of technology in the virtual classroom. These resources are crucial because they provide access to a wealth of knowledge, facilitating independent study and investigation. Professors can now teach using a new medium: the virtual world. Consequently, professors must engage in continuous training to effectively support the educational formation process (Moreno Garay et al., 2021).

Each professor must be capable of identifying which information technologies to incorporate into the teaching-learning process. While most technological tools can be universally applied, some are subject-specific and depend on the nature of the course being taught (Delgado Vaca Guzmán et al., 2022).

Professors need proficiency in managing information and communication technologies, as educational institutions have integrated them sustainably and consistently. In this context, one of the main challenges is embracing a digital culture and adapting digital tools to create new methodologies (Heinsch & Rodríguez Pérez, 2023). For this reason, professors must engage in continuous training to integrate these technologies effectively into the teaching-learning process (Lara Rivera & Cabero Almenara, 2021).

Use of educational programs in virtual environments

To develop a virtual class that includes the delivery of subject content, the professor relies heavily on programs that facilitate the effective transmission of knowledge in a didactic manner tailored to the specific needs of each subject. The programs used by professors serve as resources to enhance their teaching practices, addressing student needs to ensure learning outcomes (Navarro Cejas et al., 2021).

Every educational process requires that professors not only be proficient with computers but also know how to use a variety of tools that facilitate efficient communication and interaction with pupils. In order to reinforce the information, they want to communicate, they should also be able to create presentations and include multimedia components. In order to properly integrate virtual resources and educational materials, professors should create a dialogic setting and encourage interaction with devices and content in the virtual world (Rodríguez Hernández & Juanes Giraud, 2021).

METHODOLOGY

To comprehend and analyze the reality of professors in Lima's universities, this study uses a qualitative methodology. A collection of methods known as qualitative research involves examining occurrences in their natural environments. Because it gives meaning to occurrences based on individual viewpoints and thoroughly examines them, it is interpretive (Hernández-Sampieri & Mendoza, 2018).

Because it concentrated on the distinct perspectives of university instructors interviewed about their lived experiences and pedagogical methods in giving virtual classrooms, the phenomenological approach was selected.

A semi-structured interview guide served as the instrument for the interview technique, which was employed to gather study data. This guide consisted of eighteen open-ended questions designed to explore the teaching strategies used by professors in their virtual classes, their preparation of materials, their management of technological resources, and their use of programs.

The study employed an intentional sample of 15 university professors from general studies programs who had been conducting virtual classes at four universities in Lima. For ethical reasons, the privacy of the participating professors was protected by omitting their names and assigning them codes as follows: participant subjects E1, E2, E3, E4, E5, E6, E7, E8, E9, E10, E11, E12, E13, E14 and E15.

The interviews were conducted with the informed consent of the professors. Every interview had a certain time; some were performed in person, while others were done over the Zoom platform. Direct data gathering was made possible by the real-time nature of the interviews. The average length of each interview was thirty minutes. Every interview was videotaped and then transcribed.

Information contrast, triangulation, categorization, and structure were the manual methods used to process the data. To process the data and carry out its hermeneutic interpretation, qualitative matrices were created. To perform a comprehensive examination of the data, content analysis techniques were also used.

RESULTS

The analysis of the results was based on data obtained from interviews conducted with university professors. It is important to note that the entire analysis process was carried out considering the predefined categories established in this research. The information obtained has been organized into three sections of analysis, which are presented below:

Didactic strategies and materials in virtual classes

The interviewed professors indicated that to achieve the objectives set for the subjects they teach in their virtual classes, they rely on various methods, tools, and procedures to facilitate the teaching-learning process. Professors revealed the use of different didactic resources like software films, databases, platforms, e-books, electronic whiteboards, and other technologies. Many of them reported extensive experience with digital tools: *"I have more than 10 years of experience applying various strategies in preparing my classes"* (Professor E4).

On the other hand, Professor E7 presented a different perspective, stating that despite having many years of experience, they lack proper training in applying technology-mediated strategies: *"We have not received the necessary training in strategies for conducting virtual classes".*

Most of the interviewed professors mentioned that they have been using technology as a teaching strategy for over 10 years. They also highlighted many benefits of using digital teaching strategies, such as easier communication with students, improved comprehension levels, and more time during each session. Pupils can rewatch recorded classes whenever necessary, and the issue of pupils sitting "at the back of the classroom" is resolved when everyone is seated in front of their screens.

