

Attitudes towards digital citizenship in university students from southern Sonora, Mexico

Actitudes hacia la ciudadanía digital en estudiantes universitarios del sur de Sonora, México

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ABSTRACT

Keywords

Digital citizenship;
university students;
positive paradigms;
digital technologies;
university education

This study analyzed the attitudes of university students towards digital citizenship to improve practices when using technologies. The methodological design was mixed with a qualitative phenomenological approach and the quantitative part was correlational-causal with a non-experimental cross-sectional design. 84 students participated, of which 45 were studying engineering and 39 undergraduates. To obtain data, a semi-structured survey was applied individually to 72 participants, a focus group of three key informants and nine in an interview. The findings show that the process of appropriation of digital citizenship in university students still has a long way to go, given the limited acquisition of behaviors inherent to the proper exercise of digital citizenship. In this sense, the results are expressed in two aspects; on the one hand, the positive attitude where technology is expressed as an important part of society and its development, on the other hand, there is the negative attitude that perceives technology as a mere expendable tool. Finally, it is concluded that students must still improve the use of technologies since this us

RESUMEN

Palabras clave

Ciudadanía digital;
universitarios;
paradigmas positivos;
tecnologías digitales;
educación universitaria

Este estudio analizó las actitudes de estudiantes universitarios hacia la ciudadanía digital para mejorar las prácticas al utilizar las tecnologías. El diseño metodológico fue mixto, con enfoque cualitativo fenomenológico y cuantitativo correlacional-causal de diseño transversal no experimental. En la investigación participaron 84 estudiantes, 45 de ingeniería y 39 de licenciatura. Para la obtención de datos se utilizó una encuesta semiestructurada aplicada de forma individual a 72 participantes, a un grupo focal de tres informantes clave y a nueve en una entrevista. Los hallazgos muestran que el proceso de apropiación de la ciudadanía digital en los estudiantes universitarios aún tiene un largo camino por recorrer, debido a la escasa adquisición de comportamientos inherentes al buen ejercicio de la ciudadanía digital. En este sentido, los resultados se expresan en dos vertientes: por un lado, la actitud positiva, donde se plantea a la tecnología como parte importante de la sociedad y su desarrollo; por el otro, la actitud negativa que percibe a la tecnología como una herramienta prescindible. Por último, se concluye que los estudiantes aún deben mejorar en el uso de las tecnologías, ya que emplearlas incorrectamente puede perjudicarlos en su proceso de formación.

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INTRODUCTION

In current times, given the growing integration of emerging digital technologies in the teaching-learning processes, which are distinguished by being innovative and contributing to improve traditional analog competencies, university education has benefited from the incorporation of new strategies for teaching and learning, as well as boosting the performance of educational actors. In this sense, competencies in the use of technologies have become fundamental for education (Rendón *et al.*, 2020). One of the most relevant ways to complement the aforementioned knowledge, skills and values (competencies) is digital citizenship, understood as the set of competencies for the use of digital technologies that enable people to understand, navigate, participate, interact and transform themselves and society ethically and safely (Choi *et al.*, 2017; Elcicek *et al.*, 2018; International Society for Technology in Education, ISTE, 2023; Nordin *et al.*, 2016).

With respect to its origin, digital citizenship is one of the changes coming from the new society and is linked to technological competencies; in other words, it represents its evolution, since this citizenship implies the application of digital knowledge and skills in people's daily lives (Rodríguez *et al.*, 2020). It is possible to notice in almost all environments digital information, communication, knowledge and learning technologies (ICTs), also called emerging digital technologies. Among these technologies are the internet of things, digital applications and programs, artificial intelligence, augmented reality, robotics, etc., tools that have been integrated into everyday social and educational life, and have also become essential for communication and interaction in multimodal environments.

In this sense, the United Nations Educational, Scientific and Cultural Organization (Unesco, 2020), based in Canada, has implemented a digital citizenship initiative whose objective is to support democracy and social cohesion through the encouragement and creation of partnerships to promote the competent use of digital technologies. On the same line, the Economic Commission for Latin America and the Caribbean (ECLAC), in 2020 proposed to know the different characteristics that make up digital citizenship in the area, due to its relevance for the future of the region (Claro *et al.*, 2020).

