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Addiction to ICT

Technology has increasingly been used in today's society because of the benefits that it offers in daily life, Education being included. However, if such use is excessive and unresponsible, it can lead to health problems, such as addictions. In this sense, it is important to analyze the implications and responses of addiction to technologies in educational institutions, mainly in adolescents and young people.

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Editorial

Emerging technology, especially technological developments resulting from the expansion of the Internet, is part of the advances of the twenty-first century. The use of technology and social networks has benefits that consolidate them as essential tool for the youth. Hence, today, Internet has become the flagship tool for communication, information seeking and leisure among young people and adolescents around the world.

However, there are also problems resulting from it. The Internet, and more specifically social networks, also present important risks that cause serious problems, such as abuse or uncontrolled use that leads to addiction, classified as a serious health problem among the younger population by international organizations.

Addiction is also composed by other negative consequences that affect mental and even physical health. Social networks are characterized by the absence of the need for physical contact for communication and socialization and the possibility of simultaneously communicating and sharing leisure activities with a large volume of people, in addition to the technical ease of breaking up or suspending relationships and contacts. Disinhibition comes from anonymity coupled with ease of use and quick access, turning social networks into a tool and digital space where abuse, disrespect or cyberbullying are more frequent every day.

Hence, it is essential to reflect on the use and abuse made by children, adolescents and young people both of social networks and technological devices with a double objective: to know when they begin to use these tools and understand why, where and how they use them; to design educational strategies that empower young people in a sustainable, responsible and healthy use of technology.

Conducting these two objectives will turn us into a society that promotes healthy use of technology and social networks. Educational institutions are important in this search for answers. These include elementary, secondary and university education centers, which are responsible for developing sustainable digital literacy among students, having an impact on their families, environment, context and society. It is important that educational institutions and schools address the social problem arising from addictions to technology and unsuitable or dangerous uses of it, both for prevention and for early detection and development of the immediate solution or response.

Therefore, both the educational and scientific communities, and the editors of this monograph talk about the need to reflect on the responses that educational institutions and their members, from families to teachers, should give to the addiction to technology and social networks presented by youth. Thus, it is essential to answer questions regarding technological addictions, such as the ways to prevent them in this social group, what are the answers that educational institutions can offer, what good practices exist in the different educational levels to promote the prevention or

detection of addictions, or if a well-structured educational system can face the challenge of reducing addiction to technology and promote a responsible use of it.

The aim of this monograph titled "Responses of educational institutions to addiction to technology" is to look for answers by presenting research and analysis of current situations and experiences that deepen and reflect on the use, abuse and addiction to technology. In addition, the reader can see a complete picture, through the in-depth reading of research and studies that begin analyzing the topic of addition to technology in the early ages, until reaching young university students in an international scope.

In this sense, the monographic begins with the work entitled "Internet, Smartphone and Social Networks: Between use and abuse, before addiction". The main objective of this study is to determine how sixth grade students use their smartphone, Internet and social networks and to assess to which extent they are abusing them. To do this, three questions are answered, which were the main objective of the research: 1. What does the students use the Internet for? 2. At what age did the students have a smartphone? and 3. Do they use social networks safely? The study, despite noting that most children between 11 and 12 years old use technology reasonably, it warns that there is a group of students who make an abusive and excessive use of digital technology, both because of the type of publications they make and their frequency. Hence, the alert to pay attention to the habits of using technology among youth to prevent addictions since they are very young. It prompts us to reflect on the way in which we should be literate in the responsible use of technology at an early age.

Then, there is an analysis on adolescents in Mexico titled "Problematic use of online social networks: the case of mexican students". After analyzing a sample of 17,600 students from the Public Educational System of Mexico, the authors highlight that young people spend excessive time on social networks, having a negative impact on their academic performance, family and social life. The results of this study therefore corroborate what has been presented in other studies at the international level in relation to the generations characterized by the obsessive need to be informed and connected.

The third article of the monograph, "Dependence and addiction to smartphones among university students: Myth or reality?" reflects and analyzes the addiction to smartphones by university students.

The technology that has disrupted our lives, and those of our young university students, is definitely the smartphone. Nowadays, no one doubts that there are more mobile phones than people in the world, so it is almost impossible to see a person who is not carrying a smartphone when walking, doing physical activity, going shopping or doing any errand. We could say that watching the mobile can be considered the first action many people do in the morning day and also in bedtime.

However, the unbalanced and disproportionate use of this type of mobile devices can generate serious consequences on the physical and mental well-being of their users. However, according to Roig-Vila, López-Padrón and Urrea-Solano, mobile phone addiction is still a topic of debate among the scientific community. For this reason, they presented a study that delves into the type of use of mobile by university students and whether this use can be described as problematic.

The conclusions are really encouraging, since according to the results obtained it is noted that university students see themselves as habitual users, but do not present addictive or nomophobia traits. Therefore, their behavior may not be labeled as dependent or addictive. This aspect, according to the authors of the research, along with the potentialities presented by smartphones for learning makes relevant the need to deepen the idea of integrating them to enhance teaching-learning processes in university classrooms, of course, considering the risks that overuse can cause and focusing not only on students but also on university professors. More specifically the digital competences and

digital teaching competences they present, and their perception and perspective in relation to addictions. Even analyzing their own habits of using technology.

In this regard, the fourth article of the monographic titled "Addiction to ICT. Teaching perspective from three university centers", carries out research with university professors from three university centers of the University of Guadalajara, who offer their perception on Internet use from the Internet Use Test developed by Kimberly Young.

As it happened with students at university levels, this paper also confirms that professors consider that making a rational use of technology is beneficial. In spite of this, the researchers highlight that the sample analyzed presents some indications that warn about excessive uses that can lead to addiction. Among these inappropriate uses, they describe loss of awareness of internet usage time, feeling a certain degree of anxiety at times when they cannot connect, or consulting social networks or email, delaying their priority activities.

Despite pointing out these results and indications that are very interesting for the scientific community, according to Prieto-Quezada, Romero-Sánchez and Oliva, what truly reaffirms this work is the need to deepen studies on professors, both from the point of view of their personal and professional use of technology.

In this line and in order to complete research and educational reality in relation to the topic of addiction to technology from an educational perspective, the monographic ends with the presentation of a phenomenon directly related with the incorrect use of mobile device in classrooms, which is known as phubbing.

The authors Medina-Morales and Villalón-Hernández define phubbing as the act of belittling or ignoring a person physically for paying more attention to a mobile device. This is a phenomenon that occurs at all educational levels, because when this occurs mobile is often a disruptive element for the proper and successful development of classes. But it is also a phenomenon that modifies communication in current social life, being a problem associated with technological addiction with direct consequences in society.

The research delves into the first aspect, i.e., it is based on the search of the relationship between phubbing and the use of mobile applications when students are in class. The results obtained are impressive, including the following: 54% of students check their cell phone in classes when the professor or other classmates make their presentations.

Faced with such worrying data, it is important to reflect on its causes and effects, since it seems that the level of phubbing that occurs at the university can be defined as an important phenomenon. In this line, the study seems to corroborate that the way for students not to use the mobile device in class is associated with the rules established by the professor. This implies that the students have difficulties to self-regulate, which leads us to corroborate the need to continue research beyond addictions, in the way in which we must educate children, adolescents and young people to develop digital skills and responsible and critical use of technology. These aspects seem essential to prevent one of the main problems that derive from technology, and that overshadow the many benefits presented by the democratization of its use. These advances have involved the development of synchronous and asynchronous communication at a distance and, above all, the creation of networks between people who build collaborative societies.

Therefore, we hope that this monograph will contribute greatly to the advancement of the scientific area of educational technology, and its readers will enjoy and learn as much about technological additions and education as the editors have done in the process of elaborating it. We wholeheart-

edly thank *Revista Alteridad* and its editors for offering us this opportunity and their accompaniment in this intense and interesting challenge.

In the section Miscellaneous, García-Arce and Gutiérrez-Barba, considering that higher education institutions must implement the Sustainable Development Goals, and oriented to the change of the social, economic and environmental environments, in the article "Institutional philosophy and objectives of sustainable development", they authors intended to analyze the philosophical framework of the Autonomous University of the State of Mexico. For this, by means of a descriptive hermeneutic study they analyzed the documents General Law, University Statute and Institutional Development Master Plan. They identified a broad set of actions and highlighted the need to incorporate a more holistic vision that includes sustainability as part of the guidelines.

In the article "Mathematical and digital competence of the future teacher using GeoGebra" conducted by García-Lázaro and Martín-Nieto, when noting the daily use of technology by university students, and that sometimes digital competencies are taken for granted, the authors evidenced the need for future teachers to use digital competence in learning contexts, hence it must be included during their academic training. The pre-experimental study with students at Rey Juan Carlos University allowed to identify a satisfactory result in the use of the GeoGebra application for acquiring geometric concepts such as axial, central symmetry, inversion, rotation, translation and homozygosity.

From the Chilean context, Espinosa-Valenzuela *et al.,* in the article "Subjective distress and educational uncertainty during the COVID-19 pandemic", emphasize the need to analyze the consequences of Covid-19 beyond strictly biomedical aspects, such as from the labor market, economic and subjective well-being of society. Among the results, high levels of uncertainty, anguish and fear among young people are still present due to the effects of the pandemic, particularly the death of close relatives, the economic problems of the family and the fear of losing the school year, among others.

The article "Classroom research exercise identifying differences between concepts of peace" by Rodríguez analyzes, from the Colombian context, the various conceptions of peace, a relevant topic worldwide. The study conducted from the perceptions of children between ten and fifteen years old in Colombia shows that there are different conceptions, some called stable and others unstable. What is relevant is the relationship they have with the community they live, which could allow new research in other contexts.

Although attitudes regarding the issue of disability is not recent, the article "Conceptions on disability of Spanish university students" by Leite *et al.*, emphasizes the conceptions of students about disability in the framework of the right to access, permanence and success; noting, on the one hand, an international increase in the presence of people with disabilities in higher education institutions; and on the other, the existence of a global movement that claims access, permanence and success of students with disabilities. The authors by applying the International Scale of Disability Concepts (EICD) to 676 students from various areas of the University of Seville, although they do not find significant differences in conceptions between undergraduate and postgraduate students, as well as between participating students with and without disabilities, underline the predominance of social conceptions of disability, followed by medical aspects. They conclude by demonstrating the possibility of resignifying social conceptions of disability.

At the end of this editorial, there are armed conflicts such as the ones between Ukraine and Russia, Ethiopia, Syria, Yemen, Myanmar, Afghanistan and several African countries, which are generating serious humanitarian crises, characterized by injustice, insecurity, death; as well as lack

of access to basic resources such as water, food, or education needs. Those who suffer the most are women, children, the elderly, people with disabilities; in fact, in some places rape is used as a weapon of war, or child soldiers. But if Africa can be considered the "hottest region on the planet" in terms of conflict, and most deadly attacks take place in the Middle East, North Africa, and Sub-Saharan Africa, America has the highest rates of organized crime and gang crime. Most children, who witness torture and their relatives murdered, have to survive in destroyed countries, or live in displaced status, and years may pass without access to education, without adequate physical and psychological treatment.

Given this situation, some questions arise: Can international terrorist groups, armed groups engaged in civil wars, political instability, the lack of political will on the part of states to achieve peace, the scarcity of resources, make us believe that we live in a culture of violence? Is peace seen as a utopian possibility?

On the other hand, technology, especially artificial intelligence, is changing the way conflicts play out: more selective and anonymous cyber-attacks that reduce human physical intervention can control power plants, hospitals, airports, and generate disinformation; in this context, responsibility for life and death may depend not on human moral systems, but on complex data mining that lacks ethical considerations and compassion.

New questions arise: Are educational institutions mere spectators of conflict and violence? What are university institutions doing about violence and the use of technology? Perhaps the above questions are wrong if we consider that peace is the result of a social construction; the transformation of culture is a process that can take many years, and that also requires more just, supportive and ecological social and educational policies. It is a topic that has been opened for decades, but that requires new research and reflection.

We hope that our readers will enjoy this volume and we invite authors to publish with us.

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Responses of Educational Institutions to addiction of technology
"Respuestas de las instituciones educativas a la adicción a las tecnologías"

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Internet, smartphone & social networks: between use and abuse, before addiction

Internet, smartphone y redes sociales: entre el uso y abuso, previo a la adicción

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Abstract

The intensive use of digital technology for watching videos on the Internet, communicating trough Smartphones and interacting on Social Networks brings satisfaction and contributes to the psycho-social development of young people, which is why they are so successful. However, when they start at too early an age, the abuse and future addiction might be a risk. Therefore, to prevent schoolchildren' problems in the future, the present study has the objective of finding out whether any type of technological abuse is occurring in order to identify and intervene in the subjects who are developing it. The sample of the present research is made up of 197 students between 11 and 12 years of age, all of them in the sixth year of Primary Education, who answered a validated questionnaire (Ministerio de Interior, 2014) that analyses the technological use habits of young people. The instrument is organized into multiple-choice questions that provide information on issues such as frequency of use, place of use, internet, social networks, etc. The results obtained show that most of the students who participated in the study use digital technology in a reasonable way. However, one in ten students misuse it. Therefore, it is suggested that educational intervention is needed to prevent these students from falling into dependence and addiction, given the potential negative influences on their personal and academic lives that these habits could have.

Keywords: Abuse, addiction, teenagers, smartphone, internet, social networks.

Resumen

El uso intensivo de la tecnología digital para ver videos en internet, comunicarse a través del *smartphone* e interactuar en las redes sociales produce satisfacción y contribuye al desarrollo psicosocial de las personas más jóvenes, de ahí su éxito. Sin embargo, cuando se inician a una edad demasiado temprana, pueden acabar abusando de ellas y finalmente caer en la adicción. Por ello, para que los escolares no tengan problemas en el futuro este estudio tiene por objetivo conocer si se está produciendo algún tipo de abuso tecnológico para identificar e intervenir en los sujetos que lo están desarrollando. La muestra de esta investigación la componen 197 estudiantes entre 11 y 12 años de sexto de Educación Primaria, quienes respondieron un cuestionario validado (Ministerio de Interior, 2014) que analiza los hábitos de uso tecnológico de los jóvenes. El instrumento se organiza en preguntas de opción múltiple que ofrece información sobre cuestiones como frecuencia de uso, lugar de uso, internet, redes sociales, etc. Los resultados evidencian que la mayoría de estudiantes que participaron en el estudio utiliza la tecnología digital de forma razonable. Sin embargo, uno de cada diez estudiantes hace uso abusivo de la misma. Por ello, se sugiere que se intervenga educativamente para que este alumnado no caiga en la dependencia y adicción, dado las potenciales influencias negativas en la vida personal y académica que estos hábitos tendrían.

Descriptores: Abuso, adicción, jóvenes, smartphone, internet, redes sociales.

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1. Introduction

Nowadays people live in a liquid modernity characterized by the dizzying speed of changes that weaken economic, political, institutional structures and human bonds and their relationships (Bauman, 2000). Technology has been incorporated into communication processes and has generated a new digital dimension that influences traditional reality (Nitsevich, 2018), specifically social uses and habits (Besolí *et al.*, 2018; Martínez-Rodrigo *et al.*, 2019).

The smartphone is now a widespread communication device in society, especially among the youngest, partly because it has evolved a lot in recent years, offering more and more. In addition, its accessibility and ease of use have made it a very valuable tool for staying connected and communicating with other people at any time and place (Altuzarra Artola, 2018). Its use is widespread, to the point that three quarters of students between eleven and twelve years old own one (Garmendia *et al.*, 2019; AIMC, 2018).

In Spain, although some people live in rural areas or remote areas where connectivity may be more limited, internet access is generally good and most teenagers have internet at home (González Fernández *et al.*, 2020).

Meanwhile, social networks have a great impact on society, especially among young people since they can share content, connect with friends and family, and participate in online communities. In addition, they also offer a variety of entertainment options, such as games and music (Moreno Freites and Ziritt Trejo, 2019).

The data obtained in different studies (López-de-Ayala *et al.*, 2020; ONTSI, 2019) allow to point out that young people start using a smartphone autonomously following a simple pattern; specifically, it is observed that preadolescent boys are initially motivated to using the cell phone to play video games and observe how gamers perform on Twitch, a vertical social network that brings together people interested in this subject. On the other hand, girls tend to join directly the horizontal or generic social networks, in which they barely interact or share images or videos and dedicate themselves to observing what is happening through their mobile (Garmendia-Larragaña *et al.*, 2016; González García and Martínez Heredia, 2018).

Once they finish this initial and independent experimentation phase of mobile device use in which they have incorporated and adapted the smartphone into their daily life, both boys and girls join the trendiest social networks. Hence, they start using YouTube, WhatsApp, Facebook, Instagram, TikTok and Snapchat (Rivero, 2019; Spain IAB, 2019), without anyone having previously taught them or even shown them how to interact correctly and safely on social networks (Tejada *et al.*, 2019). Although young people use smartphones to access these digital ecosystems, they do not have sufficient digital competence to perform correctly (Fernández-Montalvo *et al.,* 2015).

Many families allow teenagers to use smartphones autonomously at very early ages, before fourteen or fifteen years old, because they do not reflect on what is the most appropriate age to do so (Zubizarreta *et al.*, 2018) and because of the social inertia in which they are involved. As a result, children join social networks earlier than they should. Even though most of them know that they should be at least thirteen years old or older to join social networks, children solve this problem by altering their date of birth in the register, which they sometimes do with the help of an adult (Del Prete and Redon Pantoja, 2020).

Social networks are now a fundamental resource for young people who use networks to socialize (Cantor-Silva *et al.*, 2018). It is a catalyst for inclusion or exclusion, and for some authors (Bonilla del Río and Sánchez Calero, 2022) it has contributed to the interpersonal relationships of younger people becoming even more complex and sometimes problematic. Not surprisingly, bullying can also happen digitally.

Another problem of this early incorporation of smartphones is the dependence on the device itself and the actions carried out by using

it. The fact that young people are in a critical period of their psychological and social development (Ortega *et al.*, 2012) makes it difficult for them to measure and assess the excessive and intensive use they make of social networks and digital technology in general (Gordo *et al.,* 2018).

Young people respond positively to the dynamics of interaction proposed by social networks and continuously post and share information that belongs to their personal and private lives, and they do so mainly because in this way they define their personal characteristics through the acceptance of others (Pérez *et al.*, 2009). Specifically, they introduce new information very frequently, mainly images and videos to be seen and valued by others.

Many young people need to constantly connect to social networks to post and observe the responses generated by their posts, since this action releases dopamine in the brain, causing them pleasure (Martín Critikián and Medina Núñez, 2021). Thus, as each interaction generates a low stimulus, people interact frequently to obtain a set of micro-incentives of satisfaction, thus moving from the use to the abuse of social networks, which can result in problems related to bio-psychological, social and family aspects when networks become addictive (Silva-Ortega and Zambrano-Villalba, 2018).

People who abuse the use of social networks and the Internet are characterized by being people who may have both a high degree of feelings of loneliness and boredom (Zhou and Leung, 2012), as well as extraversion and low responsibility, and because it allows them to interact while remaining anonymous through a fictitious identity (Wilson *et al.*, 2010).

The excessive use of smartphones, internet and social networks represents the previous step to a dependency that can eventually lead to a non-chemical addiction, also known as behavioral or non-substance addiction, which refers to a set of mental disorders in which a person has a compulsive need to perform certain activities, such as playing video games, watching pornography, gambling, compulsive shopping, among others. These addictions can be as strong as chemical addictions, such as alcoholism or drug addiction, and can have a negative impact on a person's life, affecting their mental and physical health, their relationship with others, and their work and academic performance (Becoña, 2018). In young people, it is more related to the rupture of some habits (Del Castillo, 2013).

Likewise, the philosophy of contemporary consumerist culture can contribute to the emergence of non-chemical addictions, by emphasizing the importance of excessive consumption and the search for immediate satisfaction regardless of the consequences. This culture can lead people to constantly seek new experiences and stimulation, which can trigger a compulsive need to perform certain activities (Pérez del Río and Martín, 2007).

To assess the extent to which young people abuse digital technology, there are no standard instruments or measures that allow to estimate the risk situation of a student. However, it is possible to measure the frequency and type of interactions of young people on social networks and contrast them with the responses or actions conducted by people of the same age and adults, which should not exceed both in any case.

1.1 Objectives

The research collects the concern expressed by some studies on addictive behavior in relation to the use of virtual media and social networks (Basteiro *et al.*, 2013; Escurra and Salas, 2014; Peris *et al.,* 2018) and is related to studies that address the use of digital technology (Keller *et al.*, 2020; Marín-Suelves *et al.*, 2022).

Thus, the main objective of this research is to know how students in the sixth grade of primary education use smartphones, the Internet and social networks and to assess the extent to which they are abusing them. To this end, it aims to answer the following research questions:

- What do students use the Internet for?
- At what age did students have a smartphone?
- Do they use social networks safely?

2. Research methodology

2.1 Sample

Due to the limitations to conduct the research due to the subject matter, a non-probabilistic sampling was carried out and the selection of the school that participated in the study was made at convenience. Thus, four schools participated in the study and the sample of students was made up of 197 students who voluntarily participated in the study. Of these students, 51% were male (N=101) and the remaining 49% were female (N=96). The students who participated in the study were in the sixth grade of primary education and were between 11 and 12 years old.

2.2 Research instrument

The tool used to carry out this research was the questionnaire "Survey on internet use and safety habits of young people in Spain", designed by the Home Office (2014). This instrument of multiple-choice questions, allows to know the frequency of use, place, internet and social networks, etc. The reliability analysis confirms an acceptable internal consistency of the questionnaire by obtaining a value of 0.78 in Cronbach's alpha coefficient.

2.3 Procedure

Before starting the research, the purpose of the study was explained to the principal of each school and the approval and informed consent of the students' families and guardians was obtained. Finally, they were told that completing the survey was completely voluntary. They participated in the study, answered the questions electronically and had twenty-five minutes to do so.

2.4 Research design

The work carried out is quantitative and exploratory, so an analysis and frequency study of the responses to the multiple-choice items of the survey was carried out to calculate the percentage they represent.

3. Results

The data obtained show that only 10.8% of students indicated that they rarely connect to the Internet, a quarter of the students (15.3%) mentioned they connect once or twice a week, 31.8% do so almost daily and finally 40.1% daily. Considering the last aspect, both girls (42.9%) and boys (37.5%) access the network in the same proportion.

Regarding the frequency of hours spent on the Internet, 71.8% of students stated that they connect one hour or less per day, 11.5% said that they connect daily for two to three hours, and 1.3% stated that they do not connect daily. Likewise, 15.9% mentioned that they did not know how much time they spend on the Internet.

The study also showed that students use the Internet mainly to watch videos (87.3%), do academic work (80.9%), communicate (61%) and play video games (42%). It was also found that girls (85.7%) use the Internet about 10% more than boys (76.25%) for academic work.

As for the resources for accessing the Internet, the students indicated that the device they use most is their smartphone (42.7%), followed by the computer (34.8%) and the t (23.6%). The study highlights that the resource they use the least is their parents' cell phone (1.3%).

Likewise, regarding the acquisition of the cell phone, it was observed that most of the girls who participated in the study (80.07%) got their smartphone on their birthday, while boys (61.15%) received it in summer (61.15%), twice as often as the girls (30.65%). 60.7% of the girls and 36.2% of the boys said that they use their cell phones to communicate with their

friends. Regarding cell phone use, 63.6% of girls and 24.8% of boys said that they can use mobile plans to use their cell phones, i.e., more than twice as many.

The students also stated that they mainly use instant messaging for communicating with their friends (61.4%), being girls (57.15%), compared to boys (40%) the ones who use it the most. Likewise, girls (16.9%) also prefer email as a means of communication with their classmates more than boys (2.5%). However, among students who communicate through social networking resources, such as chat rooms, 13.4% are boys and 7.6% are girls. The same is also true for online video games, since all those who indicated that they communicate in this environment were boys (5.7%).

The students surveyed also stated that YouTube (68.8%) and WhatsApp (61.1%) are the social networks they use the most, and to a lesser extent Instagram (36.6%) and TikTok (28%). In contrast, the networks they use the least are Twitter (8.3%) and Facebook (4.5%). From a gender perspective, girls (71.4%) and boys (66.25%) use YouTube to the same extent and, in contrast, girls (71.4%) use 20.15% more than boys (51.25%) WhatsApp and TikTok, 44.15% and 31.65%, respectively.

Regarding the configuration or design of the students in their social networks, 62.5% stated that they do not have any profile. Among the students who do have one, 33.1% confirmed that they show their own photo in their profile, 14.6% their name and surname, 5.1% the place where they study, 4.5% their real age and 8.9% a false one. Also, only 1.9% included their telephone number and 0.6% their home address. Finally, it was observed that 11.15% are aware that they use false data in their social profile.

On the other hand, most students (79.6%) know that they have not contacted people they do not know in their social network, while 10.8% of students state that they have done so. Girls accounted for 85.7% of the responses and boys 73.75%.

8.9% of the students indicated that in the last year they have accepted people they did not have in their contacts and 5.1% have searched for new friends on the Internet. Likewise, 3.8% said that they had tried to be a person they were not.

Table 1

Information on social network profiles (frequency)

Item	Boys	Girls
I identify myself in my profile using a real personal photo.	33.75%	32.5%
I identify myself in my profile using a photo that does not identify myself.	22.5%	33.75%
I show my real age	5.2%	3.75%
I show a false age	10%	7.8%
I show my identity (name and surname)	17.5%	11.7%
I show the school where I study	3.75%	6.5%
I show my personal phone	3.75%	1.25%
I show false data	11.25%	11.7%

Boys (12.9%) have added more contacts they did not know beforehand to their networks than girls (5.2%). Likewise, 6.25% of boys have looked new friends on the Internet, compared to 3.75% of girls. However, 5.2% of girls tried to be a person they were not, compared to 2.5% of boys.

Finally, 63.1% of students indicated that they perceive that they control their social networks, specifically 63.65% of women and 62.5% of men. On the contrary, less than a quarter (19.7%) considered that they did not.

4. Conclusions

It can be concluded that the students who participated in the study use smartphones, the Internet and social networks in a reasonable way. However, it is noted that some students abuse the digital technology, both in terms of the type of posts they make and the frequency.

Thus, it is observed that four out of ten students access the Internet daily and that both boys and girls do so with the same frequency. Likewise, it was found that seven out of ten students connect between thirty and sixty minutes a day, so they do not exceed adults in the habit of connecting to the network and are within the range of young people as indicated in other studies (Spain IAB, 2020; Ministerio del Interior español, 2014).

However, evidence indicates that some students spend too many hours or abuse of the Internet, which is consistent with Blanco *et al.* (2022). Specifically, one in ten students surveyed stays on the network between two and three hours a day and the same number of students do not know how much time they spend online. For this reason, it is recommended to conduct prospective or follow-up studies of students at an early age to identify those students who stand out for their intensive use of the Internet. This would allow preventing future technological and digital dependencies and addictions (Soto *et al.*, 2018).

Regarding the actions done by students on the Internet, it is found that most of them perform within the limits indicated by the works on network safety. Specifically, eight out of ten students connect to watch videos and do school tasks, which is consistent with Rivero (2019) and the study by Spain IAB (2020), with girls outnumbering boys in both cases (Holtz and Appel, 2011; Fernández-Montalvo *et al.*, 2015). Therefore, it is concluded, on the one hand, that students use the Internet to perform academically and for this purpose they use the personal computer, since the use of smartphones has not been normalized at the school (Romero Rodríguez *et al.,* 2021). On the other hand, it is also concluded that students use the network for entertainment and leisure activities, since the creation of audiovisual digital content is not produced, as occurs in older students.

The study shows that girls tend to communicate more than boys through instant messaging and email. However, boys use the communicative resources embedded in social networks more than girls, as indicated in the study by Valencia-Ortiz *et al.* (2020) conducted with adults. Therefore, it would also be important to identify these students who would be outside the social norm that corresponds to their age.

Regarding the use of social networks, most of these students use YouTube, WhatsApp, TikTok and Instagram and, contrary to what adults do, they do not use Facebook as much, as stated in the Spain IAB study (2022), the two most used social networks in Spain.

The students in this research perform numerous overexposure actions on Social Networks, even though they believe they know how to use them. Thus, boys show images that reflect their identity on social network profiles and girls do the opposite. Likewise, boys are inclined to put an age other than their own and girls omit it outright. In either case, they do not show their telephone number and home address, which is in line with what was already pointed out by the report of the Home Office in the work carried out in 2014.

On the other hand, although most of the students have not contacted someone they do not know beforehand, one out of a hundred students has done it so, and it can be said that this attitude is not safe. In addition, men have performed this type of action more than women (Spain IAB, 2020).

Students need to be educated in the safe and responsible use of technology and in protecting their privacy online. This may include teaching them how to set up their social networking accounts safely and to be careful about the personal information they share. It is also important to remind them not to share images or personal

information that could compromise their safety or that of others (Castillejos *et al.*, 2016).

Finally, it is concluded that the abuse of educational technology can cause a dependency that can have a negative impact on the daily lives of individuals and students who are immersed in psychosocial maturational processes.

Therefore, it is important to pay attention to social network usage habits and take measures to prevent social network addiction. This may include setting limits on time spent on social networks, seeking alternative activities to spend free time, and seeking professional support if necessary.

References

AIMC (2018). Estudio General de Medios octubre 2017- mayo 2018 (EGM). Madrid: AIMC Asociación para la Investigación de Medios de Comunicación.

Altuzarra Artola, A., Gálvez Gálvez, C. and González Flores, A. M. (2018). Explorando el potencial de los dispositivos electrónicos y de las Redes Sociales en el proceso enseñanza-aprendizaje de los universitarios. *Edutec: revista electrónica de tecnología educativa*. https://doi.org/10.21556/edutec.2018.64.1031

Basteiro, J., Robles-Fernández, A., Juarros-Basterretxea, J. and Pedrosa, I. (2013). Adicción a las Redes Sociales: creación y validación de un instrumento de medida. *Revista de Investigación y Divulgación en Psicología y Logopedia, 3*(1), 2-8. https://bit.ly/3WeSv9u

Bauman, Z. (2000). *Modernidad líquida.* Fondo de Cultura Económica.

Becoña, E. (2018). Adicciones comportamentales: separando el grano de la paja. *INFONOVA, Revista profesional y académica sobre adicciones, 34*, 11-21. https://bit.ly/3jhUvz4

Besolí, G., Palomas, N. and Chamarro, A. (2018). Uso del móvil en padres, niños y adolescentes: Creencias acerca de sus riesgos y beneficios. *Aloma: Revista de Psicologia, Ciències de l'Educació i de l'Esport, 36*(1), 29-39. https://doi.org/10.51698/aloma.2018.36.1.29-39

Blanco, O., Moral-García, J. E., Revesado Carballares, D. and Maneiro Dios, R. (2022). Actitudes y conductas en el uso de Internet en estudiantes de la provincia de Badajoz (España). *Lecturas: Educación Física y Deportes, 27*(289). https://bit.ly/3jqb4sQ

Bonilla del Río, M. and Sánchez Calero, M. L. (2022). Inclusión educativa en tiempos de COVID-19: Uso de Redes Sociales en personas con discapacidad intelectual. *RIED. Revista iberoamericana de educación a distancia*, *25*(1). https://doi.org/10.5944/ried.25.1.30875

Cantor-Silva, M. I., Pérez-Suárez, E. and Carrillo-Sierra, S. M. (2018). Redes sociales e identidad social. *Aibi Revista de Investigación, Administración e Ingeniería*, *6*(1), 70-77. https://doi.org/10.15649/2346030X.477

Castillejos López, B., Torres Gastelú, C. A. and Lagunes Domínguez, A. (2016). La seguridad en las competencias digitales de los millennials. *Apertura, 8*(2), 54-69.

Castro Zubizarreta, A., Caldeiro Pedreira, M. C. and Rodríguez-Rosell, M. M. (2018). El uso de smartphones y tablets en Educación Infantil. Una propuesta de investigación que empodera a la infancia. *Aula Abierta, 47*(3), 273-280. https://doi.org/10.17811/rifie.47.3.2018.273-280

Del Castillo, J. A. (2013). Adicciones tecnológicas: el auge de las redes sociales. *Salud y drogas, 13*(1), 5-13. https://bit.ly/3VlGKMV

Del Prete, A. and Redon Pantoja, S. (2020). Las redes sociales on-line: Espacios de socialización y definición de identidad. *Psicoperspectivas, 19*(1), 86-96. http://dx.doi.org/10.5027/psicoperspectivas-vol19-issue1-fulltext-1834

Escurra, M. and Salas, E. (2014). Construcción y validación del cuestionario de Adicción a Redes Sociales (ARS). *Liberabit. Revista de Psicología, 20*(1), 73-91. https://bit.ly/3FKCbGk

Fernández-Montalvo, J., Peñalva, A. and Irazabal, I. (2015). Hábitos de uso y conductas de riesgo en Internet en la preadolescencia. *Comunicar, XXII*(44), 113-120. https://doi.org/10.3916/C44-2015-12

Garmendia, M., Jiménez, E., Karrera, I., Larrañaga, N., Casado, M.A., Martínez, G. and Garitaonandia, C. (2019). Actividades, mediación, oportunidades y riesgos online de los menores en la era de la convergencia mediática. Instituto Nacional de Seguridad (INCIBE). https://bit.ly/3FMC793

Garmendia-Larragaña, M., Jiménez-Iglesias, E., Casado, M. A. and Mascheroni, G. (2016). Net Children Go Mobile: Riesgos y oportunidades en Internet y el uso de dispositivos móviles entre menores españoles (2010-2015). Red.es/Universidad del País Vasco/ Euskal Herriko Unibertsitatea.

González García, E. and Martínez Heredia, N. (2018). Redes sociales como factor incidente en el área social, personal y académica de alumnos de Educación Secundaria Obligatoria. *Tendencias pedagógicas*, (32), 133-146. https://doi.org/10.15366/tp2018.32.010

González Fernández, N., Salcines Talledo, I. and Ramírez García, A. (2020). Conocimiento y comunicación de las familias españolas ante los Smartphone y Tablet. *Revista de educación.* https://bit.ly/3vaknja

Gordo, A., García-Arnau, A., Rivera, J. de y Díaz-Catalán, C. (2018). Jóvenes en la encrucijada digital: Itinerarios de socialización y desigualdad en los entornos digitales. Morata. https://doi.org/10.5281/zenodo.3638173

Holtz, P. and Appel, M. (2011). Internet use and video gaming predict problem behavior in early adolescence. *Journal of Adolescence, 34,* 49-58.
https://doi. org/10.1016/j.adolescence.2010.02.004

Keller, V., Gorbunova, A. and Kapuza, A. (2020). "Last seen recently": How primary school students use social networks and internet for communication. *EDULEARN20 Proceedings* (pp. 7847-7852). IATED.Ke

López-de-Ayala, M. C., Vizcaíno-Laorga, R. and Montes-Vozmediano, M. (2020). Hábitos y actitudes de los jóvenes ante las Redes Sociales: influencia del sexo, edad y clase social. *Profesional de la información*, *29*(6). https://doi.org/10.3145/epi.2020.nov.04

Marín-Suelves, D., Becerra-Brito, C. V. and Rego-Agraso, L. (2022). Digital educational resources in early childhood Education. *Digital Education Review*, (41), 44-64. https://bit.ly/3Gkup7P

Martín Critikián, D. M. and Medina Núñez, M. (2021). Redes sociales y la adicción al like de la generación z. *Revista de Comunicación y Salud*, *11*, 55-76.
https://doi.org/10.35669/rcys.2021.11.e281

Martínez-Rodrigo, E., Martínez-Cabeza Jiménez, J. and Martínez-Cabeza Lombardo, M. A. (2019). Análisis del uso de dispositivos móviles en las aulas universitarias españolas. *Revista Latina de Comunicación Social, 74*, 997-1013. https://doi.org/10.4185/RLCS-2019-1368

Ministerio de Interior español (2014). *Encuesta sobre hábitos de uso y seguridad de Internet de menores y jóvenes en España*. Madrid.
https://bit.ly/1x31JXy

Moreno Freites, Z. M. and Ziritt Trejo, G. (2019). Redes sociales como canales de digi-impacto en la participación ciudadana. *Utopía y Praxis Latinoamericana, 24*(3), 30-45.
https://bit.ly/3PIuSDy

Nitsevich, V. (2018). Digital sociology: theoretical and methodological origins and bases. *Digital Sociology,* (1), 18-28.
https://doi.org/10.26425/2658-347X-2018-1-18-28

ONTSI. (2019). La Sociedad en Red. Transformación digital en España. Informe Anual 2018. EDICI ~ ON 2019. In Red.Es, ONTSI.
https://bit.ly/3VgTTqA

Ortega, R., Elipe, P., Mora-Merchán, J. A., Genta, M. L., Brighi, A., Guarini, A., Smith, P., Thompson, F. and Tippett, N. (2012). The emotional impact of bullying and cyberbullying on victims: a European cross-national study. Aggress. *Behav. 38*, 342-356.
https://doi.org/10.1002/ab.21440

Pérez del Río, F. and Martín, I. (2007). *Nuevas adicciones: ¿adicciones nuevas?* Intermedio.

