Perspectives on Digital Competencies in University: What's Ahead for Education?

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ABSTRACT

Digital competencies were part of online education and now when returning to the classroom what will happen or what we expect for the future in education. The objective is to analyze and describe the perspectives of the level of digital competence, the non-experimental descriptive quantitative methodology is used with 1987 university students. Resulting that the instrument adapted to the Peruvian version is adequate according to statistics such as Cronbach's Alpha. Concluding that the digital competences improved the academic quality and have a good level. Society is waiting for the next step to know what is presented to us in education.

1. Introducción

The boom of digital competences calmed down (post-covid 19) after having the enormous need to have the first quality technology for digital education and although the digital competence is part of the XXI century came well in advance to improve the use of ICT (Information and Communication Technology) with the help of the teacher and to equip all institutions (educational, work, trade, etc.) with the sole purpose of improving the quality of teaching (Miço & Cungu, 2022), because at first there was not the acceptability of the students and even more there was the rejection of the teachers towards the implementation of virtuality, but now both groups have adapted and are part of it to integrate the teaching-learning, whose influence on digital competencies is positive by the use of various platforms whose phenomenon increased upwardly for many digitization companies that managed to identify main approaches to digital competencies (digital entrepreneurship, digital ecosystems, digital business models, business platforms and co-creation platforms for entrepreneurship). Digital competencies are key piece for society and even more so in higher education, because they are training professionals with digital competencies that will lead to grow the educational enterprise mainly students and future teachers (Silva-Quiroz & Morales-Morgado, 2022).

One of the factors of effectiveness in the development of skills in traditional teaching and e-learning teaching are digital competencies, also one of the four pillars for online learning are technical competencies (Kallas & Pedaste, 2022) and like the different digital competencies these were fundamental for the development of teachers and students in different countries managing to help improve the educational needs in different institutions whose effect was observed in academic performance and student participation during online classes, the adaptation to the different study channels were satisfactory during the pandemic thanks to the motivations and willingness of teachers with feedback (Younas et al., 2022).

The education sector reached all corners of the world, such as native communities (Chile) thanks to the government's proposal as part of the inclusion in the development of student learning (Burgos-Videla et al., 2022) and whose experience has been involving much of society through the media where the student manages to integrate with educational platforms so they receive grades positively by the use of digital skills (López et al., 2022) which has become one of the main requirements to achieve quality learning in all educational institutions despite having difficulties with teachers, students, parents and training companies but achieving categories that influenced education (Delcker & Ifenthaler, 2022).

The importance of digital competencies is due to the categories and the main studies of digital literacy that have been taking place for years and whose results are the clear difference between digital competencies, digital literacy, digital thinking and digital skills that are research topics (Tinmaz et al., 2022), this prominence is due to the strong influence on education that was experienced in Covid-19 era and that teachers had to master to support the learning process of students, either with models and approaches that were supported with ICT (Basilotta-Gómez-Pablos et al., 2022). Digital competencies not only reached the education sector, but all sectors developing even digital economies that enhanced many companies creating requirements in the new employers that must meet even new profiles are evaluated using neural networks (Popoya & Strih, 2022), this application of digital competence in areas such as mathematics is due to the effectiveness in financial decision making achieving suitable employees who perform computer calculations and good quality (Valencia-Marquez et al., 2022).

Digital competencies helped to identify central themes in higher education as the culture of change and action that led to evaluate with results of flexibility, self-help, resilience and interdependence in virtual teaching that guided and strengthened technological capabilities (Bacus et al., 2022), but in countries like Chile the pandemic surprised after a social crisis so that teachers had to make more than an effort to achieve the teaching-learning process in full health emergency, where the idea arose to rethink a new, more flexible educational model with principles of inclusion and equity (Eitel & Ramiréz-Burgos, 2022), because in the XXI century, ICT were only experimented with without knowing their true potential, the Internet that came not only to help in certain areas, but came to never leave and improve the quality of life and society as a whole (Knapik et al., 2022).

With the development of digital competence is validating the scales of students about online learning to design new educational programs for a better future in higher education (Tzafilkou et al., 2022). It was observed that digital competencies are being empowered not only in higher education, but also in

education for children where digital competencies in music are being used because teachers are practicing educational praxis with the ICT approach because in higher education digital competencies in music are already being improvised in the classroom either in person or virtually to combat stress and anxiety in university students (Alburqueque et al., 2022). The causes of digital changes and transformations that occurred because of not having physical exchanges with society (pandemic era) has affected the performance and academic productivity of students although we know that digital competencies is the set of attitudes, skills and abilities that were cultivated to achieve use or manage technologies in the right way for the good of cognitive development in the education sector (Rodríguez-Garcia et al., 2022).