In the Mexican environment, institutions such as the Ministry of Public Education (SEP) and the Ceibal Foundation, have inquired about digital

citizenship through a nationwide study with more than 45 thousand participants, in which they included the different educational actors at the primary level. This sought to generate a report that would allow systematizing the main achievements, strategies and challenges that were envisioned in the inclusion of technology for the benefit of education in the country (Moravec & Doccetti, 2018).

From the disciplinary point of view, this paper is related to digital citizenship in its context (specifically with attitudes) and addresses the problems related to the excessive and permanent use of ICTs among university students. At the same time, the growing interest in digital competence among young people has been identified in recent years, so this work recognizes the need to contribute to the existing knowledge about digital citizenship in the university environment to improve the use of ICTCAD and emerging digital technologies in higher education. Although the problems concerning the implementation of digital citizenship are many, this work was focused on the attitudes of university students towards technologies according to the model of digital citizenship.

For the construction of a digital citizenship model applicable to university students, some dimensions implemented in other research were analyzed, and subsequently a model of our own was composed that integrates the domains: 1) navigating with digital technology; 2) participating and interacting online; 3) transforming oneself and society; 4) understanding digital technology; and 5) healthy digital information ecosystems (AleixandreBenavent *et al.*, 2020; Benedict, 2018; Choi *et al.*, 2017; Cortada, 2018; Elcicek *et al.*, 2018; ISTE, 2023; Nordin *et al.*, 2016; Sharma *et al.*, 2021).

Once the problem and the theoretical models were defined, we started from the research assumption that positive attitudes, where technology is expressed as an important part of society and its development, can improve practices and results with the use of these digital tools. The objective of this study was to understand the attitudes based on the participants' experiences towards digital citizenship. In order to achieve this, a qualitative question was configured to delve deeper into the topic, based on the experiences and meanings of the participants: what are the attitudes of university students towards their digital citizenship?

On the other hand, two quantitative hypotheses were posed as follows:

- H0: There is no significant positive relationship between attitude towards: 1) digital devices, 2) surfing the internet, 3) participating and interacting online, 4) personal and social transformation caused by the internet, 5) being a digital citizen, 6) negative experiences caused by digital life, 7) digital resilience, 8) digital ecosystems and the dependent variable general attitude towards digital citizenship.
- H1: There is a significant positive relationship between attitudes towards: 1) digital devices, 2) surfing the internet, 3) participating and interacting online, 4) personal and social transformation caused by the internet, 5) being a digital citizen, 6) negative experiences caused by digital life, 7) digital resilience, 8) digital ecosystems and the dependent variable general attitude towards digital citizenship.

METHOD

The following is a description of the mixed methodological design which emphasizes the qualitative phenomenological aspect.

The sample of key informants and participants was composed of 84 students, distributed in 50 males (60%) and 34 females (40%) between 18 and 49 years old (the same sample was used for both methodologies). Regarding the degree programs in which they were enrolled, 45 were engineering students (54%) and 39 were undergraduate students (46%). It should be noted that the sampling was non-probabilistic, with voluntary participants, and the inclusion criteria were: to be an undergraduate student in the municipality of Cajeme, Sonora, Mexico, and to use digital devices in their education and daily life. In both designs, it was a requirement for participation to read and accept the informed consent form.

Mixed procedure

The procedure followed for data collection consisted of: 1) requesting permission from the institutions under study to contact key informants; 2) contacting key informants via WhatsApp and in person so that they could select the medium in which they would participate, with the possibility of participating by answering a survey through Google Forms, in an interview via WhatsApp or in a focus group supported by the Google Meet platform;

3) processing and analyzing the information obtained to write the manuscript, taking into account the criteria of methodological rigor and ethical considerations.

Qualitative design

The qualitative part of the study had a phenomenological design with explanatory scope.