Pérez, R., Rumoroso. A. M. and Brenes, C. (2009). El uso de tecnologías de la información y la comunicación y la evaluación de sí mismo en adolescentes costarricenses. *Revista Interamericana de Psicología, 43*(3), 610-617.
https://bit.ly/3PKt2Cg

Peris, M., Maganto, C. and Garaigordobil, M. (2018). Escala de Riesgo de Adicción-Adolescente a las Redes Sociales e Internet: fiabilidad y validez (ERA-RSI). *Revista de Psicología Clínica con Niños y Adolescentes, 5*(2), 30-36.
https://doi.org/10.21134/rpcna.2018.05.2.4

Rivero, F. (2019). Informe ditrendia: Mobile en España y en el Mundo 2018. *Inf. técnico, Ditrendia*.

Romero Rodríguez, J. M., Aznar Díaz, I., Hinojo Lucena, F. J. and Gómez García, G. (2021).

Uso de los dispositivos móviles en educación superior: relación con el rendimiento académico y la autorregulación del aprendizaje. *Revista complutense de educación*, *32*(3). https://doi.org/10.5209/rced.70180

Silva-Ortega, V. and Zambrano-Villalba, C. (2018). conducta adictiva al internet: Redes Sociales, uso del teléfono móvil y su incidencia en la personalidad. *Psicología Unemi*, *2*(2), 41-49. https://bit.ly/3BVk0MW

Soto, A., De Miguel, N. and Díaz, V. P. (2018). Abordaje de adicciones a nuevas tecnologías: una propuesta de prevención en contexto escolar y tratamiento de rehabilitación. *Papeles del Psicólogo*, *39*(2), 120-126. https://bit.ly/3YFHAqQ

Spain, IAB. (2019). *Estudio anual de mobile & connected devices.* https://bit.ly/3PIafaJ

Spain, IAB. (2020). *Estudio anual de Redes Sociales 2020*. https://bit.ly/3HQXdFR

Spain IAB. (2022). Estudio de Redes Sociales 2022. IAB Spain. https://bit.ly/3VktGHI

Tejada Garitan. E., Castaño Garrido, C. and Romero Andonegui, A. (2019). Los hábitos de uso en las Redes Sociales de los preadolescentes. *RIED. Revista Iberoamericana de Educación a Distancia, 22*(2), 119-133. http://dx.doi.org/10.5944/ried.22.2.23245

Valencia-Ortiz, R., Cabero-Almenara, J. and Garay, U. (2020). Influencia del género en el uso de las Redes Sociales por el alumnado y profesorado. *Campus Virtuales, 9*(1), 29-39. https://doi.org/10.21556/edutec.2020.72.1649

Wilson, K., Fornasier, S. and White, K. M. (2010). Psychological predictors of young adults' use of social networking sites. *Cyberpsychology, Behavior, and Social Networking 13*(2), 173-177. https://doi.org/10.1089/cyber.2009.0094

Zhou, S. X. and Leung, L. (2012). Gratification, loneliness, leisure boredom, and self-esteem as predictors of SNS-game addiction and usage pattern among Chinese college students. *International Journal of Cyber Behavior, Psychology and Learning, 2*(4), 34-48. https://doi.org/10.4018/ijcbpl.2012100103

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Problematic use of online social networks: the case of Mexican students

Uso probemático de las redes sociales online: el caso de los estudiantes mexicanos

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Abstract

Social networks are one of the most relevant means of communication and leisure among the youngest. But, despite an abundance of benefits, there are also risks that must be analyzed. In this research, the risk to be analyzed is the addiction to social media among young Mexican people. For the development of the analysis, 17,600 young young people responded to a questionnaire based on an adaptation of Sahin's Social Media Addiction Scale - Student Form (SMAS-SF). Among the results, it needs to be highlighted the little awareness that young people have of their addiction to social networks. Any reflection on this aspect needs to consider the limited perception presented by the sample and the fact that this study measured the self-perception of young students regarding OSM.

Keywords: Addiction, youth, social media, students, teacher, perception.

Resumen

Las redes sociales constituyen una de las vías de comunicación y ocio más relevantes entre los jóvenes. Pero, a pesar de presentar multitud de beneficios, también encontramos riesgos que debemos analizar. En la investigación se analiza uno de los riesgos como es la adicción a las redes sociales que presentan los jóvenes mexicanos. Para el desarrollo del análisis se realizó un cuestionario a 17 600 jóvenes, basada en la adaptación de la Forma de estudiante de escala de adicción a las redes sociales (SMAS-SF) de Sahin. Entre los resultados destaca la poca conciencia que presentan los jóvenes en su percepción como adictos en relación con las redes sociales. Aspecto sobre el que se debe reflexionar tomando en consideración las limitaciones de percepción que presenta la muestra y el hecho de que el presente estudio midió las autopercepciones de los estudiantes jóvenes con respecto a la RR.SS.

Descriptores: Adicción, joven, medios sociales, estudiante, docente, percepción.

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1. Introduction and state of the art

1.1 Online Social Media and Addiction

Online Social Media (OSM) are one of the most important media outlets where today's youth connect with peers, and for that reason, some may consider it to be a passing vogue. However, unlike any other communication outlet in the history of humanity, Social Media have shown a superior capacity for attracting millions of users worldwide in a very short period of time and in such a "little" space as the small screen (García and Fernández, 2016).

Considering that there are different definitions regarding social networks and their functions, it is generally considered a space where people interact, share information, communicate, and thus create communities, indicating that social media have always existed in one form or another, but the Internet has given communication a sense of immediacy and extension. It is no longer about having a relatively limited personal network, on the contrary, the current social media use the benefits of the internet to create a huge social "swarm" for people to interact (Fuentes *et al.*, 2015).

Unlike face-to-face social networks, Online Social Media (OSM) are characterized by different features: absence of physical or personal contact where there may be no relationship between the identity of the individual in the offline (real) world and the online (virtual) world, OSM pave the way for social interaction to those who would otherwise have difficulties maintaining social interaction in the real world, the ability for simultaneous communication among a large number of people, and the ease to break or suspend relationships or contact (Musial and Kasienko, 2013). Such characteristics have contributed to the transformation of the traditional concept of friendship "It is no longer used only for a close, known and trusted individual, but can be used for people who barely know each other" (Llamas and Pagador, 2014; Sabariego, 2012).

In any case, it is misleading to think that it is the volume of people and interactions what makes OSM significant, when it is rather the creation of a whole new model for communication and relationships.

There is a diversity of type within social networks, depending on its degree of openness, its theme, and whether they are managed or not, etc. Social Media in recent times has obtained a certain level of presence in educational fields. The uses of OSM in education include collaborative work environments, alternative way of communication, language learning, platform or LMS (Learning Management System) for virtual training, and for the tutoring and counseling of students and parents (Túñez and Sixto, 2012; Esquivel and Rojas, 2014; Cruz, 2016; Fuentes *et al.*, 2015).

Concerning the objective of this study, the first thing to acknowledge is that its use is spreading mainly among youths. A recently conducted study in Spain (Orange, 2018) indicates active use of OSM starts at age 14, the most active users are between the ages of 16 and 24. In Mexico, the sample of our research corresponds to the percentages of active use with percentages higher than the international mean (Islas and Carranza, 2011).

There is a variety of factors involved in the increase and incorporation of OSM, including the rising tendency in which adolescents are acquiring mobile devices (Garcia-Oliva and Fernández, 2016; Gértrudiz *et al.*, 2017). In Spain, 45.90% of parents say their children received their first smartphones at the age of 14 (Orange, 2018), and 93.2% of children say it is their preferred means for accessing the Internet.

Information shows that OSM is being actively adopted among younger populations, nowadays being a method of communication and interaction, an extension to relationships, a means to find and request information, an element for leisure, and an aid for the coexistence

and creation of new forms of communication (Garcia-Oliva and Fernández, 2016; Orange, 2018; Gértrudiz *et al.*, 2017; Bastarrechea, 2017).

Because of all these possible uses, side effects are appearing among youths as a result of their use and their intrinsic communication characteristics: anonymity, ease and speed of access, disinhibition, affordability, and absence of physical contact (Fuentes *et al.,* 2015; Griffiths, 2015); also, the great amount of time exposed to them. All these elements have produced what some authors already consider an addiction to OSM.

The significance that these devices are acquiring is having a strong impact on the social identity of teenagers, who are the main users (Renau *et al.,* 2013). "Identity is an essential aspect in the development of adolescents and its construction ends with the configuration of a solid and stable personality over time, which aspires to a good coupling between the ideal life for the individual and the society in which he/she lives" (Arab and Diaz, 2015, p. 8).

For Basteiro *et al.* (2013), OSM addiction, declines with a person's age, and the characteristics of physical and psychological immaturity among juveniles linked with heavy use of OSM may have more negative repercussions on them than on adults, therefore, the interest in its analysis and reflection. As Diaz (2014, p. 54) points out: "On a psychological level, the addiction of certain technological applications can be related to emotional instability, depression, anxiety, irritability, affective impoverishment, decreased judgment and difficulties in coping with everyday problems."

1.2 Addiction to Social Media

The use of digital technologies, both abusive and problematic, is leading to the development of analysis, concern, research, the study of OSM addiction, and its consequences. A large number of studies have specifically focused on the abusive use of the internet, and its association with physical-biological, social and family problems (Echeberúa, 2012; Fernández Villa *et al.*, 2015; Young, 2015). The research on the addiction to Internet began in 1996 with a study of more than 600 cases of frequent internet users who exhibited clinical signs of addiction measured through an adapted version of the criteria of the "Diagnostic and Statistical Manual of Mental Disorders - DSM-IV" for the pathological game (Young, 2015).

For Chóliz and Marco (2012), Internet addiction is observed in a person displaying the following behavior: 1) Tolerance: an increase in the time the person must be connected, 2) Abstinence, you feel discomfort when the connection is interrupted, 3) The medium is used more than originally intended, 4) Desire to stop using the Internet, but not be able to carry such action out, 5) Excessive use of time in Internet-related activities, 6) Leaving other activities behind in order to use the internet longer, and 7) Using the Internet despite knowing of its harmful effects.

Different studies have shown that addiction to this technology has consequences, such as: difficulties in cognitive flexibility (Dong *et al.*, 2013), decision making problems (D'Hondt *et al.*, 2015), increased levels of anxiety , forgetting the performance of certain activities (Chóliz and Marco, 2012), in the development of working memory (Dong, 2012), and difficulty concentrating (Rücker *et al.*, 2015).

Not only has the research on the consequences of abuse focused on the Internet, but also on a variety of technologies, including Information and Communication Technologies (ICT) in general (Garcia-Oliba *et al.*, 2017; Gairin and Mercader, 2018), online games (Bertrán and Chamarro, 2016; Martín *et al.*, 2017), video games (Gonzálvez *et al.,* 2015; Espejo *et al.*, 2018), mobile phones (Gaspar and Cuesta, 2015; Ruiz, 2016; Polo *et al.*, 2017), and of course OSM.

The abusive use of OSM has originated a line of work called "Addiction to online social media networks", which can be categorized as a particular type of Internet addiction (Sahin, 2018). But before

analyzing it, we will discuss the term addiction itself and the variations connected to OSM.

As different authors point out (Basteiro *et al.*, 2013; Echeberúa, 2012) the term addiction has been associated with drugs and substance consumption. It is defined in the Diagnostic and Statistical Manual of Mental Disorders (APA, 2013) as the abuse and dependence on any type of psychoactive substance. However, other researchers sustain that the development of an addictive process can occur without the use of psychoactive substances. Thus, it could be defined as a compulsive and excessive use that causes a deterioration in an individual's daily routine thus leading to an addictive behavior (Watters *et al.*, 2013).

Not every author agrees that the abusive use of the Internet and social media should be considered an addiction. They claim that an addiction to technology is often confused with an addiction to behavior. As a result, they consider that it is better to differentiate true addictions, excesses, and transitory problems from an abusive, problematic, inadequate or intensive exposure to technology (Kuss *et al.*, 2014; Carbonell, 2014; Carbonell and Obrset, 2015; Pontes *et al.,* 2015). Carbonell (2014) specifically criticizes the idea of addiction to information and communication technologies as being more of a social construct that has gained popularity rather than a hard reality, an addiction of secondary nature, which can be confused with a dependence on technology, and it may be only a hobby or habit rather than a psychological disorder. These authors also argue that it is not an addiction since it is not included in the "DSM-5 Diagnostic Criteria Reference Guide" (APA, 2013).

Independently of the stance we choose to take, we cannot ignore that abusive use of technologies brings negative consequences, generating potential problems in a person's life, specifically in vulnerable groups such as teenagers (Chóliz and Marco, 2012). Through the search of instruments to aid in its diagnosis, the scales of self-perception, usually denominated as "Social Media Addiction Test (SMAT)" have been gaining ground progressively (Basteiro *et al.*, 2013; Escurra and Salas, 2014; Tutgun-Ünal and Deniz, 2015; Banyai, 2017; Simó *et al.,* 2017) one of which was elaborated by Sahin (2018), which will be the one used for the present study.

The application of these scales has provided a reference of the degree of addiction or abusive use that the adolescents have. Sahin (2018) points to the fact that people who spend too much time on technology have the desire of instant notifications, which can cause virtual tolerance, virtual communication, and virtual problems.

In Echeberúa (2012) and Echeberúa and De Corral (2010) we see that not only social media can trap adolescents by distancing them from personal contact, but also produce social isolation, and distort reality. It can also produce withdrawal symptoms when they do not have access to them, including sleep deprivation and poor performance in other activities such as academic tasks. Basteiro *et al.* (2013) point to the existence of a positive linear relationship between neuroticism, extraversion and depressive symptomatology in relation to the abuse of OSM. Llamas and Pagador (2014) suggest that abuse favors adolescent confusion between the real and virtual world. This addiction has been connected to other variables, such as low self-esteem, depression, and poor social skills (Herrera *et al.*, 2010), as well as health problems (migraines, lumbar pain, overweight or obesity, insufficient rest), psychological aspects (risk of eating or mental disorders, depression), family problems and discrimination (Fernández-Villa, 2015).

In conclusion, some adolescents are aware of their addiction, and are taking measures to overcome it (Fuentes *et al.,* 2015), but some others are not aware of its existence (Marín *et al.,* 2015).

2. Methods

2.1 Study Objective

The objectives being pursued in this research are stated in the following terms:

a) To recognize the degree of addiction that Mexican youth have toward OSM, measured by adapting the Sahin scale (2018) called "Social Media Addiction Scale-Student Form" (SMAS-SF) to a Mexican context.
b) To analyze the degree of addiction that Mexican youth have toward OSM.
c) To analyze whether the gender of the student is related to the addiction to OSM.

2.2 Research sample

The study is exploratory, consisting of 17600 students registered in the public high school system (Mexican Public Education Secretariat) and a baccalaureate school in Mexico City. It was conducted face to face of which 5451 were men and 12149 women. Most students were "under 20 years" (f = 41011, 23.3%) and "between 20 and 25 years" (f = 2710, 15.40%). Regarding the frequency with which they used RSOs, the vast majority (f = 8241, 46.82%) indicated that they used it "several times a day", followed by those who used it "at least once a day" (f = 4132, 23.48%), "two or three times a week" (f = 1847, 10.49%), "several times a week" (f = 1847, 10.49%), and "less than once a week" (f = 138, 7.84%). The data shows the following number of hours used by RSOs per week, the highest percentage was found "between 1-5 hours" (32.05%), followed by those who used them "between 5–10 hours" (22.64%), "less than 1 hour" (15.61%), and "between 15-20 hours" (7.27%). No student indicated to use them "more than 25 hours."

The sample is non-probabilistic, also called convenience or causal, which is determined by the ease of access that the researcher has to the subjects that make up the sample.

2.3 Instruments

The instrument used is an adaptation to the context Mexican adolescents, from the one elaborated by Sahin (2018) called "Social Media Addiction Scale-Student Form" (SMAS-SF). The scale implemented a Likert-type construction and 5 response options; the procedure used can be observed in the work of Valencia and Cabero (2019).

Note only that the internal consistency index obtained for the global scale was .926, and for the factors of: .836 ("Satisfaction for being connected to the RSO"), .827 ("Problems"), .826 ("Obsession for being informed"), and .797 ("Need to be connected").

Reliability according to different authors (Nunally and Bernstein, 1994; Mateo, 2012), can be considered high or very high.

The administration of the scale was done online.

3. Results

The first data presented will be the means and standard deviations obtained for each of the factors, and for the different items that make them up (Table 1).

Table 1

Mean and standard deviations

Satisfaction for being connected on online social media(m=2,32 – dt=0,75)	Temas negativos relacionados al uso de las redes sociales (m=2,13 – dt=0,76)
4. I see social media as an escape from the real world (m=2.34–s.d.=1.08).	15. I pass over my homework because I spend too much time on social media. (m=2.20–s.d.=1.08).
5. A life without social media becomes meaningless for me. (m=2.12– s.d.=1.10).	16. I feel bad if I am obliged to decrease the time I spend on social media. (m=2.21– s.d.=1.09).

Satisfacción por estar conectado en las redes sociales (m=2,32 – s.d.=0,75)	Temas negativos relacionados al uso de las redes sociales (m=2,13 – s.d.=0,76)
6. I prefer to use social media even if there is somebody around me. (m=2.31– s.d.=1.06). 7. I have physical problems because of social media use. (m=1.96– s.d.=1.02). 8. I express myself better to the people with whom I get in contact with on social media. (m=2.51– s.d.=1.18). 9. I am as I want to seem on social media. (m=2.24– s.d.=1.09). 10. I usually prefer to communicate with people via social media. (m=2.54– s.d.=1.12). 11. Even though my family frown upon, I cannot give up using social media. (m=2.62– s.d.=1.23). 12. I prefer virtual communication on social media to going out. (m=2.28- s.d.=1.02).	17. I feel unhappy when I am not on social media. (m=2.31– s.d.=1.14). 19. I use social media so frequently that I fall afoul of my family. (m=1.85– s.d.=0.92). 21. I do not even notice that I am hungry and thirsty when I am on social media. (m=1.91– s.d.=1.04). 22. I notice that my productivity has diminished due to social media. (m=2.54– s.d.=1.18). 23. I have physical problems because of social media use. (m=2.00– s.d.=1.02).
Obsession for being informed (m=2.89 – s.d.=0.79)	**Need/obsession to be connected (m=2.83 – s.d.=0.78)**
20. The mysterious world of social media always captivates me. (m=2.55– s.d.=1.00). 25. I like using social media to keep informed about what happens. (m=3.28– s.d.=1.15). 26. I surf on social media to keep informed about what social media groups share. (m=3.02– s.d.=1.08). 27. I spend more time on social media to see some special announcements (e.g. birthdays). (m=2.68– s.d.=1.11). 28. Keeping informed about the things related to my courses (e.g. homework, activities) makes me always stay on social media. (m=3.00– s.d.=1.11). 29. I am always active on social media to be instantly informed about what my kith and kin share. (m=2.79– s.d.=1.15).	1. I am eager to go on social media. (m=2.98– s.d.=1.07). 2. I look for internet connectivity everywhere so as to go on social media. (m=2.89– s.d.=1.15). 3. Going on social media is the first thing I do when I wake up in the morning. (m=2.60– s.d.=1.20). 12. I want to spend time on social media when I am alone. (m=3.12– s.d.=1.16). 14. Social media activities lay hold on my everyday life. (m=2.45– s.d.=1.07). 18. Being on social media excites me. (m=2.94– s.d.=1.07).

The data shows that the adolescents surveyed do not perceive different aspects related to OSM as problematic, since only in two items (26. "I surf on social media to keep informed about what social media groups share" and 27. "I spend more time on social media to see some special announcements (e.g. birthdays.") the average score is 3. At the same time, the results show that in a large volume of items, the average score is below central value of 2.5: 5. "A life without social media becomes meaningless for me." (2.12), 7. "I prefer the friendships on social media to the friendships in the real life." (1.96), 9. "I am as I want to seem on social media" (2.24), 13. "I prefer virtual communication on social media to going out." (2.28), 14. "Social media activities lay hold on my everyday life." (2.45), 15. "I pass over my homework because I spend too much time on social media." (2.20), 16. "I feel bad if I am obliged to decrease the time I spend on social media." (2.21), 17. "I feel unhappy when I'm not connected on social media." (2,31), 19. "I use social media so frequently that I fall afoul of my family." (1.85), 21. "I do not even notice that I am hungry and thirsty when I am on social media." (1.91), 22. "I notice that my productivity has diminished due to social media." (2.41), and 23. "I have physical problems because of social media use." (2.00).

However, because of the low standard deviations obtained it can be said that there has been a certain homogeneity in the responses offered by the respondents.

A fact that also reinforces what is being discussed in this study, is that the average and standard deviation obtained in the overall instrument was 2.50 and 0.63, respectively. These results indicate a perception of non-addiction to the OSM by the respondents.

Regarding the means and standard deviations reached in each of the factors, in Table 2, the items that constituted each one are presented, in the previous study carried out and the means and typical deviations reached.

This is also confirmed when contemplating the average scores of the factors that do not denote a perception of being trapped by the OSM. That is because they do not show a high level of obsession to connect and to be informed through OSM, nor do they consider that its use had led to problematic situations such as avoiding family or friends, or affecting their performance, or developing a physical problem. They did not express particularly high levels of satisfaction derived from being connected.

Regarding the existence of gender-differentiated responses, Table 2 shows the means and standard deviations reached in both each of the factors and the instrument.

Table 2

Averages and typical deviations according to the gender of the respondents

	G	M	S.D
Satisfaction for being connected on Online Social media	M	2.35	.754
	W	2.30	.740
Problems	M	2.15	.760
	W	2.11	.768
Obsession for being informed	M	2.84	.790
	W	2.93	.783
Need/obsession to be connected	M	2.81	.800
	W	2.85	.755
Total	M	2.50	.635
	W	2.51	.621

As the data points out, the differences are not very significant, but for its contrast we formulate the hypotheses that we present below.

Null hypothesis (H0): There are no significant differences among young people according to gender in the responses offered to the adaptation of the questionnaire "Social Media Addiction Scale-Student Form" (SMAS-SF) (2018), with an alpha risk of error of 0.05.

Alternative hypothesis (H1): there are significant differences among young people according to gender in the answers offered to the adaptation of the questionnaire "Social Media Addiction Scale-Student Form" (SMAS-SF) (2018), with an alpha risk of error of 0.05.

To do this, we will apply the student t test for independent samples, although we must point out that the Levene test (Mateo, 2012) was initially obtained to analyze the equality of the variances. In Table 3 we present the t values reached for each item, for each factor and the overall nature of the instrument, and its significance for 603 degrees of freedom.

Table 3

*Student's T for the analysis of gender significance (** = significant at 0.01)*

	Test Levene		t de student	
	F	Sig.	t	Sig.
Satisfaction for being connected on online social media	0.005	0.945	0.744	0.457
Problems	0.121	0.728	0.620	0.535
Obsession for being informed	0.003	0.955	-1.421	0.156
Need/obsession to be connected	3.044	0.082	-0.587	0.557
Total	0.102	0.750	-0.064	0.949

Based on the data, the different H0 formulated should not be generally rejected, therefore, it can be indicated that there are no significant differences among young people according to gender in the answers offered to the adaptation of the questionnaire "Social Media Addiction Scale-Student Form" (SMAS-SF), with a level of significance of p≤0.05. Rejection only occurred in one item ("I usually prefer to communicate with people via social media"), and in this case the differences are favorable to men over women.

4. Discussion and conclusions

The present study, which sought to determine if Mexican youths could be considered addicted to OSM, shows data stating that students do not perceive themselves addicted to OSM, which coincides with other authors and in different contexts (Marín *et al.*, 2015; Levene, 1960). Comments are also related to the conclusion of Kuss *et al.* (2014), Carbonell (2014), Carbonell and Oberst (2015) and Pontes, Szabo and Griffiths (2015), who point to behavior maintained by the youth and adolescents in OSM, which cannot be considered as addiction to a behavior, but rather an excess and abuse of use, something our data does not confirm, since the features of addiction cannot be found as indicated in scientific literature (Urresti *et al.,* 2015), as shown by the fact that in the "Satisfaction for being connected to the network" the average score was 2.32.

The results indicate that the idea of young people spending an excess time in OSM, and as a result having repercussions such as forgetting to perform academic tasks and problems with performance, have not been confirmed in the study, because the answers of the students do not confirm it ("15. I pass over my homework because say: I spend too much time on social media -2.20" and "22. I notice that my productivity has diminished due to social media -2.41") which agrees with the findings obtained by Tuñez and Sixto (2012) and Marín *et al.* (Sabariego, 2012). Nor have there been any reported findings that its use affects the upheaval of his/her familiar or social life ("11. Even though my family frown upon, I cannot give up using social media -2,62" and "19. I use social media so frequently that I fall afoul of my family -1.85", a finding that coincides with the comments made by Caldevilla (2010).

Unlike the author of the test that we have adapted (2018), we have not found the need identified by the author of the need that people addicted to OSM have to receive notifications constantly. As can be seen, the average score in the factor "Obsession for being informed" was 2.89, which does not suggest a tension in the respondents to receive information constantly.

As for the hypotheses of whether there were significant gender differences in the perception of students related to their addiction to OSM, no such differences have been obtained, neither in the different items of the questionnaire, nor in the four factors identified. In this

sense, our findings coincide with the results of other authors (Basteiro *et al.*, 2013; Fernández-Villa, 2015; Ruiz, 2016).

The findings should be considered within the limitations of the study, particularly the characteristics of the sample and the fact of working with students that do not have the self-perception of being addicted to OSM.

The latter leads to the proposal of future lines of research: replicate the study with different sample criteria and context; compare findings with those obtained in other scales of addiction; compare the perceptions shown by the students to OSM addiction, with their teachers and parents can perceive of them; and to analyze the possibilities to determine OSM addiction using other.

References

American Psychiatric Association (2013). *Guía de consulta de los criterios diagnósticos del DSM-5*. Médica Panamericana.

Arab, E. and Díaz, A. (2015). Impacto de las redes sociales e internet en la adolescencia: Aspectos positivos y negativos. *Revista Médica Clínica Las Condes*, *26*(1), 7-13. https://doi.org/10.1016/j.rmclc.2014.12.001

Bányai, F., Zsila, A., Király, O., Maraz, A., Elekes, Z., Griffiths, M. D., Andreassen, C. and Demetrovics, D. (2017). Problematic social media use: results from a large-scale nationally representative adolescent sample. *PLoS ONE*, *12*(1), 1-13. https://doi.org/10.1371/journal.pone.0169839

Bastarrechea, N. (2017). Jóvenes, TIC y entornos educativos. Nuevas formas de interactuar, nuevas resonsabilidades. *Telos*, *107*, 93-94. https://bit.ly/3VngDVU

Basteiro, J., Robles, A., Juarros, J. and Pedrosa, I. (2013). Adicción a las redes sociales: creación y validación de un instrumento de medida. *Revista de Investigación y Divulgación en Psicología y Logopedia*, *3*(1), 2-8. https://bit.ly/3WeSv9u

Bertran, E. and Chamarro, A. (2016). Videojugadores del League of Legends: El papel de la pasión en el uso abusivo y en el rendimiento. *Adicciones*, *28*(1), 28-34. https://bit.ly/3WX-7Tr5

Caldevillla, D. (2010). Las redes sociales. Tipología, uso y consumo de las redes 2.0 en la sociedad digital actual. *Documentación de las Ciencias de la Información*, *33*, 45-68. https://bit.ly/3Wn0T6J

Carbonell, X. and Oberts, U. (2015). Las redes sociales en línea no son adictivas. *Aloma. Revista de Psicología, Ciències de l´Educació i de l´Esport*, *33*(2), 13-19. https://doi.org/10.51698/aloma.2015.33.2.13-19

Carbonell, X. (2014). ¿Qué son las adicciones tecnológicas? Internet, MMORPG y redes sociales. En X. Carbonell (coord.), *Adicciones tecnológicas qué son y cómo tratarlas* (pp. 13-36). Síntesis.

Chóliz, M. and Marco, C. (2012). *Adicción a Internet y redes sociales. Tratamiento psicológico.* Alianza.

Cruz, I. (2016). Percepciones en el uso de las redes sociales y su aplicación en la enseñanza de las matemáticas. Pixel-Bit. *Revista de Medios y Educación, 48*, 165-186. https://doi.org/10.12795/pixelbit.2016.i48.11

D'Hondt, F., Billieux, J. and Maurage, P. (2015). Electrophysiological correlates of problematic Internet use: Critical review and perspectives for future research. *Neuroscience and Biobehavioral Reviews, 59*, 64-82. https://doi.org/10.1016/j.neubiorev.2015.10.005.

Díaz, R. M. (2014). Intervención en adolescentes. En X. Carbonell (Ed.), *Adicciones tecnológicas qué son y cómo tratarlas.* Síntesis.

Dong, G., Devito, E., Du, X. and Cui, Z.(2012). Impaired inhibitory control in internet addiction disorder. *Psychiatry Research, 203*, 153-158. https://doi.org/10.1016/j.pscychresns.2012.02.001

Dong, G., Lin, X., Zhou, H. and Lu, Q. (2014). Cognitive flexibility in internet addicts: fMRI evidence from difficult-easy and easy-to-difficult switching situations. *Addictive Behaviors, 39,* 677-683. https://doi.org/10.1016/j.addbeh.2013.11.028

Echeburúa, E. (2012). Factores de riesgo y factores de protección en la adicción a las nuevas tecnologías y redes sociales en jóvenes y adolescen-

tes. *Revista Española de Drogodependencia*, *37*(4), 435-447. https://bit.ly/3HZa9Ka

Echeburúa, E. and Del Corral, P. (2010). Adicción a las nuevas tecnologías y a las redes sociales en jóvenes: ¿un nuevo reto? *Adicciones*, *22*(2), 91-95. https://bit.ly/3PQfHbt

Escurra, M. and Salas, E. (2014). Construcción y validación del cuestionario de adicción a redes sociales (ARS). *LIBERABIT*, *20*(1), 73-91. https://bit.ly/3vgrVkp

Espejo, T., Chacón, R., Castro, M. Zurita, F. and Martínez, A. (2018). Incidencia del consumo de videojuegos en el autoconcepto académico-físico de estudiantes universitarios. *Pixel-Bit. Revista de Medios y Educación, 52*, 7-19. https://doi.org/10.12795/pixelbit.2018.i52.01

Esquivel, J. and Rojas, C. (2014). Uso de Facebook en ámbitos educativos universitarios: Consideraciones y recomendaciones. *Apertura*, *6*(2), 1-12. https://bit.ly/3WHJ0j0

Fernández-Villa, T., Ojeda, J., Almaraz Gómez, A., Cancela, J. M., Delgado-Rodríguez, M., García-Martín, M., Jiménez-Mejías, E., Llorca, J., Molina, J., Ortiz, R., Valero-Juan, L. and Martín, V. (2015). Uso problemático de internet en estudiantes universitarios: factores asociados y diferencias de género. *Adicciones*, *27*(4), 265-275. https://bit.ly/3hOLLQE

Fuentes, J. L., Esteban, F. and Caro, C. (2015). *Vivir en Internet. Retos y reflexiones para la educación*. Síntesis.

Gairin, J. and Mercader, C. (2018). Usos y abusos de las TIC en los adolescentes. *Revista de Investigación Educativa, 36*(1), 125-140. https://doi.org/10.6018/rie.36.1.284001

García-Oliva, C. and Fernández, C. (2016). *Si lo vives, lo compartes. Cómo se comunican los jóvenes en un mundo digital*. Fundación Telefónica.

García-Oliva, C., Piqueras, J. M. and Marzo, J. C. (2017). Uso problemático de internet, el móvil y los videojuegos en una Muestra de adolescentes alicantinos. *Salud y drogas*, *17*(2), 189-200. https://bit.ly/3FOOMsg

Gaspar, S. and Cuesta, V. (2015). Adicción al smartphone. Análisis motivacional de uso entre nativos digitales. *Opción*, *31*(4), 517-531. https://bit.ly/3hLaXaA

Gértrudix, M., Borges, E. and García, F. (2017). Vidas registradas. Redes sociales y jóvenes en la era algorítmica. *Telos*, *107*, 62-70. https://bit.ly/3BXfFZM

Gonzálvez, M., Espada, J. and Tejeiro, T. (2015). El uso problemático de los videojuegos está relacionado con problemas emocionales en adolescentes. *Adicciones, 29*(3), 180-185. https://bit.ly/3WHpR0k

Griffiths, M. (1995). Technological addictions. *Clinical Psychology Forum*, *76*, 14-19.

Herrera, M., Pacheco, M., Palomar, J. and Zavala, D. (2010). La adicción a Facebook relacionada con la baja autoestima, la depresión y la falta de habilidades sociales. *psicología iberoamericana*, *18*(1), 6-18. https://bit.ly/3hSxa6z

Islas, C. and Carranza, R. (2011). Uso de las redes sociales como estrategias de aprendizaje. ¿Transformación educativa? *Revista Apertura*, *3*(2). https://bit.ly/3FTPyUy

Kuss, D., Griffiths, M., Karila, L. and Billieux, J. (2014). Internet Addiction: A Systematic Review of Epidemiological Research for the Last Decade. *Current Pharmaceutical Design, 20*, 4026-4052.

Levene, H. (1960). Robust tests for equality of variances. En *I. Olkin. In Contributions to Probability and Statistics: Essays in Honor of Harold Hotelling* (pp. 278-292). Stanford University Press.

Llamas, F. and Pagador, I. (2014). Estudio sobre las redes sociales y su implicación en la adolescencia. *Enseñanza & Teaching*, *32*(1), 43-57. https://bit.ly/3jgJQ7E

Marín, V., Sampedro, B. and Muñoz, J. M. (2015). ¿Son adictos a las redes sociales los estudiantes universitarios? *Revista Complutense de Educación*, *26*, 233-251. https://doi.org/10.5209/rev_RCED.2015.v26.46659

Martín, M., Matalí, J., García, S., Pardo, M., Lleras, M. and Castellano, C. (2017). Adolescentes con Trastorno por juego en Internet (IGD): perfiles y respuesta al tratamiento. *Adicciones*, *29*(2), 125-133. https://bit.ly/3YMnpru

Mateo, J. (2012). La investigación ex post-facto. En Rafael Bisquerra (coord.), *Metodología de investigación educativa* (pp.196-230). La Muralla.