Additionally, they utilize e-books, providing direct access to information: *"Using programs has made my classes more dynamic and active"* (Professor E12). Moreover, using digital tools like interfaces and various software for creating videos, images, recordings, and presentations demonstrates how planning plays a crucial role in virtual classes.

This finding aligns with Professor E3's statement regarding their extensive use of digital tools: *"Since I started teaching at the university, about 20 years ago, I've been developing alongside the evolution of digital resources".*

Use of educational platforms

Professors most frequently utilize Zoom and Blackboard Collaborate, which enable the development of virtual teaching-learning environments. Instructors reported using the majority of these platforms' features, deeming them appropriate since they provide seamless online instruction.

In terms of continuous improvement, only Professors E3, E5, E8, E11 and E13 reported incorporating new resources such as motivational videos and open-access educational materials shared by a community of users, as well as new sources of information available online.

When asked about the educational materials used in their virtual classes, professors confirmed a significant improvement in the quality of materials over the past year: *"I have adapted my materials based on needs, incorporating PowerPoint to create presentations for the first time and using web links to foster more interactive learning"* (Professor E14).

Types of didactic strategies

The interviewed professors reported employing three types of strategies in their virtual classes: verbal, visual, and participatory activities.

Verbal activities

Verbal activities include tools available on platforms like Blackboard and Zoom, such as session recordings, chats, course messages, announcements, and emails.

Professor E2 stated: *"I like to encourage student participation through digital channels because I consider it important for learning. Students do not always participate on their initiative, but my efforts to encourage participation have been positive so far".*

Professor E10 commented on their use of Zoom: *"I can form groups with students and monitor their work at all times. This is a huge advantage because they can also share various types of information, such as presentations, Word documents, videos, and different programs".*

Table 1. Frequency of Teaching Strategies Mediated by ICTs Used in the Preparation of Virtual Classes by University Professors in Lima, Peru

Strategy/Material	Frecuency of use	Professors examples	Percentages
Verbal activities	High (used by all teachers)	Session recordings, chats, emails	100%
Visual activities	Moderate to High (varies by subject)	PowerPoint, videos, GeoGebra, Kahoot	80%
Participatory Activities	Low to Moderate (used by a few)	Group work, research, Microsoft apps	40%
Custom-developed Resources	Low (1 teacher)	GeoGebra for self-instructional exercises	7%

In Table 1, it can be observed that all the teachers interviewed use the Zoom platform to conduct their virtual classes. This platform allows them to record class sessions so that students can access them at any time and reinforce the topics covered in class. On the other hand, the percentage decreases when it comes to using other programs such as Kahoot for preparing activities.

All professors reported using various communication tools during each session. Most recorded and published their classes, used announcements to communicate important information, relied on course messages, and finally used chat and email. Professors emphasized that interaction with students is critical and that tools provided by platforms are essential for maintaining direct contact with students.

Visual activities

Professors used programs such as Microsoft Office, Kahoot, GeoGebra, Derive, Minitab, videos, e-books, and platform tools. Professor E7 mentioned: *"I mostly use GeoGebra to explain concepts so that students can analyze and apply what they've learned better".*

Professor E9 added: *"Due to the nature of the course I teach, I do not use many programs as strategies; at most, I use GeoGebra".*

Professors E4, E8, E10 and E15 reported consistently incorporating various programs into their virtual classes, noting that these programs enhance participation and motivate students to conduct research.

The frequency of visual strategies varies depending on the nature of the subjects taught. Presentations are the most commonly used tool, followed by graphics and audio files, with only one professor reporting the use of games.

Participatory activities

Only three professors assigned research or group work, promoting the use of technological resources such as Microsoft applications or statistical packages like Minitab. For exam preparation, they relied on programs like Derive or GeoGebra.

Use of custom-developed resources

Only Professor E4 reported creating custom resources, stating: *"I believe students are merely users of these resources, so I provide them with self-instructional materials to explore and manipulate. For this purpose, GeoGebra allows students to perform calculations and engage with activities to explore, understand concepts better, and solve practical exercises".*

This aligns with Professor E5's comment: *"For visual support, I primarily use PowerPoint, and with the electronic whiteboard, I solve problems and create graphs. The electronic whiteboard allows me to simulate a virtual class as if it were in person".*

Table 2. Use of Educational Platforms (ICTs) in the Preparation of Virtual Classes by University Professors in Lima, Peru

Platform	Number of professors using it	Key features	Percentages
Zoom	15	Session recordings, group work, messaging	100%
Blackboard	9	Course materials, announcements, grading	60%
Others (e.g., Google Forms, Kahoot)	5	Student participation, surveys, gamification	33%

In Table 2, the frequency of the use of the three types of activities carried out by university teachers in the development of virtual classes can be observed. Thus, all the teachers interviewed use verbal-type activities; however, only 30% of the teachers promote participatory-type activities.