Techniques

A semi-structured survey was used, designed from that proposed by Aleixandre Benavent *et al.* (2020), Benedict (2018), Choi *et al.* (2017), Cortada (2018), Elcicek *et al.* (2018), ISTE (2023), Nordin *et al.* (2016) and Sharma *et al.* (2021). Attitudes toward digital citizenship in college students were categorized into five categories related to:

- 1) Navigating with digital technology: set of attitudes needed to navigate the internet safely.
- 2) Participating and interacting online: set of attitudes necessary to participate and interact in social networks in an ethical way, either in political and community issues, or with other people through the internet and its applications.
- 3) Transforming oneself and society through the internet: set of attitudes necessary to acquire knowledge, solve problems and generate online content that helps to transform oneself through the internet in an ethical and safe way.
- 4) Understanding digital technology: having a clear idea of how digital technology works and how it is used, as well as the technical skills needed to do so safely.
- 5) Healthy digital information ecosystems: i.e., healthy internet spaces where digital objects are exchanged and shared between independent actors. These ecosystems are affected by other members of the information ecosystem and include the individual processes of learning and recovery following negative or adverse experiences caused by online information and misinformation, known as digital resilience.

The survey was applied with Google Forms, from which a database with the results was extracted. At the same time, interviews were applied using

Google Meet and WhatsApp, taking record of the conversations with audio recorders, applications on the smartphone that could be used for this purpose, along with word processors. Regarding the ethical aspects considered in the research, an informed consent was prepared for each key informant, where it was established that participation was free and without cost or risk and it was clarified that their participation would be anonymous, in addition, letters of access to the universities and a code were prepared for each participant.

Data analysis

The data analysis process began with the collection and management of the available information, creating metadata and codes for the participants, then information was extracted from the database and the audios were converted into text using essential transcription techniques. After preparing all the text, the vertical processing and coding of the information was done through content analysis, which allowed the creation of a theoretical categorization of the information and the emergence of emerging categories. Finally, a horizontal content analysis was performed to homologate and group categories, as well as to allow the inductive and deductive emergence of results, avoiding any researcher bias.

Quantitative design

The quantitative part was cross-sectional, of a non-experimental correlational-causal type and with an explanatory scope. It is necessary to specify that the qualitative text obtained with the previous method was used to obtain the quantitative data.

Instrument

This was constructed from the qualitative technique and its responses, that is, the variables were elaborated using hermeneutic and heuristic techniques with which aphorisms were sought and found in which attitudes towards the study variables were expressed, with the purpose of showing these expressions within a Likert-type scale of three options constructed according to the following order: (-1) negative attitudes, (0) neutral or indifferent attitudes, and (1) positive attitudes.

From the answers to the research questions, eight observable variables plus two attributive variables were constructed; the latter were race and age, while the observable variables were: 1) attitudes towards digital

devices, 2) attitudes towards surfing the Internet, 3) attitudes towards participating and interacting online, 4) attitudes towards personal and social transformation caused by the Internet, 5) attitudes towards being a digital citizen, 6) attitudes towards negative experiences caused by digital life, 7) attitudes towards digital resilience, 8) attitudes towards digital ecosystems. Finally, an overall attitude towards digital citizenship was calculated by averaging the values of the different attitudes.

Data analysis

The variables constructed were subjected to various statistical analyses. First, descriptive statistics were calculated to get an overview of the data, followed by a normality analysis to establish the type of hypothesis testing to which they should be subjected. Due to the distribution of the data, Spearman's Rho correlations were calculated between all the variables to establish which had significant relationships. Finally, Kruskal Wallis H-tests were performed to establish which variables significantly favored the general attitude toward digital citizenship.

QUALITATIVE RESULTS

Starting from the premise that undergraduate students must have some set of preconceived ideas or paradigms regarding digital devices and their role in education originating from their experiences, the observed attitudes were divided into the following categories: 1) navigating with digital technology, 2) participating and interacting online, 3) transforming themselves and society, 4) understanding digital technology, and 5) healthy digital information ecosystems.

Regarding the key informants, they did not show a clear concept of digital citizenship and only agreed on the dependence on digital technology, as shown below:

Digital citizen, I take it as a concept of living tied to the networks and, in my school activities, I take it as if I cannot look for information in books, since I only do it on the Internet (participant 15).

It means being able to relate, buy or see whoever I want virtually, and this is useful when I need help with certain things I want to buy or make a plan for some work with my schoolmates (participant 30).

Being a digital citizen means having access to the Internet, having a broadband connection, with the necessary equipment to connect, so that

with the Internet I can attend classes and look up what I didn't understand about a subject (participant 61).