Musial, K. and Kazienko, P. (2013). Social Networks on the Internet. *World Wide Web, 16*(1),

31-72. https://doi.org/10.1007/s11280-011-0155-z

Nunally, J. C. and Bernstein, I. (1994). *Psychometric theory*. McGraw-Hill.

Orange. (2018). *Guía sobre el uso responsable de la tecnología en el entorno familiar*. Orange.

Polo, M., Mendo, S., León, B. and Castaño, E. (2017). Abuso del móvil en estudiantes universitarios y perfiles de victimización y agresión. *Adicciones*, *29*(4), 245-255. https://bit.ly/3GfAhPt

Pontes, H. M., Szabo, A. and Griffiths, M. D. (2015) The impact of Internet based specific activities on the perceptions of Internet addiction, quality of life, and excessive usage: A cross-sectional study. *Addictive Behaviors*, *1*, 19-25. https://doi.org/10.1016/j.abrep.2015.03.002

Renau, V., Oberts, U. and Carbonell, X. (2013) Construcción de la identidad a través de las redes sociales online: una mirada desde el construccionismo social. *Anuario de Psicología, 43*(2), 159-170. https://bit.ly/3WHsxeo

Rücker, J., Akre, C., Berchtold, A. and Suris, J.C. (2015). Problematic Internet use is associated with substance use in young adolescents. *Acta Pediátrica, 104,* 504-507. https://doi.org/10.1111/apa.12971

Ruiz, C. (2016). Perfil de uso del teléfono móvil e internet en una muestra de universitarios españoles: ¿usan o abusan? *Bordón*, *68*(3), 131-145. https://doi.org/10.13042/Bordon.2016.68307

Sabariego, M. (2012). El proceso de investigación (parte 2). En Rafael Bisquerra (coord.), *Metodología de la investigación educativa* (pp.127-163). La Muralla.

Sahin, C. (2018). Social Media Addiction Scale - Student Form: The Reliability and Validity Study. *TOJET: The Turkish Online Journal of Educational Technology*, *17*(1), 168-182. https://bit.ly/3WxYar2

Simó, C., Martínez, A., Ballester, M. L. and Domínguez, A. (2017). Instrumentos de evaluación del uso problemático del teléfono móvil/smatphone. *Salud y drogas*, *17*(1), 5-14. https://bit.ly/3GoT4rT

Túñez, M. and Sixto, J. (2012). Las redes sociales como entorno docente: análisis del uso de Facebook en la docencia universitaria. *Pixel-Bit. Revista de Medios y Educación*, *41*, 77-92. https://bit.ly/3WGtPqc

Tutgun-Ünal, A. and Deniz, L. (2015). Development of the Social Media Addiction Scale. *AJIT-e: Online Academic Journal of Information Technology, 6*(21), 51-70. https://doi.org/10.5824/1309-1581.2015.4.004.x

Urresti, M., Linne, J. and Basile, D. (2015). *Conexión total. Los jóvenes y la experiencia social en la era de la comunicación digital.* CABA, GEU.

Valencia, R. and Cabero, J. (2019). TIC para la inclusión: una mirada desde Latinoamérica. *Aula abierta*, *48*(2), 139-146. https://doi.org/10.17811/rifie.48.2.2019.139-146

Watters, C. A., Keefer, K. V., Kloosterman, P. H., Summerfeldt, L. J. and Parker J. D. A. (2013). Examining the structure of the Internet Addiction Test in adolescents: A bi-factor approach. *Computers in Human Behavior*, *29*(6), 2294-2302. https://doi.org/10.1016/j.chb.2013.05.020

Young, K. (2015). The evolution of internet addiction disorder. En G. Montag, *Internet Addiction, Neuroscientific Approaches and Therapeutical Interventions* (pp. 3-17). Springer International Publishing.

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Smartphone dependence and addiction among university students: Myth or reality?

Dependencia y adicción al smartphone entre el alumnado universitario: ¿Mito o realidad?

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Abstract

The advance and development of digital technologies has led to the smartphone becoming, nowadays, an integral part of human existence. This is particularly evident among the younger generations, who use it frequently in almost all facets of their lives. However, the disproportionate and unbalanced consumption of this type of device can generate a serious impact on their physical and mental health. This, together with the high employment rates of this group, means that their use is sometimes labelled as dependent and addictive. Therefore, this study aimed to identify the usage profile of university students with respect to the smartphone and to determine whether it is problematic. The research involved 350 students in the 1st year of the Bachelor's Degrees in Early Childhood Education and Primary Education at the University of Alicante (Spain). All of them completed a questionnaire on this topic. The data were processed with the statistical analysis program SPSS version 25, with which a descriptive study was carried out. The findings obtained indicate that, although sometimes the smartphone becomes a means to avoid loneliness, most of the participants presented a habitual user pattern linked to other users or networks. Therefore, from the perspective of university students, the use of this type of device cannot be described as dependent or addictive. For this reason, and considering its potential for learning, we conclude by stressing the need to integrate it into university classrooms but foreseeing the risks that its excessive use can provoke.

Keywords: Digital technologies, problematic use, higher education institutions, nomophobia, smartphone, university students.

Resumen

El avance y desarrollo de las tecnologías digitales ha provocado que el *smartphone* sea ya parte integrante de la existencia humana. Esto resulta particularmente evidente entre las generaciones más jóvenes, quienes lo utilizan frecuentemente en casi todas las facetas de su vida. No obstante, el consumo desproporcionado y desequilibrado de este tipo de dispositivos puede llegar a generar un grave impacto en su bienestar físico y mental. Esto, unido a las elevadas tasas de empleo de este colectivo, provoca que en ocasiones su uso sea catalogado como dependiente y adictivo. Sin embargo, la adicción al teléfono móvil sigue siendo debatida entre la comunidad científica. Por ello, este estudio se propuso identificar el perfil de utilización del alumnado universitario respecto al *smartphone* y determinar si este es problemático. En la investigación participaron 350 estudiantes del 1er curso de los Grados de Magisterio en Educación Infantil y Primaria de la Universidad de Alicante (España). Todos ellos cumplimentaron un cuestionario sobre esta temática. Los datos se procesaron con el programa de análisis estadístico SPSS versión 25, con el que se realizó un estudio descriptivo. Los resultados indican que, si bien en ocasiones el *smartphone* se convierte en un medio para evitar la soledad, la mayoría de participantes presentaba un patrón de consumidor habitual, vinculado a otros usuarios o redes. Por tanto, desde la perspectiva del alumnado universitario, el uso de este tipo de dispositivos no puede ser calificado de dependiente o adictivo. Por ello, y a la vista de sus potencialidades para el aprendizaje, se concluye subrayando la necesidad de integrarlo en las aulas universitarias, pero previendo los riesgos que su uso excesivo puede ocasionar.

Descriptores: Tecnologías digitales, uso problemático, instituciones de Educación Superior, nomofobia, smartphone, estudiantes universitarios.

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1. Introduction

The development of telecommunications in recent decades has caused mobile telephony, especially the smartphone, to be an essential tool in our daily life (Seel, 2022), linked to the digital aspect (Pangrazio and Sefton-Green, 2021). The multiple features it offers have significantly expanded its use in a way that more than 78% of the world's population one of these devices (Statista, 2022). In fact, the use of smartphones in countries like Spain has grown by 102% during the last ten years (Europa Press, 2021). Some of the reasons that explain this remarkable increase lie in the almost unlimited possibilities it offers to communicate and participate in society (Cabero-Almenara *et al.*, 2019; de Almeida and Cabero, 2020; de Sousa *et al.*, 2022; Navarro-Mateos and Pérez-López, 2022; Roig-Vila *et al.*, 2021a; Roig-Vila *et al.*, 2021b; Salcines-Talledo *et al.*, 2020), qualities that have been more observed especially during the pandemic (Stevic *et al.*, 2022). Thus, it has been found that the use of the smartphone can be especially useful to improve health (Piaggio *et al.*, 2022), social integration (Jansen-Kosterink *et al.*, 2020; Roig-Vila *et al.,* 2020a), and even to promote the tourism and urban development of cities and rural communities (Javed *et al.*, 2021; Voda *et al.,* 2022).

However, the disproportionate use of this type of device, or other similar devices (Gómez *et al.,* 2021), can also be especially negative for the health of its users (Sohn *et al.*, 2019). As a result, a conglomerate of terms referring to the effects derived from the abusive consumption of the smartphone has been proposed, such as techno-stress (Yao and Wang, 2022), smombies (Hasan and Hasan, 2022), phubbing (Al-Saggaf and O'Donnell, 2019; Han *et al.*, 2022; Lai *et al.*, 2022; Ríos *et al.,* 2021), vamping (Vedova *et al.*, 2022), fear of missing out (FOMO) (Çatiker *et al.,* 202 1; Lai *et al.*, 2022) and nomophobia (Kara *et al.*, 2021). The latter concept, which arises from the abbreviation NO MObile PHone phoBIA, refers to the fear generated by the impossibility of using the mobile phone and which can lead to noticeably maladaptive responses in the subject (Aguilera-Manrique *et al.*, 2018; Anshari *et al.*, 2019; Bekaroğlu and Yilmaz, 2020; Elhai *et al.,* 2020; Zwilling, 2022), such as anxiety, depressive states, emotional imbalances or sleeping and feeding problems (Elhai *et al.*, 2017; Jahrami *et al.*, 2021; Rodríguez-García *et al.*, 2020). Because of the latter and with the aim of investigating the addictive capacity of this type of tools, this study aimed to identify the use profile of the smartphone among university students and to determine whether it is problematic.

Students, especially university students, are the ones who most use this type of devices (Ditrendia, 2020), thus being one of the most vulnerable groups to these problems (Alosaimi *et al.*, 2016; Jahrami *et al.*, 2021; Marín *et al.*, 2022; Martínez-Sánchez *et al.*, 2020; Oviedo-Trespalacios *et al.*, 2019; Romero and Aznar, 2019; Ruiz-Palmero *et al.,* 2021; Yang *et al.,* 2021). It has worsened by the social isolation problems experienced during the recent pandemic (Zwilling, 2022). The maladaptive employment of students is intimately related to the fear generated by being left out of their social network or the loss of information, if they are not frequently connected (Leonardi *et al.*, 2006; Servidio, 2021; Yuan *et al.*, 2021). Therefore, students manifest a constant need to check the mobile and have serious difficulties to silence it or turn it off in those situations in which its use is not allowed (Anshari *et al.,* 2019). In addition, the other problem lies on the notifications received on the device, which can end up becoming a particularly useful element to relax and avoid at certain moments of stress (Canale *et al.*, 2019; Panova and Lleras, 2016). Even in some cases students may experience separation anxiety or phantom vibration syndrome, despite not having received any notification (Sunitha *et al.*, 2020). When these types of behaviors are excessive and maladaptive, there is a high risk that academic performance will be affected, as well as sleep disturbances, difficulties in the ability to concentrate,

driving risk behaviors, a significant deterioration of health and, in the most severe cases, psychopathological disorders (Alkhateeb *et al.,* 2020; Busch and McCarthy, 2021; Cachón-Zagalaz *et al.*, 2020; Jahrami *et al.*, 2021; Lin and Zhou *et al.*, 2022; Romero-Rodríguez *et al.*, 2020; Rozgonjuk *et al.*, 2019).

Because of the later, studies have investigated the addictive capacity of the smartphone. In fact, for Simó et al. (2017) and Yu and Sussman (2020), compulsive and maladaptive use of the smartphone would be part of the so-called 'behavioral addictions', which explain why it is not included in the 5th edition of the *Diagnostic and Statistical Manual of Mental Disorders* (American Psychiatric Association, 2013). This type of addiction does not require the use of any substance, but the improper use of the device generates changes in the behaviors of the subject and in his/her ability to self-control, so the person will have serious difficulties to regulate his/her use profile (Romero and Aznar, 2019). Likewise, it has been found that people who have this type of problems spend a large amount of time connected to their device (Romero and Aznar, 2019), which can cause symptoms very similar to those with other types of addictions (Pera, 2020). According to Ruiz-Palmero *et al.* (2019), one of these signs is the dependency syndrome, that can be defined as the impulse and uncontrollable desire to use the device, even in situations where it is not allowed, a problem frequently observed in university students, especially those in the early stages of their studies/their degree/their training (Sharma *et al.,* 2022). However, it is still an emerging addiction, so further research is needed in this area (Cuesta *et al.*, 2020; Yu and Sussman, 2020).

As a result, some studies have focused on examining the pattern of smartphone use among college students. Thus, it has been found that students from southern Europe, specifically from Italy and Spain, tend to have a lower self-perception of problematic use than their peers from Northern countries, such as the United Kingdom or Belgium (López-Fernández *et al.,* 2017). In addition, the employment of the smartphone as a teaching resource is lower in Mediterranean countries, being used mainly for communication, interaction and leisure. Likewise, Marín-Díaz *et al.* (2020) showed the resistance of Spanish and Colombian students to categorize their use pattern as excessive. On the other hand, the investigation by Panova *et al.* (2020) with students from the United States, Spain and Colombia showed that, although consumption was similar in the three countries, instant messaging services in Spain could become a major stressor for their users. In view of this background and considering the responsibility of higher education institutions to prevent addictive behaviors of students, this study was conducted with two objectives: (1) to identify the use profile of the smartphone among university students and (2) to determine if it is a problem.

2. Method

A quantitative methodology and non-experimental design were used (Campbell and Stanley, 1963), with which conducting a descriptive study (Hernández and Mendoza, 2018).

2.1 Participants

The sample, non-probabilistic, was structured by convenience sampling (Etikan and Bala, 2017). Specifically, 350 students from the University of Alicante (UA) (Spain) participated, who were enrolled in the first year of the Bachelor's Degree in Early Childhood and Primary Education. The reasons to have chosen this institution as a context of analysis lie in its policy developed during the last years to integrate digital tools in the classroom. In this sense, it should be noted the special interest of the UA for using this type of devices to maximize the possibilities of active teaching methodologies, such as gamification (Ferriz-Valero *et al.,* 2020) or flipped classroom (Sentana-Gadea *et al.*, 2022).

Based on the socio-demographic profile of the sample, 75.4% of the subjects were under 20 years old, 76.3% were pursuing a bachelor's degree in early childhood and primary education and 75.7% were women, which is consistent with the feminization of this area of knowledge in Spain (Instituto Nacional de Estadística, 2022). In addition, almost all participants owned a smartphone (99.7%), and more than half admitted to use it during a daily period of four hours or more (55.1%), results aligned with the study of Salcines-Talledo *et al.* (2020).

2.2 Instrument

The data were collected using the scale designed by Bianchi and Phillips (2005), whose objective is to know the possible problematic use of the smartphone among adults. In particular, the adaptation of the instrument by López-Fernández *et al.* (2012) was selected, given its wide use in the Spanish context and specifically with university students (Capilla and Cubo, 2017; de-Sola *et al.*, 2019; Marín *et al.*, 2018; Ruiz, 2016). This is a Likert scale with 5 response options, ranging from 1 ("Totally disagree") to 5 ("Totally agree"). Ranges go from 27 to 135 points, so higher scores are associated with more problematic smartphone use. Five closed questions were added to the 27 items that make up the scale. The aim of these surveys was to collect socio-demographic information: sex, age, qualification, whether participants had a smartphone and, if so, the average time of use in their daily life. The final instrument showed a high internal reliability index. The Cronbach's alpha analysis yielded a value of $\alpha = .905$ for the set of items. To facilitate the dissemination and processing of data, the scale was built with Google Forms.

2.3 Procedure and analysis

Initially, the research team contacted the faculty of the Department of General and Specific Didactics (UA) who teach in the first course of the degrees to ask for their collaboration in the study. Out of these, seven responded positively and allowed to apply the questionnaire to their students. The instrument was applied individually, during school hours and with the presence of one of the members of the research group. Before applying the instrument, students were told about the study's objectives, the voluntary nature of the participation and the confidentiality and anonymity of their answers. This same information, together with self-informed consent, was also included in the instrument. Also, the guidelines of the Helsinki Declaration and the guidelines established by the UA Research Ethics Committee (https://cutt.ly/P1g6IBV) were taken into account throughout the process. To facilitate the completion of the questionnaire, a QR code associated with the survey was created and was projected in each of the classrooms, allowing students to scan it with their smartphone. The average completion time of the instrument ranged from approximately 15-20 minutes.

Once the answers were recorded, the data were tabulated and statistically treated with IBM SPSS for Windows (version 25). A descriptive study was carried out to identify measures of central tendency, position and dispersion of the data set.

3. Results

The findings are presented based on the proposed objectives. Therefore, first the results of the descriptive study are shown and, ultimately, those related to the user profile are collected.

3.1 Problematic use of the smartphone

As shown in Table 1, the smartphone is a device used by university students, since 97.1% of respondents said that almost all their friends owned this type of device. In fact, a significant number of students recognized that sometimes it becomes a means to avoid loneliness and to

communicate with other people (67.4%). In addition, more than half of the respondents considered that if they did not have it, they would be unlikely to be able to contact their immediate environment (53.1%).

Moreover, it should be noted that a high percentage of participants admitted to spending more time than they wanted on their devices (51.7%). On the other hand, they showed a more indecisive positioning regarding the possibility of prioritizing the use of the smartphone over other tasks (48.6%), sleeping problems (48%), the increase in the time of use during the last year (42.8%) or its use as a source of well-being (38.3%).

Table 1

Problematic use of the smartphone among the students of the UA

Ítem	1(%)	2(%)	3(%)	4(%)	5(%)	M	SD
1. All my friends have a cell phone	0.3	0.0	2.6	1.1	96.0	4.93	0.394
2. I have used my mobile phone to contact other people when I was alone	4.0	6.3	22.3	20.9	46.5	4.00	1.142
3. If I don´t have a phone, my friends would not be able to contact me	8.0	14.0	24.9	25.7	27.4	3.51	1.250
4. The time I spend on my phone has increased over the past year	15.5	15.1	26.6	23.4	19.4	3.16	1.326
5. The use of the mobile has reduced my sleeping time	15.5	15.1	21.4	21.1	26.9	3.29	1.406
6. I spend time on my mobile phone when I should be doing other things, which causes me problems	8.3	17.7	25.4	28.3	20.3	3.35	1.220
7. I find it difficult to disconnect from my phone	22.6	20.6	22.8	16.0	18.0	2.86	1.405
8. When I'm talking on my phone and doing something else, I get involved in the conversation and ignore what I do	10.3	26.3	32.3	21.1	10.0	2.94	1.134
9. I'm hooked on my phone longer than I'd like	6.3	16.9	25.1	27.7	24.0	3.46	1.203
10. My friends don't like my mobile to be disconnected	42.0	23.7	17.7	8.6	8.0	2.17	1.279
11. If I'm not reachable, the thought of missing a call worries me	31.4	21.7	22.0	14.3	10.6	2.51	1.343
12. I feel nervous if I spend time without checking messages or if I haven't turned on my phone	23.4	30.3	24.6	15.1	6.6	2.51	1.191
13. I feel lost without my mobile	23.4	23.2	26.0	14.3	13.1	2.71	1.325
14. I've been told that I spend too much time using my cell phone	17.1	16.6	27.4	20.3	18.6	3.07	1.341
15. When I've felt bad, I've used my phone to feel better	18.3	18.3	25.1	21.4	16.9	3.00	1.345
16. My friends and family complain because I use my mobile a lot	26.0	26.2	22.6	16.9	8.3	2.55	1.267
17. I've tried to spend less time on my phone, but I can't	28.2	32.9	22.9	12.9	3.1	2.30	1.106
18. More than once I've been in trouble because my mobile has started ringing in class, in the cinema, in the theater, etc.	40.6	26.0	14.6	9.4	9.4	2.21	1.318
19. I'm always running out of time to get everything on my cell phone	33.4	25.2	22.9	9.1	9.4	2.36	1.285

Ítem	1(%)	2(%)	3(%)	4(%)	5(%)	M	SD
20. My performance has decreased because of the time I spend on my mobile	38.3	27.7	21.4	8.6	4.0	2.12	1.135
21. I have spent more than I should or could afford on my mobile	57.7	20.9	12.0	5.1	4.3	1.77	1.114
22. Sometimes I would rather use my mobile phone than deal with other more issues	52.6	22.8	17.4	4.6	2.6	1.82	1.041
23. I have complaints related to the use of the mobile	53.7	22.3	16.0	5.4	2.6	1.81	1.055
24. I usually delay because I am hooked on my mobile when I shouldn't	65.1	19.7	8.3	4.6	2.3	1.59	0.979
25. It irritates me if I must turn off my phone in class, at meals, at the movies, etc.	76.9	12.3	7.1	2.3	1.4	1.39	0.832
26. I've tried to hide the time I spend talking on my mobile	72.6	15.4	7.1	2.3	2.6	1.47	0.917
27. I usually dream about the mobile	91.7	5.4	1.4	0.6	0.9	1.13	0.532

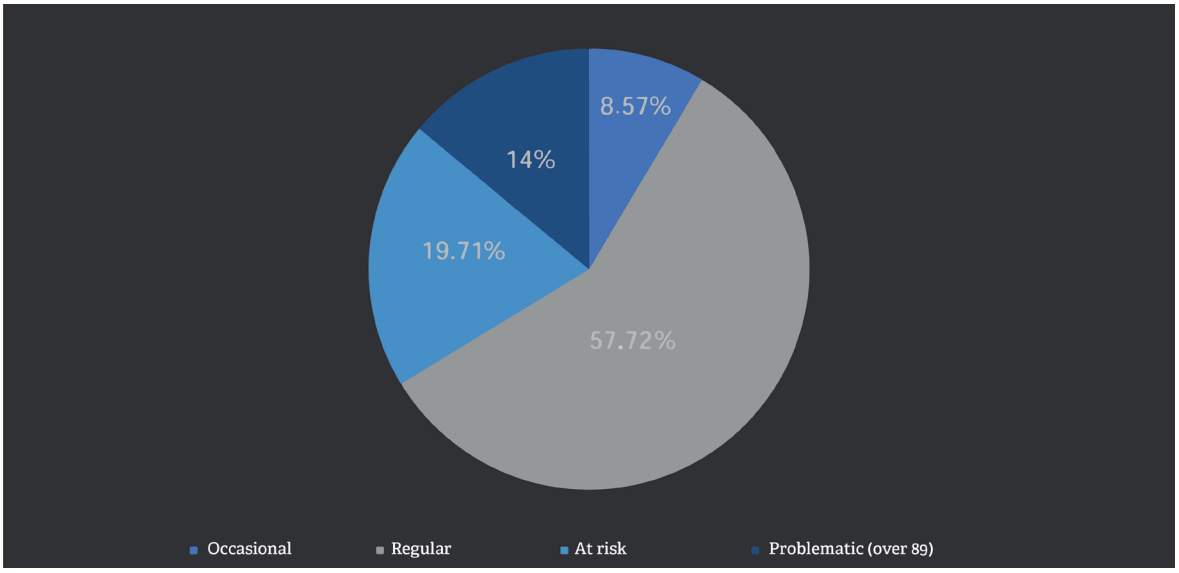
At the same time, students rejected the possibility of experiencing difficulties to disconnect it (43.2%) or having received criticism from their family and friends as a result of their disproportionate use (52.2%). In fact, they stated that they were not concerned about missing a call because they were not reachable (53.1%). According to their answers, they were also not nervous about not being able to check messages (53.7%), and about not having time to solve smartphone-related issues (58.6%). They also rejected the idea that they would not be able to spend less time on the device (61.1%) or that their friends would not like to have it disconnected (65.7%). On the other hand, they denied that their academic performance could have been affected by the time spent on the smartphone (66%) or that they had been struggling to use it when it was not allowed (66.6%). Even greater resistance was shown to the fact that they experienced discomfort related with the use of the device (76%) and to have had excessive economic expenditure due to its abuse (78,6%). Especially significant was their opposition to the fact that they tried to hide the time spent on the smartphone (88%) and, above all, to have dreamed with it (97.1%), being these two items those who obtained the lowest average scores of the instrument.

3.2 Smartphone user typology

To identify the user profile of the smartphone, the statistical criterion used in previous studies of pathological gambling was taken as a reference (de-Sola *et al.*, 2019; López-Fernández *et al.*, 2012; Ruiz, 2016). It is based on the definition of three percentiles (15, 80 and 95), which give rise to four patterns: (1) casual consumer, (2) regular consumer, (3) consumer at risk and (4) problematic consumer (Chow *et al.*, 2009). In this case, the percentiles were established based on the scores of the sum of the set of items that make up the questionnaire ($PC_{15} = 46$; $PC_{80} = 74$ and $PC_{95} = 88$). According to this, more than half of the participants were defined as regular users, while 33.71% of the sample was classified within a profile at risk or problematic (Figure 1).

Figure 1

Smartphone user typology



4. Discussion and conclusions

The digital transformation that contemporary society is undergoing as a result of has caused the smartphone to become a common tool among the youth (Roig-Vila *et al.*, 2020b). However, its disproportionate use can generate, in some cases, addiction and dependence, interfering negatively in the behavior of the subject and causing maladaptive behaviors (Aguilera-Manrique *et al.*, 2018; Alkhateeb *et al.*, 2020; Alosaimi *et al.*, 2016; Busch and McCarthy, 2021; Elhai *et al.*, 2020; Jahrami *et al.*, 2021; Lin and Zhou, 2022; Rozgonjuk *et al.*, 2019; Sohn *et al.*, 2019). From this perspective, this study aimed to: (1) identify the use profile of university students with respect to the smartphone and (2) determine if it is a problem.

As for the first objective, the findings showed that almost all the friends of the respondents had a smartphone, showing that it has become one of the most used tools by students to interact and socialize (Alosaimi *et al.*, 2016; Capilla and Cubo, 2017; Marín *et al.,* 2018; Ruiz-Palmero *et al.*, 2021). The possibilities it offers in creating new environments of communication and participation make it a particularly useful resource for young people to build their interpersonal relationships (Cabero-Almenara *et al.*, 2019; Capilla and Cubo, 2017; Jansen-Kosterink *et al.*, 2020; Jahrami *et al.*, 2021; Oviedo-Tres palacios *et al.,* 2019). The latter is evidenced since the participants claimed to have used their smartphone to contact other people in case of feeling alone or isolated; results concomitant with those studies that show that the use of this type of device can become a strategy to avoid loneliness and semi-depressive states (de-Sola *et al.,* 2019; Leonardi *et al.*, 2006). However, despite the relaxed attitude granted to the smartphone, the students refrained from qualifying their use profile as addictive or problematic. In fact, they did not consider the time spent on it to be excessive, nor did they appreciate any inconvenience associated with its use. A similar position was previously found by Marín-Díaz *et al.* (2020) and Roig-Vila *et al.* (2020b), when mentioning that university students were reluctant to characterize as disproportionate their pattern of use.

This behavior could be related to the increasing integration of the smartphone in the daily life of students, especially during the recent pandemic, which could lead to normalizing its use (Roig-Vila *et al.*, 2021a; Zwilling, 2022).

Accordingly, participants rejected the possibility of presenting nomophobia. In fact, they were not worried about staying out of their social environment because they would not regularly check their device, had to turn it off, or felt lost when they could not use it. Moreover, based on their responses, they had never received criticism from friends or family for overusing the smartphone, nor had they come to dream about it. Although these results are in line with those obtained by Roig-Vila *et al.* (2020b), they differ from those found in previous studies, which show the serious consequences that its disproportionate use can generate in learning, attentional capacity, sleeping time and physical and mental health (Anshari *et al.*, 2019; Busch and McCarthy, 2021; Cachón-Zagalaz *et al.*, 2020; Jahrami *et al.*, 2021; Lin and Zhou, 2022; Romero-Rodríguez *et al.*, 2020). Therefore, and in view of such differences, further research is needed to clarify these possible differences in the self-perception of university students.

In relation to the second objective, although a large number of participants acknowledged that they were at risk of using their smartphones abusively, more than half of them identified themselves as regular users. Although these findings are slightly inferior to those found by Marín *et al.* (2018), they are higher than those found by Roig-Vila *et al.* (2020b) and Ruiz (2016). In this sense, it should be noted that the instrument used for collecting the data was self-report, so, given the controversial nature of the questions, the answers of the participants could have been mediated by some kind of social desirability bias (Elhai *et al.*, 2020; Carbonell *et al.,* 2018; Krumpal, 2013). Therefore, the need to carry out complementary studies in this line arises.

Although this research contributes to offer knowledge in this area, it is not free of possible limitations. The first limitation is related to the fact that only one data collection tool was used, it being self-assessment. For this reason, the use of complementary information collection techniques is proposed, such as the registration of data consumption or the organization of discussion groups with the most immediate environment of the student. In this way, it will be possible to triangulate the information and obtain a more realistic image of the smartphone's use profile among university students. Also, and according to Aguilera-Manrique *et al.* (2018), it would be advisable to consider the socio-family context of students in future research, since this could have influenced their use. On the other hand, the results of the research are limited only to students of Social Sciences, specifically Education, making it difficult to extrapolate the results to other areas of knowledge. Therefore, it is suggested to expand the study to other disciplines and institutions, in order to contrast the possible differences with other realities and contexts. Another limitation of the study is the number of female students that make of the sample. The higher number of female students among the participants may have influenced the results of the study, since it has been found that the use of the device is also affected by gender (Ruiz-Palmero *et al.*, 2019). Therefore, new research should also analyze the existing differences according to the age of the respondents, sex and level studied, since these aspects will allow a more accurate and adjusted profile of maladaptive use of the smartphone among university students.

However, despite the weaknesses mentioned above, this study complements the existing knowledge about the problematic use of the smartphone, while proposing new lines of research. It can be concluded that university students perceive themselves as habitual users and, therefore, reject the idea that their behavior can be categorized as dependent or addictive. It cannot be ignored that this is a self-report study and that a significant percentage of students know

that they are at risk, so if educational actions are not designed to favor their balanced and rational use (Martínez-Sánchez *et al.*, 2020), smartphone addiction will be an imminent reality.

These actions will be essential to properly integrate the smartphone in university classrooms and, thus, be able to take advantage of all the potentialities it offers for digital transformation and collaborative knowledge construction (Veytia *et al.*, 2018). These initiatives should also allow to promote the responsible and sustainable use of this type of device among younger generations, showing the consequences that its disproportionate and abusive use can generate on physical and mental health.

References

Aguilera-Manrique, G., Márquez-Hernández, V. V., Alcaraz-Córdoba, T., Granados-Gámez, G., Gutiérrez-Puertas, V. and Gutiérrez-Puertas, L. (2018). The relationship between nomophobia and the distraction associated with smartphone use among nursing students in their clinical practicum. *PLoS ONE, 13*, 1-14. https://doi.org/10.1371/journal.pone.0202953

Alkhateeb, A., Alboali, R., Alharbi, W. and Saleh, O. (2020). Smartphone addiction and its complications related to health and daily activities among university students in Saudi Arabia: A multicenter study. *Journal of Family Medicine and Primary Care, 9*, 3220-3224. http://dx.doi.org/10.4103/jfmpc.jfmpc_1224_19

Alosaimi, F. D., Alyahya, H., Alshahwan, H., Al Mahyijari, N. and Shaik, S. A. (2016). Smartphone addiction among university students in Riyadh, Saudi Arabia. *Saudi Medical Journal, 37*, 675-683. https://doi.org/10.15537/smj.2016.6.14430

Al-Saggaf, Y. and O'Donnell, S. B. (2019). Phubbing: Perceptions, reasons behind, predictors, and impacts. *Human Behavior and Emerging Technologies, 1*(2), 132-140. https://doi.org/10.1002/hbe2.137

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders*. American Psychiatric Association.

Anshari, M., Alas, Y. and Sulaiman, E. (2019). Smartphone addictions and nomophobia among youth. *Vulnerable Children and Youth Studies, 14*(3), 242-247. https://doi.org/10.1080/17450128.2019.1614709

Bekaroğlu, E. and Yilmaz, T. (2020). Nomophobia: Differential diagnosis and treatment. *Current Approaches in Psychiatry, 12*(1), 131-142. https://doi.org/ 10.18863/pgy.528897

Bianchi, A. and Phillips, J. G. (2005). Psychological predictors of problem mobile phone use. *Cyberpsychology & Behavior, 8*(1), 39-51. https://doi.org/10.1089/cpb.2005.8.39

Busch, P. A. and McCarthy, S. (2021). Antecedents and consequences of problematic smartphone use: A systematic literature review of an emerging research area. *Computers in Human Behavior, 114,* 1-47. https://doi.org/10.1016/j.chb.2020.106414

Cabero-Almenara, J., Torres-Barbazal, L. and Hermosilla-Rodríguez, J. M. (2019). ICT and the creation of critical digital citizenship. *Education in the Knowledge Society, 20*, 1-10. https://doi.org/10.14201/eks2019_20_a22

Cachón-Zagalaz, J., Sanabrias-Moreno, D., Sánchez-Zafra, M., Zagalaz-Sánchez, M. L. and Lara-Sánchez, A. J. (2020). Use of the smartphone and self-concept in university students according to the gender variable. *International Journal of Environmental Research and Public Health, 17*(12), 1-10. https://doi.org/10.3390/ijerph17124184

Campbell, D. T. and Stanley, J. C. (1963). Experimental and quasi-experimental designs for research. En N. L. Gage (Ed.), *Handbook for research on teaching* (pp. 171-246). Rand McNally.

Canale, N., Vieno, A., Doro, M., Mineo, E. R., Marino, C. and Billieux, J. (2019). Emotion-related impulsivity moderates the cognitive interference effect of smartphone availability on working memory. *Scientific Reports, 9*, 1-10. https://doi.org/10.1038/s41598-019-54911-7

Capilla, E. and Cubo, S. (2017). Phubbing. Wing network connected and disconnected from reality. an analysis in relation to psychological well-being. *Píxel-Bit. Revista de Medios y Educación, 50*, 173-185. http://dx.doi.org/10.12795/pixelbit.2017.i50.12

Carbonell, X., Chamarro, A., Oberst, U., Rodrigo, B. and Prades, M. (2018). Problematic use of the internet and the smartphones in university students: 2006-2017. *International Journal of Environmental Research and Public Health, 15*(3), 1-13. https://doi.org/10.3390/ijerph15030475

Çatiker, A., Büyüksoy, G. D. B. and Özdil, K. (2021). Is there a relationship between nursing students' smartphone use, their fear of missing out and their care-related behaviour? *Nurse Education in Practice, 54*, 1-8. https://doi.org/10.1016/j.nepr.2021.103111

Chow, S., Leung, G., Ng, C. and Yu, E. (2009). A screen for identifying maladaptive Internet use. *International Journal of Mental Health and Addiction, 7*, 324-332. https://doi.org/10.1007/s11469-008-9170-4

Cuesta, U., Cuesta, V., Martínez, L. and Niño, J. I. (2020). Smartphone: en comunicación, algo más que una adicción [*Smartphone: In communication more than addiction]. Revista Latina de Comunicación Social, 75*, 367-381. https://www.doi.org/10.4185/RLCS-2020-1431

De Almeida, C. N. and Cabero, J. (2020). Aid-augmented reality for reinforced class: Student's perception. *Alteridad. Revista de Educación, 15*(1), 12-24. https://doi.org/10.17163/alt.v15n1.2020.01v

De Sousa, D., de Lima, M. R. and Reis, T. A. (2022). Gamification, "I have no idea what it is": A study in the Physical Education initial teacher training. *Alteridad. Revista de Educación, 17*(1), 12-23. https://doi.org/10.17163/alt.v17n1.2022.01

De-Sola, J., Talledo, H., Rodríguez, F. and Rubio, G. (2019). Prevalence of problematic cell phone use in an adult population in Spain as assessed by the Mobile Phone Problem Use Scale (MPPUS). *PLoS ONE, 12*, 1-17. http://dx.doi.org/10.1371/journal.pone.0181184

Ditrendia. (2020). *Informe Ditrendia: Mobile en España y en el Mundo 2020* + Especial COVID-19. https://bit.ly/3O3pLgu

Elhai, J. D., Dvorak, R. D., Levine, J. C. and Hall, B. J. (2017). Problematic smartphone use: A conceptual overview and systematic review of relations with anxiety and depression psychopathology. *Journal of Affective Disorders, 207*, 251-259. https://doi.org/10.1016/j.jad.2016.08.030

Elhai, J. D., Yang, H. and Montag, C. (2020). Fear of missing out (FOMO): Overview, theoretical underpinnings, and literature review on relations with severity of negative affectivity and problematic technology use. *Brazilian Journal of Psychiatry, 43*(2), 203-209. https://doi.org/10.1590/1516-4446-2020-0870

Etikan, I. and Bala, K. (2017). Sampling and sampling methods. *Biometrics & Biostatistics International Journal, 5*(6), 1-4. http://dx.doi.org/10.15406/bbij.2017.05.00149

Europa Press. (14 de mayo de 2021). *El uso del smartphone aumenta un 102% en la última década en España* [Smartphone use increases 102% in the last decade in Spain]. Europa Press. https://bit.ly/3TuhUJT

Ferriz-Valero, A., Østerlie, O., García Martínez, S. and García-Jaén, M. (2020). Gamification in physical education: Evaluation of impact on motivation and academic performance within higher education. *International Journal of Environmental Research and Public Health, 17*(12), 1-16. https://doi.org/10.3390/ijerph17124465

Gómez, J., Lázaro-Pérez, C. and Martínez-López, J. (2021). Exploratory study on video game addiction of college students in a pandemic scenario. *Journal of New Approaches in Educational Research*, *10*(2), 330-346. http://dx.doi.org/10.7821/naer.2021.7.750

Han, J. H., Park, S. J. and Kim, Y. (2022). Phubbing as a millennials' new addiction and relating factors among nursing students. *Psychiatry Investigation, 19*(2), 135-145. https://doi.org/10.30773%2Fpi.2021.0163

Hasan, R. and Hasan, R. (2022). Pedestrian safety using the Internet of things and sensors: Issues, challenges, and open problems. *Future Generation Computer Systems, 134,* 187-203. https://doi.org/10.1016/j.future.2022.03.036

Hernández, R. and Mendoza, C. (2018). *Metodología de la investigación. Las rutas cuantitativa, cualitativa y mixta* [Research methodology. Quantitative, qualitative and mixed routes]. Editorial McGraw-Hill Education.

