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Digital competences of teachers in the Faculty of Social Sciences at the UNA in the first semester of 2023

Competencias digitales de docentes de la Facultad de Ciencias Sociales de la UNA, en el primer semestre del 2023

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Abstract

Contemporary education considers digital skills to be an essential issue for pedagogical models and new learning processes. The objective was to describe the digital competencies in the use of virtual tools of teachers in the Faculty of Social Sciences at the UNA, first semester, 2023. The methodology was quantitative, descriptive level, cross -sectional; the technique was the digital survey and the instrument was designed through Google forms, with closed questions of dichotomous and multiple options, the sample studied was 55 teachers. The results express that teachers consider that their skills, digital competencies and uses of virtual tools are mostly intermediate level, only a small percentage have an advanced level and others have no skills. Three important points are observed: the institutional capacity to provide connectivity and cutting-edge infrastructure with the virtual tools available to acquire skills in a globalized world, teachers timely training as learning facilitators, and the conditions provided to students in a new social context in which they will be or are immersed from their reality. It is concluded that not participating in the digital world or being unaware of its existence distances us from current social reality. Accepting this reality leads us to clearly position ourselves with well-defined strategies in professional training.

Keywords: Digital skills; Teachers; Digital tools; University; Paraguay

Resumen

La educación contemporánea considera que las habilidades digitales constituyen un tema esencial para los modelos pedagógicos y nuevos procesos de aprendizaje. El objetivo fue describir las competencias digitales en el uso de las herramientas virtuales de los docentes de la Facultad de Ciencias Sociales de la UNA, primer semestre del 2023. La metodología fue cuantitativa, nivel descriptivo, corte transversal; la técnica fue la encuesta digital y el instrumento fue diseñado a través del Google forms, con preguntas cerradas de opciones dicotómicas y múltiple, la muestra estudiada fue de 55 docentes. Los resultados expresan que los/as docentes consideran que sus habilidades, competencias digitales y usos de herramientas virtuales son de nivel intermedio en su mayoría, solo un porcentaje reducido posee un nivel avanzado y otros/as que tienen nulas competencias. Se observan tres puntos importantes: la capacidad institucional de proveer conectividad e infraestructura de vanguardia con las herramientas virtuales disponibles para adquirir competencias en un mundo globalizado, la formación oportuna de los docentes como facilitadores del aprendizaje, y las condiciones otorgadas a los estudiantes de un nuevo contexto social donde estarán o están inmerso desde su realidad. Se concluye que no participar del mundo digital o desconocer su existencia nos aleja de la realidad social actual. Asumir esta realidad lleva a posicionarnos con claridad y estrategias bien definidas en la formación profesional.

Palabras clave: Competencias digitales; Docentes; Herramientas digitales; Universidad; Competencias digitales; Paraguay

INTRODUCTION

This research examines the digital competencies of faculty members in the Faculty of Social Sciences at the National University of Asunción (FACSO-UNA) in their use of virtual tools. Within the framework of this research, digital competencies are understood as the secure use of information technologies for work, leisure, and communication.

The study arose from the interest in understanding teachers' digital skills in using virtual tools in the academic context due to the importance of these tools in improving the teaching-learning process, and the need to use them in this post-pandemic era.

An initial search on the suggested topic at the country level reveals that there are still many areas to explore regarding teachers' skills in the use of virtual tools. However, there are some studies in the last seven years by teachers, researchers, and multilateral organizations whose contributions are described below.

The teachers in the Faculty of Philosophy at the National University of Asunción, in their research on digital skills required by a modern educator, state that the digital world is a reality of everyday life, as significant as other skills according to Rolón & Jiménez (2016):

> It's not easy, and there's a long way to go, not only to train and develop the digital skills required by higher education teachers, but also to create conditions for change and transformation of teaching practices. And here, it's not just disciplinary knowledge or teaching skills that matter, but also the teacher's attitude. Ultimately, what we're trying to change is the paradigm from which we've designed our academic work. (p. 18)

The results of Rolón & Jiménez (2016) show that better-trained professionals with greater digital skills feel more confident in using technologies, use them more in the classroom, and introduce methodological changes in their practice. On the other hand, Valenzuela (2017), in his research conducted in Paraguay, mentions that no writings specifically referring to the topic of ICT training needs in teacher professionalization or related research were found before 2017, leaving the research conducted as an important contribution within the studied framework.