Digital competences nowadays is an educational model that needs a teacher for the future and not only the teacher but the whole society to be able to interact, and to achieve this interaction an education from the initial level with digital competences is needed (Galimullina et al.,2022). These digital competencies and innovations are related to ICT and whose pillar is the daily use to communicate in society with approaches that are achieving significant effects in all universities due to the importance of improving the educational quality of the new generations (Gómez-Poyato et al., 2022). The form of communication is what prevails in digital competencies, so also digital competencies together with ICT help to improve the quality of communication in inclusive education and teaching development (Fernández et al., 2022). The development of computers occurred in this XX century1 whose union of the human being with machines is stronger day by day and the Internet is a basic need of all (Juhász et al., 2022) that has managed to be aware of it to an entire society (Revuelta-Domínguez et al., 2022).

As a result of Covid-19 all educational institutions trained their teachers, students and administrative staff in digital competencies achieving an intermediate level in teachers (Huamán-Romaní et al., 2022), these results were due to different difficulties that teachers had, while students already handled fortuitously digital competencies but they did not know that they were interacting with digital competencies. At the arrival of Covid-19 the trainings were focused on teachers leaving aside the university students, even the level of competence was measured to teachers and the level of digital competence was not measured to university students, and the question arises how the university student managed to navigate, search and filter data and digital content? If before the pandemic they only knew traditional search engines such as Google, Wikipedia, Rincon del Vago, etc., and how is it that now they can evaluate data, get quality information and have the best digital content on the network, without having to pay or buy data, because that was the first difficulty encountered when official data was required from some institutions or organizations or simply had to conduct a physical survey that lasted months and how is it that now the university student manages to manage data, information and digital content, without having to leave home and have everything available.

The university student since he was trained in digital competencies took the lead in some classrooms to support teachers and to interact with their peers, but these remarkable changes in students regarding online communication and collaboration, was the cause of these trainings; because one of the changes was the interaction between peers thanks to digital technologies, where it is possible to share, interact, participate, collaborate and manage with digital technologies. In the creation of digital content, university students only knew Power Point as the only way to use and be able to expose, but once trained they began to use a series of applications to present the respective tasks where they integrate and rework digital content and always respecting the copyright and perform or use paraphrasing to avoid coincidences with other research work. With respect to network security, this is being used to hide some information such as messages, photos, files and others not for being compromising but for security or because it had to be stored in a safe place, that is why security in cell phones or laptops is more continuous in young people because they have a lot of academic information that they do not want to share with their peers because there is healthy competition in obtaining good results (i.e. scores and/or grades), so university students insert or manage security keys in their different technological equipment.

And finally, university students with the learning and practice of digital competences manage to solve academic problems, because with digital technology you can find quality information without any difficulty and this can be used correctly, shortening gaps in digital skills. It is for this reason that the general objective is to analyze and describe the perspectives of the level of digital competence of university students post covid, and then raise the following specific objective of:

- To analyze and describe digital competencies with respect to information and digital literacy; online communication and collaboration, digital content creation, network security and problem solving in post pandemic university students.

2. Development of the investigation

The method developed in this research is of correlational type among its elements, descriptive and predictive cross-sectional with quantitative approach.

The population selected for the research was university students in Peru, who have been in permanent training for two years before the beginning of their classes online and when they required it, these trainings were on exclusive topics of virtual environments and the use of ICT for the proper development of academic activities. The total sample is 1987 university students, of which 62.9% were aged [15 to 20] years, 25.9% from [21 to 25] years, 6.1% from [26 to 30] years and 5.1% from [31 to more] years, showing superiority in the participation of students aged 15 to 20 years. The participating male students represent 45.3% and, in contrast to the female sex, there is a large number of participants with 54.7%, which is the majority. The participating university students are from universities where there is easy access to conduct the online survey, the participation of state universities is 52.8% and private universities 47.2%, the participation of students according to the area of study belonging to the areas of Science (Mathematics, Physics, Chemistry, Biology, etc.) are 11.4%, students from the area of Engineering (Civil, Mining, Systems, Industries, etc.) 41.9%, students from the area of Literature (Law, Administration, Accounting, etc.) 25.5%, students from the area of Social Sciences (Archeology, Social Service, Education, etc.) 4.9% and students from the area of Health (Medicine, Nursing, Psychology, etc.) 16.3%.