Instituto Nacional de Estadística. (2022). *Mujeres en el profesorado por enseñanza que imparten* [Women in the teaching staff by teaching they provide]. https://bit.ly/3USTjzw

Jahrami, H., Abdelaziz, A., Binsanad, L., Alhaj, O. A., Buheji, M., Bragazzi, N. L., Saif, Z., BaHammam, A. S. and Vitiello, M. V. (2021). The association between symptoms of nomophobia, insomnia and food addiction among young adults: Findings of an exploratory cross-sectional survey. *International Journal of Environmental Research and Public Health, 18*(2), 1-11. https://doi.org/10.3390/ijerph18020711

Jansen-Kosterink, S. M., Bergsma, J., Francissen, A. and Naafs, A. (2020). The first evaluation of a mobile application to encourage social participation for community-dwelling older adults. *Health and Technology, 10*, 1107-1113. https://doi.org/10.1007/s12553-020-00430-9

Javed, A. R., Faheem, R., Asim, M., Baker, T. and Beg, M. O. (2021). A smartphone sensors-based personalized human activity recognition system for sustainable smart cities. *Sustainable Cities and Society, 71*, 1-12. https://doi.org/10.1016/j.scs.2021.102970

Kara, M., Baytemir, K. and Inceman, K. (2021). Duration of daily smartphone usage as an antecedent of nomophobia: Exploring multiple mediation of loneliness and anxiety. *Behaviour & Information Technology, 40*(1), 85-98. https://doi.org/10.1080/0144929X.2019.1673485

Krumpal, I. (2013). Determinants of social desirability bias in sensitive surveys: A literature review. *Quality & Quantity, 47*, 2025-2047. https://doi.org/10.1007/s11135-011-9640-9

Lai, X., Hu, C., Ying, L., Xu, H., Zhao, C., Yang, X., Yu, X. and Zhang, G. (2022). Risk and protective factors associated with smartphone addiction and phubbing behavior among college students in China. *Psychological Reports*. https://doi.org/10.1177/00332941221084905

Leonardi, P., Leonardi, M. E. and Hudson, E. (2006). Culture, organization, and contradiction in the social construction of technology: Adoption and use of the cell phone across three cultures. In A. Kavoori and N. Arceneaux (Eds.), *The cell phone reader: Essays in social transformation* (pp. 205-225). Peter Lang.

Li, L., Niu, Z., Mei, S. and Griffiths, M. D. (2022). A network analysis approach to the relationship between fear of missing out (FoMO), smartphone addiction, and social networking site use among a sample of Chinese university students. *Computers in Human Behavior, 128*, 1-10. https://doi.org/10.1016/j.chb.2021.107086

Lin, Y. and Zhou, X. (2022). Bedtime smartphone use and academic performance: A longitudinal analysis from the stressor-strain-outcome perspective. *Computers and Education Open, 3*, 1-14. https://doi.org/10.1016/j.caeo.2022.100110

López-Fernández, O., Honrubia-Serrano, M. L. and Freixa-Blanxart, M. (2012). Adaptación española del "Mobile phone problem use scale" para población adolescente [Spanish adaptation of the "Mobile Phone Problem Use Scale" for adolescent population]. *Adicciones, 24*(2), 123-130. http://dx.doi.org/10.20882/adicciones.104

López-Fernández, O., Kuss, D. J., Romo, L., Morvan, Y., Kern, L., Graziani, P., Rousseau, A., Rumpf, H.J., … Billieux, J. (2017). Self-reported dependence on a mobile pones in young adults: A European cross-cultural empirical survey. *Journal of Behavioral Addictions, 6*(2), 168-171. http://dx.doi.org/10.1556/2006.6.2017.020

Marín, V., Sampedro, B. E., Ortega, J. M. and Figueroa, J. (2022). Predictive factors of problematic smartphone use in young Spanish university students. *Heliyon, 8*(9), 1-7. https://doi.org/10.1016/j.heliyon.2022.e10429

Marín, V., Vega, E. and Sampedro, B. E. (2018). Problematic use of the smartphone by university students. *Revista Española de Drogodependencias*, *43*(1), 62-76. https://bit.ly/3GdOKMq

Marín-Díaz, V.,Muñoz-González, J. M. and Sampedro-Requena, B. E. (2020). Problematic relationship with smartphones of Spanish and Colombian university students. *International Journal of Environmental Research and Public Health, 17*(15), 1-18. https://doi.org/10.3390/ijerph17155370

Martínez-Sánchez, I., Goig-Martínez, R. M., Álvarez-Rodríguez, J. and Fernández-Cruz, M. (2020). Factors contributing to mobile phone dependence amongst young people. Educational implications. *Sustainability, 12*(6), 1-11. https://doi.org/10.3390/su12062554

Navarro-Mateos, C. and Pérez-López, I. J. (2022). A phone app as an enhancer of students' motivation in a gamification experience in a university context. *Alteridad. Revista de Educación, 17*(1), 64-74. https://doi.org/10.17163/alt.v17n1.2022.05

Oviedo-Trespalacios, O., Nandavar, S., Newton, J. D. A., Demant, D. and Phillips, J. G. (2019). Problematic use of mobile phones in Australia … Is it getting worse? *Frontiers in Psychiatry, 10*, 1-15. https://doi.org/10.3389/fpsyt.2019.00105

Pangrazio, L. and Sefton-Green, J. (2021). Digital rights, digital citizenship and digital literacy: What's the difference? *Journal of New Approaches in Educational Research*, *10*(1), 15-27. http://dx.doi.org/10.7821/naer.2021.1.616

Panova, T. and Lleras, A. (2016). Avoidance or boredom: Negative mental health outcomes associated with use of information and communication technologies depend on users' motivations. *Computers in Human Behavior, 58*, 249-258. https://doi.org/10.1016/j.chb.2015.12.062

Panova, T., Carbonell, X., Chamarro, A. and Puerta-Cortés, D. X. (2020). Specific smartphone uses and how they relate to anxiety and depression in university students: A cross-cultural perspective. *Behaviour & Information Technology, 39*, 944-956. https://doi.org/10.1080/0144929X.2019.1633405

Pera, A. (2020). The psychology of addictive smartphone behavior in young adults: Problematic use, social anxiety, and depressive stress. *Frontiers Psychiatry, 11*, 1-6. https://doi.org/10.3389/fpsyt.2020.573473

Piaggio, D., Namm, G., Melillo, P., Simonelli, F., Iadanza, E. and Pecchia, L. (2021). Pupillometry via smartphone for low-resource settings. *Biocybernetics and Biomedical Engineering, 41*(3), 891-902. https://doi.org/10.1016/j.bbe.2021.05.012

Ríos, J., Matas-Terron, A., Rumiche Chávarry, R. and Chunga Chinguel, G. (2021). Scale for measuring phubbing in Peruvian university students: Adaptation, validation and results of its application. *Journal of New Approaches in Educational Research*, *10*(2), 175-189. http://dx.doi.org/10.7821/naer.2021.7.606

Rodríguez-García, A. M., Moreno-Guerrero, A. J. and López, J. (2020). Nomophobia: An individual's growing fear of being without a smartphone. A systematic literature review. *International Journal of Environmental Research and Public Health, 17*(2), 1-19. https://doi.org/10.3390/ijerph17020580

Roig-Vila, R., López-Padrón, A. and Urrea-Solano, M. (2021a). Perfil del uso académico del smartphone entre estudiantes noveles universitarios españoles e iberoamericanos [Profile of smartphone academic use among Spanish and Latin American university students in their freshman years]. *American Journal of Distance Education, 35*(1), 66-81. https://doi.org/10.1080/08923647.2021.1880730

Roig-Vila, R., Romero-Guerra, H. and Rovira-Collado, J. (2021b). BookTubers as multimodal reading influencers: An analysis of subscriber interactions. *Multimodal Technologies and Interaction*, *5*(7), 39. http://dx.doi.org/10.3390/mti5070039

Roig-Vila, R., Urrea-Solano, M. and Gavilán-Martín, D. (2020a). The quality of autism spectrum disorder diagnosis families' views. *Education Sciences, 10*(9), 1-16. https://doi.org/10.3390/educsci10090256

Roig-Vila, R., Prendes-Espinosa, P. and Urrea-Solano, M. (2020b). Problematic smartphone use in Spanish and Italian university students. *Sustainability 12*(24), 1-18. https://doi.org/10.3390/su122410255

Romero, J. M. and Aznar, I. (2019). Análisis de la adicción al smartphone en estudiantes universitarios. Factores influyentes y correlación con la autoestima [Analysis of smartphone addiction in university students. Influential factors and correlation with self-steem]. *RED. Revista de Educación a Distancia, 60*, 1-12. https://doi.org/10.6018/red/60/08

Romero-Rodríguez, J. M., Aznar-Díaz, I., Marín-Marín, J. A., Soler-Costa, R. and Rodríguez-

Jiménez, C. (2020). Impact of problematic smartphone use and Instagram use intensity on self-esteem with university students from physical education. *International Journal of Environmental Research and Public Health, 17*(12), 1-10. https://doi.org/10.3390/ijerph17124336

Rozgonjuk, D., Elhai, J. D., Ryan, T. and Scott, G. G. (2019). Fear of missing out is associated with disrupted activities from receiving smartphone notifications and surface learning in college students. *Computers & Education, 140,* 1-7. https://doi.org/10.1016/j.compedu.2019.05.016

Ruiz, C., (2016). Perfil de uso del teléfono móvil e Internet en una muestra de universitarios españoles. ¿Usan o abusan? [Profile of cell phone and Internet use in a sample of Spanish university students: Do they use or abuse?] *Bordón. Revista de Pedagogía, 68*, 131-145. https://doi.org/10.13042/Bordon.2016.68307

Ruiz-Palmero, J., Colomo-Magaña, E., Sánchez-Rivas, E. and Linde-Valenzuela, T. (2021). Estudio del uso y consumo de dispositivos móviles en universitarios [Study of the use and consumption of mobile devices in university students]. *Digital Education Review, 39*, 89-106. https://bit.ly/3GankXD

Salcines-Talledo, I., González-Fernández, N. and Briones, E. (2020). The smartphone as a pedagogical tool. Student profiles as related to its use and knowledge. *Journal of New Approaches in Educational Research, 9*(1), 91-109. https://doi.org/10.7821/naer.2020.1.454

Seel, P. B. (2022). *Digital universe. The global telecommunication revolution*. Wiley Blackwell.

Sentana-Gadea, I., Llorca-Schenk, J. and Díaz-Ivorra, M. C. (2022). Application of convergent technologies in teaching: Flipped classroom and augmented reality. In F. Cavas, G. Peris-Fajarnes, P. Morer, I. Lengua and B. Defez (Eds.), *Advances in design engineering II. INGEGRAF 2021. Lecture notes in mechanical engineering* (pp. 345-357). Springer.

Servidio, R. (2021). Self-control and problematic smartphone use among Italian university students: The mediating role of the fear of missing out and of smartphone use patterns. *Current Psychology, 40*, 4101-4111. https://doi.org/10.1007/s12144-019-00373-z

Sharma, R., Vaidya, V., Rajan, R., Eldhose, A. T., Ratre, H. and Rai, H. L. (2022). Smartphone dependency and its impact on academics among medical and nursing students: A cross-sectional study. *Journal of Integrative Nursing, 4*(1), 30-35. https://doi.org/10.4103/jin.jin_44_21

Simó, C., Martínez, A., Ballester, Mª. L. and Domínguez, A. (2017). Tools of assessment of problematic mobile phones/smartphone use. *Health and Addictions, 17*(1), 5-14.

Sohn, S., Rees, P., Wildridge, B., Kalk, N. J. and Carter, B. (2019). Prevalence of problematic smartphone usage and associated mental health outcomes amongst children and young people: A systematic review, meta-analysis and grade of the evidence. *BMC Psychiatry, 19*, 1-10. https://doi.org/10.1186/s12888-019-2350-x

Statista. (2022). *Global smartphone penetration rate as share of population from 2016 to 2020*. https://bit.ly/3g2K8xO

Stevic, A., Koban, K., Binder, A. and Matthes, J. (2022). You are not alone: Smartphone use, friendship satisfaction, and anxiety during the COVID crisis. *Mobile Media & Communication, 10*(2), 294-315. https://doi.org/10.1177/20501579211051820

Sunitha, V., Rajesh, R. and Aruna, J. (2020). Assessment on prevalence and its factors on phantom vibration syndrome among UG and PG students in selected colleges. *Journal of Education Technology in Health Sciences, 7*(3), 90-95. https://doi.org/10.18231/j.jeths.2020.022

Vedova, A. M., Covolo, L., Muscatelli, M., Loscalzo, Y., Giannini, M. and Gelatti, U. (2022). Psychological distress and problematic smartphone use: Two faces of the same coin? Findings from a survey on young Italian adults. *Computers in Human Behavior, 132*, 1-10. https://doi.org/10.1016/j.chb.2022.107243

Veytia, M. G., Lara, R. S. and García, O. (2018). Objetos virtuales de aprendizaje en la Educación Superior [Virtual learning objects in higher education]. *Eikasia: Revista de Filosofía, 79*, 207-224. https://bit.ly/3AcQa5S

Voda, M., Dumitrache, N. D., Negru, R., Du, Q. and Gan, C. (2022). Rural geosystems' future

in the smartphone world: The inception of Romanian tourist sites. *Sustainability, 14*(15), 1-15. https://doi.org/10.3390/su14159652

Yang, Z., Asbury, K. and Griffiths, M. D. (2021). "A cancer in the minds of youth?" A qualitative study of problematic smartphone use among undergraduate students. *International Journal of Mental Health and Addiction, 19*, 934-946. https://doi.org/10.1007/s11469-019-00204-z

Yao, N. and Wang, Q. (2022). Technostress from smartphone use and its impact on university students' sleep quality and academic performance. *The Asia-Pacific Education Researcher*. https://bit.ly/3AfuINz

Yu, S. and Sussman, S. (2020). Does smartphone addiction fall on a continuum of addictive behaviors? *International Journal of Environmental Research and Public Health, 17*(2), 1-21. https://doi.org/10.3390/ijerph17020422

Yuan, G., Elhai, J. D. and Hall, B. J. (2021). The influence of depressive symptoms and fear of missing out on severity of problematic smartphone use and Internet gaming disorder among Chinese young adults: A three-wave mediation model. *Addictive Behaviors, 112*, 1-8. https://doi.org/10.1016/j.addbeh.2020.106648

Zwilling, M. (2022). The impact of nomophobia, stress, and loneliness on smartphone addiction among young adults during and after the COVID-19 pandemic: An israeli case analysis. *Sustainability, 14*(6), 1-16. https://doi.org/10.3390/su14063229

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ICT addiction. Teaching perspective from three university centers

Adicción a las TIC. Perspectiva docente desde tres centros universitarios

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Abstract

Within the analyses made with reference to the use and abuse of Information and Communication Technologies, there are several research applied to young people, since they are the group that most concentrates online consumption. However, little has been analyzed about the trends and reflections made in this regard by another population sector, not always different in age, but in their purposes and daily activities: teachers. As part of this work, a study with teachers from three colleges of the University of Guadalajara is shown, who offer their perception of consumption on the web based on the Internet Addiction Test developed by Kimberly Young. The results show, in general, a rational tendency in the use of technology, although there are some frequent indications in the case of the loss of awareness of the time of Internet use, to feel a certain degree of anxiety or nervousness when not connected or to consult social networks or mail before starting priority activities. This work reaffirms the need to deepen studies on the group of teachers of the study centers, since both their personal and professional affectation is of interest, as well as the role that technology plays for them and what message they give to the student communities they serve.

Keywords: Addiction, education, professors, smartphone, technology, university.

Resumen

Entre los análisis realizados con referencia al uso y abuso de las Tecnologías de la Información y la Comunicación existen diversos estudios aplicados a los más jóvenes, por ser el grupo que más concentra el consumo en línea. No obstante, poco se ha analizado sobre las tendencias y reflexiones realizadas al respecto por otro sector poblacional, no siempre diferente en edad, pero sí en sus propósitos y actividades cotidianas: los y las docentes. Como parte de este trabajo, se muestra un estudio hecho a docentes de tres centros universitarios de la Universidad de Guadalajara, quienes ofrecen su percepción sobre el consumo en la web a partir del Test de Uso de Internet elaborado por Kimberly Young. Los resultados muestran, en general, una tendencia racional en la utilización de la tecnología, aunque hay algunos indicios frecuentes en el caso de la pérdida de conciencia del tiempo de uso de internet, a sentir un cierto grado de ansiedad o nervios al no conectarse o así como a consultar redes sociales o el correo antes de iniciar actividades prioritarias. Este trabajo reafirma la necesidad de profundizar en estudios sobre el colectivo de docentes de los centros de estudio, ya que interesa tanto su afectación personal y profesional, como el papel que para ellos juega la tecnología y qué mensaje dan a las comunidades de estudiantes a las que atienden.

Descriptores: Adicción, docencia, educación, tecnología, teléfono, universidad.

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1. Introduction

1.1 State of the art

Educational institutions are particularly interesting regarding the Information and Communication Technologies (ICT), on the one hand, by the constant debate on its inclusion in the teaching-learning process, and on the other hand, by the care for the excesses in its use.

The approach to a research topic involving technology and the problem of addictions derived from its excessive use leads us to consider two aspects of analysis; firstly, to know what technology is and, secondly, to determine which are the cases of addiction in history.

Valera *et al.* (2021) state that there is no consensus in the academic literature regarding the use of the term "addiction" to refer to the constant use of the Internet and social networks. Technology originates with the first stone tool that primitive man used (Avalos, 2017); elements such as fire and the spear are considered as technological scopes relevant as inputs insofar as they modify the lifestyle of the first inhabitants. Therefore, to understand the addiction to technology, it is important to know that all scientific innovations since their origin have sought to give our lives meanings and better quality in all aspects, relating innovations to the same scientific and technological advances of human beings.

Technology is indeed an important part in the development of humanity and is maximized for humanity. After the pandemic of COVID-19, the use and permanent access of social networks increased its benefits, especially in education, but at the same time it developed psychosocial disorders in people, such as physical and emotional health problems (Li *et al.*, 2016), and the expansion of violent behaviors, bullying and cyberbullying, as stated by Prieto and Sanchez (2020), who argue that social networks in the lives of children and young people have changed their habits, cultural and educational performance. In most cases, technological changes have forced teachers to modify the way they teach, from integrating digital knowledge to updating the curriculum and changing teaching strategies. Preciado (2010), says that scientific contributions related to technological advances seek to solve human problems. Thus, it is believed that not only educational models should change in the face of technological advances, but also teaching styles to produce better educational experiences and increase academic performance and reduce apathy and uncontrolled addiction to social networks by students.

1.2 Technology, addiction and education

Undoubtedly, these media have positive aspects to students. López *et al.* (2019) describe that young people have social networks, chats, games and create content, which allows them to interact with other users.

However, López *et al.* (2019) point out that "when this intensive use is not consciously controlled and users are distracted by accessing multiple media simultaneously, there are disadvantages, affecting the performance in other activities" (p. 28). Therefore, educational centers have tried several strategies, such as prohibiting its use in the classroom (especially at the middle and high school level) or during the entire stay at school (elementary level), as well as training teachers in the use of technology in the subject, but the results are scarce or poorly documented.

With these practices, there is a gap between the massive use of technology (especially social networks), particularly by young people, with their fathers, mothers and even teachers, causing a generation gap (Moreno *et al.*, 2017). However, the opportunity to become digitally literate is lost, understanding this concept as "learning to interpret and manage the devices and tools offered by new information and communication technology" (Bawden, 2002, cited in Moreno *et al.*, 2017, p. 13).

However, a latent problem is the abuse of technology (mainly cell phones), which is referred to as "addiction".

López *et al.* (2019) refer to this issue:

> When we talk about the use of ICT in an uncontrolled, anxious, progressive way and with an evident resistance to stop, we can glimpse characteristics associated with substance addictions, specifically the increase of tolerance and withdrawal syndrome... The addition to information and communication technology detailed in previous paragraphs has been recognized by the World Health Organization (WHO) and classified among the behavioral addictions (p. 29).

González Amarilla and Pérez Vargas (2019) cite Brod (1984) who "was the one who introduced the term Technostress, which dates back to the 1980s, considering it as a modern adaptive disease, caused by the lack of ability to deal with new computer technology in a healthy way" (p. 23).

Similarly, they refer to Salanova *et al.* (2007), who states that the trigger elements of stress can be the "technological demands (e.g., mental overload), lack of technological resources (e.g., lack of social support) and lack of personal resources (e.g., lack of specific self-efficacy with technology)" (González Amarilla and Pérez Vargas, 2019, p. 24).

Rojas and Yepes (2022) clarify that there is a difference between dependence and addiction, which is in the "emotional intensity of the person involved" and the abandonment of what is necessary to fulfill daily activities. However, they agree that the uncontrolled use of these devices causes academic, physical and social problems, among others, to the extent that it can become a public health issue (Valencia *et al.*, 2021).

In addition, they cite Watters *et al.* (2013) who say that an addiction can be the compulsive use of a substance, but also of an activity that causes an alteration in the person's normal functioning. Other authors referred to dependence, but not to addictive behavior. In either case, it is considered that there is an alteration when the person has difficulties in cognitive flexibility to make decisions; increase in the level of anguish; forgetfulness of activities; memory, concentration or family problems.

The role played by teachers and educational institutions in education for digital citizenship and in the use of ICTs as educational tools has been little studied in this area.

Rojas and Yepes (2022) analyzed the studies in this regard in Latin America during the last ten years and gathered 216 in which most of the topics referring to ICTs were about cyberbullying, fake news and addiction, and only 10% of these focused on adults.

At the same time, Valencia *et al.* (2021) reviewed 116 articles on the impact of networks on young people and how to intervene from an educational perspective. They point out that one of the results found is the relationship between the increase in hours spent on social networks and the increase in academic failure, but also conclude the need for institutions to prepare students in terms of digital skills, and parents also require knowledge about the operation and problems of networks.

One of the problems is the use of these tools. Hernández *et al.* (2018, p. 677) cite Marqués (2004), who:

> A triple function: (1) as a facilitating instrument for learning processes, (2) as a tool for information processing and (3) as implicit learning content.

There is undoubtedly a complex situation in which a balance must be sought in terms of pedagogical use, but not abuse. De Lima and Moreira (2019) state that "Education needs to be integrated into cyberculture and must accompany its dynamics of sociocultural renewal and should promote (cyber) inclusion" (p. 13). However, these are not the only elements that condition the changes but should be used

to enhance pedagogical and reflective aspects, according to the same authors.

For Waliño *et al.* (2019), the policy of prohibiting the use of devices in educational institutions may have an adverse effect: that teachers consider if it is an important element in the training of young people. They believe that, above and beyond such practice, what is important is to build "an educational model that allows both teachers and students to develop their own digital citizenship" (p. 322).

The previous authors have also pointed out that there is resistance among teachers and that more studies are needed on whether technology contributes or distracts students from learning. Specialists do not question the potential of the Internet and cell phones or networks but planning on their use is required (López *et al.*, 2019). For this, the authors say that a curricular redesign, teacher training and infrastructure improvement are required.

Valencia *et al.* (2021) question whether teachers have the digital competencies to guide young people in formative actions and potentiate collaboration and participation strategies. Likewise, Waliño *et al.* (2019) consider that teacher training is scarce and that it depends much more on the interest of each individual than on a clear educational policy.

Hernández *et al.* (2018) propose a categorization of the competencies in which teachers should specialize in terms of ICT management, which are: instrumental, aesthetic, curricular, pragmatic, psychological; as a producer, as an evaluator; critical, organizational, research, and communicative capacity, which implies a challenge for the teacher as Maldonado (2018) points out, which consists on focusing on the pedagogical practices of the teacher to enable the development of citizenship, technological and scientific competencies, requiring the analysis of the teaching styles of each teacher, as an actor within the educational process.

1.3 Some theoretical positions related to Internet addictions

The researcher Kimberly Young (1996), a pioneer in several studies on Internet addiction, already warned about the risks of its use and abuse, making recommendations to parents and teachers. Young (1996) created a test to know if the person suffered from this dependence. The World Health Organization (1992) has pointed out that the dependence syndrome presents three or more physical emotional expressions that can be related to the addiction of the Internet, such as compulsion to be connected to a device; lack of control over its use; withdrawal symptoms such as despair, anguish and fear when we are disconnected, and apathy in the participation of other forms of entertainment, games, activities, etc.

Internet dependence disorder is difficult to diagnose, however, it has the same symptoms as addictions such as alcohol, coffee or drugs.

Sánchez Carbonell *et al.* (2008) point out that the Internet and the cell phone require attention in the issue of addictions that could be compared to the reinforcing properties of addictive substances such as feeling part of a group and creating identity, contacting others without the need for face-to-face contact, which creates stress.

Echeburúa and De Corral (2010) emphasized the most important risks of ICT abuse, which are, in addition to addiction, access to inappropriate content, harassment or loss of privacy. Castells (2001) argues that the Internet benefits individualism, changing relationships traditionally structured in the community, family and work, together with interests and affinities where distance is no longer a limit in the relationship.

1.4 Importance of the topic from a teaching perspective

One of the first aspects that makes this topic relevant is that there is a gap in the information regarding the perception of teachers.

Although the focus of attention is on young people, because they are the main group that uses technologies for communication, many teachers are also within the age range of highest ICT use. In this sense, their academic use is unknown, but also their personal use.

The level of Internet use in the country can be seen, for example, in the 18th Study on the Habits of Internet Users in Mexico 2022, by the Mx Internet Association. The latest study shows that the age range in which most Internet users (19.8%) is between 25 and 34 years old, followed (17.2%) by those between 35 and 44 years old, i.e., age groups that include many professionals.

It is complex to determine at universities the number of teachers and their ages given the diversity of institutions, however, it is possible to give an overview regarding basic education teachers. In this regard, INEGI (2020) reported that the average age of teachers is 40 years, and the range oscillates between 35 and 44 years (Magaña, 2021).

García *et al.* (2019) warn that teachers are aware of the activities of students in the virtual environment, but do not have the tools to manage these situations. Similarly, the same authors (2019, p. 45) cite Gabarda *et al.* (2017) and Eden *et al.* (2012) who:

> Teachers, aware of their insufficient digital knowledge, demand more information and training, the development of protocols for action in schools and the activation of tools to help them detect problems related to the misuse of new technologies.

Reference is even made to a "position of inferiority experienced by teachers as digital immigrants, compared to those already born in the Internet era" (p. 45).

González Amarilla and Pérez Vargas (2019,) consider that:

> Technostress can be present at any time of the teaching task either by the lack of use or excessive use of technology, therefore it is convenient to know about it to consider the necessary preventive measures at the institutional level focused on the human factor responsible for providing quality education to students. (p. 33).

Álvarez Flores (2021) believes that "the advantages of the Internet due to its interactive nature, ease of access, convenience of use and immediacy can be transformed into disadvantages by presenting individuals possible negative effects by posing various threats as a result of inappropriate or uncontrolled use" (p. 34). Young (1999) anticipated this aspect when pointing out that the use of the Internet did not provide improvements in student performance, mainly because of the disorganized nature of the information on the web and not always linked to school curricula and textbooks and, in the workplace, it may represent a reduction in the effectiveness of performance. These factors are also relevant to consider when analyzing academics in terms of their time and type of use on the Internet.

2. Methodology

In order to obtain the results, a quantitative approach and a descriptive scope were used to determine the characteristics of a group of academics and their Internet use behaviors. This first approach is considered valuable since most of the analyses regarding Internet use have focused on students.

A non-probabilistic purposive sample of ten professors belonging to two university centers of the University of Guadalajara (Mexico) was taken: from the Economic Administrative and Northern Sciences and 11 from the Social Sciences and Humanities.

Purposive sampling allows to study populations with a high degree of variability (Otzen and Monterola, 2017). This is the situation that can be found in spaces as heterogeneous as university centers, where the teaching staff is diverse.

Thus, the idea was to have a variety of academics, from young professors to those with lots of years of experience; different academic degrees (undergraduate and graduate) and different formations as professionals.

The instrument selected was the Internet Use Test, developed by Kimberly Young, which "evaluates the extent to which a subject relates to the computer, classifying addictive behavior" and has been validated in more than 20 countries around the world (Álvarez Portela and Fernández Castillo, 2018, p. 175). From this first study it will be possible to conduct other types of research with different approaches and, above all, with a larger population, based on the data collected with the intention of diagnosing more broadly the behaviors of professors regarding Internet, the type of use they make of online tools and the degree of addiction in a community as broad as that of the University of Guadalajara.

3. Discussion of the results

According to the diagnosis carried out as a result of the instrument applied, 54.8% of the respondents were women and 45.2% were men. The age of most of the professors was from 36-45 years old, representing 38.7%; followed by the group from 26-35 years old, representing 25.8%; followed by those older than 55 years old, representing 19%; and concluding with those from 26-35 years, representing 16.1%. Most of the professors have a master's degree, with 48.4%, while 35.5% of those surveyed have a PhD, and the rest, 16.1%, have a bachelor's degree.

Table 1

How often do you realize that you spend more time on the Internet than you should?

Frequency	Percentage
Never	3.2
Rarely	9.7
Occasionally	29
Frequently	16.1
Very often	25.8
Always	16.1

The interaction that professors stated, adding the frequencies "Always" and "Very often", reach 41.9%, i.e., slightly more than 4 out of 10 teachers.

On the other hand, the results indicating that professors neglect their academic activities because they are on the Internet show that 41.9% do it rarely, while 16% say they do it occasionally. This shows that, in general, academics do not neglect their work, although they may tend to be connected with some frequency.

When asked how often they make friends online, 45% answered "Never", while 35.5% "Rarely"; this indicates a distrust in establishing friendships and coexistence through this channel, perhaps as a response to the awareness and experience of the dangers of interacting through the Internet, especially with strangers.

In relation to the performance of professional activity and the possible harm caused by the abuse in the use of the Internet, 58.1% of professors state that they have never experienced this situation; if adding to this percentage those who rarely suffer from it the figure reaches 80.7%. Only 6.5% consider that it happens frequently.

Table 2

How often do you check your social networks or email before starting other priority activities?

Frequency	Percentage
Never	0
Rarely	12,9
Occasionally	32,3
Frequently	25,8
Very often	16,1
Always	12,9

As shown in the table, attention to priority activities is often neglected due to the distraction generated by e-mail or social networks. The highest percentage 32.3% check their mail and it is noteworthy that 29% check it very often and always, which is a habit in almost one in three professors. Notwithstanding the above, they consider that their work productivity is not affected by the Internet, so they consider that there is no impact in this regard.

Professors do not point out a connection between the daily life problems and the need to connect to the Internet. 54.8% indicated that there is never an escape from difficulties thanks to online connection. Regarding the responses of those who do report a virtual escape from difficulties, two people indicated that it happens very often and one frequently. At the same time, for the majority there is no plan of what they will do the next time they go online, 35.5% indicating never and 25.8% rarely. The answers "Very often" and "Always" are only expressed by two academics. Although professors do not consider the Internet to be an essential element for daily life either, in the sense that they consider that it would be boring or empty not to have this tool, most of them thought that the Internet has made life more pleasant.

In the analytical approach as to whether it bothers them when other people interrupt them while they are on the Internet, 55% indicated that it never happens, mainly because of the high degree of concentration and effort involved in performing activities in front of a computer focused on what they are doing and disconnecting from what is happening around them. The results suggest that when people are on the Internet, they are usually capable of voluntarily directing their attention to the effort and concentration on the activity being carried out, so they tend to ignore the distracters that prevent them from focusing their interest on the cyberspace.

As for the frequency on the use of Internet and sleeping problems, the highest percentage of responses (32.3%) indicates that it rarely causes this effect, maybe because people do not use devices at bedtime or simply their sleep discipline forces them to suspend the use of any device that enables connection to the network during bedtime. On the other hand, 25.8% say that occasionally spending time on the Internet reduce their sleeping hours; it is also found that 22.6% have never suffered the loss of sleeping hours; 12.9% indicate that it happens frequently and 6.5% say that it happens very often.

Although most of the results indicate that there is rarely a perception in this sense, there is a physical wear and tear when checking social networks, chatting or watching videos during sleeping hours, since rest times are shortened to the point of technological insomnia. Knowing how to identify whether the exacerbated use of time spent on the Internet and how it is directly impacting the physical and mental health of people will help to control and regulate a balance between connectivity times and breaks from the use of electronic devices.

There is the fact among professors that the dynamics of online work with their students generate a lack of time to use it in their personal activities with their families, which is adapting to the evolution of life routines and even to a digital culture that is increasing every day, especially with the new generations and forces them to be in more contact with the internet, knowing that they have a more active and dynamic participation with their students through the Internet and social networks, in which they accept the support it provides in academic activities and facilitates the organization, delivery and evaluation of activities, thus getting to know new educational proposals and keeping a record of their activities, accepting the power of the Internet in the academy and in the daily social interactions of the university.

Table 3

Have you ever thought about spending less time on the Internet and not been able to do it successfully?

Frequency	Percentage
Never	29
Rarely	25,8
Occasionally	22,6
Frequently	19,4
Very often	0
Always	3,2

As to whether professors intend to spend less time on the Internet (Table 3), 29% have not been able to do so because of the support it provides; there is no perception on the part of those participating in the study that Internet use is a problematic situation.