Another point mentioned by Valenzuela (2017) is that Higher Education Institutions in Paraguay design their curricular proposals based on the expert opinion of one or more of their technical teachers, without making an exhaustive analysis of the training needs in the careers and their subjects. Likewise, the National Agency for the Evaluation and Accreditation of Higher Education (ANEAES) considers the steps for accreditation in the use of ICT, however, up to this date very few programs have been accredited; in fact, institutions are more interested in accreditation itself, rather than in the application of digital tools in the professionalization of higher education.

Valenzuela (2017) concludes that teachers and future teachers need to be trained through a didactic approach that synergistically considers the development of generic competencies; specific competencies for university teaching; and specific ICT capabilities.

Furthermore, he points out that "institutions cannot always have state-of-the-art technological infrastructure. Therefore, it is essential to have an educational model that is efficient and participatory" (Valenzuela, 2017, p. 121).

Current context of digital teaching skills in the use of virtual tools

In the 2019-2020 country program, the Organization of Ibero-American States for Education, Science and Culture Regional Office in Paraguay expressly mentions the following:

> Teacher training must continue to be one of the main lines of intervention for educational programs in the pursuit of improving the quality of education. In recent years, the standards for admission tests for teaching major have been raised, and progress has been made in teacher certification. Further progress is still needed in the design of teacher training policy and educators' professional career (OEI, 2019, p. 20).

Similarly, the quality of higher education remains an area of work requiring further development. It is necessary to improve coordination in planning regarding ways to integrate, articulate, and harmonize educational

programs. It is also necessary to refine the relevance and content of vocational training school curricula, as they are disconnected from the needs of the labor market. Teachers, as key players in the teaching-learning process, are taking on a new role that complements the development of new teacher training policies based on the development of their competencies (OEI, 2019).

Within educational strengthening programs, the need for programmatic/educational development in 21st-century competencies and skills is recognized, including teachers' digital competencies. They are immersed in a changing and digitalized world (OEI, 2019).

The OEI mentions that one of the greatest challenges facing higher education in Paraguay is achieving quality. To achieve this, transparency must be improved, allowing for the identification of the strengths and weaknesses of higher education, enabling policies tailored to the needs of universities and their students.

In this context, an article has been found that serves as a reference for intervention in this area, proposed by Brítez (2020) from the National University of the East on education regarding the advance of COVID-19 in Paraguay with the objective of describing the measures taken by each government in relation to education. This document addresses the changes that the pandemic has generated at the level of the countries of the triple border; however, in this section only that referring to Paraguay will be extracted. Britez (2020) expresses the following: In Paraguay, the Executive Branch declared a state of health emergency throughout the country to control the health measures established for preventing the expansion of the COVID-19 pandemic through Decree No. 3456 of March 16, considering the suggestion of the WHO, an institution that on January 30, 2020, declared that the situation regarding Covid-19 constitutes a public health emergency of international importance. Health Minister Julio Mazzoleni had already announced the government's decision to suspend all public, private, and academic activities. This came in response to the confirmation of the second case. Paraguay was the first country in the region to adopt drastic preventive measures to mitigate the spread of the coronavirus, with the complete suspension of activities and a complete quarantine (phase 0).

Conceptualization

For a better understanding, some key elements for the research are defined, such as teaching skills, virtual tools, and digital competencies. Two international organizations have been used as reference; however, the perspective used for the research approach is that of the European Community, whose organization has extensively developed the suggested topic (EC, 2018).

According to UNESCO (2016), digital competencies are defined as a range of skills that facilitate the use of digital devices, communication applications, and networks to access and better manage information. These skills enable people to create and exchange digital content, communicate and collaborate, and solve problems, leading to effective and creative development in life, work, and social activities in general.

Virtual tools are constantly changing, with updates and new technologies being created, while higher education curricula do not provide for ongoing support throughout the process.

Gisbert & Esteve (2011), cited in Cervera, Martínez & Mon (2016), refer to the difficulty posed by the disparity of conceptualizations when working on this topic, which is related to the complexity of the digital context. They define digital competence as "a set of tools, knowledge, and attitudes in the technological, communicative, media, and informational fields that configure a complex and multiple literacy" (p. 76).

