

# Analysis of digital literacy among teachers in Peru

Análisis de la alfabetización digital docente en Perú

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## Abstract

Currently, the use of technology in the academic field is highly relevant, both for teachers' professional development and for the teaching process, as it facilitates students' exposure to the digital context. However, to achieve an adequate implementation of digital tools in the educational field, it is essential that teachers have the media literacy skills to address this challenge. Therefore, this research article aimed to analyze the digital literacy of teachers in Peru. The methodology used was qualitative, with an inductive approach and an interpretive phenomenological design. The interview technique was used, and a semi-structured interview guide was used as an instrument, with seven participants who shared their perceptions of teachers' digital literacy. The results showed that digital literacy initially represented a challenge due to the new knowledge that teachers had to acquire. However, this process proved beneficial by integrating technology into the teaching-learning process, whether through the use of digital applications or the creation of digital content to reinforce the learning provided. Furthermore, teachers used various media to communicate and share this content.

**Keywords:** digital literacy, digital content, technology.

## Resumen

En la actualidad, el uso de la tecnología en el ámbito académico es de gran relevancia, tanto para el desarrollo profesional de los docentes como para el proceso de enseñanza, ya que facilita el acercamiento de los estudiantes al contexto digital. Sin embargo, para lograr una adecuada implementación de las herramientas digitales en el ámbito educativo, es fundamental que los docentes cuenten con una alfabetización mediática que les permita enfrentar este desafío. Por ello, el presente artículo de investigación tuvo como objetivo analizar la alfabetización digital de los docentes en Perú. La metodología utilizada fue cualitativa, con un enfoque inductivo y un diseño fenomenológico interpretativo. Se empleó la entrevista como técnica y se utilizó una guía de entrevista semiestructurada como instrumento, aplicada a siete participantes que compartieron sus percepciones sobre la alfabetización digital docente. Los resultados evidenciaron que la alfabetización digital representó inicialmente un desafío debido a los nuevos conocimientos que los docentes debieron adquirir. No obstante, este proceso resultó beneficioso al integrar la tecnología en el proceso de enseñanza-aprendizaje, ya sea mediante el uso de aplicaciones digitales o la creación de contenido digital para reforzar los aprendizajes impartidos. Además, los docentes emplearon diversos medios para comunicar y compartir dicho contenido.

**Palabras clave:** alfabetización digital, contenido digital, tecnología.

## Introduction

The purpose of this article is to analyze the perspective of educators regarding the use of technological resources in their pedagogical practices, as well as to explore the conceptualization that teachers have about digital literacy. This topic is crucial in a globalized world where technology is advancing rapidly, making the knowledge and use of various technological resources indispensable.

Currently, computers and other technological devices are fundamental elements, transitioning from novelty to essential tools for performing various tasks. Therefore, it is crucial for individuals to know how to use them to streamline their functions. It is no longer sufficient to merely know how to read and write; it is now also essential to understand the functionality of the technological devices circulating in society, leveraging the benefits they can offer to facilitate users' work.

Initially, digital literacy focused on individuals or professionals who worked directly with computers. Those who wished to learn could acquire skills to use them and even repair them. At its inception, digital literacy was not considered a necessity or requirement for functioning professionally in society. However, as new digital devices emerged, the need for familiarity with the digital realm became increasingly essential, leading to digital literacy becoming indispensable, thereby enhancing professionals' competitiveness in the job market.

Moreover, the confinement caused by the Covid-19 pandemic emphasized the importance of digital technology as an essential tool for maintaining the continuity of social and work activities. While this reality significantly boosted remote work, it also raised concerns, as not all employees were prepared for it. Some were unfamiliar with the use of devices, while others lacked access to them. Additionally, numerous applications and programs became essential for the efficient development of remote work, which posed challenges for many, as each tool had specific characteristics and particular handling requirements.

In the academic sphere, the landscape was similar to the one described above. Remote work became widespread across all educational levels, from early childhood to higher education. Therefore, it was crucial for educators to develop digital competencies or enhance existing ones through digital literacy, in order to acquire skills and knowledge in the use of Information and Communication Technologies (ICT) within the teaching-learning process with their students (Moreno-Guerrero et al., 2020). It was fundamental to provide literacy to educators in this regard, as they would be responsible for training their students and, at times, parents in the use of the digital platforms and tools necessary during virtual classes.