Regarding whether they prefer to spend more time on the Internet than on socializing with friends, 45.2% consider that they have never done so, since the awareness of the use and applications of the Internet as a resource for professional and social help still prevails, which cannot displace the value of socialization as a communication tool. Among the responses, 22.6% say that they rarely prefer to spend more time connected on the Internet than to socializing with friends, 16.1% said occasionally, 9.7% said very often, and 6.5% said frequently. The results show that people prefer human socialization to computer solitude, not without mentioning that for those who said that Internet is a priority over people, there may be a decrease in communication, in addition to the existence of depressive, sedentary and solitary situations.

Finally, professors were asked if they had felt anxious, nervous or depressed when they were unable to connect on the Internet, the results showed that most of them did not perceive it as such, which may be because they are familiar with their activities, times and spaces in which they know Internet as an effective tool for their purposes. This security is due to the mastery of technological tools and awareness of the correct use of the Internet. However, there is a contradiction with the answers provided in previous questions that show the professor's obsession and feelings of anguish when he/she is not connected to social networks for a certain period of time.

4. Conclusions

It is important to carry out studies where Internet addiction is the focus of scientific analysis. Having said this, the results show that more and more people see their forms of socialization and their physical and mental health altered due to excessive use of the Internet.

Although there is no alarming data among the subjects studied, there are some results that suggest attention to professors as Internet users, such as the loss of awareness of the time spent on the Internet or the distraction of priorities by consulting the web.

Likewise, it is found that due to the excessive use of technology it is possible that many professors with connectivity addiction problems have some difficulty when socializing in their work and family environments, also finding that the professors who spend more time connected will be those who may be affected with conditions such as stress, anxiety, lack of effectiveness and interest in daily activities, with the same problems of communication and mental health.

The results show a brief social image insofar as they allow to interpret that the problems derived from addiction to Internet connectivity can be linked to the social dynamics of users in such a way that the more time connected on the Internet, the more the addictive risk factor. As analyzed by Valencia *et al.* (2021), it is essential to create training models so that not only students but also teachers master different aspects of technology (search, evaluation, collaboration and protection, among others).

It is also concluded that being Internet a tool that facilitates thousands of activities in the professional or social environment of professors' daily lives, it is important to recognize that the excessive time that professors spend in their connectivity makes them escape from a social reality where the virtual world acquires more meaning. Even though there is research on Internet addiction, we consider that the added value of this study is to concentrate the research interest in professors, especially at the University of Guadalajara, who are aware of the great value of technology as a support in their teaching and learning activities in order to ensure meaningful learning according to the educational needs of their student community.

It will be necessary in future research to see if it is feasible to conduct similar studies in other university centers of the University of Guadalajara with the aim of knowing their institutional realities in terms of Internet addiction not only in their teachers, but also considering students in the short term, in order to determine the prevalence of addiction to social networks and prevent it in a timely way. As Cabero *et al.* (2019) point out, it cannot be denied that ICT abuse has negative consequences, so it is essential to conduct educational public policies that regulate the use and abuse of technology and prevent harmful effects to the detriment of users, which could be significant for teaching practice in cyberculture, allowing to effectively enhance participatory and collaborative strategies inside and outside the classroom.

References

Álvarez Flores, E. (2021). Uso crítico y seguro de tecnologías digitales de profesores Universitarios. *Formación Universitaria*, *14*(1), 33-44. https://bit.ly/3RmpXr4

Álvarez Portela, D. R. and Fernández Castillo, E. (2019). Propiedades psicométricas de la versión adaptada del internet addiction test. *Salud & Sociedad*, *10*(2), 174-185. https://doi.org/10.22199/issn.0718-7475-2019-02-007

Asociación de Internet Mx. (2022). *18° Estudio sobre los Hábitos de Personas Usuarias de Internet en México 2022*. https://bit.ly/3rbdY5g

Avalos, L. (2017). *Historia de la ciencia y su tecnología*. Publicaciones Escolares Edición MAGISTERIO, San José Costa Rica.

Cabero Almenara, J., Martínez, S., Valencia-Ortiz, R., Leiva, J., Orellana, M. L. and Harvey-López, I. (2019). La adicción de los estudiantes a las redes sociales on-line: un estudio en el contexto latinoamericano. *Revista Complutense de Educación, 24*(4), 1-12. https://doi.org/10.5209/rced.61722

Castells, M. (2001). *La galaxia Internet*. Areté.

De Lima, M. R. and Moreira de Andrade, I. (2019). Significaciones docentes sobre la integración de tecnologías digitales en prácticas pedagógicas. *Alteridad*, *14*(1), 12-25. https://doi.org/10.17163.alt.v14n1.2019.01

Echeburúa, E. and De Corral, P. (2010). Adicción a las nuevas tecnologías y a las redes sociales en jóvenes: un nuevo reto. *Revista Adicciones, 22*(2), 91-95. Sociedad Científica Española de Estudios sobre el Alcohol, el Alcoholismo y las otras Toxicomanías. Palma de Mallorca, España.

García, B. C., López de Ayala-López, M. C. and Martínez Pastor, E. (2019). Usos comunicativos de las nuevas tecnologías entre los menores. Percepción de sus profesores sobre oportunidades y riesgos digitales. *Mediaciones Sociales* (18), 43-57. https://bit.ly/3ref7ZL

González Amarilla, S. B. and Pérez Vargas, S. F. (2019). Tecnoestrés docente: el lado opuesto de la utilización de las nuevas tecnologías por los docentes del nivel medio. *Revista Científica Estudios e Investigaciones*, *8*(1), 21-35. https://doi.org/10.26885/rcei.8.1.21

Hernández, R. M., Orrego, R. and Quiñones, S. (2018). Nuevas formas de aprender: La formación docente en el uso de las TIC. *Propósitos y Representaciones*, *6*(2), 671-701. http://dx.doi.org/10.20511/pyr2018.v6n2.248

López Barbosa, R. R., Guízar, A. D. and Santa Ana Escobar, M. B. (2019). Aceptación, estrés y adicción por el uso de las Tecnologías de Información y Comunicaciones en la educación profesional. En J. C. Neri Guzmán, R. López y B. O. Ríos Velázquez (2019), *El uso de las Tecnologías de la Información y Comunicación en el desempeño de jóvenes universitarios* (25-56). https://bit.ly/3dSmIdp

Magaña, C. (14 de mayo de 2021). Las y los maestros: INEGI presenta datos sobre la docencia. *México Social*. https://bit.ly/3CdEst8

Maldonado, M. E (2018). El aula, espacio propicio para el fortalecimiento de competencias ciudadanas y tecnológicas. *Sophia, 14*(1), 39-50. https://doi.org/10.18634/sophiaj.14v.1i.822

Moreno López, N., González Robles, A., Torres Gómez, A. and Araya Hernández, J. (2017). Alfabetización digital a padres de familia en el uso de las redes sociales. *Alteridad*, *12*(1), 8-19. https://bit.ly/3HHZYJu

Otzen, T. and Manterola, C. (2017). Técnicas de muestreo sobre una población a estudio. *International Journal of Morphology*, *35*(1), 227-232. https://bit.ly/2Iub2Za

Preciado, J. V. (2010). *Introducción a la informática educativa.* Colecciones Escolares UNED, San José Costa Rica.

Prieto Quezada. M. T. and Romero Sánchez, A. L. (2020). Violencia online en jóvenes de un bachillerato de México. *Revista. Espacios*, *42*(03). https://bit.ly/3Wtv4sN

Rojas Díaz, J. S. and Yepes Londoño, J. J. (2022). Panorama de riesgos por el uso de la tecnología en América Latina. *Trilogía Ciencia Tecnología Sociedad*, *14*(26), 1-40. https://doi.org/10.22430/21457778.2020

Sánchez-Carbonell, X., Beranuy, M., Castellana, M., Chamarro, A. and Oberst, U. (2008). La adicción a Internet y al móvil: ¿moda o trastorno? *Revista Adicciones*, *20*, 149-160. https://cutt.ly/90PGjjQ

Valencia-Ortiz, R., Cabero-Almenara, J. and Garay Ruiz, U. (2021). Adicción a las redes sociales en estudiantes mexicanos: percepciones de discentes y docentes. *Tecnología, Ciencia y Educación, 19*, 103-122. https://doi.org/10.51302/tce.2021.616

Waliño Guerrero, M. J., Pardo Baldoví, M. I. and San Martín Alonso, A. (2019). *Formación del profesorado para la ciudadanía digital.* XXVI edición de las Jornadas Universitarias de Tecnología Educativa. https://bit.ly/3BOgseN

Young, K. (1996). Psychology of computer use: addictive use of the Internet: a case that breaks the stereotype. *Psychological Reports*, *79*, 889-902. http://dx.doi.org/10.2466/pr0.1996.79.3.899

Young, K. (1999). Internet Addiction: Symptoms, Evaluation, And Treatment. L. Van de Creek y T. L. Jackson (Eds.), *Innovations in Clinical Practice*, *17*. https://bit.ly/3unIsm5

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Study of the prevalence of phubbing in classrooms by apps´use

Estudio de la prevalencia del phubbing durante clases ocasionado por el uso de apps

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Abstract

Cell phones, as well as the applications used in them, have changed the forms of communication processes between their users, inclusive, in classroom is common. Among the phenomena associated with the mobile device-applications binomial is phubbing, which is defined as the action of belittling or ignoring a person physically by paying more attention to the mobile phone. This research was developed at a public university in southern of Mexico. The principal objective was to find the relationship between phubbing and the use of mobile device apps when students are in the classroom. The study had a quantitative, descriptive and correlational approach. An instrument of our own elaboration was applied, which measured of two variables; in the one hand, Prevalence of phubbing and on the other hand, the use of apps. The questionnaire was applied in between 2019 and 2021, to 643 students, (F: 471, M: 172). It was identified that the prevalence of phubbing and the approach have a direct positive relationship. This means that, the closer the applications, the more phubbing is done in classes. The findings suggest that a significative percentage of students would like to avoid being phubbers by discovering it as a social phenomenon that affects their academic and social context in person.

Keywords: Mobile, mobile phone, addiction, apps, technologies, technopathy.

Resumen

Los teléfonos celulares, así como las aplicaciones utilizadas en ellos, han cambiado las formas en los procesos comunicativos entre sus usuarios, incluso en las aulas, lo que se percibe con frecuencia. Entre los fenómenos asociados al binomio de dispositivo móvil-aplicaciones se encuentra el *phubbing*, que se define como la acción de menospreciar o de ignorar a una persona físicamente por prestar más atención a un dispositivo móvil.

Esta investigación se desarrolló en una universidad pública en el sur de México con el objetivo de hallar la relación existente entre el *phubbing* y el uso de las aplicaciones de los dispositivos móviles cuando los y las estudiantes se encuentran presenciando su clase. El estudio tuvo un enfoque cuantitativo, descriptivo y correlacional. Se aplicó un instrumento de elaboración propia que midió dos variables, la Prevalencia del *phubbing* y, Uso de las aplicaciones. El cuestionario se aplicó en el intervalo de 2019 a 2021, a 643 estudiantes, (M:471, H:172). Se identificó que la prevalencia del phubbing y el acercamiento con las aplicaciones tienen una relación directa de engranaje, esto significa que, a mayor acercamiento a las aplicaciones, más *phubbing* se realiza en clases. Dentro de los hallazgos se encontró que un porcentaje de estudiantes desearía evitar ser *phubbers* al descubrirlo como un fenómeno social que afecta su contexto académico e interpersonal al sumergirse en el ocio ignorando su entorno.

Descriptores: Móviles, teléfono móvil, adicción, aplicaciones, TIC, tecnopatía.

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1. Introduction

A new world is created with the digital era and the Internet where communication, along with technology, has reached beyond what is observed. However, it is much more than technology "It is a means of communication, interaction and social organization" (Castells, 2000, p. 1). Especially "in an era of accelerated changes where paths promoted by the use of technology are opening up" (Martín-Párraga *et al.*, 2022, p. 37), which are being classified for different interests and social benefits. Technology is emerging which allow information sharing through computers, televisions, tablets and cell phones.

> Technological revolution is a global reality. It is currently in its boom, presenting more opportunities for employment, interaction, innovation and development in all social spheres. Today, people can communicate, study, work regardless of distance through digital connectivity (Mulumeoderhwa, 2022, p.74).

The use and services provided by mobile devices, especially cell phones, facilitate and make human life more comfortable. Some of these benefits are the use of email, communication through social networks, Internet shopping or information queries on the web (Villafuerte-Garzón and Vera-Perea, 2016).

ICTs in pedagogy are also present, since students are connected with their educational environment, peers, teachers, content and resources (Campos-Soto *et al.,* 2020).

Thus, as there is a close relationship between the Internet, mobile devices and applications for social and interactive use, phubbing has become more and more frequent in the classrooms during classes, reason for which this study is conducted, to measure how much time the student spends on the internet during classes, and what are the apps the student uses the most, to change the pedagogy in the future when acting as a teacher in the classroom by learning to use these tools for teaching.

1.1 Mobile devices and their relationship with phubbing

Mobile devices allow the individual to be reachable at any time and attentive to the different content they offer (Pedrero-Pérez *et al.,* 2012; Bian and Leung, 2014; Espina-Jerez, 2016).

However, despite the obvious benefits of smartphones, researchers have been increasingly concerned about their potential adverse effects on mental and physical health, and the quality of social and school interactions (Ha *et al.,* 2008; Khan, 2008; Lee *et al.*, 2014; Chotpitayasunondh and Douglas, 2016; Wang *et al.,* 2023; Thomas *et al.,* 2022; Zhan *et al.,* 2022; Wu *et al.*, 2022; He *et al.*, 2022; Hernandez-Gracia *et al.*, 2021; Fernández-Andujar *et al.*, 2022; Xio-Pan *et al.*, 2022).

In 2007 originate mobile applications (apps), software on cell phones and tablets that perform functions for the user, tools that when downloaded facilitate tasks in everyday life. "Mobile applications have become one of the main sources used by people to communicate, organize their lives, entertain themselves and even work" (Velo-de-Sebastian, 2014, p. 12).

In that sense, cell phones can reduce the quality of interpersonal interactions, producing a "tele-addiction" effect, where people are diverted from face-to-face exchanges with others and thus lose the art of face-to-face interaction (Habuchi *et al.*, 2005; Chotpitayasunondh and Douglas, 2016).

Just as the applications are improve different services in favor of the user, they are also negative since there are those that demand a constant visualization or approach, causing different complications in the life of these consumers:

> In these applications, addiction focuses on interactive communications that can be accessed at any time when there is no control or restriction of them, their permanent and constant use generates in students lack of awareness of their environment. Our society is surrounded by technology that is innovating every day, but this

> innovation is not used politely, generating dangers and risks. (Rosado-Alvarez *et al.,* 2015, p. 1)

The advent of smartphones and, subsequently, of apps, caused a series of psychopathologies related to their use. The World Health Organization (2008) mentions that one in four people suffers from technology-related disorders.

There is a wide variety of problems in the literature that have originated as a result of the use of the Internet and mobile devices. There are phenomena related to the use of cell phones and applications, some of which are often unknown to people. Among these technopathies are nomophobia, or cell phone philia, i.e., the fear of being without a cell phone (Asensio *et al.*, 2018), vibration anxiety, or phantom vibration syndrome. About 70% of users feel at some point the vibration of the phone when it does not really exist (Ponce-Aguirre, 2012; Capilla-Vilchis, 2018, Medina and Regalado, 2021). Sleep texting is a pathology that involves writing text messages while sleeping (Mobile World Capital Barcelona, 2013). FOMO (Fear of Missing Out), is a pervasive fear that others may be having rewarding experiences from which one is absent (Przybylski *et al.,* 2013). WhatsApp it is technically known as De Quervain's syndrome, BlackBerry thumb, gamer's thumb, radial styloid tenosynovitis, mom's thumb, or adolescent texting tendonitis (Malarvani *et al.*, 2014). Phubbing as the object of this study is a neologism composed of two words, phone and snubbing, a phenomenon that appears with the increasing and advanced technology.

According to Nazir and Piskin (2019), this term arises in 2012 when several experts met to find the word to describe the behavior of ignoring others for using the cell phone. In 2013 in the Australian dictionary, Macquarie Dictionary, the word phubbing appears already as a verb, describing it as the act of snubbing someone by detracting attention by looking at the cell phone.

Chotpitayasunondh and Douglas (2016) consider that this phenomenon of ignoring the interlocutor by attending to the mobile device has been normalized and explained from psychosocial, e.g., human interaction, social exchanges (Berg *et al.,* 1995; Cialdini, 1993; Falk and Fischbacher, 2006) and reciprocity (Pelaprat and Brown, 2012). This created a behavior of accepted reciprocity, of mutual intention to prioritize digital interaction over face-to-face.

The youth population is the one that remains more time virtually connected through their cell phones so they could be doing phubbing constantly, although they do not know its definition. Most people have taken the two places, as phubber who ignores and as phubbee, the one who is ignored, terms mentioned by Chotpitayasunondh and Douglas (2018 p. 304).

There is a campaign that was conducted through a website called Stop Phubbing (Haigh, 2022), to prevent phubbing, inform, raise awareness and advise on how to stop it.

A study conducted in Latin America (Mexico, Colombia and Brazil) points out that the largest population (75%) with mobile admit to making use of it to pretend to be busy and not talk to other people, almost half of the respondents said that they use it to "spend time" and for daily distraction, and a third, to consult an address instead of asking another individual or ordering a cab (Koob and Schulkin, 2019).

The Institute of Social Sciences in Croatia conducted international research "The Phubbing Phenomenon: Its Predictors and Consequences in a Cross-Cultural Perspective" where cell phone usage habits, Internet addiction and the number of hours online, as well as self-control were questioned. Although the results showed that they spent more than nine hours a day online, phubbing and FOMO were low to moderate, women were found to perform more phubbing, but men stay longer online (Brkljačić *et al.*, 2018, p.110).

In the case of Mexico, a study was conducted in the state of Hidalgo among high school students about the presence of phubbing in the classroom and the results show that from 50% to 75% of the students surveyed use cell phones in class without the teacher's consent, attending to

personal matters unrelated to educational practice (Hernández-Gracia *et al.,* 2020).

In Mexico, phubbing is still unknown by many, and there are even few studies related to emerging phenomena related to the use of mobile devices. Likewise, most of the literature found related to phubbing has focused on emotional disorders or affectations in interpersonal relationships suffered by users. However, research on phubbing in the classroom context is scarce, hence the purpose of this research.

2. Methodology

The study has a quantitative correlational approach. Two variables were constructed, the prevalence of phubbing and the use of apps.

2.1 Objectives

- To find the relationship between phubbing and the use of mobile device applications when students are in class.
- Identify the differences of phubbing between men and women.

2.2 Population

The study was carried out in the Academic Division of Education and Arts of Universidad Juárez Autónoma de Tabasco, with 3490 students distributed in four bachelor's degrees; 1131 in Education Sciences, 735 in Communication, 1573 in Languages and 51 in Management and Promotion of Culture.

2.3 Sample

The selection of the population was random with students of the bachelor's degrees of Education Sciences, Languages, Communication and Management and Promotion of Culture from 2019-2021. A total of 643 students participated, 471 were female and 172 male. The mean age of the participants was 20 years with a standard deviation of 2.8.

2.4 Procedure

A self-developed instrument consisting of 27 questions was used, which consisted of three parts. The first collected information related to age, gender, degree and semester. The second consisted of 21 questions on a frequency scale (Never, Seldom, Almost always, Always) that measured the prevalence of phubbing among university students in class. The third consisted of two questions, one dichotomous, to find out whether the respondent was familiar with the term or not, and one open-ended question to elicit their opinions about the phenomenon.

Prevalence of phubbing (e.g., Do you check/use your mobile device when you are in class (cell phone, tablet, computer)? with an alpha of .73. after performing a confirmatory analysis, the data fit the model ($c2 = 16.79$, $df = 3$, $p = .001$; SRMR = .01, AGFI = .95, TLI = .92, CFI = .98, RMSEA = .08, CI 90% [0.05, 0.12]).

Use of applications. It was divided into two dimensions: a) Approach that measures which apps influence the prevalence of phubbing in academic spaces. It consists of four questions such as, for example: how often do you use WhatsApp while accompanied? with a reliability of .66. b) Aloofness that measures the student's permanent desire to stop phubbing. It consists of four questions such as, have you ever wished to stop checking WhatsApp while accompanied? with a reliability of .80.

After a confirmatory analysis of the variable data, fit the model ($c2 = 64.31$, $df = 17$, $p = .000$; SRMR = .03, AGFI = .95, TLI = .94, CFI = .96, RMSEA = .06, CI 90% [0.04, 0.08]).

A pilot test was conducted to measure its internal consistency. Once the instrument was pilot tested, a form was developed for participants to answer online and they were invited to participate through social networks, flyers and by direct invitation of 35 research professors

of the Academic Division. Each participant was guaranteed the freedom to respond openly and the confidentiality of the data. None participants was excluded.

The records were processed in SPSS without loss of data, working with a 95% confidence interval. Factor analysis, reliability of variables and dimensions were performed in this application. Subsequently, means, SD and correlations were calculated.

AMOS was used to determine the goodness of fit and degree of freedom. A confirmatory analysis was performed for the variables, verifying the fit of the measurement model to the data. A 95% confidence interval was used to assess the goodness of fit of the models; fit indices proposed by previous researchers were used (Byrne, 2016; Kline, 2016) such as chi-square and associated likelihood (c2 with p>.001), standardized root mean square residual (SMSR =.01), Tucker-Lewis index (CFI =.98), and root mean square error of approximation (RMSEA =.08).

3. Results

The participation of the students was distributed as: 48% of the students from the Bachelor's Degree in Education Sciences, 17% from the Bachelor's Degree in Communication, 4% from the Bachelor's Degree in Languages and 31% from the Bachelor's Degree in Cultural Management.

Eighty-three percent of the group surveyed were unaware of the term phubbing as an emerging phenomenon from cell phone use. Table 1 shows that there are significant differences in the prevalence of phubbing between both genders. Both men and women consider that they rarely use their cell phones in the classroom, i.e., they do not see themselves as phubbers.

Table 1

Prevalence of phubbing by gender

	M (DE)	gl	t	p
Men	2.05(.55)	292.7	2.57	.01
Women	1.93(.52)			

Despite this result, students are aware that checking their cell phones too often can be detrimental academically. The phone can be used for academic purposes, especially now in times of pandemic and post-pandemic.

Table 2 shows that there are no differences between males and females in the willingness to walk away from the cell phone to check applications.

Table 2

Application distance by gender

	M (DE)	gl	t	p
Men	2.20(.85)	641	-.56	. .57
Women	2.24(.84)			

After performing a correlation analysis, there was a significance between the variables of app use and prevalence. This suggests a negative correlation, the greater the distance the lower the prevalence of phubbing in academic spaces, as shown in Table 3.

Table 3

Mean, standard deviation and correlations between the variables use of apps and prevalence of phubbing.

Variable	*M*	SD	1	2	3
Approach	1.9	.55		22**	.54**
Distancing	2.2	.84	.22**		-.12**
Prevalence	1.9	.53	.54**	-.12**	
*p<0.05. **p<0.01. ***p<0.001					

As can be seen in Table 4, students are distracted by applications oriented to instant communication or those that allow them to watch series or play online video games.

Tabla 4

Media y desviación estándar por tipo de aplicaciones más utilizadas

Application	*M(SD)*
Facebook	2.16(.75)
WhatsApp	2.43(.82)
Instagram	1.72(.75)
YouTube	1.62(.79)

Consequently, 23% indicated that they have always wanted to stop checking their cell phone while in class. Twenty-one percent of the students answered never, i.e., most of them have not felt the desire to avoid checking their cell phone applications while they are with another person, since they do not use them. They consider that social networks have changed the way of socializing nowadays, and the topics to be discussed in the meetings are derived from the exchange of content seen in the networks. They consider that strategies should be explored to diminish this practice of their use for social purposes in the classroom because it has become a habit rather than a necessity.

4. Discussion and conclusions

This research extends previous discussions on phubbing as an emerging phenomenon that impacts on various areas of communication. The basis of correlating the prevalence of phubbing in class with the use of apps had not been explored in the literature and the results were inconclusive.

In general, the fact that students avoid using apps would be associated with the norms established by the faculty, this means that there is no self-recognition on the part of the student, since as Bianchi and Philips (2005) mention, it is not clear why people do not have the necessary self-control when the use may be inappropriate. As Obregón (2015) says, there is an important paradox when stating that society claims not to depend on it, but at the same time encourages dependence until it becomes an addiction. In general, respondents are unaware that walking away can be critical in their academic performance and in their social relationship with others in face-to-face.

The effects of the prevalence of phubbing in academic spaces, and in classes, are significant, since 54% of students check their cell phones in class. This data indicates that phubbers are present when the teacher is teaching the class, or when their classmates are presenting a topic. This result

means that only 46% of teachers do not suffer from snubbing by their students, however, there are complaints from teachers, commenting that they realize that students perform practices outside class on their devices, evidencing phubbing.

These findings are closely related to the use of applications; students feel the need to keep in touch in an immediate and mediated way. This is related to what Jie *et al.* argue about the need to relate which will induce the desire of college students to seek emotional support in social networks, especially when needs in the offline context are not well met (2020, p. 2).

It is possible that Maslow's hierarchy of needs has changed with technology in mediated communication (Rico, 2017). The need for security, belonging to a group, affiliation, recognition and self-realization are subordinated to the use of social and interactive applications on cell phones.

The act of ignoring the other in a face-to-face manner by connecting with the digital world, reflects that this phenomenon has been normalized in our society, which has caused emotional problems, as well as personal, family and academic ruptures. This means that the self-perception of being discourteous is null, consequently, the desire to leave the situation becomes nonexistent. As mentioned by Capilla-Garrido and Cubo-Delgado (2017), technological diseases increase due to their excessive use (p. 178). Nowadays, phubbing is common, as stated by Vanden-Abeele *et al.* (2019) "people do not really seem to notice, and any effect on distraction and conversational intimacy, whether positive or negative, seems to be quite small" (p. 42).

As mentioned by Davey *et al.* (2018), the greater the dependence on cell phones, the greater the behavior associated with phubbing among university students.

The results show that there is a need for pedagogical strategies among students to be oriented to the use of cell phones in classes. This fact is related to 45% of the respondents, who say they do not want to stop checking their cell phones.

In general, this situation has caused serious problems in interpersonal relationships, since there are those who are rejected and ignored because in the middle of the communication between two or more people they feel affected because someone pays more attention to the mobile device than to the same person, developing behaviors such as the following: they do not stop looking at the cell phone, they write while talking, they lower their gaze at every moment, they do not pay attention or interrupt. What do these people who have been ignored or rejected because of a "machine" feel? "Dependence on technology affects interpersonal relationships with people who are in their social environment" (Durán-Nieves, 2014, p. 182).

The variable of distancing from the app, as opposed to approaching it, shows that the students identified their willingness to stop phubbing. They consider that staying away from apps and mobile devices is a difficult task. The academic slogan of absenting themselves from mediated communication has become a complicated task. However, in the classroom the student is expected to have his/her five senses in class, when they present in class, they expect the audience to pay full attention. This does not change on the teacher's side, participation and interactivity in the classroom is expected as a result of thematic understanding. In the end, the work of raising awareness should not only fall on parents, but also on teachers, as mentioned by Santana-Vega *et al.* (2019), they should be involved to create a common learning space about the problems generated by the misuse of cell phones and the need to use them responsibly.

According to the results, the applications that distract students are those related to instant communication; Terán-Prieto (2019) confirms that WhatsApp and social networks are the most widely used among adolescents and young people, where a high prevalence is found for their inappropriate use, as well as the risk of abuse and dependence on them.

The results of this research in relation to the use and abuse of social networks are consistent with other previous studies, Bendayan and Blanca (2019) argue that there are specific behaviors with excessive use of Facebook that are related with problematic use of the cell phone and phubbing. It agrees with Karadag *et al.* (2015) when saying that the desire to show one's existence by peeking on social networks may be the factors that increase this addiction. Although for Igarashi *et al.* (2005), young people do not need fully integrated relationships with others, but relationships that function partially in response to one's situational demand. It makes sense then that students are more attentive to their cell phones because they are expecting the reactions provoked by their posts or instant messages.

Finally, this study focused on student phubbing in the classroom from the use of apps on their mobile. The study contributes to understanding the relationship between smartphone applications and university students' classroom behavior through the prevalence of use and apps. One of the limitations of the study was that it focused only on students in the social sciences and humanities areas of a single public university. Additional transdisciplinary validations should be conducted to compare and explain specific behaviors in common. It will be up to social scientists to open future research on comparative studies among all the phenomena arising from the use of mobile devices to identify which has the greatest impact on the academic quality of university students and, therefore, on their social life, since it is unknown whether they will impose new rules on the way we communicate face to face.

References

Asensio-Chico, I., Díaz-Maldonado, L. and Garrote-Moreno, L. (2018). Nomofobia. Enfermedades del siglo XXI. *Medicina de familia. SEMERGEN*, *44*(7), e117-e118. http://doi.org/10.1016/j.semerg.2018.05.002

Bendayan, R. and Blanca, M. J. (2019). Spanish version of the Facebook Intrusion Questionnaire (FIQ-S). *Psicothema*, *31*(2), 204-209. http://doi.org/10.7334/psicothema2018.301

Berg, J., Dickhaut, J. and McCabe, K. (1995). Trust, reciprocity, and social history. *Games and Economic Behavior, 10*(1), 122-142. https://doi.org/10.1006/game.1995.1027

Bian, M. and Leung, L. (2014). Linking loneliness, shyness, smartphone addiction symptoms, and patterns of smartphone use to social capital. *Social Science Compute Review*, *33*(1), 61-79. https://doi.org/10.1177/0894439314528779

Bianchi, A. and Phillips, J. G. (2005). Psychological predictors of problem mobile phone use. *Cyber Psychology y Behavior: The Impact of the Internet, Multimedia and Virtual Reality on Behavior and Society*, *8*(1), 39-51. https://doi.org/10.1089/cpb.2005.8.39

Bragazzi, N. L. and Del-Puente, G. (2014). A proposal for including nomophobia in the new DSM-V. *Psychology Research and Behavior Management*, *7*, 155-160. https://doi.org/10.2147/PRBM.S41386

Brkljačić, T., Šakić, V. and Kaliterna-Lipovčan, Lj. (2018). Phubbing among Croatian students. En S. Nakić Radoš (Ed.), *Protection and promotion of the well-being of children, youth, and families: Selected Proceedings of the 1st International Scientific Conference of the Department of Psychology at the Catholic University of Croatia,* 109-126. Zagreb, Croatia: Catholic University of Croatia. https://bit.ly/3tsq3oC

Byrne, B. M. (2016). *Structural equation modeling with Amos.* Routledge.

Capilla-Garrido, E. and Cubo-Delgado, S. (2017). Phubbing. Conectados a la red y desconectados de la realidad. Un análisis en relación al bienestar psicológico. *Pixel-Bit, Revista de Medios y Educación*, (50). http://doi.org/10.12795/pixelbit.2017.i50.12

Campos Soto, M. N., Ramos Navas-Parejo, M. and Moreno Guerrero, A. J. (2020). Realidad virtual y motivación en el contexto educativo: estudio bibliométrico de los últimos veinte años de Scopus. *Alteridad, 15*(1), 47-60. https://doi.org/10.17163/alt.v15n1.2020.0

Capilla-Vilchis, R. (Ed.) (2018). Phubbing, ¿es más importante tu smartphone? *Ciencia mx noticias*. https://bit.ly/33nARHJ

Castells, M. (2000). *Internet y la sociedad red*. [Conference]. Conferencia de Presentación del Programa de Doctorado sobre la Sociedad de la Información y el Conocimiento, Universitat Oberta de Catalunya, España. https://bit.ly/2PlLRNW

Chotpitayasunondh, V. and Douglas, K. M. (2016). How "Phubbing" becomes the norm: The antecedents and consequences of snubbing via smartphone. *Computers in Human Behavior*, *63*, 9-18. https://doi.org/10.1016/j.chb.2016.05.018

Chotpitayasunondh, V. and Douglas, K. M. (2018). The effects of "phubbing" on social interaction. *Journal of Applied Social Psychology*, *48*(6), 304-316. https://doi.org/10.1111/jasp.12506

Cialdini, R. B. (1993). *Influence: the psychology of persuasion*. Morrow.