In order to group the studies carried out in this field, Cañete Estigarribia, Torres-Gastelú, Lagunes-Domínguez & Gómez-García (2021) mention some standards that allow us to point out which elements to consider when talking about the development of digital teaching competence.

Detailed in order; first, UNESCO (2008), which identifies five competencies that teachers must develop, the components of which are “policies, curriculum and assessment, pedagogy, use of ICTs, organization and administration of the educational institution, and professional teacher training” (Cañete-Estigarribia et al., 2021, p. 87).

Second, the Common Framework for Digital Competence for Teachers (2017) in Spain establishes that “digital competences are defined as competences that 21st-century teachers need to

develop to improve their educational practice and for continuous professional development" (p. 3). This framework is an adaptation of the European Framework of Digital Competence for Citizens V2.1 (DigiComp) (in which digital competence is one of the eight competences of the citizen) and the European Digital Competence Framework for Educators (DigiCompEdu), which is divided into five competence areas (information, communication, content creation, security, and problem-solving) and includes 21 competences. Then, in each of these competences, six levels are constructed in which descriptors are mentioned based on terms of knowledge, capacities, and attitudes that serve as a parameter to detect the training needs in teachers' digital competence (INTEF, 2022).

Finally, there is "Enlaces" from the Chilean Ministry of Education, which also mentions five dimensions, which are: "technical, pedagogical, social, ethical and legal aspects, school management and professional development" (Cañete-Estigarribia et al., 2021, p. 87).

For this research, the authors used the definition established in the European Union's European Digital Competence Framework. Digital competence is defined as the safe and critical use of information society technologies for work, leisure, and communication. It is based on core ICT competencies: the use of computers to obtain, evaluate, store, produce, present, and exchange information, and to communicate and participate in collaborative networks via the Internet (European Parliament and Council, 2006).

B -learning (Blended learning), is another term coined to describe education developed through the mediation of ICT supports, but unlike the previous term, this term combines face-to-face classes. According to Mariño (2006), the use of the traditional classroom combined with the web is known as "technology insertion" or web enhancement. Rosas (2005), cited by Mariño, argues that this does not consist of introducing technology into the classroom, but rather replacing some learning tasks with others supported by technology. This term is an English word that can be translated as blended learning.

M -Learning, Among the Learning Management Systems, currently and quite used is what is known as M-Learning, which in Spanish is understood as mobile learning. García & Seoane Pardo (2015), made a count of definitions of M-learning from various authors and, they affirm that what determines is the approach in which you want to insist: (Pinkwart, Hoppe, Milrad & Pérez, 2003; Quinn, 2000), cited in García-Peñalvo & Seoane Pardo (2015), refer that M-learning is the successor of E-learning , since it " is the learning supported by digital electronic resources and tools and M-learning is the E-learning that is supported by mobile devices and wireless transmission; or simply, it is when learning takes place with mobile devices" (p.11).

The research objective was to describe the digital skills of FACSO-UNA teachers in their use of virtual tools.

From the perspective of FACSO-UNA, this research is justified because it provides timely information on teachers' digital skills, which would facilitate decision-making for planning training and institutional strengthening projects. This will benefit teachers in their classes, which will have an impact on classroom learning.

METHOD

The research used Miranda (2018) and Campoy (2019) as a reference, establishing its quantitative nature. The data collection instrument was applied for the timely generation of numerical information on teachers' digital competencies in the use of virtual tools. The phenomena of the studied environment were systematically described. It was cross-sectional, since the data were collected at a single time.

The level or scope of the research is descriptive, as it describes the situations verified and events measured; and it provides the characteristics of the teaching group in relation to digital competencies in the use of virtual tools. It has allowed for the analysis of the main elements and characteristics of interest proposed in the objectives.

The population or universe that made up the study is made up of higher education teachers in the Faculty of Social Sciences at the National University of Asunción for the 2023 academic year. The entire population was taken; in this case, 60 teachers from the Sociology and Social Work programs; participation was 92%, or 55 participating teachers. The sampling used was non-

probabilistic; teachers were included according to the research objective. The type of sampling is intentional or deliberate, since the researchers arbitrarily chose the population, based on the elements available to them.