Management of technological resources

Technological resources enable the creation of materials that are attractive to students and enhance communication by facilitating smoother knowledge transmission. All resources used in the classroom must be easy for students to handle and, above all, provide them with direct access.

The interviewed professors expressed diverse opinions and interesting perspectives regarding their preparation for using technological resources in virtual teaching. It is important to highlight that not all professors reported having strong proficiency in using these resources. *"From my experience, I can say that I only use some resources that allow me to conduct my classes, but at the same time, I feel that I need more knowledge"* (Professor E8).

On the other hand, Professors E1, E4, and E9 stated that they have a good command of technological resources and are constantly incorporating new ones: *"The different resources I use in class help me communicate better with my students and foster better learning. That's why I'm always researching new resources to incorporate into my classes"* (Professor E1).

One notable aspect is that all the interviewed professors considered themselves knowledgeable in digital topics. They felt capable of designing dynamic classes and noted that, following the health crisis, there has been a greater interest in and need for using technological tools. All professors had received various training courses, developed strategies independently, and continued to learn consistently.

Use of programs in virtual classes

All interviewed professors reported using different programs and noted that, without them, it would not be possible to conduct their classes. The most frequently used program for preparing didactic materials for virtual sessions is PowerPoint, which serves as a powerful visual aid for presenting topics and reinforcing knowledge.

In addition to PowerPoint, Professors E1, E3, E8 and E13 also use programs like Kahoot or Google Forms to foster student participation through surveys:

"I like gamification because it significantly increases student motivation, resulting in greater participation and attention" (Professor E3).

Regarding virtual evaluations, all interviewed professors stated that they use Word and GeoGebra to prepare different types of exams: *"After creating exams in Word and assessing topics using GeoGebra, I upload the files to the platform"* (Professor E7).

As a positive aspect, professors actively seek new programs to incorporate into their classes. Professor E11 stated: *"Recently, I've added two new tools, Genially and Creately, which are helping me plan more innovative and didactic classes".*

Table 3. Use of Educational Programs (ICTs) in the Preparation of Virtual Classes by University Professors in Lima, Peru

Program	Professors using it	Purpose	Percentage
PowerPoint	15	Presentations, visual support	100%
Kahoot	9	Gamification, quizzes, student participation	60%
GeoGebra	6	Concept explanation, visual simulations	40%
Google Forms	5	Surveys, participation monitoring	33%
Genially, Creately	3	Interactive and innovative class materials	20%

In Table 3, it is shown that 100% of the teachers interviewed use PowerPoint as visual support and for conducting their classes. However, it can be observed that a very low percentage of teachers use programs for developing interactive and innovative materials.

DISCUSSION

The findings show that the professors who were interviewed were knowledgeable about the pedagogic techniques and resources that are employed by instructors in online classrooms. This supports the findings of Flores Tena et al. (2021), who point out that the majority of educators nowadays must integrate technology into their lesson plans to meet the goals established for every subject.

The use of methodological strategies tailored to virtual classes reflects a renewal in teaching methodologies for technology use. Real-time participation and learning activities provide opportunities to improve classroom work. This finding aligns with Boud (2021), who stated that, in general, professors' experiences reveal that using technology and developing strategies aligned with virtual classes are overwhelmingly positive.

It was discovered that professors used a variety of software and applications, including Word, PowerPoint, Kahoot, and GeoGebra, to prepare instructional materials for online classes. Díaz Borges (2021) highlighted that the internet allows students to access instructional resources at any time and from any location. Since the goal of these resources is to encourage self-directed learning, including them in instruction is an important pedagogic technique.

Three categories of classroom activities were recognized by the professors who were interviewed: interactive, verbal, and visual. To encourage communication and active engagement, they integrated programs that included cartoons, videos, and resources from a variety of educational platforms. Fernández Martín (2020) underlined the significance of platform management since it facilitates effective connection with students by providing areas for participation through chat, email, video

conferencing, and other virtual tools. Since it makes it easier to create activities that promote learning and help each topic reach its goals, the benefits of utilizing and managing technological resources as part of didactic strategies are particularly evident.