The data were collected through the instrument used by Silva-Quiroz y Morales-Morgado, (2022), this instrument is validated and has five dimensions. This instrument through its dimensions analyzes and measures the digital competencies during the pandemic times where they were in permanent interaction and training on digital competencies with the sole purpose of improving the academic situation of each university student.

The instrument used has a total of 21 items divided into five dimensions, dimension one: D1: information and digital literacy which has three items and they are D11: manages to navigate, search and filter data, information and digital content, D12: evaluates data, information and digital content and D13: manages to manage data, information and digital content; dimension two D2: online communication and collaboration which has six items and they are D21: manages to interact through digital technologies, D22: manages to share through digital technologies, D23: manages to participate through digital technologies, D24: collaborates through digital technologies, D25: has a good behavior on the network and D26: manages digital identity (key usage); dimension three D3: digital content creation which has four items and they are D31: succeeds in developing digital content, D32: integrates and reworks digital content, D33: respects copyright and licenses and D34: succeeds in digital programming; dimension four D4: network security which has four items and they are D41: protects his/her devices (passwords, patterns), D42: performs and requests protection of personal data and privacy, D43: manages to protect health and personal well-being when using devices, and D44: protects the environment by recycling devices and to finish dimension five D5: problem solving which has four items and they are D51: seeks information to solve some technical problems, D52: identifies the need and of technological answers, D53: creatively uses digital technology and D54: identifies digital skills gaps.

The instrument used for the research with its five dimensions measures the level of digital competence that the university student has after having had a long teaching-learning process where we will analyze what is intended to be done with digital competencies now that everything is back to normal with traditional classes with chalk or pen and blackboard. The scale used in this instrument is the Likert scale of five points numbered from lowest to highest from 1 to 5, where: 1=strongly disagree, 2=disagree, 3=neither agree nor disagree, 4=agree and 5=totally agree. While in the sociodemographic data, multiple scales are used as appropriate. To measure the level of digital competence we will divide into 4 intervals where the average of [1-2] will be considered in the low competence level, the average of [2-3] will be considered in the fair competence level, the average of [3-4] will be considered in the good competence level and the average of [4-5] will be considered in the high competence level (Huamán-Romaní et al., 2022).

The instrument used has validity and reliability presented in an optimal way with the confirmatory factor analysis [4], so we proceeded to adapt it to a Peruvian context. The first thing that was done was to translate the instrument to be used, hiring two native English language experts and translation specialists to adapt it to the Spanish language and its Peruvian characteristics, then the validity and reliability of the instrument in the Peruvian context was tested with a sample of 64 students from the National Amazonian University of Madre de Dios, resulting in optimal values that are accepted by the scientific community. Then we proceeded to perform the corresponding tests with the 1987 data collected from university students, from which reliable and valid values were obtained as shown in the following statistics: Cronbach's alpha (0.971), item means (3. 781), item variance (1.041), Inter-item covariance (0.643), Inter-item correlation (0.619), ANOVA with test for non-additivity of Turkey (inter-item = 640.081, gl=20, non-additivity = 13.870), Hotelling's T-squared test (=739.847, F=36.638, Sig. =0.000).

The research comes from the motivation and suggestion of a doctoral course in education in the month of September 2022 when we were asked about What will happen now with digital skills? If everything is back to normal in the universities of Peru and there are universities that are authorized to provide classes in person and/or online and it is where these digital skills were needed for the proper development of academic activities and there are no or very few universities authorized to teach hybrid classes (face-to-face and online at the same time), then to answer the question, we must first know what level of digital skills are university students? Thanks to this question, a measurement instrument was first selected from eight articles found in the Scopus database, which was adapted to the Peruvian context.

Next, the population to be investigated was selected, finding as a sample the university students by convenience due to the difficulty of carrying out the survey in different universities in the Apurimac region (3 universities), the Ayacucho region (2 universities), the Madre de Dios region (2 universities), the Piura region (5 universities) and the province of Lima (5 universities). The surveys were conducted online with the use of the Google form which facilitated the collection of data from all respondents, university students participating in the survey had to fill out with personal Gmail or institutional mail, the form was also configured to respond only once and then be shared with friends, teachers and university students for their respective filling, It should be noted that before participating in the survey they were informed whether they wished to participate or not because it is a non-mandatory survey, i.e. it is a voluntary survey and they also had to authorize the use of their answers to make a final report and be published as an article at the end of the research and at all times the privacy and confidentiality of the answers was maintained.