The data collection technique was a Google questionnaire organized by section, using a Google Drive form. The data collection instrument used in the research was a structured questionnaire on teachers' digital competencies in using virtual tools, which consisted of a set of questions regarding the measured variables.

The question types were structured, closed, dichotomous, and multiple-choice. Before applying the research instrument in the field, the questionnaire was validated at the operational level in a pilot test with teachers from another school.

Permission was sought from all participants, so their responses to the survey constituted informed consent, as the research purposes and privacy procedures were explained to the participants. Each completed questionnaire was compiled into a database automatically grouped by the software used, and no responses were identified with the teacher who answered them.

The data collected in the survey were organized according to established analysis criteria and tabulated using computer tools and an Excel spreadsheet.

Finally, a descriptive and synthetic analysis of the results obtained was carried out in relation to the objectives suggested in the research, in order to generate the relevant recommendations.

RESULTS

The study population consisted of professors from the Social Work and Sociology programs. Of these, 55 responded, representing 92% of the total faculty at the school. Of this group, 18% teach both programs, 26% teach Sociology, and 56% teach Social Work.

Before addressing the first specific objective of this research, it is important to note that 93% of teachers have daily internet access, while the rest access it less frequently. Regarding their usual internet connection method, the results indicate that the majority (38%) access it via Wi-Fi and mobile data on their cell phones, while a significant group (36%) only access the internet via Wi-Fi (See Table 1).

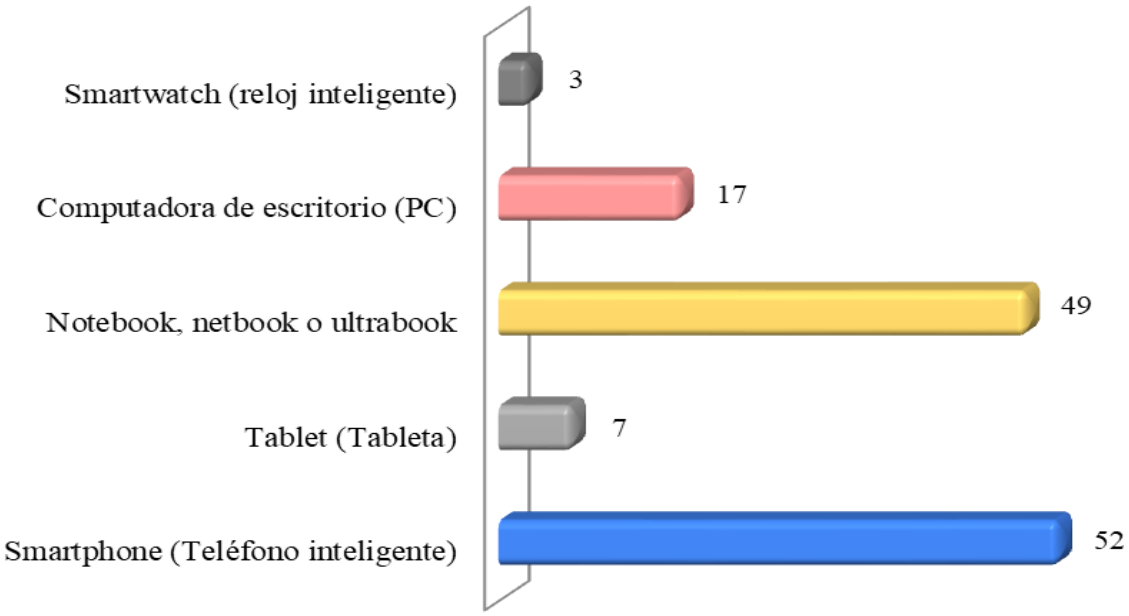
Table 1. *Usual means of internet connection for FACSO-UNA teachers*

Description	*Percentage (%)*
Via Wi-Fi	36%
Via Wi-Fi, Via mobile data on your cell phone	38%
Through mobile data on your cell phone	16%
Fiber optic (cable)	2%
Via Wi-Fi, Via mobile data on your cell phone, Fiber optic (cable)	5%
Via Wi-Fi, Fiber optic (cable)	2%
Total	**100%**

Note: Percentages represent the frequency of use of each Internet connection method.