Consequently, this context highlighted the technological and digital lag in the educational field, as millions of teachers worldwide, from various educational levels and sectors, lacked the fundamental digital competencies needed to teach classes virtually or remotely. Furthermore, many educators did not have access to appropriate technology at home, and some lacked even internet connectivity, indicating their unpreparedness to face the global challenge posed. According to UNESCO (2020), among the highlighted factors, the most significant was the lack of digital literacy among educators.

Regarding the above, it is important to note that the Peruvian teaching profession was not exempt from this issue. Although the Ministry of Education, in coordination with other ministries, implemented the National Digital Literacy Plan starting in 2012, according to Law No. 29904, with the primary objective of bringing the

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population closer to the appropriate use of ICT, Peruvian teachers were not digitally prepared to effectively assume remote or virtual classes. Perhaps the lack of commitment to training or the absence of enforcement and oversight by the relevant authorities regarding the offered training were determining factors. This is particularly relevant considering that the National Basic Education Curriculum (CNEB, 2016) places great importance on developing the competence related to students' performance in virtual environments using ICT. However, if educators are not well-prepared in digital skills, how can they effectively instruct their students in the use of ICT to enhance their learning?

In Peru, despite the Ministry of Education providing continuous training to in-service teachers in technology to improve digital competencies during the pandemic, the gap in the educational sector was notably evident. This situation raised concerns among national authorities, as reflected in the 2020 report by the Ombudsman's Office, "Education in the Face of the Health Emergency," which mentions factors such as the lack of teacher training, limited internet access, and geographical factors, among others.

Therefore, considering all that has been mentioned thus far, it is crucial to conduct research like the one presented here, as the results will provide insights into educators' digital knowledge and their willingness to integrate various tools into their classes. This will allow for the identification of gaps and the establishment of training programs that enhance teachers' capabilities, which, in turn, will enable students to acquire skills in the digital realm. Furthermore, theoretically, this research will be grounded in previous works, both nationally and internationally, that help to better understand the topic at hand.

In this context, national authors such as Sotelo & Gastello (2022) investigated teachers' perspectives on digital literacy within their pedagogical practices, highlighting that educators recognize the importance of becoming digitally literate today. The authors concluded that digital literacy offers significant benefits to users, as it facilitates access to digital information and enhances educational processes. Similarly, Suárez & Lloret (2022) analyzed Peruvian teachers' conceptions regarding the digitalization of education using SWOT analysis, revealing existing technological limitations. They concluded that the digital divide is due to a lack of digital competencies among educators combined with technological shortcomings in public educational institutions, especially in peripheral and rural areas of the country. Additionally, Sucari et al. (2021) examined the evolution and integration of digital literacy in the educational field in Peru, where they observed that teachers perceive digital training as an obligation rather than an opportunity for growth in the digital realm. The authors emphasize the need to promote digital literacy from teacher training, proposing its inclusion in curricula and certification.

Concerning international studies, notable work by Mendoza & Párraga (2022) analyzed teachers' digital competencies and found that their use of digital tools is limited. They suggest that educators should enhance their digital competencies through media and information literacy. Furthermore, Granda et al. (2021) explored the role of teachers in the digital context, as well as the advantages and disadvantages of digital literacy in education. The authors stated that while technology supports educational improvement, educators often feel inadequately prepared and view it not as a supportive tool, but rather as an obstacle to their teaching sessions. On another note, Cervantes & Rojas (2021) investigated how teachers faced the pandemic with basic digital literacy. Their study revealed a sense of indebtedness among teachers toward their students for not being digitally prepared. The authors argue for a digital training plan for educators to level up their acquired competencies since all possess prior knowledge that merely needs refinement.