Finally, the survey database was downloaded from the Google form for its respective review if there were incomplete data, after the review and there being no incomplete data in the Excel format, this is adapted to the SPSS format which is the statistical program that will be used in this research with version 25. The data analysis performed in the SPSS program are descriptive, such as the mean (M), standard deviation (SD), variance coefficient, asymmetry and kurtosis. Parametric tests, inter-item correlations, ANOVAS, Tukey's tests, Cronbach's alpha and non-linearity were then performed.

3. Results

Table 1 shows the descriptive results obtained in each dimension and in each element, in which high values are shown. All the averages are above 3.5 points, which indicates that they are higher than expected. Table 1 also shows a negative asymmetry indicating that it has the highest and optimal values. Dimension D4: network security, is the dimension with the highest score, that is, university students master network security almost perfectly, indicating that university students use digital skills to install programs or applications to protect their technological equipment from any threat such as viruses or theft of their equipment or personal identity, as well as manage to maintain their privacy safely to avoid future problems, are always alert to any situation of computer threat and protect both their health and emotional well-being and also protect the environment by recycling devices that no longer work. And the lowest scoring but important dimension is dimension D1: information and digital literacy where the student now (also before) manages to navigate, unlike before receiving the digital trainings if he managed to navigate and search for information but now he does it in a better way the search using

Boolean codes, tricks or tips to search for quality information, from recognized and more prestigious data dabs, not only manages now to make presentations in Power Point, now performs academic work more surprising and with higher quality in images, data, content and even with live animations for the sole purpose of presenting a good academic work.

Table 1. Distribution of Dimensions

	Total mean	Mean	Standard deviation	Variance	Asymmetry	Kurtosis
D11		3,629	1,0135	1,027	-,712	,240
D12	3.634	3,638	,9607	,923	-,623	,180
D13		3,646	,9885	,977	-,663	,239
D21		3,771	1,0707	1,146	-,799	,144
D22		3,799	1,0407	1,083	-,767	,114
D23	3.7678	3,742	1,0224	1,045	-,682	,029
D24		3,682	1,0328	1,067	-,613	-,139
D25		3,844	1,0442	1,090	-,758	,008
D26		3,769	1,0665	1,137	-,697	-,113
D31		3,680	1,0284	1,058	-,656	,055
D32	3.6813	3,631	,9921	,984	-,558	-,017
D33		3,865	1,0174	1,035	-,807	,240
D34		3,549	1,0832	1,173	-,552	-,244
D41		4,031	1,0395	1,081	-1,131	,936
D42	3.905	3,921	1,0214	1,043	-,927	,526
D43		3,895	1,0111	1,022	-,872	,437
D44		3,773	1,0427	1,087	-,779	,223
D51		3,955	1,0085	1,017	-1,056	,928
D52	3.886	3,854	,9619	,925	-,830	,526
D53		3,915	,9817	,964	-,924	,670
D54		3,821	,9823	,965	-,749	,348

Figure 1 shows the distribution of dimension 1: information and digital literacy, where it is observed that the levels of digital competence most used by university students is to manage data, information and digital content (3.646) for their academic activities and now that they have returned to face-to-face education, they will continue to use it for their academic work, but after using these digital competences they will have to think about how to exploit this knowledge for other areas. Without underestimating also, the other items, when used together they manage to enrich the digital competences, the university students in the three items managed to answer in a great percentage the alternative in which they "agree" with each of the digital competences indicated, that is 43.6 %, 44.7 % and 43.1 % respectively in each item.

Figure 1. Histogram of the information and digital literacy dimension.

Figure 2 shows the distribution of dimension 2: online communication and collaboration, where it is observed that the levels of digital competence most practiced by university students is to achieve good online behavior (3,844), that is to say that they did not use social networks, e-mails or other means of communication to disrespect each other or other people, they did not harm their classmates psychologically or morally, even though they knew each other's access classes to their platforms and/or

virtual classrooms. It is for this reason that the students were able to respond in the vast majority of the items the alternative "agree" in 39.5%, 40.0%, 40.8%, 40.4%, 37.7% and 37.3% respectively in each item of the dimension.