I hate [having to be a digital citizen], I prefer to leave the computer aside (participant 73).

With respect to the category of online navigation, the participants agreed on its importance for both the school and everyday context. As can be seen, the participants were in favor of technology as an important part of society and its development:

Internet is a great tool to look for information about some homework or to further reinforce my learning, it influences my school activities a lot since I am always browsing the internet to look for information (participant 3).

Surfing the internet is really a world, there is everything and it helps me a lot with my homework and I can learn new things or reinforce things I have learned (Participant 17).

Surfing is looking for information of any kind, entertainment, homework, it is related to looking for facilities when doing homework (participant 78).

The literature has highlighted the usefulness of online browsing as a means that simplifies the search for information, which facilitates school and daily activities (Rodríguez *et al.*, 2020; Unesco, 2020). In this sense, the informants recognize the Internet as a useful tool for their learning, expressing that they mostly use it in the search for information, as a mechanism to perform their tasks; however, no evidence was found that covers an advanced use in the exploitation of the numerous resources available on the Internet.

Regarding the next category, it was found that key informants do not actively participate in topics of social, political or university interest, some even show aversion to online interaction in the educational topic, but most of them find it important to communicate or interact at a distance:

Participating and interacting online is how I can be part of the virtual community, be one more. For example, in the pandemic it has been very important, since we were able to access online classes (participant 17).

It allows you to interact with people you never thought you would meet and in this time of pandemic it allowed me to make friends at school, even though I had never seen them (participant 30).

It saves time and expenses to go to school (Participant 34).

It means a lot since I also have a social life on the Internet (Participant 57).

In the case of transforming themselves and society, most participants agree that technologies help them to improve by acquiring information and knowledge; however, attitudes seem to be directed more towards a conception of technology as only a dispensable tool. This can be read below:

It transforms us in perhaps opening our minds to what we have within reach, and it happens the same in the school environment, we have a great amount of information at hand that is used for good or bad (participant 2).

It transforms us a lot, since nowadays any child at any age has internet or some device and they are connected every day and that affects them a lot, since they no longer live with other people or play, but to be honest, because of the pandemic it is very important to have internet, since our classes are online and we have to have it. For me it has transformed me a lot to be without the computer even though I am on it all day, in my classes and doing work, although it is my responsibility to do that, there comes a point where you want the online classes to end and go back to face-to-face classes (participant 3).

Internet helps us a lot, as I said, it is one of the main tools, but as a society I feel that we do not take advantage of it one hundred percent for its good use (participant 28).

In relation to the understanding of digital technologies, the participants agree that they are important tools at school, as well as in everyday life.

For me they are everything, since I learn from them, I do research, I get information, I do laboratory practices, I test through simulators. They are fundamental in my studies (participant 2).

They are very important in my daily life and very fundamental in school activities (participant 17).

It's how we communicate (participant 35).

QUANTITATIVE RESULTS

Based on the objective of understanding attitudes towards digital citizenship and the hypotheses of whether there is a significant positive relationship between attitudes towards some of the items, the following results were obtained: the median of the items is mostly one and only differs in four cases, indicating a tendency towards positive attitudes towards digital citizenship; also, the asymmetry and kurtosis obtained allow us to assume that by obtaining a larger sample the results will tend to normalize (see Table 1).

Table 1. Descriptive statistics on attitudes towards digital citizenship

	R	Mín.	Máx.	M	Me	S	Asymmetry		Kurtosis	
Attitudes towards digital devices	2	-1	1	0.96	1	0.24	-7.31	0.26	55.60	0.52
Attitudes towards surfing the internet	2	-1	1	0.90	1	0.37	-4.14	0.26	17.39	0.52
Attitudes towards participating and interacting online	2	-1	1	0.60	1	0.78	-1.51	0.26	0.40	0.52
Attitudes towards the personal and social transformation caused by the internet	2	-1	1	0.43	1	0.76	-0.91	0.26	-0.68	0.52
Attitudes towards being a digital citizen	2	-1	1	0.24	0	0.72	-0.39	0.26	-0.99	0.52
Attitudes towards negative experiences caused by digital life	2	-1	1	-0.73	-1	0.50	1.61	0.26	1.76	0.52
Attitudes towards digital resilience	2	-1	1	0.68	1	0.58	-1.67	0.26	1.78	0.52
Attitudes towards digital ecosystems	2	-1	1	0.43	0	0.57	-0.33	0.26	-0.83	0.52
General Attitude Towards Digital Citizenship	0.88	0.00	0.88	0.44	.5	0.23	0.02	0.26	-0.80	0.52