Davey, S., Davey, A., Raghav, S. K.; Singh, J. V., Singh, N., Blachnio, A. and Przepoórkaa, A. (2018). Predictors and consequences of "Phubbing" among adolescents and youth in India: An impact evaluation study. *Journal of Family and Community Medicine 25*(1), 35-42. https://bit.ly/3PLdldg

Durán-Nieves, I. M. (2014). Tecnologías y su impacto en el entorno social y empresarial: Nomofobia y phubbing. *Revista APEC*, *30*, 176-188. https://bit.ly/2Yy2biO

Espina-Jerez, B. (2016). *Afrontamiento y uso del teléfono móvil inteligente en una muestra de adolescentes españoles.* [Master dissertation]. Universidad Pontificia Comillas de Madrid https://bit.ly/2EFzpWY

Falk, A. and Fischbacher, U. (2006). A theory of reciprocity. *Games and Economic Behavior*, *54*(2), 293-315. http://doi.org/10.1016/j.geb.2005.03.001

Fernández-Andújar, M., Oporto-Alonso, M., Sorribes, E., Villalba, V. and Calderon, C. (2022). Internet addiction, phubbing, psychological variables and self-perception of mathematical competence in college students. *MDPI, 10*(15), 2631. https://doi.org/10.3390/math10152631

Ha, J. H., Chin, B., Park, D., Ryu, S. and Yu, J. (2008). Characteristics of excessive cellular phone use in Korean adolescents. *CyberPsychology & Behavior, 11*(6), 783-784. http://dx.doi.org/10.1089/cpb.2008.0096

Habuchi, I., Dobashi, S., Tsuji, I. and Iwata, K. (2005). Ordinary usage of new media: Internet usage via mobile phone in Japan. *International Journal of Japanese Sociology, 14*(1), 94-108. https://doi.org/10.1111/j.1475-6781.2005.00071.x

Haigh, A. (2022). *Stop phubbing & start connecting*. http://stopphubbing.com/

He, Q., Zhao, B., Wei, H. and Huang, F. (2022). The relationship between parental phubbing and learning burnout of elementary and secondary school students: The mediating roles of parent-child attachment and ego depletion. *Frontiers in Psychology, Section Educational Psychology.* https://doi.org/10.3389/fpsyg.2022.963492

Hernández-Gracia, T. J., Duana-Ávila, D., Hernández-Gracia, J. F. and Torres-Flórez, D. (2021). La presencia de phubbing en estudiantes del nivel superior. *Panorama*, *15*(28), 92-104. https://doi.org/10.15765/pnrm.v15i28.1818

Igarashi, T., Takai, J. and Yoshida, T. (2005). Gender differences in social network development via mobile phone text messages: A longitudinal study. *Journal of Social and Personal Relationships*, *22*(5), 691-713. https://doi.org/10.1177/0265407505056492

Jie, F., Xingchao, W., Zhonglin, W. and Jianfeng, Z. (2020). Fear of missing out and problematic social media use as mediators between emotional support from social media and phubbing behavior. *Addictive Behaviors*, 107. https://doi.org/10.1016/j.addbeh.2020.106430

Karadağ, E., Tosuntaş, Ş. B., Erzen, E., Duru, P., Bostan, N., Şahin, B. M., Çulha, İ. and Babadağ, B. (2015). Determinants of phubbing, which is the sum of many virtual addictions: A structural equation model. *Journal of Behavioral Addictions, 4*(2), 60-74. http://doi.org/10.1556/2006.4.2015.005

Koob, G. F. and Schulkin, J. (2019). Addiction and stress: An allostatic view. *Neuroscience & Biobehavioral Reviews, 106*, 245-262. https://doi.org/10.1016/j.neubiorev.2018.09.008

Khan, M. (2008). Adverse effects of excessive mobile phone use. *International Journal of Occupational Medicine and Environmental Health, 21*(4), 289-293. http://dx.doi.org/10.2478/v10001-008-0028-6

Kline, R. (2016). *Principles and practice of structural equitation modeling*. The Guilford Press. https://bit.ly/3u6L9sj

Lee, Y., Chang, C., Lin, Y. and Cheng, Z. (2014). The dark side of smartphone usage: psychological traits, compulsive behavior and technostress. *Computers in Human Behavior, 31, 373-383.* http://doi.org/10.1016/j.chb.2013.10.047

Malarvani, T., Ganesh, E., Nirmala, P.G., Kumar, A. and Singh, M. K. (2014). WhatsAppitis: Recent Study on SMS Syndrome. *Scholars Journal of Applied Medical Sciences (SJAMS*), 2(6B), 2026-2033. https://bit.ly/2O9fX6E

Martín-Párraga L., Palacios-Rodríguez, A. and Gallego-Pérez, Ó. M. (2022). ¿Jugamos o gamificamos? Evaluación de una experiencia formativa sobre gamificación para la mejora de las competencias digitales del profesorado universitario. *Alteridad,* (17)1, 36-49. https://doi.org/10.17163/alt.v17n1.2022.03

Medina-Gamero, A. and Regalado-Chamorro, M. (2021). Phubbing: el otro rostro de la COVID-19. *Medicina de Familia. SEMERGEN, 47*(6), 1-426. http://doi: 10.1016/j.semerg.2021.05.001

Mobile World Capital Barcelona. (Ed.) (2013). Patologías móviles: 'sleep texting' y la vibración fantasma. https://bit.ly/2ZaID5p

Mulumeoderhwa-Mufungizi, E. (2022). El mundo de la conectividad: Un paso hacia el crecimiento del Internet de las Cosas en México. *Revista ComHumanitas, 13*(1), 72-91. https://bit.ly/3VgIwjl

Nazir, T. and Piskin, M. (2019). Phubbing: A technological invassion which connected the world but disconnected humans. *The International Journal of Indian Psychology*, *3*(4), 2349-3429. http://doi.org/10.25215/0403

Obregón, M. P. (2015). *Phubbing y las relaciones interpersonales en adolescentes*. Universidad Rafael Landívar, Guatemala. https://cutt.ly/AhnJugO

Organización Mundial de la Salud. (Ed.) (2008). *La atención primaria de salud, más necesaria que nunca.* Informe sobre la salud en el mundo 2008. https://bit.ly/3I7KUDq

Pedrero-Pérez, E. J., Rodríguez-Monje, M. T. and Ruiz-Sánchez de León, J. M. (2012). Adicción o abuso del teléfono móvil. *Revisión de la literatura. Adicciones*, *24*(2), 139-152. https://bit.ly/2XVwikM

Pelaprat, E. and Brown, B. (2012). Reciprocity: Understanding online social relations. *First Monday, 17*(10). http://doi.org/10.5210/fm.v17i10.3324

Ponce-Aguirre, A. (2012, September 30). Nomofobia: La pandemia del siglo XXI. *Ingeniería de la Conducta.* https://bit.ly/2BY3qAu

Przybylski, A. K., Murayama, K., DeHaan, C. R. and Gladwell, V. (2013). Motivational, emotional, and behavioral correlates of fear of missing out. *Computers in Human Behavior, 29*(4), 1841-1848. https://doi.org/10.1016/j.chb.2013.02.014

Rico, G. (2017). Pirámide de Maslow en el mundo digital. *Eidos´*. https://cutt.ly/K1bMPqR

Rosado-Álvarez, M. M., Espinoza-Burgos, A. D. and Tingo-Herrera, J. T. (2015). Universitarios adictos a las aplicaciones tecnológicas en un smartphone. *Contribuciones a las Ciencias Sociales*. https://bit.ly/3dWdK9V

Santana-Vega L. E., Gómez-Muñoz, A. N. and Feliciano-García, L. (2019). Uso problemático del móvil, fobia a sentirse excluido y comunicación familiar de los adolescentes. [Adolescents problematic mobile phone use, fear of missing out and family communication]. *Comunicar*, *59*, 39-47. https://doi.org/10.3916/C59-2019-04

Terán-Prieto, A. (2019). Ciberadicciones: Addiction a las nuevas tecnologías (NTIC). *Congreso de Actualización Pediatría* 2019 (pp. 131-141). Lúa Ediciones 3.0. https://bit.ly/2DfBOH8

Thomas, T. T., Carnelley, B. K. and Hart, M. C. (2022). Phubbing in romantic relationships and retaliation: A daily diary study. *Computers in Human Behavior, 137*(1). https://doi.org/10.1016/j.chb.2022.107398

Vanden-Abeele, M. M. P., Hendrickson, A. T., Pollmann, M. M. H. and Ling, R. (2019). Phubbing behavior in conversations and its relation to perceived conversation intimacy and distraction:

An exploratory observation study. *Computers in Human Behavior*, *100*, 35-47. https://doi.org/10.1016/j.chb.2019.06.004

Velo-de-Sebastián, V. (2014). *Las telco en un mundo digital: Un análisis del nuevo sistema de valor debido al desarrollo de la Apps.* [Master dissertation]. Universidad Pontificia Comillas de Madrid. https://bit.ly/2YsNBc1

Villafuerte-Garzón, C. M. and Vera-Perea, M. (2016, July 26-28). *Phubbing y género: Uso, abuso e interferencia de la tecnología.* XI Congreso Iberoamericano, Ciencia, Tecnología y Género, Costa Rica. https://bit.ly/2UCbT2j

Wang, X., Qiao, Y. and Wang, S. (2023). Parental phubbing, problematic smartphone use, and adolescents' learning burnout: A cross-lagged panel analysis. *Journal of Affective Disorders, 320*(1), 442-449. https://doi.org/10.1016/j.jad.2022.09.163

Wu, X., Zhang, L., Yang, R., Zhu, T., Xiang, M. and Wu, G. (2022). Parents can't see me, can peers see me? Parental phubbing and adolescents' peer alienation via the mediating role of parental rejection. *Child Abuse & Neglect, 132*(1). https://doi.org/10.1016/j.chiabu.2022.105806

Xiao-Pan, X., Qing-Qi, L., Zhen-Hua, L. and Wen-Xian, Y. (2022). The Mediating Role of Loneliness and the Moderating Role of Gender between Peer Phubbing and Adolescent Mobile Social Media Addiction. *MDPI,* 19(16). https://doi.org/10.3390/ijerph191610176

Zhan, S., Shrestha, S. and Zhong, N. (2022). *Romantic relationship satisfaction and phubbing: The role of loneliness and empathy*. Frontiers in Psychology, Department of Philosophy. https://doi.org/10.3389/fpsyg.2022.967339

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Institutional philosophy and sustainable development goals: underlying linkages

Filosofía institucional y objetivos de desarrollo sostenible: nexos subyacentes

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Abstract

Three main documents: the General Law, the University Statute, and the Institutional Development Plan, describe the philosophy with which the Autonomous University of the State of Mexico (UAEMex), describes its contribution to society, through the advancement of knowledge and management actions. Because of the importance of Higher Education Institutions (HEIs) in the achievement of the Sustainable Development Goals (SDGs), the aim of this research is to analyse the philosophical framework of the UAEMex as a support for the fulfilment of the SDGs. Hermeneutics was used as a technique with the use of Atlas.ti® Software version 9.1.6, coding the documents from keywords that indicated a narrow relationship with the corresponding definition of one of the seventeen SDGs. It was found that the SDGs that appear most frequently are 1) education, 2) decent work and economic growth, and 3) peace, justice, and strong institutions. Water, energy, and climate action were found to have a weak presence. Based on the above, it is considered that there is a congruence of the SDGs in the philosophy and mission of UAEMex; therefore, HEIs can incorporate sustainability and SDGs within their normative framework. In addition, there is an opportunity to develop non-formal education.

Keywords: Philosophy, educational management, sustainable development, higher education, substantive functions, legislation.

Resumen

El marco filosófico de las Instituciones de Educación Superior (IES) debe implementar los Objetivos de Desarrollo Sostenible (ODS) para cambiar el entorno social, económico y ambiental de estudiantes, dentro y fuera del campus. Tres documentos principales: la Ley General, Estatuto Universitario y Plan Rector de Desarrollo Institucional, describen la filosofía con la que la Universidad Autónoma del Estado de México (UAEMex), da cuenta de su contribución a la sociedad, a través del avance del conocimiento y acciones de gestión; el objetivo de esta investigación es analizar el marco filosófico de la UAEMex como sustento para el cumplimiento de los ODS. Se utilizó la hermenéutica como técnica con el uso del Software Atlas.ti® versión 9.1.6, codificando los documentos a partir de palabras clave que indicaban una relación estrecha con la definición correspondiente de cada uno de los diecisiete ODS. Se comprobó que los ODS que aparecen con mayor frecuencia son 1) educación, 2) trabajo decente y crecimiento económico, y 3) paz, justicia e instituciones sólidas. La presencia del agua, la energía y la acción climática es escasa. Con base en lo anterior, se considera que existe una congruencia de los ODS en la filosofía y misión de la UAEMex; por lo tanto, las IES pueden incorporar a la sustentabilidad y ODS dentro de su marco normativo. Además, existe una oportunidad para desarrollar educación no formal.

Descriptores: Filosofía, gestión educacional, desarrollo sostenible, enseñanza superior, funciones sustantivas, legislación.

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1. Introduction and state-of-the-art

1.1 Theoretical frame

In 1968, the Report titled "The Limits of Growth" (Meadows *et al.,* 1972), mentioned sustainability as a guiding framework to mitigate the impacts on the environment and improve the quality of life of society.

There is ambiguity about sustainability and sustainable development. Andrade *et al.* (2017) indicate more than 100 definitions; some authors consider them synonyms, while others say these are different terms (Valenzuela, 2017; Martínez and Martínez, 2016; Jiménez, 2016; Cortés and Peña, 2015; Macías *et al.*, 2006), not being the purpose of this study to discuss this disambiguation, this paper will use them interchangeably.

The Brundtland Report describes sustainable development as an action that aims to balance economic, cultural, political, ecological and social resources and dimensions to achieve intergenerational and intragenerational equity (Brundtland, 1988).

Although sustainability has been approached following social, economic and environmental aspects (Nijkamp, 1990, in Zarta, 2018), architectural (Lazar and Chithra, 2021; Mickaityte *et al.,* 2008), business (Moufty *et al.*, 2021), transportation (Abdullahi *et al.*, 2021), political and axiological (Martínez and Martínez, 2016; Bell and Morse, 2008), emotional (Axon, 2020; Brow *et al.,* 2019), spiritual (Ratner, 2004), educational and philosophical (Martínez and Martínez, 2016; Gutiérrez-Barba and Martínez-Rodríguez, 2010), the environment is the main dimension (Moufty *et al.,* 2021).

In fact, the predominance of this dimension is such that environmentalism is a factor that originated the typology of weak sustainability and strong sustainability. The first, also called moderate environmentalism, in which the environment has little relevance and is more important than economics (Michelsen *et al.,* 2016; Pierri, 2005). Strong or conservationist ecological sustainability considers that there is harmony between the components of the Earth (Michelsen *et al.*, 2016; Gutiérrez and Pozo, 2006; Pierri, 2005). The strong or critical humanistic sustainability stream believes that society needs to be re-educated to use natural resources responsibly (Michelsen *et al.*, 2016).

To achieve sustainability, political, cultural, educational, economic and technological strategies have been developed, among which the Sustainable Development Goals (SDGs) stand out.

The 17 SDGs - no poverty, zero hunger, good health and well-being, quality education, gender equality, clean water and sanitation, affordable and clean energy, decent work and economic growth, industry, innovation and infrastructure, reduced inequalities, sustainable cities and communities, responsible production and consumption, climate action, life below water, life on land, peace, justice and strong institutions, partnership for the goals - aim to measure progress toward sustainability quantitatively.

The SDGs are developed under the three most main dimensions of sustainability (economic, social and environmental) (Mohamed and Noguchi, 2019; Barbier and Burgess, 2019), and should be met considering the 2030 Agenda (Lange *et al.,* 2019), involving all governments, non-governmental organizations, the private sector and civil society (Barbier and Burgess, 2019; Gusmão *et al.,* 2018). Higher Education Institutions (HEIs) can help because of their duty to society (Covas, 2004) because they promote a better quality of life, and awareness in favor of sustainability (Pizzutilo and Venezia, 2021) and promote the 2030 Agenda (Etse and Ingley, 2016).

In this regard, the Sustainable Development Solution Network (SDSN) mentions success stories, in Australia there is the creation of the PhD in Sustainable Development by the SDGs at Curtin University and the Student Leadership Forum on SDGs at Monash University, among others

(SDSN, 2017). Lehigh University, Pennsylvania, stands out in the United States (United Nations, 2021). Fihlo *et al.* (2019) analyze the curriculum of 167 universities in 17 countries and point out that the fight against poverty, health and quality education in Latin America is in the first places.

In Mexico, the Autonomous University of the State of Mexico and the Monterrey Institute of Technology and Higher Education stand out as coordinating institutions of the SDSN to incorporate the SDGs in Mexican HEIs (SDSN México, 2021).

HEIs can create strategies based on their roles in meeting the SDGs. Garcia-Arce *et al.* (2021) analyzed the proposals of UNESCO (1998), ARIUSA (2014), UNEP (2014), UN (2015) and CRUE (2018), ANUIES (2000), COMPLEXUS (2013), SEP (2020) and found that all 17 SDGs are present, albeit unevenly in the four substantive functions of the HEIs.

1.2 Literature review

From the Talloires meeting in 1990 to the present day, universities have carried out actions aimed at sustainability. Mendoza-Cavazos (2016) mentions some systems that evaluate sustainability in HEIs: the Three-Dimensional University Ranking (TUR), University Sustainability Policy Evaluation (AUSP), Sustainability Monitoring and Evaluation System (STARS) of the Association for the Promotion of Sustainability in Higher Education Institutions (AASHE), and Greenmetric. There is the RISU PROJECT in Latin America, of the Ibero-American Networks Alliance of Universities for Sustainability and the Environment (ARIUSA).

Some countries have done the same: the Netherlands is developing the Audit Instrument for Sustainability in Higher Education (AISHE); there is the working group in Spain called Sectoral Commission on Environmental Quality, Sustainable Development and Risk Prevention in Universities (CADEP).

In Mexico, the Mexican Consortium of Environmental Programs for Sustainable Development (COMPLEXUS) (CRUE, 2018; Alba *et al.*, 2012) and the National Association of Universities and Higher Education Institutions (ANUIES), which promotes an Institutional Environmental Plan (PAI, by its acronyms in Spanish).

1.3 Institutional philosophy and regulatory framework

The sustainable strategies of HEIs include parameters related to the green campuses, interdisciplinarity of sustainability, pedagogy, learning and instruction, community outreach, institutional policy, auditing, evaluation, quality control, curriculum, research and professional development, as well as philosophy and principles (Wals, 2014). Given the current moment, it is advisable to consider the fulfillment of the SDGs and their relationship with philosophy, considering that "Philosophy is the broadest of disciplines and explores the basic concepts that accompany our thinking and talks about any subject" (Kenny, 2006, p. XI) and consequently our action. As for higher education institutions, philosophy is consistent with its substantive functions; the philosophy related to government is called political philosophy (Miller, 2003), as for the HEIs it can be defined as philosophy of micropolitics but does not lose importance in relation to the way that the government affects the well-being of people (Miller, 2003).

The philosophy of the HEIs, understood as the ideology that brings a level of maturation (Aguilar and Chicaiza, 2011), has an influence through the generation of strategies, and fulfills the development of objectives (Díaz, 2019). In addition, institutional philosophy can generate awareness, improve the environment (Aguilar, 2020), and provide better living conditions (Gokalp, 2012). This institutional philosophy can be contained in the normative framework (Díaz, 2019) of the HEIs, which must have a solid ideology to "guide" (Pazmiño, 2008), in addition to enable dialogues between educational author-

ities and the university community to establish proposals for training (Nanclares and Tobón-Marulanda, 2021), management and research for the benefit of all involved.

The guiding documents as expressions of the institutional philosophy and its articulation with the SDGs will show the solidity of the current and future actions that the UAEMex-pledge to comply with responsible management in the educational, labor, technological, economic and environmental aspects to favor sustainability (Morales and Villa, 2018, cited in Cruz and Serrano, 2020); where the philosophy of the HEIs guarantees the management towards sustainability, regardless of the administrative changes, since philosophy is in science (Vaesen and Katzav, 2019), in climate change (Foster, 200 20) or any other area for making decisions, measuring the consequences (Vaesen and Katzav, 2019) and creating utopias (Foster, 2020).

The philosophical attitude enables HEIs to intervene in the long term, to achieve sustainability and assume their responsibility as agents of change (Mariño, 2012).

1.4 Sustainable Higher Education Institutes (HEIs) in Mexico

Eight IES signed the Talloires Declaration in Mexico (of 417 universities from 79 countries), there are 18 HEIs partner in COMPLEXUS; 15 HEIs participate in the RISU PROJECT and in GreenMetric that ranks 912 universities from 84 nations, only 24 universities are within the ranking, one of them is the Autonomous University of the State of Mexico (UAEMex).

Likewise, many HEIs have included environmental issues in their institutional plans (Green, 2013), which according to Peer and Stoeglehner (2013) and Larrán *et al.* (2015) green universities or sustainable universities not only focus on environmental aspects but also social, cultural and economic aspects; they consider green campus, sustainable research, public participation, cooperation between institutions and sustainable results (Freidenfelds *et al.,* 2018; UNEP, 2014).

Out of the 3100 Mexican HEIs (Gobierno de México, 2021), only 70 have registered their PAI (2018), in which the proposed strategies cover all the substantive functions, while the philosophy of the institutions has not been analyzed from the perspective of sustainability and it is relevant to know if the SDGs have a place in it.

1.5 Autonomous University of the State of Mexico (UAEMex)

The UAEMex is one of the main public universities in Mexico, it has a baccalaureate, two university technical programs, 84 of bachelor programs; 41 specialties, 35 masters and 23 doctorates. It has liaison programs in Germany, Argentina, Spain, Italy and the United States of America.

The UAEMex has several certifications that recognize its prestige:

- In 2020, Green Metric ranked 12th out of 24 Mexican universities.
- Webometrics ranks 2951 worldwide, 709 in the North American Region and 26 nationally.
- The QS World University ranking in 2021 is in the range 801-1000, the 70th position in Latin America and 11th in Mexico.
- Times Higher Education World University Rankings placed it in the 78th position of Latin America, five nationally and 1201 worldwide.

2. Methodology

The institutional philosophy of UAEMex is contained in 159 documents, the most outstanding are: the Law of the Autonomous University of the State of Mexico (UAEMex Law), the University Statute (UAEMex Statute) and the Institutional Development Master Plan (PRDI), the current

one is 2017-2021, and constitutes the top-down vision of this HEIs.

Since the unit of analysis is the philosophical discourse contained in the regulatory framework, the visibility of the SDGs is done from a hermeneutic descriptive approach without pretending to stablish causes and effects. The 17 SDGs are considered as categories of analysis, which means that each paragraph was labeled with the SDGs that, from the interpretative view of the writer, was related. Subsequently, the categories were recorded as codes for the analysis with Atlas.ti® version 9.1.6. Software that allows grouping, identifying frequencies and co-occurrences among the rhetorical selections made. Given the timing of the documents, they do not explicitly indicate the SDGs, so this is an interpretative analysis.

3. Results

The UAEMex Law was updated in 2005, the UAEMex Statute in 2007, and the PRDI in 2017. The SDGs that appear most frequently are the objective linked to education (SDG 4) with 161 co-occurrences, secondly, the objective of decent work (SDG 8) with 131 co-occurrences and third the objective of peace, justice and solid institutions (SDG 16) with 113 co-occurrences.

While the SDGs with the least presence are clean water and sanitation (SDG 6) with a co-occurrence, affordable and clean energy (SDG 7) and climate action (SDG 13) with two co-occurrences each (Table 1).

Table 1

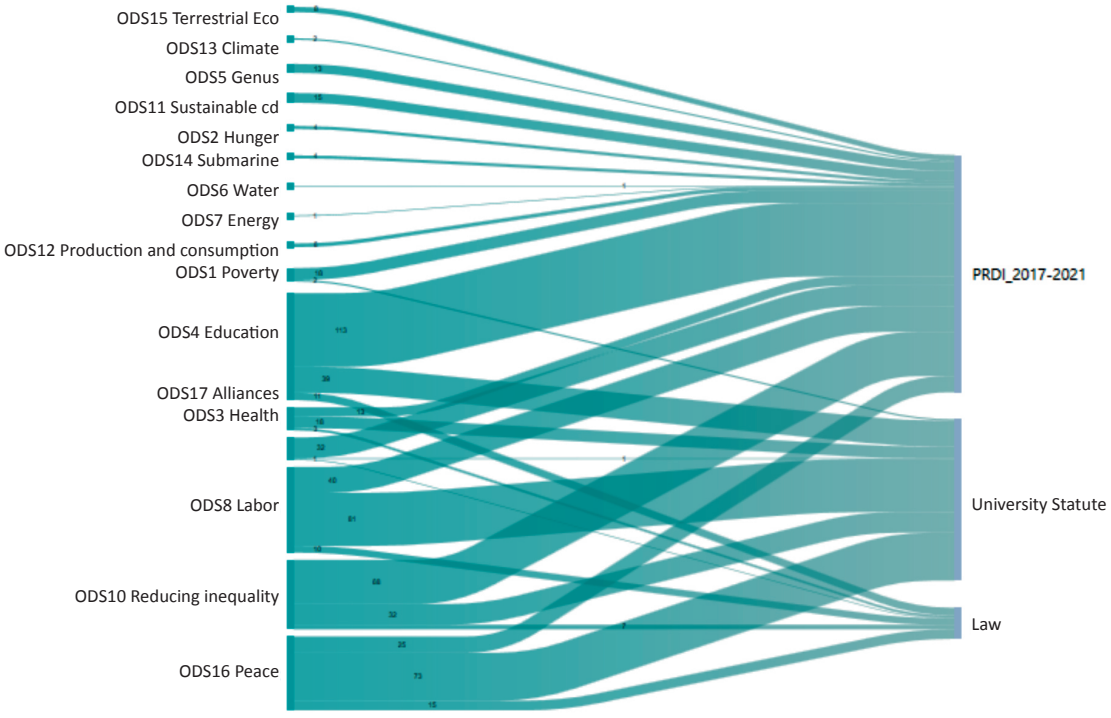
Co-ocurrences in the regulatory framework of UAEMEX and SDGs

	UAEMex-Law	UAEMexStatus	PRDI 2017-2021	Totals
SDG1 End Poverty	0	2	18	20
SDG2 Zero hunger	0	0	4	4
SDG3 Health and Wellness	1	1	32	34
SDG4 Quality education	11	39	113	163
SDG5 Gender equality	0	0	13	13
SDG6 Clean water and sanitation	0	0	1	1
SDG7 Affordable and clean energy	0	0	1	1
SDG8 Decent work and economic growth	10	81	40	131
SDG9 Industry, innovation and infrastructure	7	10	40	57
SDG10 Reduction of inequalities	7	32	68	107
SDG11 Sustainable cities and communities	0	0	15	15
SDG12 Responsible production and consumption	0	0	6	6
SDG13 Climate action	0	0	2	2
SDG14 Underwater life	0	0	4	4
SDG15 Life of terrestrial ecosystems	0	0	8	48
SDG16 Peace, justice and strong institutions	15	73	25	113
SDG17 Partnerships to achieve the Goals	3	18	13	34
Totals	54	256	403	713

The Sankey Diagram (Figure 1) shows that the PRDI has more mentions of SDGs than the Law and Statute; however, in the last two documents they have almost the same proportion as the PRDI, documents with fewer pages and longer updating time.

Figure 1

Sankey Diagram, SDGs and UAEMex Regulatory Framework



Note. Elaborated using Software Atlas.ti® version 9.1.6.

4. Discussion

In the literature analyzed regarding the SDGs and their link with education and philosophy, it was found that SDG 1 involves various aspects, not only in economic, but is linked to health, nutrition, crime, and employment (Filho *et al.*, 2021) where education can provide opportunities for economic growth, promote values, attitudes and skills to students (Sanz *et al.,* 2017), and UAEMex strengthens its commitment to society in the PRDI by carrying out health groups to marginalized areas of the State of Mexico and supports micro-entrepreneurs in the region, while the Statute presents two mentions that refer to scholarships for students, and the Law does not mention any; so it is considered an area of improvement for the institution, which established support from its philosophy, not as part of a unit but is guaranteed from the Law.

The SDG 2 considers malnutrition and eating disorders of individuals, in addition to strategies to combat hunger, such as agriculture (Vogliano *et al.*, 2021). In this regard, the UAEMex through the PRDI develops nutrition groups and support projects in the country, while the Law and Statute does not provide it, so, it can set the challenge of ensuring food for the uni-

versity community and society. SDG 3 concerns about good health and well-being, which refers to combating discrimination, racism, violence (Durmush *et al.*, 2021), sexuality, drug addiction (Byrne *et al.,* 2018), hygiene, safety, risk areas, health, psychology (Swuste and Sillem, 2018), in which the PRDI mentions a civil protection plan according to its environment, organizing some health groups. The UAEMex Statute provides for safety in relation to their work activities and the UAEMex Act establishes a co-occurrence related to the absence of the Rector and Directors related to health problems.

SDG 4 evidences teaching techniques, curricula, workshops, procedures, and alphabetization programs, among others; this is the most mentioned SDG in the ScienceDirect platform under the search "education and universities" as it yields more than a million related articles. Among the many co-occurrences found, the one that stands out is that in the PRDI, which states that the university has campuses located in various areas of the State of Mexico to bring higher education closer to marginalized communities and develops curricula that include sustainability. In the UAEMex Law, for example, the use of creative teaching techniques is highlighted; while in the Statute economic supports and scholarships are mentioned for the university community to fulfill its responsibilities. SDG 5 is linked to gender equity with women's rights, as they make their way in the workplace, in education, in decision-making, in politics (Zabaniotou, 2020), especially in the rural area (Luo *et al.*, 2021); however, this inequality is not present in the Law or Statute of the UAEMex, while the PRDI shows it in an incipient way, mentioned only in the number of women working in the institution, as well as female students, so it is relevant to establish a clear and energetic policy that addresses the perspective of gender equality.

SDG 6 aims to combat water scarcity that depends on access and quality of water to improve the quality of life and human well-being (Price *et al.*, 2021), while SDG 7 considers efficiency and clean energy to reduce greenhouse gases, in addition to changing habits of energy consumption (Pereira *et al.,* 2021); for both SDGs, the PRDI provides saving water and electric energy, while the UAEMex Statute and Law show no co-occurrences, so it is important to establish a framework of environmental management and communication for the efficient use of water, conversion to use clean energy and saving them as part of its institutional philosophy.

SDG 8 considers economic growth, decent and safe work, opportunities and productivity (Rai *et al.,* 2019), and this SDG is mainly linked to the University Statute and the UAEMex Law which establish the rights and obligations of the university community. While the PRDI shows an overview of the employment environment of the UAEMex, both have pros and cons, which is interesting because graduates, students, current and future collaborators know the job offer of the UAEMex. SDG 9 deals with technological progress and innovation, where students understand a sustainable industrialization and identify new job opportunities in areas related to information technology, transport, industry and infrastructure (UNESCO, 2017), where the UAEMex places technology in these three documents at the service of administrators, professors and students, in addition to encouraging scientific, technological and humanistic production. Therefore, it can be glimpsed that there is concern, at least in the documents, to offer technological advances to everyone.

SDG10 proposes to implement strategies to reduce inequality in education, occupation or income between nations or within a country (UNESCO, 2017), and this aspect is well exploited by UAEMex by having several campuses in remote areas to offer middle and higher education, which is reflected in the three documents analyzed. The SDG11 is linked to sustainable cities that are safe and inclusive, and education can create opportunities for recovering areas for recreation or conservation (Wolsink, 2016). Through the PRDI, the UAEMex aims to pre-

serve natural areas within the fields, to have a sustainable infrastructure, among others, while for the Law and Statute no link was found with this SDG, so the university can consider the creation of green campuses and contribute to the sustainability of cities inside and outside the fields. SDG 12 involves a change of habits in terms of consumption and production with the purpose that they are responsible of the environment (Castillo *et al.,* 2021). The UAEMex PRDI directs actions regarding water, energy, and brigades related to environmental awareness; the Law and Statute do not consider this SDG relevant, but could generate actions aimed at modifying habits related, for example, to stationery and other office supplies.

The SDG13 considers generating strategies for climate change to make new generations less vulnerable (Gerald *et al.,* 2021); UAEMex mentions to mitigate climate change in the PRDI university projects in favor of the environment, while the Law and Statute do not make this section visible, so the university is invited through its regulations to establish actions to stop, mitigate and help populations adapt to climate change. Regarding SDG14, the United Nations Decade of Ocean Sciences for Sustainable Development (2021-2030) foresees that ocean-related studies are still emerging; in this regard, Claudet *et al.* (2020) consider that SDG 14 can facilitate the achievement of the other SDGs by contributing to the preservation of marine biodiversity (Diz *et al.*, 2018). This SDG is not explicitly present in the UAEMex, since it is understandable that there are no strategies not being near the ocean, but it is an area of opportunity for UAEMex; however, the ocean issue was considered within the brigades that contemplate the environment. SDG15 considers that the importance of terrestrial biodiversity must be understood, and conservation practices should be carried out (UNESCO, 2017), and only this SDG is contemplated in the PRDI, where various species are conserved through the care of biodiversity of the State of Mexico; it would be interesting to consider it in the Law and Statute.

SDG 16 could be considered as one of the most relevant since there must be a synergy between the institutions in order to achieve the others (Yarnall *et al.*, 2021). In this regard, the UAEMex in the three documents analyzed considers the university community and the population to comply with specific strategies such as the UAEMex Law and the Statute that consider the job and student opportunities that can be granted by the UAEMex, and in the PRDI, the actions carried out in favor of the community are contemplated. Finally, SDG17 emphasizes the global alliance to comply with sustainability (UNESCO, 2017); in this regard, the PRDI contemplates actions in a regional and international way. The UAEMex Law and Statute only consider the work-as-a-team of the university community; as Jonas (2000) said on a collective level, in which the common good and the good of nature is ensured, the latter is not considered as an object but as part of an ethical and critical human being (Gavilanes and Tipán, 2021), through a principle of responsibility (Jonas, 1995).

5. Conclusions

In practice many things are done, whether certifications, curricular innovations, environmental plans, improvement of infrastructure, border research, but these are not explicit in the normative documents and the challenge is that the institutions incorporate a holistic vision from its foundation and include sustainability as part of their guidelines, which obeys a philosophy that responds to sustainability in a permanent way, as systematically posed by Acosta and Martínez (2009) through the *sumak kawsay* or Good living.

Some future lines of research could be to analyze what students, teachers and collaborators think about the regulations of HEIs and their relationship with sustainability.

The results are consistent with the findings of Fihlo *et al.* (2019) regarding quality education,

but not in relation to the fight against poverty and health that the authors point out.

UAEMex's PRDI considers sustainability as part of its strategies, even if the SDGs are not mentioned as such; in addition, the UAEMex Law and Statute focus more on the labor policies of employees. With these results, UAEMex, as a humanist institution, must emphasize on developing strategies for the SDGs that are not mentioned in the documents: zero hunger, clean water and sanitation, affordable and clean energy, climate action, underwater life

A limitation of the study is that it only focuses on three documents that, although they are the guidelines to be followed by the HEIs, they leave aside other institutional aspects that could affect the results, such as academic research, learning unit agenda, administrative management, dissemination activities, among others.

The qualitative analysis has some subjectivity, so the results should be taken with caution, since they could not be extrapolated to other HEIs, due to the diversity of characteristics, structure, normative framework and philosophy. However, it is a first approach to the relationship between the SDGs and the philosophy of the HEIs, making it the basis for other research, to model and support long-term actions rooted in the substantive functions of UAEMex.

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References

Abdullahi, H., Reyes-Rubiano, L., Ouelhadj, D., Faulin, J. and Juan, A. (2021). Modelling and Multi-criteria Analysis of the Sustainability Dimensions for the Green Vehicle Routing Problem. *European Journal of Operational Research, 292*(1), 143-154. https://doi.org/10.1016/j.ejor.2020.10.028

Acosta, A. and Martínez, E. (2009). *El Buen Vivir. Una vía para el desarrollo.* Abya-Yala.

Aguilar, F. (2020). Contribuciones de la filosofía para la consolidación de la filosofía de la educación. *Revista Conrado, 16*(74), 99-111. https://bit.ly/30NXCWe

Aguilar, F. and Chicaiza, Í. (2011). Filosofía: Entre saber, enseñanza-aprendizaje y sujeto. *Sophia, Colección de Filosofía de la Educación,* (10), 235-257. https://bit.ly/3r0glJe

Alba, H., Barbeitos, R., Barral, M., Benayas, J., Blancas, D., Domènech, X., Fernández, I., Florensa i Botines, A., García, F., López, N. and Ysern, P. (2012). Estrategias de sostenibilidad y responsabilidad social en las universidades españolas: Una herramienta para su evaluación. *Profesorado. Revista de Currículum y Formación de Profesorado, 16*(2), 59-75. http://bit.ly/3U557xQ

Axon, S. (2020). The socio-cultural dimensions of community-based sustainability: Implications for transformational change. *Journal of Cleaner Production, 266*, 121933. https://doi.org/10.1016/j.jclepro.2020.121933

Barbier, E. and Burgess, J. (2019). Sustainable development goal indicators: Analyzing trade-offs and complementarities. *World Development,* (122), 295-305. https://doi.org/10.1016/j.worlddev.2019.05.026

Bell, S. and Morse, S. (2008). *Sustainability Indicators. Measuring the Immeasurable?* (Second ed.). Earthscan.