***Figure 2**. Histogram of the online communication and collaboration dimension.*

	fi	%
1,0	90	4.5
2,0	153	7.7
3,0	419	21.1
4,0	785	39.5
5,0	540	27.2
Total	1987	100.0

	fi	%
1,0	69	3.5
2,0	162	8.2
3,0	415	20.9
4,0	794	40.0
5,0	547	27.5
Total	1987	100.0

	fi	%
1,0	64	3.2
2,0	173	8.7
3,0	457	23.0
4,0	810	40.8
5,0	483	24.3
Total	1987	100.0

	fi	%
1,0	65	3.3
2,0	205	10.3
3,0	470	23.7
4,0	803	40.4
5,0	444	22.3
Total	1987	100.0

	fi	%
1,0	59	3.0
2,0	168	8.5
3,0	404	20.3
4,0	749	37.7
5,0	607	30.5
Total	1987	100.0

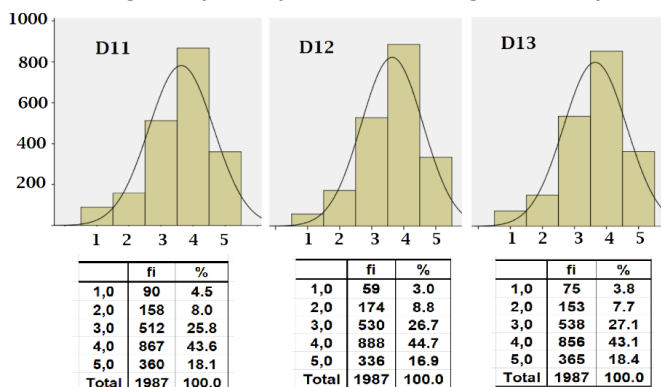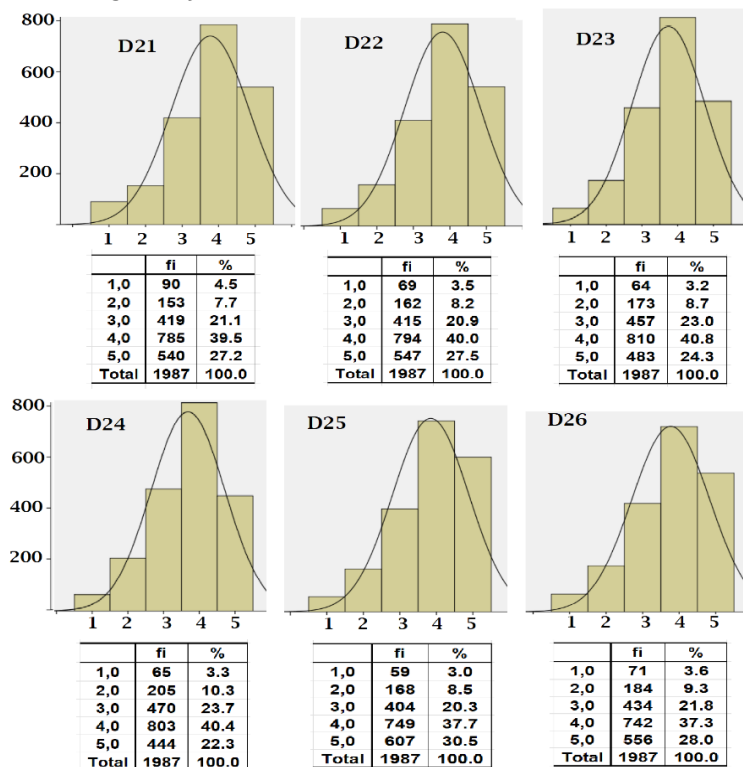|	fi	%
1,0	71	3.6
2,0	184	9.3
3,0	434	21.8
4,0	742	37.3
5,0	556	28.0
Total	1987	100.0

Figure 3 shows the distribution of dimension 3: online communication and collaboration, where it is observed that the levels of digital competence most practiced in university students is to respect the author's rights and licenses, i.e. it was very easy to find information of academic works in which they could also easily be reworked by changing titles, a little of the introductory part, images, The same thing happened when a program was used, the license was mentioned and if it was not open access then it was not used. This is how university students began to practice and master the "paraphrasing" which was present in all academic works. It is for this reason that university students were able to respond in their great majority in the alternative mentioning "agree" in 40.4%, 41.0%, 39.6% and 37.3% respectively in each item of the dimension.

Figure 3 shows the distribution of dimension 4: network security, where it is observed that the levels of digital competence most practiced by university students is to protect their devices, they do so by installing security applications such as passwords, patterns and others (4,031) that can be used in private, especially cell phones, because these now contain bank accounts, contain applications for transferring money or other personal things. They also keep in private or as it is called "safely" many personal and group work files that they do not want to share with other classmates. It is for this reason that university students were able to respond "in agreement" in 39.1%, 39.9% and 40.0% in items two to four, but there is item 1 where they responded "totally agree" in item 1 of the respective dimension.