Due to the sample size, a Kolmogorov-Smirnov normality test for small samples was performed. This procedure yielded low results for most of the dimensions measured, with significance less than 0.050, so it is assumed that this sample is not normally distributed (see Table 2).

Table 2. Kolmogorov-Smirnov Normality Tests

	Estadístico	gl	Sig.
Attitudes towards digital devices	0.535	84	0.00
Attitudes towards surfing the internet	0.531	84	0.00
Attitudes towards participating and interacting online	0.472	84	0.00
Attitudes towards the personal and social transformation caused by the internet	0.368	84	0.00
Attitudes towards being a digital citizen	0.259	84	0.00
Attitudes towards negative experiences caused by digital life	0.458	84	0.00
Attitudes towards digital resilience	0.447	84	0.00
Attitudes towards digital ecosystems	0.311	84	0.00
General Attitude Towards Digital Citizenship	0.141	84	0.00

As the distribution observed in the data was considered, a Spearman's Rho correlations test was performed to ensure that both attitudes and general attitude towards digital citizenship are related to each other, but not the same. The test showed significant correlations at the $**p < .01$ and $*p < .05$ bilateral level for most attitudes, excluding attitudes toward digital devices, as well as age; it is also possible to observe that this relationship is mostly high, above 0.3 (see Table 3).

Table 3. Spearman's Correlations Between AGHCD, Career, Age, and Other Attitudes

	1	2	3	4	5	6	7	8	9	10	11
1. Race	-										
2. Age	-.253*	-									
3. Attitudes Towards	-.0001	-.0181	-								

Digital Devices											
4. Attitudes towards surfing the internet	-0.045	-0.130	.249*	-							
5. Attitudes Toward Participating and Interacting Online	0.135	-0.154	-0.084	-0.037	-						
6. Attitudes towards the personal and social transformati on caused by the internet	0.080	-0.126	-0.125	0.125	.225*	-					
7. Attitudes towards being a digital citizen	-0.001	-0.078	-0.054	-0.098	0.018	0.012	-				
8. Attitudes Toward	-0.013	-0.129	0.090	0.159	-0.009	-0.103	0.063	-			

Negative Experiences Caused by Digital Life											
9. Attitudes towards digital resilience	-0.027	-0.206	-0.092	0.061	-0.129	0.086	0.108	-0.032	-		
10. Attitudes towards digital ecosystems	0.106	-0.067	-0.018	0.142	0.147	0.029	0.088	0.124	-0.042	-	
11. General Attitude Towards Digital Citizenship (AGHCD)	0.060	-.325**	0.048	.309**	-.521**	-.549**	-.445**	.263*	.293**	.446**	-

Subsequently, it was decided to form an ordinal variable with the continuous variable general attitude toward digital citizenship; for this purpose, it was divided into three equal parts. The first third of values symbolized negative attitudes, the second third represented neutral or indifferent attitudes and the last third positive attitudes towards digital citizenship. From this, a comparison of independent samples was performed using the Kruskal-Wallis H-test, by taking into account the variables: age, attitudes towards surfing the Internet, attitudes towards participating and interacting online, attitudes towards personal and social transformation caused by the Internet, attitudes towards being a digital

citizen, attitudes towards negative experiences caused by digital life, attitudes towards digital resilience, attitudes towards digital ecosystems, in comparison with the levels in the general attitude towards digital citizenship.

The results showed a significant relationship between the general attitude towards digital citizenship and the variables: attitudes towards personal and social transformation caused by the Internet, attitudes towards being a digital citizen and attitudes towards negative experiences caused by digital life. According to the data, age, attitudes towards surfing the Internet, attitudes towards participating and interacting online, attitudes towards digital resilience and attitudes towards digital ecosystems are not significant for the general attitude towards digital citizenship, but the rest of the attitudes are significant and, as expected, the better the significant attitudes, the better the attitude towards digital citizenship (see Table 4).