Both nationally and internationally, the studies addressed demonstrate that teachers face deficiencies in the technological field within their pedagogical practices, which indirectly harms their students. This situation arises because students are deprived of the necessary knowledge to adequately engage with the digital educational tools available online that help improve or reinforce learning. While students need guidance from their teachers, this will not occur if their instructors are unfamiliar with or unable to employ educational digital tools. Consequently, it is essential that digital literacy is developed from teacher training and that a continuous updating plan is implemented to progressively reduce the digital divide among educators. Concurrently, educational institutions must be equipped with appropriate technological devices to support this process.

Referring back to the case of Peruvian educators, it is important to indicate that they still operate at an initial level concerning the development of digital competency, which is concerning since all teachers should be knowledgeable about using ICT. Generally, many educators do not take the use of technology seriously in their teaching, believing that watching a video or using the radio is sufficient. Although these devices are also part of technology, today it is necessary to know more. Since 2017, the use of ICT has been regarded as a transversal competency that every teacher must develop with their students during their academic hours (Turpo-Gebera et al., 2022). Therefore, educational authorities must develop a digital literacy plan that raises teachers' awareness of the need for fundamental digital skills to address various situations.

Digital literacy involves acquiring the knowledge, skills, and attitudes necessary in digital contexts to solve problems (Matamala, 2018) and to leverage information from the digital world. The University of Internet (UNIR, 2019) defines it as the competence to navigate the digital context, communicating, creating, and understanding information. Within connectivism, its role is viewed as collaborative learning around the network, where the location of the collaborators is insignificant; what matters is having access to the network to participate in the exchange of knowledge (Bernal, 2020).

Based on the above, it can be asserted that digital literacy connects individuals to the technological world and knowledge, providing benefits in any field of work, including education. Therefore, teachers must stay at the forefront of knowledge, integrating it into their pedagogical practice, which will make their classes more innovative. In this regard, Area (2015) states that being digitally literate goes beyond using email or interacting on social media; it involves knowing and utilizing the applications of a technological device or a digital account. Thus, it is necessary for educators to familiarize themselves with new technologies for their students' benefit.

Although digital literacy represents a challenge, as it evolves with the emergence of new ICT, individuals must develop the capacity to understand, analyze, and navigate the digital world from any device over time (Avello et al., 2013). In this context, Pini (2019) notes that digital literacy has levels ranging from basic, related to interaction on social media, to intermediate, which involves improving quality of life through technology use, and up to an advanced level, which refers to the creation of original digital content. Accordingly, the ideal scenario is for individuals to develop their knowledge to at least the intermediate level, aspiring for more.

In the research on digital literacy, two subcategories are related: technology management and the creation and communication of digital content. Regarding technology management, it is noted as the component related to instrumental and cognitive dimensions. It is essential to know the programs and applications used on technological devices, as well as to possess the ability to search for, analyze, and select appropriate information for the tasks performed. In summary, it is important to distinguish why and how technology is utilized (Baque-Castro & Viguera-Moreno, 2021). It is worth noting that managing technology involves not only handling devices but also appropriately manipulating tools or applications.

Concerning the creation and communication of digital content, this falls within the communicative dimension (Area, 2015), which involves producing and consuming information through the spaces provided by cyberspace. This also implies respecting authorship and exercising restraint in what is created and transmitted. In terms of digital content creation, educators have utilized various tools and applications such as Canva, working individually or collaboratively, and have created videos or audio using Filmora or Spotify. To communicate or share the created content, they have employed resources like WhatsApp, email, and blogs, among others.

Sandoval (2020) mentions that teachers should use digital equipment and resources that help them conduct engaging and dynamic classes, such as Google Workspace, which includes various integrated applications that facilitate the educational process, like Meet and Classroom. Castillejos (2019) suggests that one should not only be a consumer of information found on the web but also a prosumer of creative and quality content, reusing, remixing, and restructuring existing content to provide a personal brand. Therefore, it is recommended to safeguard the authorship of the content published on various platforms.

Given the above, it is important to note that this research was conducted in a public educational institution in Peru, where the limitations of participating teachers regarding the use of digital resources and tools during remote or in-person classes were observed. This led to the research question: How do teachers develop digital literacy in a public institution in Peru? The foundational points were technology management and the creation-communication of digital content. In this context, the primary objective of the research was to analyze teachers' perceptions of the importance of digital literacy within their pedagogical work.