Regarding the survey on the type of devices used by teachers to access the Internet, the results were as follows: 52 teachers own a smartphone, and 49 stated that they own a notebook, netbook or ultrabook; a smaller number mentioned that they access the Internet through a desktop computer (17), a tablet (7) or a smartwatch (3) as shown in Figure 1.

Figure 1. *Devices to which FACSO-UNA teachers have access*

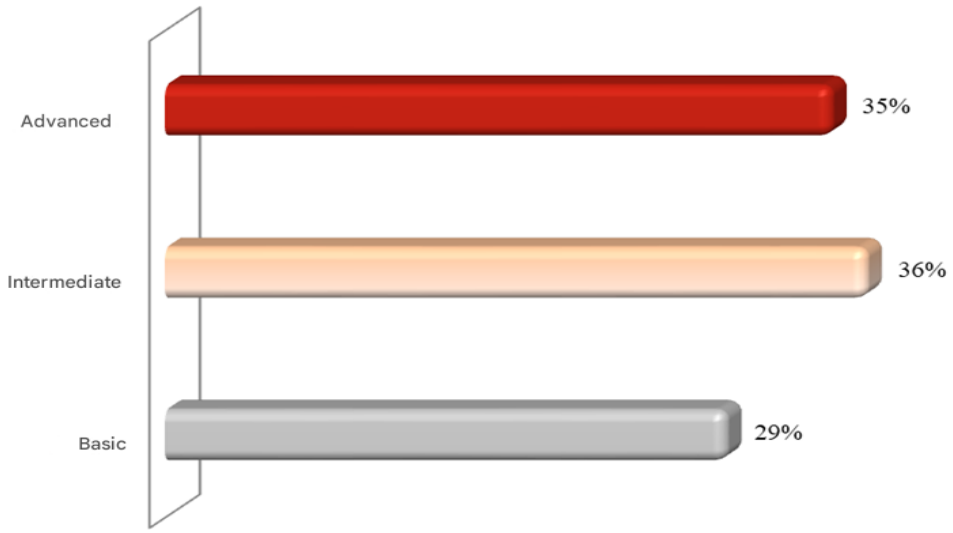


Digital skills

First, we surveyed teachers' perceptions of their command of information and communication technologies, and found that just over half of teachers (55%) felt they had an intermediate command of ICTs, while 29% and 15% considered they had a basic and advanced command, respectively.

Figure 2 shows the perception of their mastery of browsing, searching, and filtering data, information, and digital content. Only 35% reported advanced proficiency in this variable.

Figure 2. *Perception of domain navigation, search and filtering of data, information and digital content*

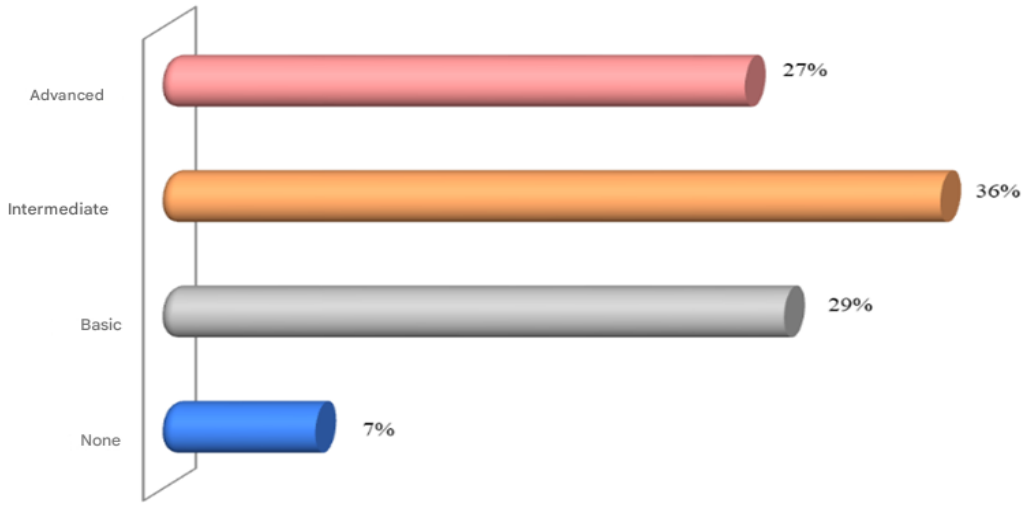


Regarding the perception of mastery for data, information, and digital content management, almost half of teachers perceived their level of mastery as intermediate (47%), and 6% expressed that their mastery is nonexistent; only 22% stated they had an advanced level. Furthermore, regarding interaction through digital technologies, 53% of teachers perceive themselves at an intermediate level, 20% at a basic level for communication and collaboration through digital tools, and 25% at an advanced level. Finally, regarding sharing (documents, images) through digital technologies, there is little variation between those who perceive they have intermediate, advanced, and basic mastery, since at the intermediate level, 36% and 31%, respectively, perceive themselves as advanced and nonexistent.