In terms of technological resource management, professors plan each virtual session, employing digital technology as a support system for the teaching-learning process by integrating devices and digital resources into course content. The professors agreed that mastering information and communication technologies (ICT) is essential for teaching. According to the European Commission (2020), to carry out their duties, educators nowadays need a wider range of digital solutions. According to Araya-Muñoz and Majano-Benavides (2022), to provide new spaces for individuals involved in the virtual teaching-learning process, professors need to improve their fundamental abilities, especially in managing techniques and technology.

Professors use digital platforms to provide feedback through personalized virtual mentoring. Students have access to all information, ensuring the benefits of technology for each virtual session's development (Cabero-Almenara et al., 2020). However, professors emphasized the need for continuous training. Similarly, Vera (2021) noted in her research findings that, while professors are familiar with the platforms they use for virtual teaching, they consider permanent training in methodologies essential to efficiently integrate technology.

Even though the use of platforms helps establish a link between teachers and students for presenting activities and facilitating the learning process, it is necessary for information and communication technologies to serve as the fundamental principle of the teaching process in each virtual class session (Córdova, et al., 2024).

By providing the opportunity to assess both material and feedback, the ability to develop assessments utilizing platforms guarantees that assessments are an essential part of class activities. Evaluation is a crucial component of activities in virtual classes, and it is crucial to stress the importance of developing assessments utilizing digital platforms. This method not only makes content evaluation easier, but also makes it possible to generate feedback.

Thus, Mantilla et al. (2024) states that platforms such as **Zoom**, among others, are essential since they promote and enhance communication between students and teachers in virtual environments. Real-time communication is efficient; however, when teachers lack the necessary skills to use these tools, the potential benefits they offer are significantly limited.

According to the professors interviewed, they utilize a variety of software applications to develop creative work environments and new presentations for synchronous sessions. This is consistent with the findings of Moreno Garay et al. (2021), who claimed that synchronous and asynchronous student-professor connection was guaranteed by the use of virtual educational tools. This is especially important since the growth of online learning environments, facilitated by platforms, software, and the internet, allows students and instructors to communicate and exchange knowledge without the need for physical classrooms.

Most of the interviewed professors consider their handling of digital tools adequate, though not at an expert level. Similarly, Badajoz Ramos et al. (2022) notes that professors generally possess an intermediate level of proficiency in managing digital tools, which enables them to effectively conduct each remote class session. In this regard, it is worth highlighting that they view the ability to interact with students both synchronously and asynchronously as an advantage (Casasola Rivera, 2020). The professors also stated that by using various programs, they create authentic spaces that facilitate an efficient teaching-learning process, as also affirmed by Zurita Cruz et al. (2020).

CONCLUSION

In conclusion, by modifying their didactic approaches to online learning, the professors who were questioned modified their lesson plans. They stated that they were able to create new tactics that

made their position in the virtual classroom easier thanks to technology tools and resources. The instructors' use of platforms and specialized programs showed that they had the necessary information technology skills, which enabled them to create instructional materials and enhance their performance.

Professors planned virtual sessions by incorporating technological resources available to them. They carried out three types of activities—visual, communicative, and participatory—emphasizing that technological tools enable diverse activities such as incorporating audio, images, videos, and electronic texts.

They enhanced professor-student connection by using platform-specific communication capabilities like forums, chat, messaging, and group building. In order to effectively utilize platform capabilities and support the development of innovative tactics in virtual environments, educators recognized the significance of ongoing training.

Last but not least, professors successfully interact with their pupils, creating a positive work atmosphere and resolving issues as they arise. Through the creation of innovative tactics that are in line with contemporary realities and improved didactic materials, they consistently showed a dedication to raising the caliber of their online instruction.

AUTHORS' CONTRIBUTIONS

LERC: Conceptualization, Investigation, Resources, Data curation, Writing- Original draft, Visualization, Writing- Reviewing and Editing; JREV: Methodology, Validation, Writing- Reviewing and Editing.