## Methodology

This research was approached from a qualitative perspective, valuing the interpretations, perceptions, and viewpoints of participants (Hernández-Sampieri & Mendoza, 2020). Its aim was to analyze the central phenomenon in its real context, based on the participants' experiences, utilizing a phenomenological design and an interpretative paradigm. It was a basic research study intended to enhance existing knowledge and can serve as a reference for other studies (Arias & Covinos, 2021). Additionally, the inductive method was employed, which, according to Urzola (2020), allows for investigations into phenomena starting from the particular to the general.

The study involved seven teachers from the educational institution who worked during the pandemic. Semi-structured interviews were used, guided by a ten-question interview format. This technique was chosen as it allows for understanding the opinions or perceptions of participants regarding the phenomenon under study (Campoy & Gómez, 2009).

It is also important to mention that the research adhered to ethical principles such as beneficence, non-maleficence, and autonomy, which lend relevance and reliability to the research. The consideration of these ethical principles ensured that the research was responsible and respectful towards participants, thereby contributing to the validity of the results obtained.

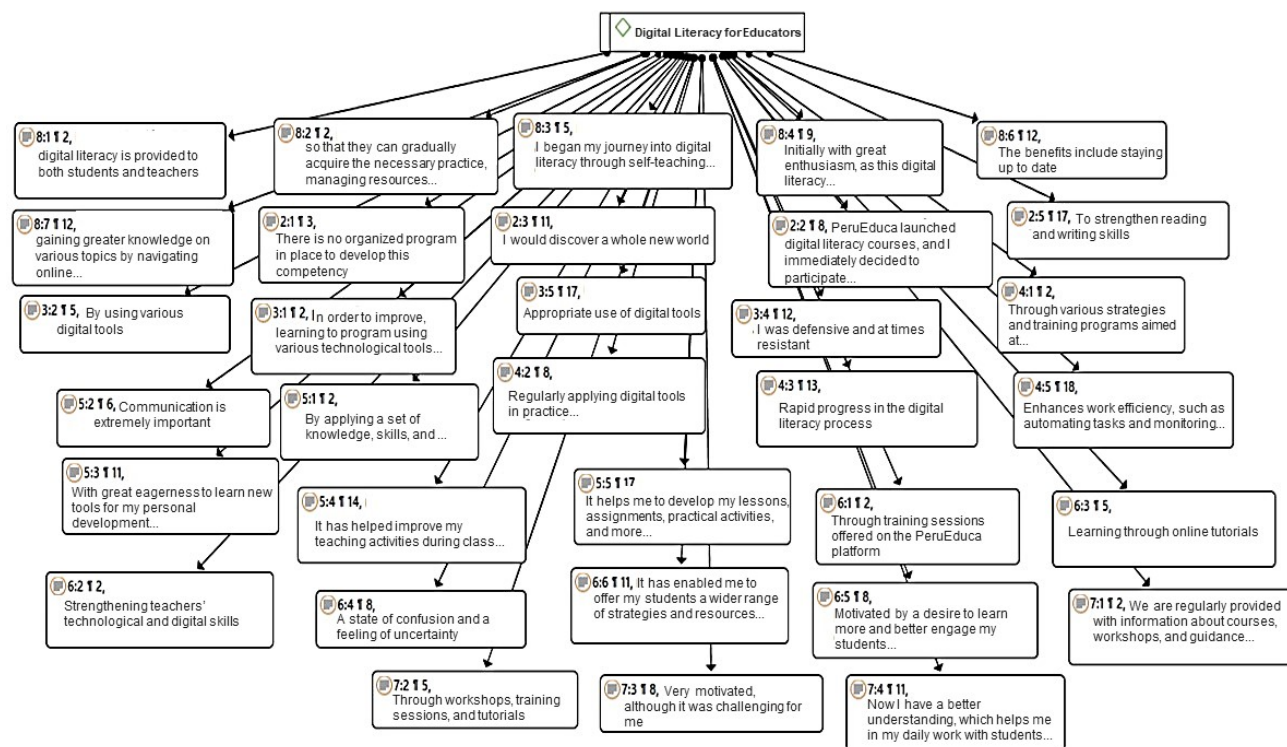