Focusing on teachers' perceptions of mastery of collaborative processes and the joint development of resources and knowledge, 29% perceive themselves to have advanced mastery, and more than 60% perceive themselves to have intermediate or basic mastery. Regarding the development of digital content (saving documents, creating audio albums), only 22% of respondents perceive themselves to have advanced mastery of these tools, 38% intermediate, and 40% basic. Regarding whether they integrate and rework digital content, only 5% of respondents responded at an advanced level, 36% intermediate, 42% basic, and 16% none.

Another interesting point in Figure 3 concerns citizen participation through digital technologies: only 27% of teachers perceive themselves to have an advanced command of citizen participation (online procedures and purchases).

Figure 3. *Perception of domain of citizen participation through digital technologies*



Finally, regarding their perception of mastery over the protection of digital devices and content, 58% of teachers perceived themselves as having a basic or no level of proficiency, and only 2% perceived themselves as having an advanced level. Meanwhile, regarding the protection of personal data and privacy, 58% of teachers perceived themselves as having a basic or no level of proficiency, and only 7% perceived themselves as having an advanced level.

Virtual tools used by teachers

Here, teachers had the option to choose more than one answer. The results are presented in Table 2, from highest to lowest, and it can be seen that almost all (52 out of 55) teachers use Google Meet to conduct virtual meetings or classes, followed by Zoom (82%), and in third place (51%) Microsoft Teams. Another digital tool widely used by teachers is the social network YouTube, with 56%.

Table 2. *Virtual tools used according to FACSO-UNA teachers*

Technological tools	Amount	Percentage (%)
Meet	52	95%
Zoom	45	82%
YouTube	31	56%
Microsoft Teams	28	51%
Blog	7	13%
Goto Webinar	2	4%
None	2	4%

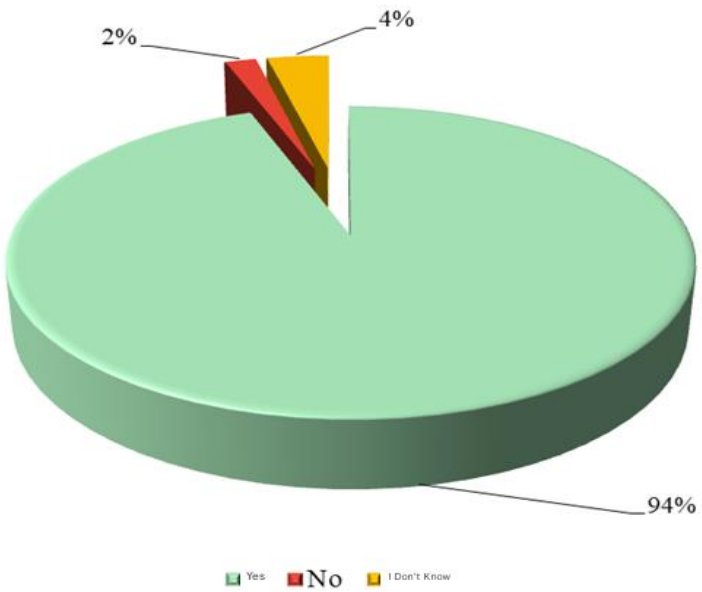
Table 3 shows the main reasons for using virtual tools. It shows that FACSO teachers use digital tools primarily for meetings (95%), asynchronous classes (75%), and synchronous classes (73%). Two out of three teachers (67%) use digital tools to share documents and 36% use them to share explanatory links.