REFERENCES

Araya-Muñoz, I., & Majano-Benavides, J. (2022). University Didactics in Virtual Environments. Experience in Social Sciences. Revista Electrónica Educare, 26(3), 1–19. https://doi.org/10.15359/ree.26-3.28

Area Moreira, M. (2019). Los materiales didácticos digitales: recomendaciones prácticas para el profesorado. http://riull.ull.es/xmlui/handle/915/13628

Badajoz Ramos, J. A., Jaime Flores, M. J., & Martínez Quispe, D. B. (2022). Student perception on the use of ICT by teachers at public universities in Peru. Comuni@cción: Revista de Investigación En Comunicación y Desarrollo, 13(4), 272–281. https://doi.org/10.33595/2226-1478.13.4.750

Boude, O. R. (2021). Design of mobile learning strategies in higher education through a professor training process.. Formación Universitaria, 14(2), 181–188. https://doi.org/10.4067/S0718-50062021000200181

Boulahrouz Lahmidi, M., Medir Huerta, R. M., & Calabuig i Serra, S. (2019). Digital technologies and education for sustainable development. An analysis of scientific production. Pixel-Bit, Revista de Medios y Educación, 54, 83–106. https://doi.org/10.12795/pixelbit.2019.i54.05

Cabero-Almenara, J., Romero-Tena, R., & Palacios-Rodríguez, A. (2020). Evaluation of Professor Digital Competence Frameworks Through Expert Judgement: the Use of the Expert Competence Coefficient. Journal of New Approaches in Educational Research, 9(2), 275–293. https://doi.org/10.7821/naer.2020.7.578

Casasola Rivera, W. (2020). The role of didactics in the university teaching and learning processes. Revista Comunicación, 29(1–2020), 38–51. https://doi.org/10.18845/rc.v29i1-2020.5258

Chong-Baque, P. G., & Marcillo-García, C. E. (2020). Innovative pedagogical strategies in virtual learning environments. Dominio de las Ciencias, 6(3), 56–77. https://doi.org/10.23857/dc.v6i3.1274

Comisión Europea. (2005). Propuesta de recomendación del parlamento europeo y del consejo sobre las competencias clave para el aprendizaje permanente.

https://www.europarl.europa.eu/meetdocs/2004_2009/documents/com/com_com(2005)0548_/com_com(2005)0548_es.pdf

Comisión Europea. (2020). Digital Competence Framework for Educators (DigCompEdu). EU Science Hub. https://joint-research-centre.ec.europa.eu/digcompedu_en

Córdova, EA., Salas, TJ, Lopez, ZM. & Astucuri, M. (2024). TIC´S As a Pedagogical Resource for The Development of Teachers' Learning Sessions. Pakistan Journal of Life and Social Sciences, 22(2): 8369-8385. https://doi.org/10.57239/PJLSS-2024-22.2.00632

Delgado Vaca Guzmán, L. M., Castro Onofre, J. C., & Orosco Tejerina, O. (2022). Teaching strategies supported by digital communication tools in social networks. Revista Internacional de Tecnología, Ciencia y Sociedad, 11(2.4), 1–11.

Díaz Borges, B., Mármol, M. C., Piñero, L. del R., & Cejas, M. F. (2021). Software para el Diseño de Recursos Didácticos durante la pandemia del Covid-19. Revista Venezolana de Gerencia, 26(6 Edición Especial), 680–696. https://doi.org/10.52080/rvgluz.26.e6.41

Fernández Martín, E. (2020). Análisis de estrategias metodológicas docentes innovadoras apoyadas en el uso de TIC para fomentar el Aprendizaje Cooperativo del alumnado universitario del Grado de Pedagogía. Revista Interuniversitaria de Formación Del Profesorado. Continuación de La Antigua Revista de Escuelas Normales, 34(2). https://doi.org/10.47553/rifop.v34i2.77628

Flores Tena, M., Ortega Navas, M. C., & Sánchez Fuster, M. C. (2021). Las nuevas tecnologías como estrategias innovadoras de enseñanza-aprendizaje en la era digital. Revista Electrónica Interuniversitaria de Formación Del Profesorado, 24(1). https://doi.org/10.6018/reifop.406051

González Calatayud, V., Prendes-Espinosa, M. P., & Solano-Fernández, I. M. (2022). Instrumento de análisis de la competencia de emprendimiento digital en educación superior. RELIEVE - Revista Electrónica de Investigación y Evaluación Educativa, 28(1). https://doi.org/10.30827/relieve.v28i1.22831

Heinsch, B., & Rodríguez Pérez, N. (2023). E-formación y educación superior en las líneas de actuación de la Unión Europea. Competencia digital y metodológica del docente de lenguas extranjeras. RELIEVE - Revista Electrónica de Investigación y Evaluación Educativa, 29(2), 1–19. https://doi.org/10.30827/relieve.v29i2.25176

Hernández-Sampieri, R., & Mendoza, C. P. (2018). Metodología de la investigación. Las rutas cuantitativa, cualitativa y mixta. In Mc Graw Hill Education (Ed.), Revista Universitaria Digital de Ciencias Sociales (RUDICS) (1st ed., Vol. 10, Issue 18). Mc Graw Hill Education. https://virtual.cuautitlan.unam.mx/rudics/?p=2612

Jam, F. A., Singh, S. K. G., Ng, B., & Aziz, N. (2016). Interactive effects of Gender and Leadership Styles on Open Service Innovation: A Study of Malaysian Doctors, *International Journal of Economics Research*, 1*3*(3), 1287-1304.