## Results and discussion

After conducting the interviews with participants, the respective analysis was performed using the Atlas Ti 9.1 program, which facilitated the coding of responses and allowed for the development of a hermeneutic network of subcategories. From this analysis, it was found that the proper management of technology is an important part of digital literacy, enabling the creation and communication of digital content. Additionally, Atlas Ti 9.1 allowed for contrasting the obtained data, maximizing its utility for analyzing teachers' digital literacy (Soratto et al., 2020), effectively addressing the research objectives. In this sense, the use of Atlas Ti 9.1 was fundamental for organizing and systematizing qualitative data, providing a detailed and structured view of the results.

### General objective: Analyze the digital literacy of teachers in Peru

All responses regarding digital literacy and its subcategories—technology management and digital content creation—were analyzed. Figure 1 presents the most relevant responses about teachers' digital literacy, providing a clear view of the most significant findings obtained during the analysis.

**Figure 1**  
Citation network of the digital literacy category

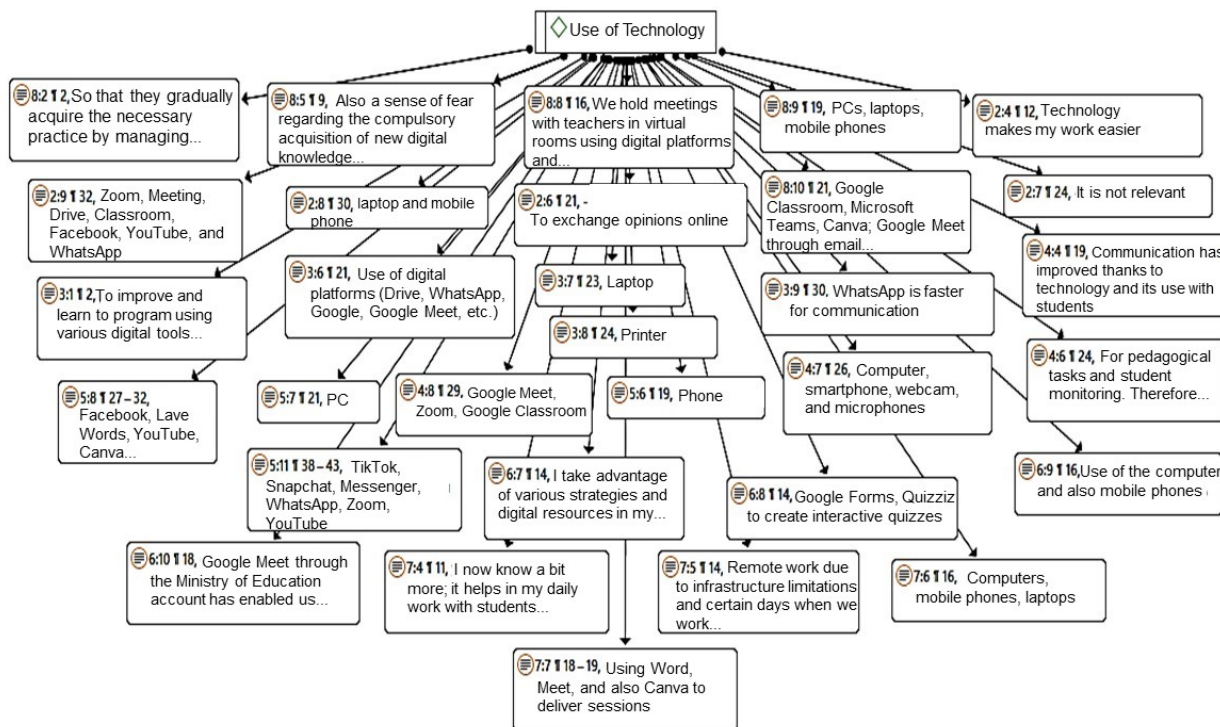


For the analysis of the main category, the first four interview questions were used, which supported the finding that teachers' digital literacy emerged out of necessity due to the Covid-19 pandemic. Additionally, teachers acknowledged that becoming digitally literate allowed them to become familiar with digital tools and platforms to continue their work during the pandemic, and they continue to use them today.