Table 4. Comparison between general attitudes towards digital citizenship, specific attitudes that comprise it, and age

Variable	Negative Attitude / Average Range	Neutral or indifferent / Average Range	Positive Attitude / Average Range	H Kruskal Wallis	for gl	P- Asymptotic
Age	0	44.72	32.30	3.296	1	0.069
Attitudes towards surfing the internet	0	41.85	45.50	1.386	1	0.239
Attitudes towards participating and interacting online	0	40.93	49.70	2.997	1	0.083
Attitudes towards the personal and social transformation caused by the Internet	0	39.31	57.17	8.562	1	0.003
Attitudes towards being a digital citizen	0	38.08	62.83	14.920	1	0.000
Attitudes towards negative experiences caused by digital life	0	39.28	57.30	11.864	1	0.001
Attitudes towards digital resilience	0	41.83	45.60	0.500	1	0.479
Attitudes towards digital ecosystems	0	40.54	51.50	3.208	1	0.073

TRIANGULATION OF QUALITATIVE AND QUANTITATIVE RESULTS

Expressions of the qualitative part showed that the participants use ICTCADs extensively, but they point them out as tools that can help or harm. This is because they recognize the ease with which they can be affected by the technologies, so they need to acquire skills to use them for their own or social benefit. When contrasting the quantitative part with the qualitative part, it is obtained that those who have positive attitudes towards the personal and social transformation caused by the Internet, towards being a digital citizen and towards the negative experiences caused by digital life, are those with a better general attitude towards digital citizenship.

When going deeper into the attitudes towards personal and social transformation caused by the Internet, it is observed, as expressed, that technologies can indeed help or harm those who use them, as mentioned below:

Well, in a word, [technologies] make us faster to perform some activity, but at the same time it makes us lazy, because we know that we have it easy, this applies to the tasks in which perhaps we do not study the subject and we just copy what is on the internet and we do not do what is really a research (participant 4)

I feel that it does not transform me into anything, it only makes my day to day life easier, it transforms society into any person it wants to be, since it is very easy to express yourself out there, it transforms in that you no longer need to go to school and use a notebook to learn (participant 78).

Likewise, some pointed out the great potential of technologies: "In the right hands it is a great way to become smarter people in any field we want, this also applies to school" (participant 30).

Similarly, regarding attitudes towards being a digital citizen, it was possible to observe the absence of a clear concept of what this means:

Being a digital citizen means having access to the Internet, having a broadband connection, with the necessary equipment to connect, it means that with Internet I can attend classes and look up what I did not understand about a subject (participant 61).

These expressions became unfavorable for technologies in education: "Well, I think it is good, but I think that for school it has to be face-to-face to relate to each other and learn better" (participant 66). Although there were exceptions such as the following: "I am part of a large community in which we all participate and contribute something, however small it may be, but we contribute" (participant 7).

When continuing with the attitudes towards the negative experiences caused by digital life, the same thing happens, almost no expression refers to ways of recovering from negative experiences, nor how technology can help to recover from these experiences; however, there are those who express being able to recover from these experiences mainly by suspending the use of technology.

The Internet provides an anonymity that is sometimes counterproductive, people who have the opportunity to be in contact with you, insult you or bother you (participant 46).

I feel that social networks distract a lot from what you are doing, so you have to focus well because they are a great distractor (participant 47). The Internet gives us the comfort of being at home, but this reduces our ability to socialize (participant 73).

Finally, it is possible to argue that the overall positive attitude towards digital citizenship is composed of positive attitudes towards the personal and social transformation caused by the Internet, being a digital citizen and towards the negative experiences caused by digital life. These three attitudes were shown to be the most significant for university students, who tend to use digital technologies in their daily and academic lives, as they are the points upon which the participants were least positive. Only those who maintain positive attitudes towards these situations achieved a better attitude towards digital citizenship.

In contrast to these positive attitudes towards digital citizenship, the inability to recover from negative experiences in an adequate manner, dislike for the use of digital technologies, especially in the educational field, dependence on digital technologies or indifference to the skills and knowledge that allow developing the potential of these technologies were also pointed out.