Brundtland, G. (1988). *Our common Future.* Oxford University Press. https://bit.ly/2ZjGvLC

Byrne, J., Rietdijk, W. and Pickett, K. (2018). Teachers as health promoters: Factors that influence early career teachers to engage with health and wellbeing education. *Teaching and Teacher Education, 69*, 289-299. https://doi.org/10.1016/j.tate.2017.10.020

Castillo, L. L.-F., Cortés, D. and Sierra-Pérez, J. (2021). Promoting sustainable consumption in Higher Education Institutions through integrative co-creative processes involving relevant stakeholders. *Sustainable production and consumption, 28*, 445-458. https://doi.org/10.1016/j.spc.2021.06.009

Claudet, J., Bopp, L., Cheung, W., Devillers, R., Escobar-Briones, E., Haugan, P., . . . Barbieré,

J. (2020). A Roadmap for Using the UN Decade of OceanScience for Sustainable Developmentin Support of Science, Policy, and Action. *One Earth, 2*(1), 34-42. https://doi.org/10.1016/j.oneear.2019.10.012

Cortés, H. and Peña, J. (2015). De la sostenibilidad a la sustentabilidad. Modelo de Desarrollo Sustentable para su implementación en políticas y proyectos. *Revista Escuela de Administración de Negocios,* (78), 40-55. https://doi.org/10.21158/01208160.n78.2015.1189

Covas, O. (2004). Educación Ambiental a partir de tres enfoques: comunitario, sistémico e interdisciplinario. *Revista Iberoamericana de Educación, 35*(1), 1-7. https://doi.org/10.35362/rie3512941

CRUE. (2018). *Diagnóstico de la sostenibilidad ambiental en las Universidades españolas. Informe 2017.* CRUE. https://bit.ly/3CJ44Lu

Díaz, A. (2019). Análisis de la filosofía, pedagogía y epistemología: Hacia la horizontalidad en la relación docente-estudiante. *Revista Oratores,* (10), 3-16. https://bit.ly/3HOdSaJ

Diz, D., Johnson, D., Riddell, M., Rees, S., Battle, J., Gjerde, K., Hennige, S. and Roberts, M. (2018). Mainstreaming marine biodiversity into the SDGs: The role of other effectivearea-based conservation measures (SDG 14.5). *Marine Policy, 93*, 251-261. https://doi.org/10.1016/j.marpol.2017.08.019

Durmush, G., Craven, R., Brockman, R., Seeshing, A., Mooney, J., Turner, K. and Guenther, J. (2021). Empowering the voices and agency of Indigenous Australian youth and their wellbeing in higher education. *International Journal of Educational Research, 109*, 101798. https://doi.org/10.1016/j.ijer.2021.101798

Etse, D. and Ingley, C. (2016). Higher education curriculum for sustainability: Course contents analyses of purchasing and supply management programme of polytechnics in Ghana. *International Journal of Sustainability in Higher Education, 17*(2), 269-280. https://doi.org/10.1108/IJSHE-07-2015-0121

Fihlo, W., Shiel, C., Paço, A., Mifsud, M., Veiga, L., Londero, L. and Caeiro, S. (2019). Sustainable Development Goals and sustainability teaching at universities: Falling behind or getting ahead of the pack? *Journal of Cleaner Production, 232*, 285-294. https://doi.org/10.1016/j.jclepro.2019.05.309

Filho, W., Lovren, V., Will, M., Lange, A. and Frankenberger, F. (2021). Poverty: A central barrier to the implementation of the UN Sustainable Development Goals. *Environmental Science & Policy, 125*, 96-104. https://doi.org/10.1016/j.envsci.2021.08.020

Foster, G. (2020). Concrete utopianism in integrated assessment models: Discovering the philosophy of the shared socioeconomic pathways. *Energy Research & Social Science, 68*, 101533. https://doi.org/10.1016/j.erss.2020.101533

Freidenfelds, D., Kanins, S. and Gusca, J. (2018). What does environmentally sustainable higher education institution mean? *Energy Procedia,* (147), 42-47. https://doi.org/10.1016/j.egypro.2018.07.031

García-Arce, J., Pérez-Ramírez, C. and Gutiérrez-Barba, B. (2021). Objetivos de Desarrollo Sustentable y funciones sustantivas en las Instituciones de Educación Superior. *Revista Actualidades Investigativas en Educación, 21*(3), 1-34. https://doi.org/10.15517/aie.v21i3.48160

Gavilanes, R. and Tipán, B. (2021). La Educación Ambiental como estrategia para enfrentar el cambio climático. *Alteridad, 16*(2), 286-298. https://doi.org/10.17163/alt.v16n2.2021.10

Gerald, O., Peduzzi, D., Ludwig, D., Riede, M. and Keller, L. (2021). Is it possible to build adolescents' cognitive adaptive capacity through climate change education? Insights into a two-year long educational programme in North Tyrol (Austria) and South Tyrol (Italy). *Climate Risk Management, 33*, 100327. https://doi.org/10.1016/j.crm.2021.100327

Gobierno de México. (2021). *Sistema de Información Cultural*. https://bit.ly/3xfcKYX

Gokalp, N. (2012). Philosophy education and human freedom. *Procedia-Social and Behavioral Sciences,* (47), 477-479. https://doi.org/10.1016/j.sbspro.2012.06.683

Green, T. (2013). Teaching (un)sustainability? University sustainability commitments and student experiences of introductory economics. *Ecological Economics, 94*, 135-142. https://doi.org/10.1016/j.ecolecon.2013.08.003

Gusmão, R., Filho, W., Gonçalves, O., De Mattos, D. and Ávila, L. (2018). A Literature-Based Review on Potentials and Constraints in the Implementation of the Sustainable Development Goals. *Journal of Cleaner Production, 198*, 1276-1288. https://doi.org/10.1016/j.jclepro.2018.07.102

Gutiérrez, J. and Pozo, T. (2006). Modelos teóricos contemporáneos y marcos de fundamentación de la Educación ambiental para el desarrollo sostenible. *Revista Iberoamericana de Educación,* (41), 21-68. https://doi.org/10.35362/rie410771

Gutiérrez-Barba, B. and Martínez-Rodríguez, M. (2010). El plan de acción para el desarrollo sustentable en las instituciones de educación superior. Escenarios posibles. *Revista de la educación superior, 39*(154), 111-132. https://bit.ly/30WdBS0

Jiménez, P. (2016). Interpretando las perspectivas del desarrollo sustentable. En A. Hernández, H. González y G. Tamez, *Desarrollo sustentable: de la teoría a la práctica* (pp. 13-36). Ediciones DeLaurel. https://bit.ly/30Trws7

Jonas, H. (1995). *El principio de responsabilidad. Ensayo de una ética para la civilización tecnológica.* Editorial Herder.

Jonas, H. (2000). *El principio vida. Hacia una biología filosófica.* Editorial Trotta.

Kenny, A. (2006). *Brief History of Western Philosophy.* (Second Edition ed.). Wiley-Blackwell.

Lange, A., Filho, W., Londero, L. and Sapper, J. (2019). Assessing research trends related to sustainable development Goals: Local and global issues. *Journal of Cleaner Prod, 208*, 841-849. https://doi.org/10.1016/j.jclepro.2018.09.242

Larrán, M., Herrera, J., Calzado, M. and Andrades, F. (2015). An approach to the implementation of sustainability practices in Spanish universities. *Journal of Cleaner Production, 106*(1), 34-44. https://doi.org/10.1016/j.jclepro.2014.07.035

Lazar, N. and Chithra, K. (2021). Prioritization of sustainability dimensions and categories for residential buildings of tropical climate: A multi-criteria decision-making approach. *Journal of Building Engineering, 39*, 102262. https://doi.org/10.1016/j.jobe.2021.102262

Luo, Y., Guo, F. and Li, R. (2021). Gender equality and expansion of higher education: Testing effectively maintained inequality theory against the case of China. *International Journal of Educational Research, 110*, 101855. https://doi.org/10.1016/j.ijer.2021.101855

Macías, H., Téllez, O., Dávila, P. and Casas, A. (2006). Los estudios de sustentabilidad. *Ciencias* (81), 20-31. https://bit.ly/3FIpN8c

Mariño, L. (2012). La educación filosófica como experiencia y posibilidad. *Praxis & Saber, 3*(5), 187-207. https://doi.org/10.19053/22160159.1136

Martínez, R. and Martínez, D. (2016). Perspectivas de la sustentabilidad: teoría y campos de análisis. *Revista Pensamiento Actual, 16*(26), 123-145. http://dx.doi.org/10.15517/pa.v16i26.25188

Meadows, D., Meadows, D., Randers, J. and Behrens, W. (1972). *The limits to growth. A report for the club of Rome´s project on the predicament of mankind.* Universe Books.

Mendoza-Cavazos, Y. (2016). Sistemas de evaluación de la sustentabilidad en las Instituciones de Educación Superior. *CienciaUAT, 11*(1), 65-78. https://bit.ly/3oYBIId

Michelsen, G., Adomßent, M., Martens, P. and Von Hauff, M. (2016). Sustainable Development – Background and Context. En H. Heinrich, P. Materns, G. Michelsen y A. Wiek, *Sustainability Science. An introduction* (pp. 5-30). Springer. https://doi.org/10.1007/978-94-017-7242-6_2

Mickaityte, A., Zavadskas, E., Kaklauskas, A. and Tupenaite, L. (2008). The concept model of sustainable buildings refurbishment. *International Journal of Strategic Property Management, 12*(1), 53-68. https://doi.org/10.3846/1648-715X.2008.12.53-68

Miller, D. (2003). *Political Philosophy: A Very Short Introduction.* Oxford University Press.

Mohamed, O. and Noguchi, T. (2019). A conceptual framework for understanding the contribution of building materials in the achievement of Sustainable Development Goals (SDGs). *Sustainable Cities and Society, 52*, 101869. https://doi.org/10.1016/j.scs.2019.101869

Moufty, S., Clark, E. and Al-Najjar, B. (2021). The different dimensions of sustainability and bank performance: Evidence from the EU and the USA. *Journal of International Accounting, Auditing and Taxation, 43*, 100381. https://doi.org/10.1016/j.intaccaudtax.2021.100381

Naciones Unidas. (10 de 09 de 2021). *Incorporando los ODS en los planes de estudio de educación superior*. https://bit.ly/3DHEN5A

Nanclares, R. and Tobón-Marulanda. (2021). Retroalimentación colaborativa de currículo, resonancias de las experiencias discentes. *Alteridad, 16*(2). https://doi.org/10.17163/alt.v16n2.2021.03

Pazmiño, E. (2008). Relación, interacción e implicación entre la filosofía y la educación. *Sophia, Colección de Filosofía de la Educación,* (4), 111-124. https://doi.org/10.17163/soph.n4.2008.05

Peer, V. and Stoeglehner, G. (2013). Universities as change agents for sustainability e framing the role of knowledge transfer and generation in regional development processes. *Journal of Cleaner Production,* (44), 85-95. https://doi.org/10.1016/j.jclepro.2012.12.003

Pereira, J., Hoeckesfeld, L., Dal Magro, C., Favretto, J., Barichello, R., Lenzi, C., Secchi, L., Montenegro de Lima, C. and Salgueirinho Osório de Andrade Guerra, J. B. (2021). Green Campus Initiatives as sustainable development dissemination at higher education institutions: Students' perceptions. *Journal of Cleaner Production, 312*, 127671. https://doi.org/10.1016/j.jclepro.2021.127671

Pierri, N. (2005). Historia del concepto de desarrollo sustentable. En G. Foladori, & N. Pierri, *¿Sustentabilidad? Desacuerdos sobre el desarrollo sustentable.* 27-81. Miguel Ángel Porrúa.

Pizzutilo, F. and Venezia, E. (2021). On the maturity of social responsibility and sustainability integration in higher education institutions: Descriptive criteria and conceptual framework. *The International Journal of Management Education, 19*(3), 100515. https://doi.org/10.1016/j.ijme.2021.100515

Price, H., Adams, E., Nkwanda, P., Mkandawire, T. and Quilliam, R. (2021). Daily changes in household water access and quality in urban slums undermine global safe water monitoring programmes. *International Journal of Hygiene and Environmental Health, 231*, 113632. https://doi.org/10.1016/j.ijheh.2020.113632

Rai, S., Brown, B. and Ruwanpura, K. (2019). SDG 8: Decent work and economic growth. A gendered analysis. *World Development, 113*, 368-380. https://doi.org/10.1016/j.worlddev.2018.09.006

Ratner, B. (2004). "Sustainability" as a dialogue of values: challenges to the sociology of development. *Sociological Inquiry, 74*(1), 50-69. https://doi.org/10.1111/j.1475-682X.2004.00079.x

Red de Programas Ambientales Institucionales de la Región Sur-Sureste de ANUIES México. (2018). *Ambiente PAI.* https://bit.ly/3nJU5RN

Sanz, R., Peris, J. and Escámez, J. (2017). Higher education in the fight against poverty from the capabilities approach: The case of Spain. *Journal of Innovation & Knowledge, 2*(2), 53-66. https://doi.org/10.1016/j.jik.2017.03.002

SDSN. (2017). *Getting started with the SDGs in universities: A guide for universities, higher education institutions, and the academic sector. Australia, New Zealand and Pacific Edition.* Melbourne: Sustainable Development Solutions Network-Australia/Pacific. https://bit.ly/3r8IWfm

SDSN México. (2021). *Red de Desarrollo Sostenible MX2030*. https://bit.ly/3HHeLlv

Swuste, P. and Sillem, S. (2018). The quality of the post academic course 'management of safety, health and environment (MoSHE) of Delft University of Technology. *Safety Science, 102*, 26-37. https://doi.org/10.1016/j.ssci.2017.09.026

UNEP. (2014). *Greening Universities Toolkit V2.0. Transforming universities into green and sustainable Campuses: A Toolkit for implementers.* United Nations Environment Programme. https://bit.ly/3xmUsVz

UNESCO. (2017). *Educación para los Objetivos de Desarrollo Sostenible: objetivos de aprendizaje.* Francia: UNESCO. https://bit.ly/3r3mQuX

Vaesen, K. and Katzav, J. (2019). The National Science Foundation and philosophy of science's withdrawal from social concerns. *Studies in History and Philosophy of Science Part A, 78*, 73-82. https://doi.org/10.1016/j.shpsa.2019.01.001

Valenzuela, L. (2017). Reflexiones sobre los conceptos Desarrollo Sustentable y Desarrollo Sostenible. Relaciones con la Responsabilidad Social Organizacional (RSO). *Teuken Bidikay, 8*(10), 211-229. https://bit.ly/3oW7cyB

Vogliano, C., Murray, L., Coad, J., Wham, C., Maelaua, J., Kafa, R. and Burlingame, B. (2021). Progress towards SDG 2: Zero hunger in melanesia – A state of data scoping review. *Global Food Security, 29*, 100519. https://doi.org/10.1016/j.gfs.2021.100519

Wals, A. (2014). Sustainability in higher education in the context of the UN DESD: a review of learning and institutionalization processes. *Journal of Cleaner Production,* (62), 8-15. https://doi.org/10.1016/j.jclepro.2013.06.007

Wolsink, M. (2016). 'Sustainable City' requires 'recognition'. The example of environmental education under pressure from the compact city. *Land Use Policy, 52*, 174-180. https://doi.org/10.1016/j.landusepol.2015.12.018

Yarnall, K., Olson, M., Santiago, I. and Zelizer, C. (2021). Peace engineering as a pathway to the sustainable development goals. *Technological Forecasting & Social Change, 168*, 120753. https://doi.org/10.1016/j.techfore.2021.120753

Zabaniotou, A. (2020). Towards gender equality in Mediterranean Engineering Schoolsthrough networking, collaborative learning, synergies andcommitment to SDGs-The RMEI approach. *Global Transitions, 2*, 4-15. https://doi.org/10.1016/j.glt.2019.12.001

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Mathematical and digital competence of future teachers using GeoGebra application

Competencia matemática y digital del futuro docente mediante el uso de GeoGebra

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Abstract

University students use technology daily, so that some digital skills are sometimes taken for granted. However, it is necessary for future teachers to use their digital competence in didactic contexts, which is why they must broaden this competence in their academic training and apply it for didactic purposes. The aim of this work is to ensure that future teachers master the techniques related to geometric transformations while improving their digital, mathematical and didactic competence (TPACK Model). For this, the GeoGebra Classic free software application has been used, with the aim of enabling students in training to acquire skills for teaching geometric concepts such as axial symmetry, central symmetry, inversion, rotation, translation and homothetic symmetry. A mixed methodology with a pre-experimental design is used with a sample of 68 participants belonging to the subject of Mathematics and its didactics III of the Degree in Primary Education at the Universidad Rey Juan Carlos enrolled during the 2021/2022 academic year. The notes, the workshops and the data from the expressly designed questionnaire allow for a quantitative and qualitative analysis of the information. The results are very satisfactory since the application of GeoGebra Classic allows the development of strategies that combine competences simultaneously and it is concluded that it facilitates and improves the acquisition of mathematical and digital competence and simplifies some difficulties that emerge in learning.

Keywords: Mathematics education, competence, communication, digital, teaching, GeoGebra.

Resumen

El alumnado universitario utiliza la tecnología a diario, por lo que, en ocasiones, ciertas competencias digitales se dan por supuestas. Sin embargo, es necesario que el futuro profesorado utilice su competencia digital en contextos de aprendizaje, por lo que deben ampliarla en su formación académica y aplicarla con fines didácticos. El objetivo de este trabajo es conseguir que el futuro profesorado, domine las técnicas relacionadas con las transformaciones geométricas a la vez que mejora la competencia digital, matemática y la didáctica de esta (Modelo TPACK). Para ello, se ha aplicado el Software libre de GeoGebra Classic, con la finalidad de que el alumnado en formación adquiera competencias para la enseñanza de conceptos geométricos como los de simetría axial, central, inversión, rotación, traslación y homotecia. Se ha utilizado una metodología mixta con diseño pre-experimental con una muestra de 68 participantes pertenecientes a la asignatura de Matemáticas y su didáctica III del Grado en Educación Primaria de la Universidad Rey Juan Carlos matriculados durante el curso 2021/2022. La evaluación, los talleres y los datos del cuestionario especialmente diseñado permiten realizar un análisis cuantitativo y cualitativo. Los resultados son muy satisfactorios ya que la aplicación de GeoGebra Classic permite desarrollar estrategias que combinan competencias de forma simultánea y se concluye que facilita y mejora la adquisición de competencia matemática y digital y simplifica algunas dificultades que surgen en el aprendizaje.

Descriptores: Educación matemática, competencia, comunicación, digital, docente, GeoGebra.

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1. Introduction

The acquisition of basic mathematical competence is one of the goals to be achieved in the Sustainable Development Goals of 2030 foreseen by the UN. Specifically, SDG number four (SDG4) reflects the need for quality and universal education. Therefore, in order to achieve this objective, it is important to analyze the relationship between the results obtained in the classroom and the academic training received by teachers and future teachers in training.

To this end, the PISA Report (Program for International Student Assessment) provides educational information on the levels of knowledge and competencies acquired by students at the international level, which allows a glimpse of the areas of knowledge that improve in some areas and those that are still progress (OECD, 2019). The results obtained in Spain in the area of mathematics in recent years are below the OECD average, as well as in neighboring countries.

In addition, the National Council of Teacher of Mathematics (NCTM, 2020) collects standards for preparing mathematic teachers for both early childhood education (De Castro Hernández, 2020) and primary education in general. Specifically, for geometry, it is intended to apply transformations and use symmetry to analyze mathematical situations (NCTM, 2020).

The education law that regulates basic knowledge in primary education in Spain (BOE, 2020) reflects the need for students to acquire a mathematical skill sufficient to develop in their daily and formative life. This skill involves the solution of mathematical problems (which as a complex and integral activity requires a specific training coupled with cognitive and metacognitive knowledge) to achieve the constitutive elements of competition (Pistón-Rodríguez and Parejo-Jiménez, 2019) and which should be acquired in the first formative stages.

Mathematics is considered the basis of complex processes of knowledge and requires other skills such as analytical, reflective and critical thinking, i.e., the ability to reason, formulate or solve problems (Fernández Bravo, 2006). Hence, the importance that all people can acquire basic mathematical skills during their training and that they can consolidate more complex mathematical contents. The work of the teacher is very relevant in this task, as it requires didactic and methodological skills to solve possible difficulties and facilitate learning (Saucedo *et al.*, 2014). Likewise, the teacher must "develop argumentative capacity, the use of the appropriate mathematical lexicon, and the appropriate use of different representations of a mathematical object accompanied by manipulative material or technological resources" (Vargas-Díaz and Apablaza, 2019, p. 87).

According to Rivero (2012), teaching mathematics implies also being aware of some difficulties, such as: the abstraction in the teaching of the content, the use of repetition, mechanized or inadequate methodology that does not facilitate the understanding of mathematical concepts; all this coupled with how students feel mathematics, which usually shows a feeling of hatred, rejection or anxiety (Novelo Sánchez *et al.*, 2015).

Once future teachers acquire knowledge and basic mathematical competence, it is also necessary to have sufficient communicative and didactic competence, which facilitates an effective teaching of the subject. It is "a process that gives greater meaning and connotation to the training process" (Jerez Berrio, 2020, p. 13), which requires effective interpersonal communication and the use of technology for teaching purposes in the classroom.

Thus, future teachers are challenged to having skills in digital and communicative competence in addition to mastering the mathematical area (Gràcia *et al.*, 2017; 2020) to effectively perform the teaching process. These competences, as Colás-Bravo *et al.* state (2019, p. 30), "goes beyond the individual training of teachers in ICT, being necessary the development of teaching practices that promote this in students".

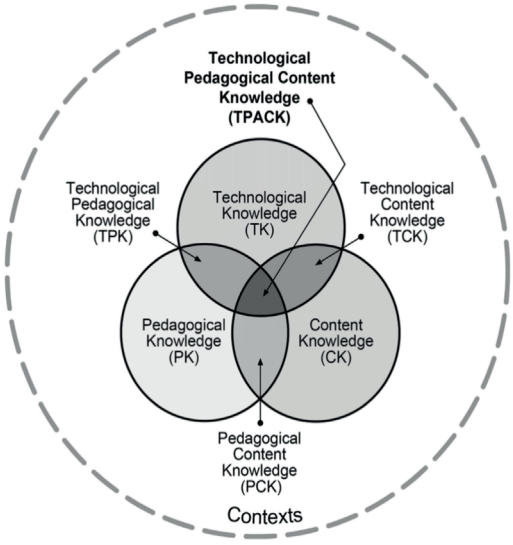
One of the emerging strategies to improve these skills is to integrate technology as a tool to approach mathematical content and achieve greater attractiveness to the subject. For authors such as Cotic (2014), their integration in the classroom depends on the interest of the teacher and his/her ability to stimulate collaborative work of the students and long-life learning or continuous learning. Also, his/her ability to manage technology, requiring his/her digital competence (Ortega-Sánchez *et al.,* 2020).

It is undeniable that digital tools play an important role in the teaching and learning process of mathematics at all educational levels; therefore, the didactic use of technology forces to adapt traditional resources to digital. As stated by Gómez-Gómez (2021), the problem or difficulty is their adaptation for pedagogical purposes.

Therefore, some methodological models, such as Technological Pedagogical Content Knowledge (TPACK), point out that in order to obtain optimal results when integrating technology in the training process, it must be done considering three fundamental aspects: the mastery of the content, the application of technology to it and the pedagogical component of it. Hence, TPACK classifies it into three blocks: Technological Knowledge, Content Knowledge and Pedagogical Knowledge (Schmidt *et al.*, 2009).

Figure 1

TPACK model



Note. Mishra and Koehler (2008).

Other models, such as NETS-T Standards, from the ISTE International Society for Technology in Education, analyze technological profiles for teacher preparation and its link with digital competence (Fuller, 2020). In the context of digital competence, one of the best-known models is the European framework for the digital competence of educators: DigCompEdu (Redecker, 2017), which in Spain is the Common Framework of Digital Teaching Competence (IN-TEF, 2017)

The 2012 IEA (National Institute of Educational Evaluation) TEDS-M (Teacher Education Study in Mathematics) report points out that teacher training in Mathematics Education is one of the variables that interfere with the international differences between the academic results of primary and secondary

school children. The test distinguishes between Mathematical Content Knowledge (MCK) and Mathematical Pedagogical Content Knowledge (MPCK), which represent the whole range of difficulty.

Specifically, the TEDS-M Report (2012) shows how future teachers know that they have less training in the field of geometry than the rest of the students from other countries, although they are at practically the same level in the other blocks.

Therefore, considering the principles of the TPACK methodological model and the results of the TEDS-M Report (2012), specifically the Geometry module, six items out of 24 corresponding to mathematical content and 2 out of 10 to Pedagogical Content are analyzed for designing this research.

In recent years, early education has witnessed the changes of technology in the way students approach knowledge and leisure, and how a wide range of possibilities is opened for its use in classrooms. Referring to digital competence means going beyond instrumental knowledge of the basic use of equipment (Eshet-Alkalai, 2012); it must be understood as "a combination of a set of technical-procedural, cognitive and socio-emotional skills, necessary to live, learn and work in a digital society" (Fraser *et al.*, 2013). The development of critical thinking as well as other creative and intellectual skills derives from this digital competence. Therefore, the basic use of technology, from which future teachers and their students usually start, is only the precondition for achieving full digital competence (European Commission, 2011). As early as 2012, Ferrari is following the Institute for Prospective Technological Studies (IPTS) definition for the European Commission that defines digital competence as:

> A set of knowledge, skills, attitudes, strategies and values required when using ICT and digital media to perform tasks, solve problems, communicate, manage information, collaborate, create and share content, and build knowledge effectively, efficiently, appropriately, critically, creatively, autonomously, flexibly, ethically and reflexively for work, leisure, participation, learning, socialization, consumption and empowerment.

Thus, there are studies (for example, Esteve Mon, 2015) that understand digital competence as the accumulation of diverse knowledge: communicative, technological, audiovisual or media.

Hence, depending on the starting point of each student, there will be those who have "skills and abilities in the areas of production and transfer of the new (digital) foundations" and others who do not, which can produce a digital gap (Didriksson, 2007, p. 58) if skills are not achieved, according to UNESCO, at four levels: (a) access; (b) use; (c) appropriation; and (d) production.

There is a consensus in believing that technology makes it easier for teachers to include diverse resources to achieve quality training, which is essential in teaching and learning mathematics (Hohenwarter *et al.*, 2009). In addition, the students can acquire many different mathematical skills with multimedia environments, taking advantage of their digital skills. As Rubio *et al.* (2016, p. 91) say "the advantages of integrating digital technology (e.g., dynamic geometry software, CAS, spreadsheet, among others) in Mathematics Education" have been widely reported in the specialized literature (Artigue, 2009; Hoyles, 2010) and facilitate the opening towards processes of pedagogical interaction, collaboration and knowledge sharing (Barahona *et al.*, 2015).

Technological resources can facilitate, activate and develop the acquisition processes of these competences and can be developed effectively when applying mathematic software such as GeoGebra, as determined by previous research (Aldazábal Melgar *et al.*, 2021; Septian *et al.*, 2020; Suryani and Rofiki, 2020; Freyre and Mántica, 2017).

The application, created by Markus Hohenwarter, offers the possibility of learning

dynamic geometry (Geo) and algebra (Gebra), as well as many other mathematical contents in primary, secondary or high school curricula (De Albornoz Torres, 2010) in a connected, compact and easy-to-use software environment (Diković, 2009). It is a simple but powerful resource.

Among the features of GeoGebra are design, through free software that facilitates its continuous development; simplicity of use; the possibility of using it in different platforms and multiple languages, as well as learning by experimental and guided discovery (Diković, 2009). In addition to having a simple interface and a variety of geometric and algebraic tools to perform numerous constructions, it is possible to "generalize and even infer which forms can be obtained under certain conditions" (Bolaños and Ruiz, 2018, p. 156). Meanwhile, Barahona *et al.* (2015) highlight that GeoGebra facilitates abstraction processes to show relationships between a geometric and an algebraic model of a real-life situation. It has a spreadsheet, and its numerous views allow to alternate the use of arithmetic, algebraic representations, symbolic calculation and statistical and probabilistic calculation (Del Pino Ruiz, 2013), which facilitates solving a problem, not only mathematically but also visually (Aktümen and Kabaca, 2012). In addition, GeoGebra favors collaborative and constructivist work by interacting with different working groups and interlearning (Prodromou, 2014).

When assessing the mathematical competence of the future teacher in Spain, the seven specific skills established by the PISA Report can be considered (OECD, 2019): communication, mathematization, representation, reasoning and argumentation, design of strategies to solve problems, use of operations and symbolic, formal and technical language, and use of mathematical tools, as well as NCTM learning standards. This concretion facilitates the evaluation and acquisition of mathematical competence determined by the curriculum in each educational stage.

Among the knowledge and skills that are prominently confined to mathematical competence, as noted above, are those related with geometry and algebra and that also encompass SDG4.

Therefore, the aim of this research is to work from the competency point of view the learning achievements of geometry established by NCTM combining the didactic, digital and mathematical competence (TPACK Model) with the application of GeoGebra Classic Software in the university education received by the future teachers, as well as to know their perception of using these in the classroom.

2. Methodology

The research presented arises from the need to incorporate to the traditional didactics of mathematics a digital tool that allows university students in training know how to solve mathematical problems applying the Computer Software GeoGebra Classic. Not only is the solution of exercises limited to obtaining the optimal final result (acquired mathematical knowledge), but the use of this digital tool (digital competence) is part of the training process complementary to the mere use of pencil and paper and simulate their application in a real classroom (didactic competence), in short, it is intended to meet the foundations established by the TPACK Methodological Model.

To this end, a pilot test has been carried out in the subject Mathematics and its Didactics III, belonging to the third course of the Training Plan of the Degrees in Primary Education of the King Juan Carlos University during the 2021-2022 academic year, using a mixed methodology with pre-experimental design with a sample of 68 participants.

The course begins classes in hybrid format due to Covid-19, in which, in turns, face-to-face and telematic attendance to classes is combined.

2.1 Objetives

The general objective is to connect technology, mathematics and didactics to incorporate them into teacher training using the GeoGebra Classic tool.

The specific objectives are:

- OE1 (Content Awareness): Work on geometry as learning content for the future teacher.
- OE2 (Technological Knowledge): work geometry with digital tools for the incorporation of digital competence into mathematics and vice versa.
- OE3 (Pedagogical Knowledge): to work with the contents related to the geometry of primary education with the GeoGebra Classic program.

2.2 Sample

This research is carried out during the first semester of the 2021-2022 academic year with students belonging to the Primary Education Degree (85.29% of the sample) and to the Double Degree in Early Childhood and Primary Education (14.70% of the sample), both in-person degrees and with a population of 68 enrolled, of which 58.82% are men and 29.41% are women. The sampling carried out is non-probabilistic for convenience and also belong to a single group, so it represents 100 percent of the population under study.

2.3 Phases of the research

A brainstorming was done in the first class using the Wooclap tool, in which the students were asked about their perception of mathematics in general and geometry in particular. Most of the students participating in the online modality, through the Teams platform, as well as those who were in the classroom, agreed that they found them difficult and boring. In addition, they were asked how they would feel about "teaching math" as future teachers, and most acknowledged that it made them feel nervous and unprepared. After this first analysis, they were asked if they knew computer programs for teaching geometry, and although many did not know their existence for didactic purposes, they did know the application of GeoGebra in solving problems, and some also indicated that they had worked with it on previous courses.

After the first contact with the participation in Wooclap, the students were proposed to hold a virtual workshop with the use of GeoGebra Classic to work the mathematical contents that are included in this module. To do this, they had to create working groups with assigned roles specific to cooperative work (Johnson and Johnson, 1999).

To carry out the workshop, they are told to analyze the content of two documents, on the one hand, the teaching guide of the subject, and on the other, the analysis of Decree 89/2014 regulating mathematical content for the Primary Education Cycle for the Community of Madrid, Spain. The objective is to know the standards of learning required in the subject and the correspondence between these and the curricular contents regulated in the schools where they will be working as teachers when they graduate.

In the second phase, they are asked to work in a didactic way on transformations, in particular rigid movements and homothetic. To do this, they developed teaching materials based on manipulative materials adapted as if they were to be applied in the real classroom.

Once this activity was completed, they were told to solve exercises on the same subject using tools such as the compass and the rule, dynamics that at first had to develop at an individual level.

Finally, they were asked to solve these exercises using the GeoGebra Classic program.

2.4 Use of GeoGebra Classic in the teaching of geometrical transformations

Then, a case analysis is performed to better understand the application of GeoGebra Classic in the virtual workshop designed for it.

In the first exercise presented to them, the student must make a turn in an anti-clockwise direction of the next circular sector, taking point D as center of rotation and α as angle of rotation.

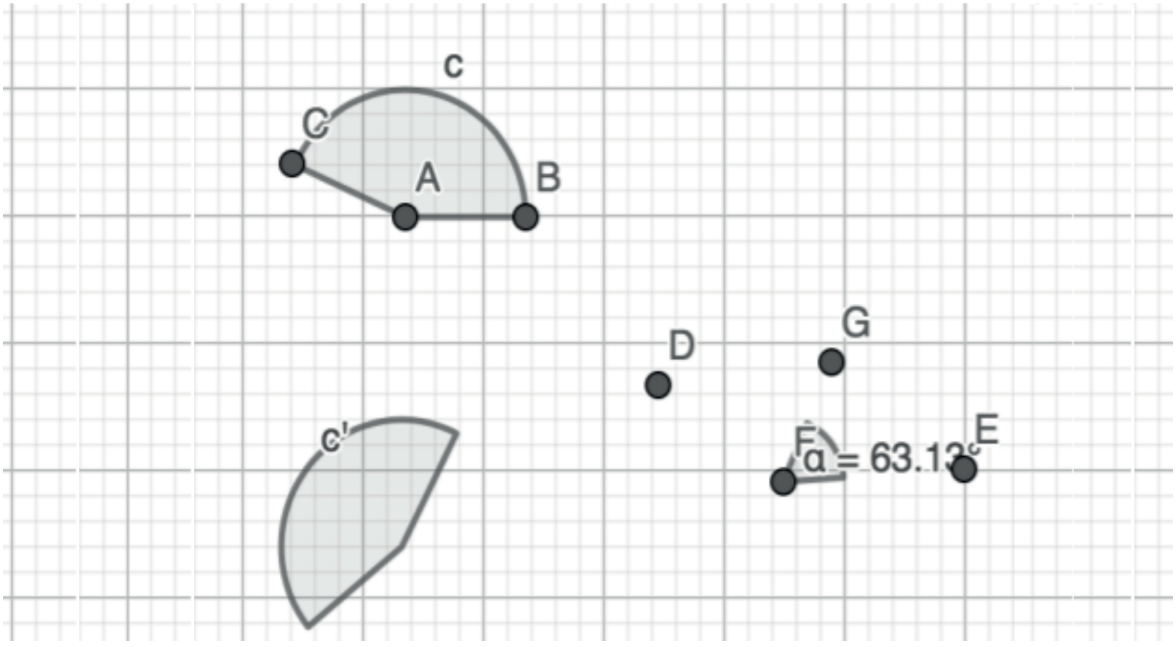
The aspects included in the rubric to solve the problems are:

- It does not provide the requested exercise.
- It provides the exercise but does not do the required movement.
- It provides the exercise and performs the required movement, but it fails to consider the direction, or the center or angle requested.
- It provides the exercise and performs the required movement well considering the direction, center and angle requested.

Figure 2 shows one of the problems successfully solved.

Figure 2

Geometric Transformation: The Rotation

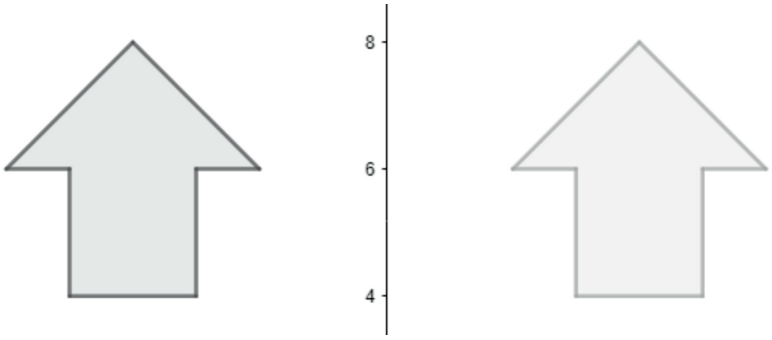


Peer-to-peer evaluation criteria have been based on a rubric provided by the faculty and a feedback section. The coincident assessments given by two colleagues based on the rubric and supervised by the faculty determine the correct performance of the exercise.

On the other hand, two solutions are shown on another planned statements, a correct solution and a partially correct solution. In this case, students are asked to perform a symmetry based on the axis provided. Figure 3 shows one of the productions that is considered not entirely correct, receiving the assessment of another colleague among the available options as "the student contributes to the exercise, but does not perform the required movement".