### Specific objective 1: Analyze technology management in the pedagogical practices of Peruvian teachers

To analyze this objective, three key aspects were considered. First, the study examined how teachers integrated technology into their pedagogical practices. Second, it investigated the technological devices they used. Finally, it analyzed the digital platforms employed. Figure 2 presents the corresponding citation network.

**Figure 2**  
Citation network for specific objective 1

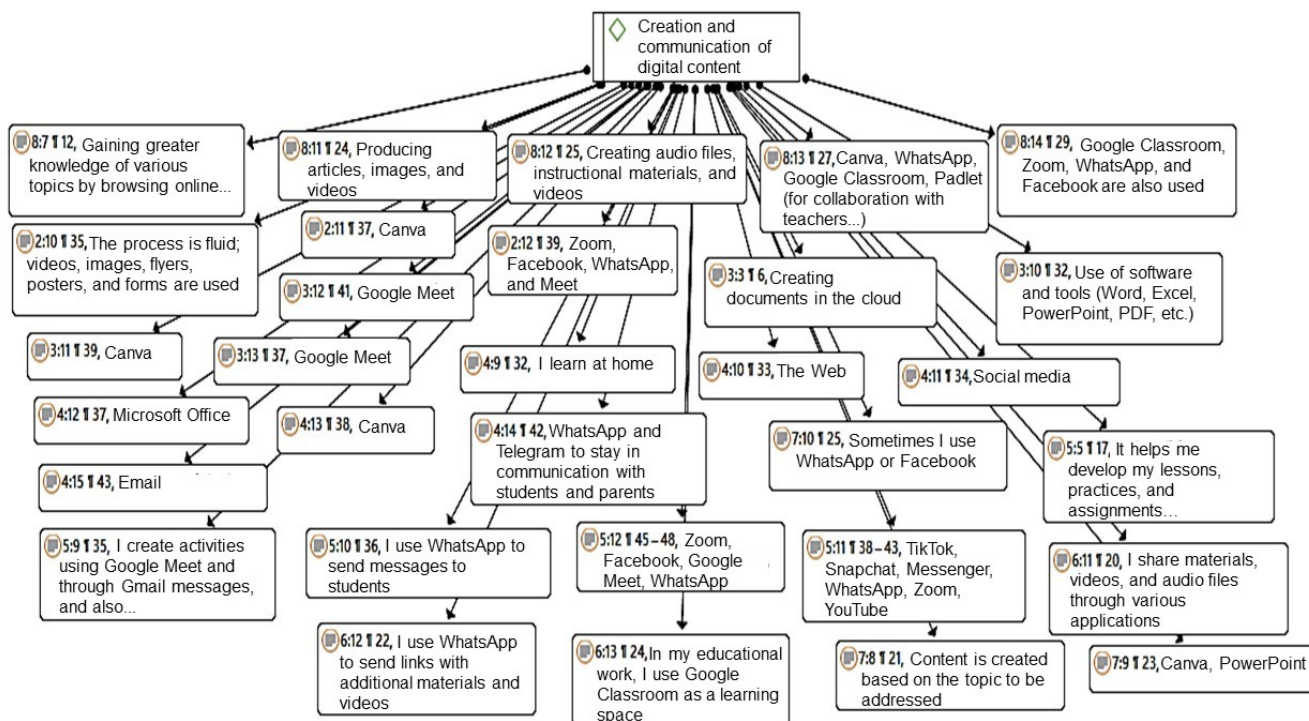


According to observations during the pandemic, using technology was essential for teachers to maintain class continuity, as it facilitated communication among educational stakeholders. The most commonly used devices by teachers during classes included smartphones and computers. Additionally, educators primarily utilized Google services in their classes, which facilitated the implementation of digital educational tools and interaction with students.