Figure 3. Histogram of the network security dimension.

	fi	%
1,0	79	4.0
2,0	81	4.1
3,0	326	16.4
4,0	714	35.9
5,0	787	39.6
Total	1987	100.0

	fi	%
1,0	68	3.4
2,0	110	5.5
3,0	382	19.2
4,0	777	39.1
5,0	650	32.7
Total	1987	100.0

	fi	%
1,0	63	3.2
2,0	118	5.9
3,0	398	20.0
4,0	793	39.9
5,0	615	31.0
Total	1987	100.0

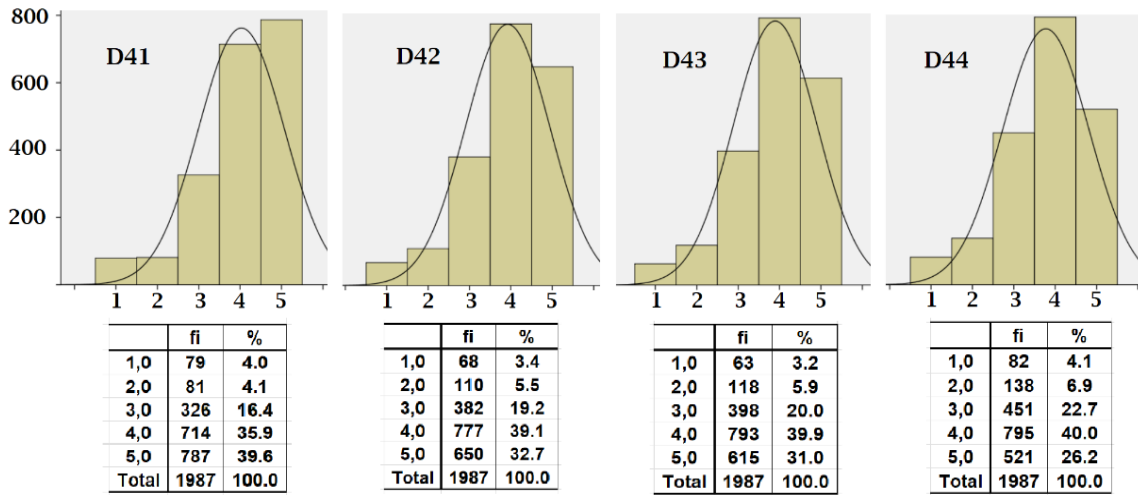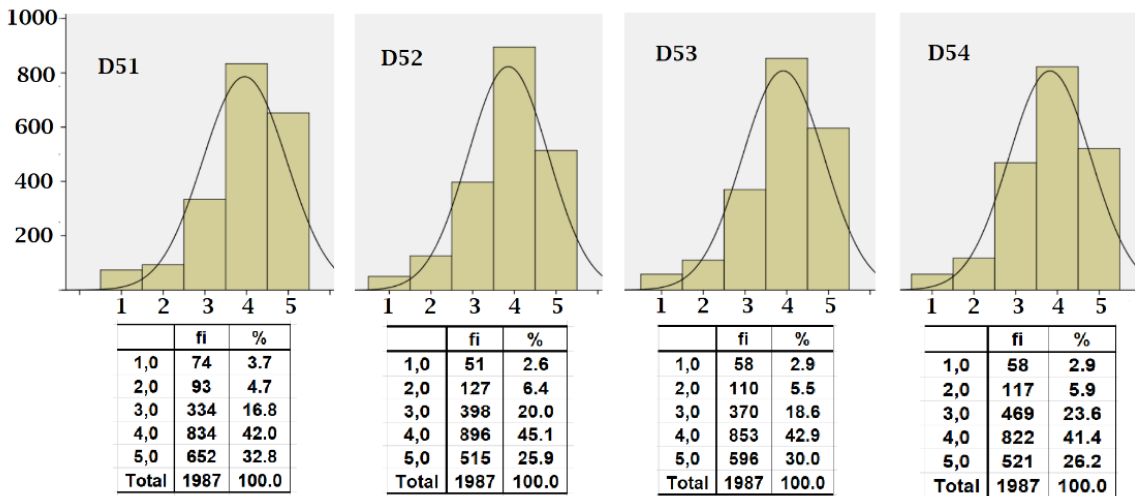|	fi	%
1,0	82	4.1
2,0	138	6.9
3,0	451	22.7
4,0	795	40.0
5,0	521	26.2
Total	1987	100.0

Figure 4 shows the distribution of dimension 5: problem solving, where it is observed that the levels of digital competence most practiced by university students is to search for information to solve some technical problems (3.955), that is, if they have a problem with an application or even with real problems, the university student searches or consults a solution in the search engine, where there are orientations to be able to solve it. It is for this reason that the university students were able to respond in their great majority to the alternative "agree" in 42.0%, 45.1%, 42.9% and 41.4% respectively of dimension five.