Lara Rivera, J. A., & Cabero Almenara, J. (2021). Saberes digitales en el profesorado universitario. Estudio en una escuela mexicana. Revista de Educación a Distancia (RED), 21(66). https://doi.org/10.6018/red.447911

Machuca Vivar, S. A., Sánchez Trávez, D. E., Sampedro Guamán, C. R., & Palma Rivera, D. P. (2021). Percepción de los estudiantes de las clases síncronas y asíncronas a un año de educación virtual. Revista Conrado, 17(81), 269–276. https://conrado.ucf.edu.cu/index.php/conrado/article/view/1897?articlesBySameAuthorPage=2

Mantilla, PN., Arana, JL., Torres, EF. & Alfaro, GC. (2024). Exploring the Use of Technological Tools to Enhance Collaborative Learning in Higher Education Institutions. Pakistan Journal of Life and Social Sciences, 22(2): 574-589. https://doi.org/10.57239/PJLSS-2024-22.2.0042

Minedu. (2022). Docentes del bicentenario: protagonistas del país que queremos construir. Ministerio de Educación. https://www.gob.pe/institucion/minedu/campa%C3%B1as/4776-docentes-del-bicentenario

Moreno Garay, O. F., Ochoa Tataje, F. A., Mutter Cuellar, K. J., & Vargas de Olgado, E. C. (2021). strategias pedagógicas en entornos virtuales de aprendizaje en tiempos de pandemia por Covid-19. Revista de Ciencias Sociales, 27(4), 202–213. https://doi.org/10.31876/rcs.v27i4.37250

Navarro Cejas, M., Cejas Martínez, M. F., Mendoza Velazco, D. J., Aldaz Hernández, S. M., & Venegas Álvarez, G. S. (2021). Las plataformas virtuales y la percepción de los estudiantes universitarios en la educación superior ecuatoriana durante la pandemia COVID-19. RISTI - Revista Ibérica de Sistemas e Tecnologias de Informação, 43, 647–663.

OCDE. (2020). Making the Most of Technology for Learning and Training in Latin America (OCDE, Ed.). Fundación Telefónica Movistar. https://doi.org/10.1787/ce2b1a62-en

Ortiz Aguilar, W., Santos Díaz, L., & Rodríguez Revelo, E. (2020). Estrategias didácticas en entornos virtuales de enseñanza-aprendizaje universitarios. Opuntia Brava, 12(4), 68–83. http://opuntiabrava.ult.edu.cu/index.php/opuntiabrava/article/view/1105

Phayap, N. N., Thanapitak, W., Chaiyanupong, N., Thongkamkaew, C., Jirangvoraphot, N., Sae-Chee, T., & Urairat, K. (2024). Factors Affecting Purchase Intention Towards Food Stores at OTOP Nawatwithi Tourism Community in Southern Thailand. *Pakistan Journal of Life & Social Sciences*, *22*(2).

Rodríguez Hernández, C., & Juanes Giraud, B. Y. (2021). Implementación de una estrategia didáctica para la interactividad en ambientes virtuales para el posgrado en la Educación Superior. Universidad y Sociedad, 13(1), 307–316. https://rus.ucf.edu.cu/index.php/rus/article/view/1927

UNESCO. (2023, April 20). Las competencias digitales son esenciales para el empleo y la inclusión social. Organización de las Naciones Unidas para la Educación, la Ciencia y la Cultura. https://www.unesco.org/es/articles/las-competencias-digitales-son-esenciales-para-el-empleo-y-la-inclusion-social

Vera, F. (2021). Impacto de las plataformas de videoconferencia en la educación superior en tiempos de COVID-19. Transformar, 2(1), 41–57. https://revistatransformar.cl/index.php/transformar/article/view/8

Zurita Cruz, C. E., Zaldívar Colado, A., Sifuentes Ocegueda, A. T., & Valle Escobedo, R. M. (2020). Análisis crítico de ambientes virtuales de aprendizaje. Utopía y Praxis Latinoamericana, 25(11), 33–47. https://produccioncientificaluz.org/index.php/utopia/article/view/34496