**Specific objective 2: Analyze the development of digital content creation and communication by teachers in Peru**

Regarding the second objective, responses related to the creation and communication of digital content were analyzed, establishing three key aspects. First, the study examined how digital content was created in the educational institution. Second, it investigated which applications teachers used for this activity. Finally, it analyzed the methods employed by teachers to share their content with students. Figure 3 illustrates these findings, providing a detailed view of how educators are integrating digital technologies into their pedagogical practices.

**Figure 3**  
Citation network for specific objective 2



The figure shows that teachers create digital content based on their knowledge but also utilize available online resources, modifying or adapting them to suit their needs. For the tools used, teachers employed Canva and Office for content creation, and applications like Google Meet, WhatsApp, and Zoom for dissemination.

In relation to the analysis and interpretation of results concerning the general objective, digital literacy provided considerable benefits to teachers, one of which is the ability to remain connected through digital platforms. According to interview responses, teachers had to self-educate, seeking ways to continue their educational work. While this was positive, it is important to note that technology has been available for some time, providing educators with prior opportunities for technological training to successfully tackle the challenges they faced.

In line with this, Sotelo & Gastello (2022) stated that initially, teachers showed resistance to the integration of technology in education, but they have since recognized that technology and its tools are beneficial for teaching. Furthermore, Suárez & Lloret (2022) emphasized that educational institutions must be equipped with appropriate technology to motivate teachers to become digitally literate. It is crucial for teachers to be digitally literate, as this ensures an education aligned with contemporary needs and promotes the digital development of students. However, public educational institutions must also be equipped with modern devices in adequate quantities to ensure all students have access. Additionally, the state should facilitate and subsidize internet access, as much of the educational digital tools are online.

Regarding specific objective 1, teachers indicated the use of computers and smartphones in the educational process. They also noted that Google utilities are the most commonly used digital tools during remote classes. Mendoza & Párraga (2022) suggest that teachers do not demonstrate mastery in using digital tools, highlighting the need for media and information literacy training to develop the necessary digital competencies for both virtual and in-person classes. Interviewees expressed motivation to learn and apply technology during their virtual classes, emphasizing the need to promote digital literacy to reinforce and enhance the knowledge acquired by teachers during the pandemic. This knowledge will not only assist in their teaching but also contribute to their professional and personal development, as technology is integral to various contemporary activities.

Finally, as for specific objective 2, teachers employed applications and programs like Canva and Office for digital content creation, and Google Meet, Zoom, and WhatsApp for dissemination. Granda et al. (2021)

emphasized that technological advances have sometimes benefited teachers in the teaching process, but at other times they have not, due to inadequate digital preparation. In contrast, Pini (2019) noted that digital literacy encompasses levels, including publication and content creation. Despite their limited technological training, participating teachers were able to create and publish digital content, indicating a certain level of preparedness. However, there is still a need to refine their digital competencies, although it is commendable that they ventured to use technology with minimal knowledge.

In summary, it is essential and inevitable for teachers to develop their digital competencies through digital literacy, which should be promoted by the Ministry of Education and monitored through a supervision plan. Today, every teacher must certify that they possess digital competencies, which should be updated according to technological advancements. Only in this way can quality learning be ensured through the integration of ICT, preparing students for life's challenges, as being digitally competent goes beyond merely interacting on social media.

## Conclusions

After analyzing and interpreting the responses from participants and contrasting them with previous studies, it is concluded that digital literacy initially posed a challenge for educators, which they overcame by attending training sessions or following tutorial videos on the use of digital resources. This enabled them to fulfill their pedagogical responsibilities, benefiting both themselves and their students.

Regarding specific objective 1, it is concluded that technology management is indispensable for teachers in the development of virtual classes. The use of technological devices such as computers and smartphones facilitated the application of various educational tools, whether for new learning or reinforcing existing knowledge. Additionally, this technological integration enhanced interaction and access to information in a virtual environment.

Finally, concerning specific objective 2, it was concluded that to create digital content, such as worksheets, teachers utilized resources like Canva or Office. In other cases, they employed tools for creating videos or audio, which were shared with their students primarily through WhatsApp, noted for its speed and ease of use. In this regard, digital literacy not only improved teachers' ability to create content but also facilitated its distribution and communication in a digital environment, underscoring the importance of technology in contemporary education.

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