Figure 4. Histogram of the problem-solving dimension.

	fi	%
1,0	74	3.7
2,0	93	4.7
3,0	334	16.8
4,0	834	42.0
5,0	652	32.8
Total	1987	100.0

	fi	%
1,0	51	2.6
2,0	127	6.4
3,0	398	20.0
4,0	896	45.1
5,0	515	25.9
Total	1987	100.0

	fi	%
1,0	58	2.9
2,0	110	5.5
3,0	370	18.6
4,0	853	42.9
5,0	596	30.0
Total	1987	100.0

	fi	%
1,0	58	2.9
2,0	117	5.9
3,0	469	23.6
4,0	822	41.4
5,0	521	26.2
Total	1987	100.0

In the research, it is proposed to describe the correlation between elements, the results of which are shown in Table 2, where it has significant values and there is a positive correlation between elements of the research.

Table 2. Correlation between elements of digital competencies

	D11	D12	D13	D21	D22	D23	D24	D25	D26	D31	D32	D33	D34	D41	D42	D43	D44	D51	D52	D53	D54
D11		0,795	0,807	0,634	0,598	0,594	0,575	0,593	0,582	0,595	0,585	0,585	0,485	0,558	0,549	0,525	0,481	0,589	0,564	0,589	0,569
D12			0,827	0,618	0,618	0,620	0,604	0,605	0,592	0,585	0,591	0,593	0,484	0,544	0,567	0,539	0,472	0,576	0,578	0,596	0,581
D13				0,617	0,600	0,618	0,607	0,609	0,599	0,596	0,585	0,593	0,499	0,534	0,556	0,539	0,484	0,567	0,574	0,591	0,582
D21					0,834	0,811	0,750	0,757	0,743	0,612	0,598	0,624	0,476	0,635	0,621	0,590	0,523	0,647	0,621	0,642	0,589
D22						0,806	0,785	0,760	0,757	0,577	0,563	0,611	0,473	0,606	0,612	0,584	0,515	0,635	0,632	0,636	0,604
D23							0,810	0,766	0,742	0,619	0,602	0,601	0,511	0,589	0,593	0,572	0,517	0,606	0,619	0,621	0,602
D24								0,731	0,740	0,622	0,622	0,576	0,520	0,549	0,564	0,543	0,496	0,587	0,597	0,588	0,572
D25									0,766	0,600	0,592	0,648	0,502	0,641	0,637	0,619	0,539	0,633	0,623	0,644	0,600
D26										0,582	0,618	0,621	0,505	0,603	0,611	0,563	0,507	0,608	0,603	0,606	0,593
D31											0,792	0,692	0,672	0,567	0,577	0,563	0,535	0,614	0,621	0,608	0,625
D32												0,677	0,694	0,531	0,563	0,553	0,538	0,586	0,622	0,616	0,633
D33													0,622	0,655	0,663	0,590	0,644	0,650	0,644	0,652	0,631
D34														0,487	0,526	0,526	0,569	0,517	0,575	0,545	0,606
D41															0,812	0,740	0,641	0,714	0,660	0,679	0,632
D42																0,765	0,690	0,691	0,691	0,691	0,653
D43																	0,753	0,673	0,670	0,672	0,656
D44																		0,614	0,634	0,608	0,651
D51																			0,800	0,795	0,723
D52																				0,797	0,807
D53																					0,795
D54																					

4. Conclusion

The digital skills in times of pandemic which is running out was of great help (with respect to ICT) and importance to achieve communicate and interact with society especially in education and work where it had to take policy measures and legislation for its implementation (Miço & Cungu, 2022) and continue with education at all levels, it is for this reason that students resorted to improve their knowledge of digital skills through the trainings they received. These trainings helped students during online classes, but the question now is what will happen after returning to the classroom.

Students as teachers, thanks to digital competencies, were able to have a better attitude towards online collaboration and communication as well as network security, but there was also less attitude towards digital literacy and information, problem solving and creation of digital pages (Silva-Quiroz & Morales-Morgado, 2022) because they did not have economic resources or sufficient materials to warrant the full use of these dimensions, however they tried to do their best to practice these dimensions with the help of teachers and students who did have access.