DISCUSSION

The results obtained coincide with the findings of Rendón *et al.* (2020) that positive attitudes towards the use of digital technologies favor a better use: a better attitude helps the experience of those who use technology, thus reinforcing its use. Similarly, there is agreement with ISTE (2023), as it was found that positive behaviors when using technology benefit digital citizenship; there is also agreement with Choi *et al.* (2017), as it was possible to demonstrate that personal and social transformation through the use of digital technologies is a fundamental part of digital citizenship.

Regarding attitudes towards negative experiences caused by digital life, there is agreement with Sharma *et al.* (2021) on the importance of bouncing back from these experiences to improve the use of technology. Regarding the part of being a digital citizen, it matches with that of Claro *et al.* (2020) and Rodríguez *et al.* (2020), who mention the importance of people being and considering themselves as digital citizens to improve their use of technology.

Regarding the limitations of the study, these are mainly due to the difficulties related to the pandemic, which complicated access to participants and data collection, so it was necessary to work with a reduced number of people and use digital media, which greatly conditioned the techniques used to collect information.

CONCLUSIONS

It is possible to confirm that the objectives set out in the research were achieved, since the attitudes that make up the paradigms in which technology is an important part of society and its development were understood, as well as some of the attitudes that harm these paradigms, being the positive attitudes towards personal and social transformation caused by the Internet, being a digital citizen and towards the negative experiences caused by digital life, towards digital citizenship, those that were more significant in the proper use of digital technologies.

It was found that attitudes such as the inability to recover from negative experiences in an adequate manner, dislike for the use of digital technologies, especially in the educational field, dependence on digital technologies or indifference to the skills and knowledge that allow developing the potential of these technologies have an unfavorable impact.

In the category of navigating with digital technology, it was possible to understand that the participants have appropriated this competence in a correct and positive way, since they achieve their objectives when navigating on the Internet, and the only problem is the distractions that this navigation generates for them. At the same time, it was observed that participants also recognize the existence of an excess of information and the need to resort to reliable sites.

Regarding online participation and interaction, it was found that participants use digital technologies to interact with people. In this sense, they recognize the importance of the internet as a great facilitator of interactions, but they also perceive a great dependence on it, being the lack of face-to-face interaction a problem. Although all participants interact through the Internet, they do so mainly in non-school social networks, and they consider that these interactions can have negative effects. In turn, participation falls by the wayside, as students indicate that part of digital citizenship consists of participating in political and social issues, but they do not do so.

The category of transforming oneself and society was among the least positive, as it did not show adequate appropriation, since most of the expressions were negative. The participants recognize the potential of the Internet to transform themselves and society, but they consider that this transformation is negative and leads them to be, among other things, dependent, less thoughtful and more distracted. At this point we can say that there is a need to foster an understanding in students of the positive ways in which digital technologies transform us, and ways to prevent technologies from affecting young people should be proposed.

When continuing with the part of understanding digital technology, the participants were positive towards the use of digital technologies, but consistently remarked the existence of negative practices or effects derived from them. It is concluded that, although students have a wide appropriation of digital technologies, as they are fully capable of using them and achieving their goals, this appropriation still does not include enough practices to avoid some negative experiences caused by digital life.

The last category studied, referring to healthy digital information ecosystems, showed that university students consider the ecosystems where they live healthy and that they do recover from their negative experiences, but they do so in an unstructured way, that is, they do not

know methods to achieve this and turn to other people to do so or simply disconnect completely while they manage to recover.

Ultimately, it should be mentioned that digital social networks are not negative for students, they just need to be put to better use. Similarly, it is necessary for university students to be alert to all types of false information on the Internet and pay attention to their online activities; the Internet can help students, but also harm them if it is not used correctly, for example, online classes are useful in these times, but it is important to remember that not all people learn the same, even with the same tools.

With the above in mind, it is recommended to continue studying the effect of attitudes towards digital citizenship in order to improve the uses given to digital technologies, and educational institutions are advocated to include experiences that improve these attitudes in a transversal and collaborative way in students. Finally, it is suggested to promote a single concept of digital citizenship among the different educational actors.

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