Table 3. *Main reasons for using virtual tools*

Main reasons for use	Amount	Percentage (%)
Meetings	52	95%
Asynchronous classes	41	75%
Synchronous classes	40	73%
Share documents	37	67%
Share explanatory links	20	36%
None	0	0%

Finally, when teachers were asked whether the pandemic helped them adopt new virtual tools in the teaching-learning process, 94% indicated this (Figure 4).

Figure 4. *Use of new virtual tools in the classroom during the pandemic*



Teaching skills

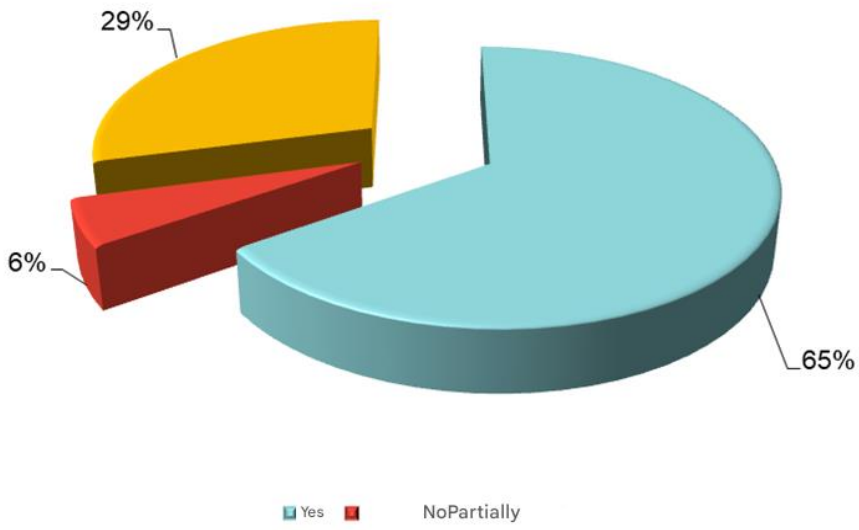
The results related to teacher skills show that 67% of teachers perceive that they possess "information, media, and technology skills," while 62% possess "learning and innovation skills" and other skills to a lesser extent.

Table 5. *Digital skills of FACSO-UNA teachers*

Skills in the digital community	Amount	Percentage (%)
Skills related to information, media and technology	37	67%
Learning and innovation skills	34	62%
Digital empathy (the ability to see the world as the person you are interacting with digitally)	23	42%
Life and Career Skills	18	33%
None	1	2%

Figure 5 shows the results indicated by teachers in relation to the use of digital skills as pedagogical strategies in class, resulting in that practically 2 out of 3 teachers (65%) use them.

Figure 5. *Inclusion of digital skills as pedagogical strategies*



DISCUSSION

Based on the results, which are grouped into three axes: i) Digital skills, which consists of the safe use of information technologies for work, leisure and communication, ii) virtual tools, which consists of the use of programs, platforms or applications for education, leisure or work-related issues, and 3) teaching skills, understood as a set of resources that allow training to be carried out by developing quality classes to achieve pedagogical objectives.

First, we surveyed teachers' self-perceptions of ICT proficiency, and found that just over half of teachers (55%) felt they had an intermediate command of ICTs, while 29% and 15% considered themselves to have a basic and advanced command, respectively. However, when the questions were more specific, the distribution changed.

The 55% intermediate level drops to 36% when asked about browsing, searching, and filtering

digital content, and the distribution between advanced, intermediate, and basic is more similar (35%, 36%, and 29%, respectively).

Figure 3 shows the differences: 20% reported having a basic level of digital interaction, but when it comes to exchanging documents and managing data, this gap widens, with 6% perceiving themselves as having no data and information management skills.

Regarding more complex network-based actions, such as collaborative processes, joint knowledge construction through ICT, and the development and integration of digital content, the percentages at the advanced level range from 29% to 5%. This may provide clues for ongoing teacher training.

Regarding the difficulties encountered in digital skills, the most significant result in digital literacy refers to basic or nonexistent ICT skills; however, 55% assess themselves as having an intermediate command of these skills. Regarding searching and filtering data, information, and digital content, no major difficulties were encountered. Teachers rated their skills first as intermediate, and then another group as advanced and a similar number as basic. There was little variation in the results here; that is, the three levels have almost the same number of teachers, which means they do not have a unified command of technology in the field of teaching.