The different digital competencies should be evaluated to achieve technological advances, knowledge and learning skills for the development of education and social environments (Kallas & Pedaste, 2022) thinking about a digitized future and not stop practicing these digital competencies to continue linking online learning as satisfactory for success and good academic performance during the studies of any educational level (Younas et al., 2022). In the school development, categories are perceived that managed to have: teaching, namely, organization, feedback, personal resources, collaboration and infrastructure which motivated to succeed as a student and as a teacher (Delcker & Ifenthaler, 2022) which should be practiced in face-to-face teaching, otherwise we will have to adapt to new methodologies that change this type of teaching.

The digital competencies are focused on reflection, self-assessment and analysis that teachers used to develop the learning process of students despite the existence of a low or medium-low level of digital skills so that should be customized training to teachers according to the level of knowledge (Basilotta-Gómez-Pablos et al., 2022), ie this level of digital competence was after the first year so that in the following year these digital skills were improved (Huamán-Romaní et al., 2022). It was possible to use applications such as neural networks to evaluate new employees on the knowledge of digital skills which will help in the digital economy of any company and this will be profiled to have a quality human capital (Popova & Strih, 2022), because employees are needed to contribute with their digital knowledge to achieve better income to the company and have first class results and more than anything to have results that help to make good decisions for the good of all employees as these will be the direct beneficiaries (Valencia-Márquez et al., 2022).

The digital competencies were focused on students with computer experience and had the least rejection at the beginning of the use of these, and then be part of the digital competence and want to learn more of these and apply in online education and hybrid education (Tzafilkou et al., 2022), but the

question is, how will it be applied in face-to-face education? Since everything will go back to the way it was before, will teachers still continue to request virtual work or will they go back to requesting in folder or printed.

There are researches with positive effects of music in students of all educational levels with the use of musical digital competences which should be suggested or increased in musical workshops at all educational levels to maintain active learning and psychological excitement of students (Alburqueque et al., 2022), this kind of applications surprised the university education in workshops and online presentations because the objective of digital competences is to moderate the relationship of education with hybrid education to maintain active digital competences of students in all branches of science and interacting with the same society. There is also evidence of digital competences in the application of languages whose results were successful in terms of coherence and cohesion, content, vocabulary adequacy and richness as well as grammatical correctness (Mykytiuk et al., 2023).

This is how digital competencies came to impose themselves and interact with society and even more to interact, collaborate and have the way to communicate among teachers to perform all kinds of academic activities despite having an intermediate level of training in digital competencies (Rodríguez-García et al., 2022) before the trainings and with the passage of time to have all the technology at hand. Through the training of digital competencies, teachers also managed to develop strategies of ways to evaluate and how to develop the digital competencies of students (Fernández et al., 2022) since digital literacy was and will be an urgent social need for all types of application and especially in education for its advantages and characteristics (Zainab et al., 2023).

Digital competencies, although it is true that they arrived at a time to safeguard education because it was not known for sure how long the Covid-19 pandemic would last and there were no other means to cover and carry out academic activities as others that society required, but now that everything is returning to normal and classes will be face-to-face, what will happen to digital competencies? We will have to wait for time to pass to see what is coming and see what advances we will have especially for education in its different educational levels, for that reason it would be very important to investigate what we want to have in the very near future for education.

And finally, we have that the digital competences in the university students achieved a score of an average of 3.7748 (3.634, 3.7678, 3.6813, 3.905 and 3.886) points, which places the digital competences in the interval [3-4] which means that the competences of the university students are in the level of good. In addition, there is a positively significant correlation of elements.

With respect to digital competencies on information and digital literacy, university students strengthened their knowledge to the maximum and were able to navigate easily in high-impact databases, filter quality information, and select information and data for quality academic work.

And nothing better than thanks to digital competencies they were able to work in groups maintaining communication and collaboration online, because there were no more excuses for being late or had to do other things, because they could connect to the meeting from anywhere, they were and to participate in academic meetings and even in family and friend's meetings, good communication was maintained between all aspects to achieve more than anything a good attitude towards their academic work.

While in the creation of content they managed to improve their digital content while maintaining respect for the authorship and licensing of the work or programs used, students who are not in the areas of programming or systems engineering failed to program due to lack of training and technological tools.

The university students strengthened their knowledge about network security, always keeping a password or pattern on all their devices so that they do not manage to steal academic and personal information since they do not have bank accounts but they do motivate their parents to place passwords and patterns to their family devices.

University students before the pandemic only used digital skills in a smaller percentage to perform a search on the Google search engine; but after the training and online classes they consult the internet and different search engines for any problematic situation or reference, because any answer and of different quality can be found on the internet. It is for that reason that in problem solving university students are more successful because they solve their problems with the help of digital competences.

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