Regarding communication and collaboration skills through digital tools, the most significant difficulties are encountered in sharing large files and extensive documents through digital technologies. Finally, the greatest difficulty is in the area of collaborative processes and the joint development of resources. A significant number of teachers stated that they possess basic skills, while others did not. Considering this polarization in teacher training between basic, intermediate, and advanced levels, this can lead to differentiated training conditions. In the area of citizen participation, limitations on online procedures such as paying fines, banking, or online shopping still leave 36% of teachers who consider themselves to have basic or no skills.

While communication and collaboration skills are important, it is observed that 16% of teachers have no skill in creating and reworking digital content, which consists of recording videos and audios, editing them, creating flyers, filters, and images—that is, reworking digital content that can serve as teaching resources for the classroom. This influences the teaching-learning process because, if teachers don't know how, they won't use any collaborative digital content creation in class.

A key point concerns digital security competencies. Here, it is also clear that there is difficulty protecting devices, personal data and privacy, and digital content. Risks and threats, such as viruses, encrypted passwords, cyberattacks, scams, and other electronic intrusions are current realities. On this point, teachers expressed that most of them have basic competencies. As it can be seen in Chart 6, the percentage of advanced levels ranges from 2% to 7%.

Virtual tools

It was identified that the most used tools by teachers were, firstly, Meet (95%) and Zoom (82%), a significant percentage also YouTube (56%). These aforementioned tools are used primarily for the purpose of participating in meetings (95%), and to a lesser extent for asynchronous and synchronous classes or to share content.

When asked about the adoption of new tools during the pandemic, 94% of teachers mentioned that the crisis has influenced the adoption of new virtual tools in the teaching-learning process.

Teaching skills

According to the results obtained, the categories identified regarding teaching skills first refer to skills related to access to information, media, and technology, and second, to learning and innovation skills. These two points are favorable to promoting their use in the teaching context. Thus, 65% mentioned that they use digital tools for pedagogical strategies, and another 29% that they do so partially. This situation has a double connotation: teachers must be prepared, but students must also be able to absorb this reality. Here, the important challenge for teachers lies in access to equipment and connectivity and their appropriate, timely, innovative, and equitable use as a real and achievable pedagogical strategy, that is, one that does not lose the meaning of the development of the academic program, diverting attention from the tool itself, which is merely a means of communication.

CONCLUSIONS

Considering the suggested objectives of understanding the set of digital resources that enable teachers to develop quality training to achieve pedagogical objectives related to learning, it can be affirmed that most teachers possess skills related to information, media, and technology, as well as skills for the teaching-learning process and innovation. Furthermore, a significant percentage includes the use of ICT in their pedagogical strategies and perceives themselves to have moderate competencies for teaching today.

In general, the majority perceive that they have an intermediate level of basic skills and a lower group that has advanced mastery of digital skills, although it represents a smaller number, there was a variation from 2% to 7% who believe they have no competence, which is a limitation when teaching classes, since each teacher, depending on the subject they teach, has large groups of students, whose learning opportunities would decrease considerably in relation to others.

Regarding the consultations on the safe use of information society technologies for work, leisure, and communication, it was concluded that very little is known and applied, which could threaten the use of technology in the assessment process. This calls for an institutional commitment to improve digital security for all teachers who use digital tools in the classroom.

Regarding digital literacy in the areas of ICT, navigation, data search and filtering, information management, and digital content, their skills are assessed at an intermediate level, which is interesting because it indicates significant progress in this field for today's globalized society. The challenge lies in increasing skills for collaboration and knowledge construction through digital tools, such as video conferencing, social media, large video and image processing, and joint content editing. Most teachers were assessed with intermediate skills, while another representative group had basic skills. Some of them even mentioned having no skills in this area.

Currently, almost all employers require technology skills; they assume that professionals or students already have a grasp of the digital community. Failure to incorporate these practices into the training process would leave students behind in the labor market.

Finally, teacher training in the digital field is vital and it can be achieved through short courses, in-service training, or learning circles, providing teachers with a range of opportunities that fit their time availability. The analysis invites to consider three important points: the institutional capacity to provide connectivity and cutting-edge infrastructure with the virtual tools available to acquire skills in a globalized world; timely teacher training as a learning facilitator; and the conditions provided to students in a new digital social context, where they will be or are immersed from their current reality.

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