Figure 3

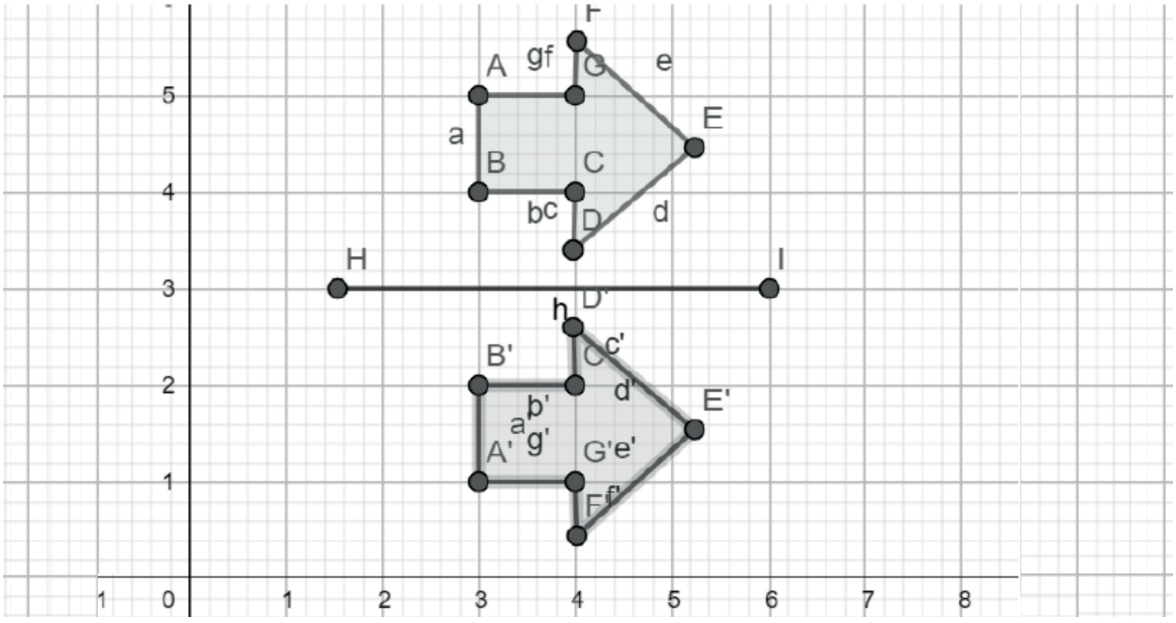
Partially successful geometric transformation: symmetry



However, in Figure 4, there is a positive evaluation by correctly providing the exercise and perform-ing the required movement.

Figure 4

Correct geometric transformation: symmetry



In short, the participation in the workshops with the delivery and peer evaluation allowed students to know how to develop the same exercises by other peers, as well as the possibility of self-evaluation and identify if what they had done was correct or not.

2.5 Data collection tools

In order to know the perception of this initiative among future teachers and see their association established by implementing the activities proposed in a real classroom, an *ad hoc* ques-

tionnaire was designed using the Forms tool of Office 365 Package, as the main tool for collecting information. The questionnaire has eight items consisting of dichotomous questions and Likert scale with values between 1 and 5, 1 being the worst value and 5 the maximum value, with some open questions. The average response time is less than four minutes. Questions are oriented to assessing the experience with the participation through the workshops, the use of GeoGebra Classic and the knowledge of the agenda. They are also asked about their perception of their training in mathematics education, as well as their training in mathematical content at the levels prior to the Degree in Education.

The voluntary participation in the questionnaire is 40% (28 students), participation lower than expected but it allows analyzing the situation that facilitates the use of appropriate teaching and pedagogical strategies to achieve the teaching objectives successfully (Hernández Ávila and Carpio Escobar, 2019). On the other hand, the participation in the workshops and the scores obtained in them were analyzed, as well as the impact on the final grade of the subject.

3. Results

The quantitative analysis of the answers provided in the questionnaire is carried out using the statistical package Microsoft Excel, performing a descriptive analysis of the results. The qualitative analysis is performed considering the contributions and opinions of the participants from answers obtained with Wooclap and with open questions of the questionnaire, thus completing the information obtained in the quantitative analysis.

Thus, a block classification of the most relevant information is presented:

Prior formation: they were asked about the branch of knowledge prior to entering university, and more than half of the class identified with "humanities" in 54% of cases while only 48% identified with "sciences".

Content: Regarding the difficulty of geometry-related content, they were asked to assess using a dichotomous question whether it was difficult or easy or incomprehensible. Mode indicates that they perceive mathematical content difficult or very difficult. It is true that in this question they were also asked if they thought they had to study more, being that 74.2% of respondents rated 4 points out of 5 to the statement that they have to study more, at least at the time they answered the survey, and 29% said they did not understand anything.

Perception of training: more than half of respondents believe that their Degree training plan needs more dedication hours to mathematics teaching

Workshop rating: the workshop rating is generally positive. To find out what they thought, this question was left open to collect their opinions. Some of the comments to note are: "GeoGebra has helped me visualize what I could not see by myself" "the fact of doing exercises in GeoGebra seems to me a good resource". However, one of the negative aspects is that it has taken them a long time to carry out exercises with the application.

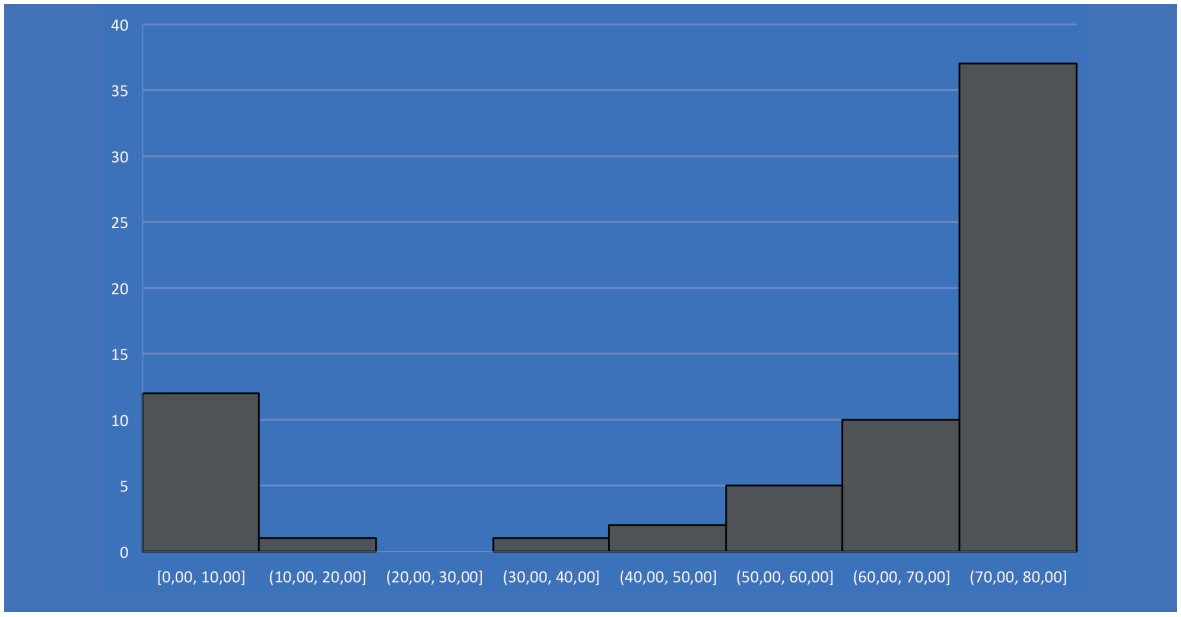
In addition, to know the participation in the workshop, two activities were set in the virtual classroom, on the one hand, the delivery of the scheduled task in which each coordinator of the group had to deliver the activities designed with manipulative material in time and format established. In this case, the participation was 100% of the enrollees, which was relevant since participation was a voluntary decision. On the other hand, a virtual workshop was set up for the individual delivery of the proposed exercise solution. In this case, it was divided into two sessions, on the one hand the delivery and on the other hand the evaluation of the work of another partner to promote peer evaluation. In the first phase, 89.65% of the enrollees participated; however, 83.82% participated in the evaluation of the work of a peer, this data must take into

account that students who do not present their work cannot evaluate it.

The overall average score for workshop participation is satisfactory, ranging from 70 to 80 points. Specifically, if the average result of the first planned exercise is analyzed as an example, a score of 78 points out of 80 is obtained. In general, as can be seen in Figure 5, most students obtained this grade because they correctly solved the exercise proposed by applying GeoGebra Classic.

Figure 5

Evaluation results of the geometric transformation exercise with rotation



4. Discussion and conclusions

The results presented indicate that the application of technology allows to achieve optimal results if combined with knowledge and didactics in the teaching and learning process. The inclusion of GeoGebra Classic in the training process of future teachers and the introduction of mathematical concepts in learning have been well accepted among students, while, as stated by Gómez-Gómez (2021), the application of different technological resources for pedagogical purposes allows achieving better results. Likewise, as stated by Rubio *et al.* (2016), ICTs improve technological competence, among other things, because they develop abstract thinking. During the process, it has been determined that, as in previous research such as that of Ruiz López (2012), the didactic competence using GeoGebra Classic may be conditioned by the previous digital competence that the students have, so it is necessary to implement activities in the classroom that facilitate the competence during the training processes of future teachers, so that they are more in line with the current situation of education in Spain.

Students can acquire mathematical competence according to the TPACK model, and as stated in the study of Mishra and Koehler (2008), if the technological dimension and skills of the students are combined with the acquired mathematical knowledge and its application in the classroom. On the other hand, other research, such as that of Pistón-Rodríguez and Parejo-Jiménez (2019), highlight that mathematical competence is acquired in the first formative

stages; however, the empirical evidence of this work shows that the application of GeoGebra Classic allows students to recognize the abstract component of mathematics, as most respondents say; which is related, in turn, to the research carried out by Fernández-Bravo (2006) in which the author concludes that basic mathematical competences can be acquired at any formative stage, or the Systematic analysis by Yohannes and Chen (2021) that highlight the importance of integrating GeoGebra for mathematical education.

Regarding acquired mathematical competence, the results show an improvement in the grades of those students who participated individually in the workshops with GeoGebra Classic. It is especially remarkable the difference of previous knowledge that some students had when assimilating and applying mathematical concepts and that was conditioned by their branch of previous knowledge identified with the field of humanities and not science. In addition, it has allowed them to demand more training in this regard. Therefore, some rejection to mathematics and geometry are removed as also concluded by Novelo Sánchez *et al.* (2015)

On the other hand, it is of special interest the teaching and media competence of the teacher to facilitate the access of the student to knowledge, as well as to favor the access to digital resources that facilitate the approach to basic mathematical knowledge while developing the competence. The need to provide digital teaching skills to future teachers through the appropriate inclusion of ICT is highlighted, where the TPACK model is shown as an effective teaching model.

In short, the application of GeoGebra Classic facilitates and improves the acquisition of mathematical and digital competence and reduces certain deficiencies or difficulties that arise in learning. The main contribution when applying the mixed pre-experimental methodology designed for this research with the use of workshops and when using GeoGebra Classic is that there is replicability in the procedure and allows developing strategies that combine, at the same time, the three competencies foreseen in the TPACK model.

Undoubtedly, a good starting point to complete this research would be to carry out a comparative study between the results of future promotions with those obtained in this work, observing the existing deviations to adopt strategies of didactic improvement to achieve quality teaching and effectively comply with the SDGs by verifying that the use of GeoGebra improves the digital mathematical competence of the future teacher.

References

Aktümen, M. and Kabaca, T. (2012). Exploring the Mathematical Model of the Thumbaround Motion by GeoGebra. *Technology, Knowledge and Learning*, *17*(3), 109-114. https://doi.org/10.1007/s10758-012-9194-5

Aldazabal Melgar, O. F., Vértiz Osores, R. I., Zorrilla Tarazona, E., Aldazábal Melgar, L. H. and Guevara Duarez, M. F. (2021). Software GeoGebra en la mejora de capacidades resolutivas de problemas de figuras geométricas bidimensionales en universitarios. *Propósitos y Representaciones, 9*(1). https://doi.org/10.20511/pyr2021.v9n1.1040

Artigue, M. (2009). The future of teaching and learning mathematics with digital technologies. En *Mathematics education and technology: Rethinking the terrain: The 17th ICMI study* (pp. 463-475). Springer.

Barahona Avecilla, F., Barrera Cárdenas, O., Vaca Barahona, B. and Hidalgo Ponce, B. (2015). GeoGebra para la enseñanza de la matemática y su incidencia en el rendimiento académico estudiantil. *Revista Tecnológica-ESPOL, 28*(5). https://bit.ly/3L3sTH1

Bolaños Florido, C. and Ruiz Hidalgo, J. F. (2018) Demostrando con GeoGebra. *Números, Revista de didáctica de las matemáticas, 99*, 153-171. https://bit.ly/3Mi6F43

BOE. Ley Orgánica 3/2020, de 29 de diciembre, por la que se modifica la Ley Orgánica 2/2006, de 3 de mayo, de Educación. núm. 340, de 30 de diciembre de 2020, 122868-122953. https://bit.ly/3IxH4me

Colás-Bravo-Bravo, P., Conde-Jiménez, J. and Reyes-de-Cózar, S. (2019). The development of the digital teaching competence from a sociocultural approach. *Comunicar*, *27*(61), 21-32. https://doi.org/10.3916/c61-2019-02

Cotic, N. S. (2014). GeoGebra como puente para aprender matemática. En *Congreso Iberoamericano de Ciencia, Tecnología, Innovación y Educación*, *3*(10). bit.ly/3vrwMQV

De Albornoz Torres, A. C. (2010). GeoGebra. Un recurso imprescindible en el aula de Matemáticas. (2010). *Revista iberoamericana de educación matemática*, *23*, 201-210. https://bit.ly/3rImObd

European Commission. Joint Research Centre. Institute for Prospective Technological Studies (Seville) y European Commission. Joint Research Centre. Institute for Prospective Technological Studies (Seville) (2011). *Institute for Prospective Technological Studies*. EUR-OP.

De Castro Hernández, C. (2020). Contenido matemático fundacional para el aprendizaje en los primeros años. Edma 0-6: *Educación Matemática en la Infancia*, *4*(2), 32-60. https://bit.ly/3sa0K9h

Del Pino Ruiz, J. (2013). El uso de Geogebra como herramienta para el aprendizaje de las medidas de dispersión. Probabilidad Condicionada. *Revista de didáctica de la Estadística*, (2), 243-250. https://bit.ly/3DdsYpW

Didriksson, A. (2007). *La universidad en las sociedades del conocimiento.* Organización de las Naciones Unidas para la Educación, la Ciencia y la Cultura, Representación de la UNESCO en México.

Diković, L. (2009). Applications GeoGebra into teaching some topics of mathematics at the college level. *Computer Science and Information Systems*, *6*(2), 191-203. https://doi.org/10.2298/CSIS0902191D

Eshet-Alkalai, Y. (2012). Thinking in the digital era: A revised model for digital literacy. Issues in *Informing Science and Information Technology*, *9*, 267-276. https://doi.org/10.28945/1621

Esteve Mon, F. M. (2015). *La competencia digital docente: análisis de la autopercepción y evaluación del desempeño de los estudiantes universitarios de educación por medio de un entorno 3D.* (Doctoral dissertation, Universitat Rovira i Virgili).

Fernández Bravo, J. A. F. (2006). Desarrollo del pensamiento lógico-matemático. En Emilio Miraflores Gómez y José Quintanal Díaz (coords.), *Educación infantil: orientaciones y recursos metodológicos para una enseñanza de calidad* (pp. 297-326). Editorial CCS.

Ferrari, A. (2012). Digital competence in practice: An analysis of frameworks. *JRC IPTS, 10*, 82116. https://bit.ly/3zkvDMr

Fraser, J., Atkins, L. and Richard, H. (2013). *DigiLit leicester. Supporting teachers, promoting digital literacy, transforming learning.* Leicester City Council.

Freyre, M. and Mántica, A. (2017). Constatación empírica y uso de propiedades para la validación de conjeturas utilizando GeoGebra. *Números Revista de Didáctica de las Matemáticas* (95), 107-121. https://bit.ly/3DaFV3P

Fuller, M. T. (2020). ISTE standards for students, digital learners, and online Learning. En *Handbook of research on digital learning* (pp. 284-290). IGI Global.

Gómez-Gómez, M. (2021). La formación del profesorado ante las nuevas oportunidades de enseñanza y aprendizaje virtual desde una dimensión tecnológica, pedagógica y humana. *Revista Publicaciones*. https://doi.org/10.30827/publicaciones.v51i3.18123

Gràcia, M., Galván-Bovaira, M. J. and Sánchez-Cano, M. (2017). Análisis de las líneas de investigación y actuación en la enseñanza y el aprendizaje del lenguaje oral en contexto escolar. *Revista Española de Lingüística Aplicada/ Spanish Journal of Applied Linguistics*, *30*(1), 188-209. https://doi.org/10.1075/resla.30.1.08gra

Gràcia, M., Jarque, M. J., Astals, M. and Rouaz, K. (2020). Desarrollo y evaluación de la competencia comunicativa en la formación inicial de maestros. *Revista iberoamericana de educación superior, 11*(30), 115-136. https://doi.org/10.22201/iisue.20072872e.2020.30.591

Hernández-Ávila, C. E. and Carpio Escobar, N. A. (2019). Introducción a los tipos de muestreo. *Alerta, Revista científica del Instituto Nacional de Salud*, *2*(1), 75-79. https://doi.org/10.5377/alerta.v2i1.7535

Hohenwarter, J., Hohenwarter, M. and Lavicza, Z. (2009). Introducing dynamic mathematics software to secondary school teachers: The

case of GeoGebra. *Journal of Computers in Mathematics and Science Teaching*, *28*(2), 135-146. https://bit.ly/3CJGmRg

Hoyles, C. (2010). *Mathematics education and technology: Rethinking the terrain* (pp. 250-284). J. B. Lagrange (Ed.). Springer.

Instituto Nacional de Evaluación Educativa. (2012). TEDS-M Informe Español: Estudio internacional sobre la formación inicial en matemáticas de los maestros. IEA. Ministerio de Educación, Cultura y Deporte.

INTEF. (Ed.) (2017). Marco común de competencia digital docente 2017. MECD. https://bit.ly/2NJe8Az

Jerez Berrio, C. I. (2020). *Las matemáticas "un acto comunicable": Desarrollo y fortalecimiento de la competencia comunicativa en el área de matemáticas en estudiantes de grado 4º de la Institución Educativa San Agustín, del municipio de Aguazul-Casanare*. https://bit.ly/3ssFFYA

Johnson, D. W. and Johnson, R. T. (1999). Making cooperative learning work. *Theory into practice*, *38*(2), 67-73. https://doi.org/10.1080/00405849909543834

Mishra, P. and Koehler, M. J. (2008, March). Introducing technological pedagogical content knowledge. En *Annual Meeting of the American Educational Research Association* (pp. 1-16).

Novelo Sánchez, S. C., Herrera Sánchez, S. C., Díaz Perera, J. J. and Salinas Padilla, H. A. (2015). Temor a las matemáticas: causa y efecto. *Revista Iberoamericana de Producción Académica y Gestión Educativa*, *2*(3), 5-10. https://www.pag.org.mx/index.php/PAG/article/view/268/314

OCDE. *PISA 2018. (2019) Programa para la Evaluación Internacional de los Estudiantes.* Informe español. Instituto Nacional de Evaluación Educativa. Ministerio de Educación y Formación Profesional. bit.ly/3M9Ance

Ortega-Sánchez, D., Gómez-Trigueros, I. M., Trestini, M. and Pérez-González, C. (2020). Self-perception and training perceptions on teacher digital competence (TDC) in Spanish and French university students. *Multimodal Technologies and Interaction*, *4*(4), 74. https://doi.org/10.3390/mti4040074

Pistón-Rodríguez, M.D. and Parejo-Jiménez, N. (2019) Percepción del alumnado de educación primaria sobre estrategias para la invención y resolución de problemas matemáticos. *Inclusión y Diversidad.* PRAXIS.

Prodromou, T. (2014). GeoGebra in teaching and learning introductory statistics. *Electronic Journal of Mathematics & Technology*, *8*(5), 363-376. https://bit.ly/3xH8hjJ

Redecker, C. (2017). European framework for the digital competence of educators: DigCompEdu (No. JRC107466). *Joint Research Centre (Seville site).*

Rivero, Y. (2012). *La planificación de estrategias didácticas y el desarrollo del pensamiento lógico-matemático en educación primaria. División de estudios para graduados.* Universidad del Zulia.

Rubio, L., Prieto, J. and Ortiz, J. (2016). La matemática en la simulación con GeoGebra. Una experiencia con el movimiento en caída libre. IJERI: *International Journal of Educational Research and Innovation,* (5), 90-111. https://bit.ly/3TtFGX0

Ruiz López, N. (2012). "Análisis del desarrollo de competencias geométricas y didácticas mediante el software de geometría dinámica GeoGebra en la formación inicial del profesorado de Primaria". (Tesis doctoral inédita).

Saucedo, R., Godoy, J., Fraire, R. and Herrera, H. (2014). Enseñanza de las integrales aplicadas con GeoGebra. *El Cálculo y su Enseñanza*, *5*, 125-138. https://mattec.matedu.cinvestav.mx/el_calculo/data/docs/P8.bbf0a982b7788f.pdf

Schmidt, D. A., Baran, E., Thompson, A. D., Mishra, P., Koehler, M. J. and Shin, T. S. (2009). Technological pedagogical content knowledge (TPACK) the development and validation of an assessment instrument for preservice teachers. *Journal of research on Technology in Education*, *42*(2), 123-149. https://bit.ly/3yWhftA

Septian, A., Inayah, S., Suwarman, R. F. and Nugraha, R. (2020, August). GeoGebra-Assisted Problem Based Learning to Improve Mathematical Problem-Solving Ability. En *SEMANTIK Conference of Mathematics Education* (SEMANTIK 2019) (pp. 67-71). Atlantis Press. https://doi.org/10.2991/assehr.k.200827.119

Suryani, A. I. and Rofiki, I. (2020, February). The practicality of mathematics learning module on triangles using GeoGebra. *Journal of Physics: Conference Series*, *1470*(1), 012079). IOP Publishing. https://bit.ly/3OmpXHs

Vargas-Díaz, C. and Apablaza, H. (2019). Competencia comunicativa en la formación inicial actual del profesor de Matemática en Chile. *Formación universitaria*, *12*(3), 81-90. https://doi.org/10.4067/S0718-50062019000300081

Yohannes, A. and Chen, H. L. (2021). GeoGebra in mathematics education: a systematic review of journal articles published from 2010 to 2020. *Interactive Learning Environments*, 1-16. https://doi.org/10.1080/10494820.2021.2016861

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Subjective distress and educational uncertainty during the Covid-19 pandemic

Malestar subjetivo e incertidumbre educativa durante la pandemia por Covid-19

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Abstract

The health crisis caused by Covid-19 has consequences that go beyond the strictly biomedical, having a differential impact on the labor market, economic and subjective well-being of the population, causing high vulnerability and prolonged uncertainty. The pandemic has produced events that escape the biomedical, impacting differentially on people's economic and subjective well-being. By means of contingency tables and Classification Trees, we analyze the perception, uncertainty and feelings that young people between 14 and 24 years old have about the pandemic and its effects, reported in the Covid-19 Youth survey. Of special interest are those who fear losing the school year due to the health crisis. The results highlight that young people recognize the seriousness of Covid-19, although they perceive that adults exaggerate the crisis and that young people are not infected; in addition, they report high levels of uncertainty due to the death of a family member or friend, family economic problems, and fear of losing the school year. Educational uncertainty is predominant among younger youth and is linked to high levels of worry, anxiety and fear, together with the manifestation of compulsive drinking and insomnia. The conclusions highlight the impacts that the pandemic has had on the subjective wellbeing of the young population; socioemotional deterioration related to the fear of death of close ones, family economic problems, and losing the school year. This problem raises the need for a multidimensional and extended approach beyond the end of the pandemic.

Keywords: Students, pandemic, education, mental health, psychological effects, social behavior.

Resumen

La crisis sanitaria por la Covid-19 tiene secuelas que van más allá de los aspectos estrictamente biomédicos impactando diferencialmente sobre el mercado del trabajo, bienestar económico y subjetivo de la población, provocando una alta vulnerabilidad y una prolongada incertidumbre. Con datos de la Encuesta Jóvenes Covid-19 y mediante tablas de contingencia y árboles de clasificación, el objetivo de este artículo es analizar la percepción, incertidumbre y sentimientos que jóvenes entre 14 y 24 años tienen sobre la pandemia y sus efectos, con especial énfasis en quienes temen perder el año escolar por la crisis sanitaria. Los resultados destacan que los y las jóvenes reconocen la gravedad de la Covid-19, aunque perciben que los adultos exageran la crisis y que los jóvenes no se contagian; además, reportan altos niveles de incertidumbre por la muerte de algún familiar o amigo/a, problemas económicos familiares y temor a perder el año escolar. Incertidumbre educativa predominante en jóvenes de menor edad con altos niveles de preocupación, angustia y miedo, junto con la manifestación de ingesta compulsiva e insomnio. Las conclusiones remarcan los impactos que la pandemia ha tenido sobre el bienestar subjetivo de la población joven, deterioro socioemocional cimentado sobre un extendido miedo a la muerte de cercanos/as, los problemas económicos familiares y perder el año escolar; problemática que plantea la necesidad de un abordaje multidimensional y extendido más allá del término de la pandemia.

Descriptores: Estudiantes, pandemia, educación, salud mental, efectos psicológicos, comportamiento social.

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1. Introduction

The health crisis due to the Covid-19 pandemic (SARS-CoV-2) has had a direct impact on the health and social and economic life of people, collapsing the health, labor and education systems. Governments have faced unprecedented complications, where medical uncertainty was added to citizen demands for responses and measures to fight an invisible threat, whose high levels of basic reproduction even surpassed that found in the Influenza virus A subtype H1N1 of 2009 (Gutiérrez and Varona, 2020), presenting high mortality rates, mainly among older adults, in addition to a surprising mutation capacity. This required a rapid study to discover and apply effective forms of containment, immunization and/or eradication (Cortés, 2020; Pérez *et al.*, 2020; Saravia Bartra, 2020).

The pandemic also has permeated the most intimate areas of personal and social life, highlighting the physiological and emotional vulnerability of individuals. While Covid-19 threatens the survival of older adults more severely, the psychological/emotional burden it generates on the rest of the population is no less relevant. The pandemic has increased feelings among young people such as fear, anxiety, discomfort and confusion, hindering identity development, family life and proper school progress.

1.1 Youth and Covid-19 in Chile

Concern about the state of the young population has been a constant fact during the Covid-19 pandemic in Chile. Not only referring to education and their migration to an online modality, but the interest also to know what young people do and think is important for contemporary public policies, especially the task of observing and shaping their opinions, feelings and general perception because of the crisis (Hinemphasis, 2020; Mendiola *et al.*, 2020; Salas *et al.*, 2020; UNICEF, 2020).

In general, this interest relies in four dimensions of the lives of young people during the pandemic: health (objective and subjective well-being), education (study habits, performance, stress), social relations (distancing, anxiety, social networks) and family relations (shared time, house chores, types of communication). This segment of the population has transformed their lives, if not interrupted, being limited to prolonged and compulsory confinement, in addition to an increase in dependence on social networks (Gómez, 2020).

Among the phenomena mostly reported in young people is pandemic stress, psychological response to the crisis that produces feelings of fear, anxiety and uncertainty, which are linked to depressive symptoms, addictive behaviors and fear of the death of a beloved (Chacón Fuertes *et al.*, 2020). Likewise, confinement measures have changed the habits and routines of young people; the schedules for eating, sleeping, studying or having fun have changed, in addition to the increase of sedentary and/or solitary lifestyles due to social isolation. On top of that, measures to curb the pandemic have also sharpened the situation of those belonging to the most disadvantaged people, especially after the migration from a face-to-face educational modality to a virtual one and the consequent interruption of food, protection and services to recreation that they provided (UNICEF, 2020).

Moreover, the health crisis has also caused young people to interrupt their social life. Quarantine and lockdown measures have hindered the pre-crisis pace of life, for example, from being forced to stop attending school in person where they could socialize with peers and teachers to giving up parties or meetings with peers for entertainment. Although it is true that the crisis has intervened in the social life of all people in general, it is also true that this specific group faces it in a special way due to the life cycle they go through. Being in a maturation and conformation stage of identity, where experimentation, relationships with others and autonomy achieved inside and outside the home are essential to build their personality, it is not surprising

that when restricted show conflicts with family authority and negative behaviors such as stress, anxiety or irritability.

In addition to the above, the various impacts of the pandemic, its depth and repercussions, are managed by the segmentation of the Chilean society, especially regarding education. Considering the marked gap of resources that each family has according to its class origin, the possibilities of mitigating the problems derived from the crisis vary significantly, so that from the beginning those who do not have technological devices and Internet access at home cannot be part of an online education. In addition, each student has support because of the socio-educational capital of families, where the guidance, corrections and supervision they can receive depend on the education of their parents.

Despite their desire for independence, teenagers are not an isolated entity. Recent evidence has shown their empathy towards their peers and their concern about their possibility of getting and suffering the effects of Covid-19 (Chacón Fuertes *et al.*, 2020; Taylor, 2019; UNICEF, 2020). Although they have promoted transgressive events such as hidden parties widely reported by the media, their fear of infection is also a constant that reinforces the adoption and respect of quarantine measures.

This situation reports the need to know how young people in Chile feel, what they do and how they face the pandemic, inquiring about their anxieties, fears and uncertainty, particularly those related to the educational process whose dynamics have been abruptly interrupted.

2. Methodology

2.1 Design

This work uses a quantitative perspective of statistical analysis from a transversal design. The perception of risk and uncertainties reported by young people regarding the current health crisis due to Covid-19 is examined through the calculation of indices and contrast tests of hypotheses, both in a bivariate and multivariate context. Proportions and estimates are analyzed at the bivariate level, which are complemented by the multivariate Segment Trees technique to model the decision itineraries and distinctive attributes when configuring risk perception.

2.2 Instrument

The database of the survey "National panorama of young people facing the health crisis of Covid-19", hereinafter Young Covid-19, is used, which is carried out by the Under-Secretariat for Children of the Ministry of Social Development and Family (MDSF), an organization that aims to protect, promote and disseminate rights in children and adolescents.

The survey Young Covid-19 aims to know the feelings and behaviors caused by the pandemic to Chilean adolescents and young people. It is an official and nationally representative survey, conducted in 70 municipalities of Chile during April 2020, with the target population between 14 and 24 years.

This questionnaire is structured in a set of items that address, under categorical Likert type answers and multiple answer question, the perception of risk of the transmission of Covid-19, economic, family and personal effects of the pandemic, in addition to items related to mental health and academic uncertainty among young people.

2.3 Sample

The research article is limited to the young population that is studying in high school or university and corresponds to 367 subjects (Table 1), subsample that represents 61% of the total of respondents. The general sample was extracted using probabilistic procedures with stratification criteria to ensure representativeness at national level and enable the inferential extrapolation process.

Table 1

Description of the student sample (n = 367)".

	%
Sex • Male • Female	 45.8 54.2
Do you work? • Yes • No	 13.6 86.4
Educational level • High School • University	 53.4 46.6
Age • 14 to 17 • 18 to 21 • 22 to 24	 39.5 24.0 36.5

Note. Own elaboration with data from the Youth Covid 19 (2020) survey.

In socio-demographic terms, the sample shows a predominance of female students (54.2%), adolescents between 14 and 17 years (39.5%), mostly belonging to middle school (53.4%) and where only a low percentage work and study (13.6%).

2.4 Procedure

An exploratory phase is carried out with the data of the survey Young Covid-19 in order to select the cases of the subsample previously established in the inclusion criteria; logical errors are corrected and the metric of the variables of interest is examined. Subsequently, the analytical processes were performed with the statistical treatment of the items and dimensions relevant to the object of study.

First, a descriptive analysis is performed made by calculating proportions of the categorical variables, whether these are nominal or ordinal metric, information that is represented through Tables. In this phase, the perceptions that students have regarding the severity of the Covid-19 crisis are modeled, as well as the uncertainties and feelings that it causes, and the negative consequences that confinement generates in their daily lives, analyses that are segmented based on classificatory attributes considered significant, such as age and sex.

Secondly, a multivariate analysis was performed, specifically the Segmentation Trees or Classification technique. Indeed, in order to give greater analytical depth, the modeling of the profiles that structure the uncertainty of losing the academic year in the new educational scenario was performed using classification trees. A multivariate procedure allowed diagramming the hierarchical structure of the factors in branches and nodes with the greatest ability to discriminate and predict the modeled variable. The segmentation method based on Chi square maximizes the distances between groups, defines profiles and structure of routes (Gervilla and Palmer, 2009).

Along with the modeled variable Uncertainty about losing the school year, a set of attributes that the literature reports as relevant were used as predictors, all of which met the contrast criterion of categorical asymmetry 90/10.

Also, a three-level exclusion and the criterion of 50 cases for the parent node and 20 for the child node is established in order to avoid overfitting. The CHAID algorithm structured a tree of three predictors under these conditions and requirements [Age, Skepticism and Sex] with ten nodes, six of them terminal. This tree correctly classifies 75.5% of the cases, with a sensitivity level of 67.2% and specificity of 83.4%, grouping the smallest Node to 7.6% of the analyzed sample. These parameters were considered suitable for using the sorting tree technique.

The classification tree modeling initially included a total of five predictors:

Table 2

Multivariate Analysis Variables Listing

Variable	Definition (Category structure)	Meaning and hierarchic position [symmetry]
Fear of losing the school year	A dichotomous variable that expresses one of the negative effects that young people fear for the future [0= No; 1= Yes].	Dependent [No= 51.0%; Yes= 49.0%]
Age	Ordinal variable ordered in three levels [14-17 years; 18-21 years; 22-24 years].	Significant First Level [14-17 years old= 39.5%; 18-21 years old= 24.0%; 22-24 years old= 36.5%]
Sex	Dichotomous variable (1= Male; 2= Female)	Significant Third Level [Male= 45.8%; Female= 54.2%]
Perceived risk of Covid-19	Dichotomous attribute constructed based on two items, having as reference (value=1) the conformity with 'adults exaggerate the crisis' and 'young people do not get infected with Covid-19'. Acquiring value=0 otherwise.	Significant Second Level [High perception= 47.3%; Low perception= 52.7%]
Level of education	Dichotomous variable [1= Incomplete High School; 2 = Higher Education]	Not significant [Incomplete High School = 53.4%; Higher Education = 46.6%]
Employment status	Dichotomous variable [1= Not working; 2= Working]	Not significant [Not working= 86.4%; Working= 13.6%]

Note. Own elaboration using the data from the Youth Covid-19 (2020) survey.

3. Results

The health crisis caused by Covid-19 has been a major challenge for all citizens, although its impacts and concerns vary due to the sociodemographic characteristics of the groups that make it up.

In the case of young people, the pandemic has involved in recent months a series of changes in their lifestyle, behaviors and expectations, especially among those who are studying, given the abrupt change that has meant migrating from a face-to-face modality to an online or distance modality. In this regards, Table 3 shows that practically all students (97.3%) know that the coronavirus crisis is serious, hence, no significant differences between groups were found. Despite recognizing this seriousness, 46.1% think that adults exaggerate and 32.2% say that normally young people do not get infected, figures that are particularly high among middle school students, observing statistically significant differences in the contrast of hypotheses ($p<0.01$). Generally, 55.2% said they agree that ending the crisis relies on doctors and 72.0% said that it relies on the

government, particularly a high number of students in higher education [chi^2=9,598; p<0.05].

Table 3

Overview of the Covid-19 pandemic situation

	Contrast academic level			
	General	High school	Higher Education	Chi2
Coronavirus crisis is serious	97,3	96.5	98.3	--
Adults exagerate	46.1	49.7	42.2	19.136(**)
Young people do not get infected	32.2	41.0	22.6	15.947(**)
Ending the crisis relies on:				
-Government	72.0	69.1	75.0	9.598(*)
-Doctors	55.2	59.0	51.2	--

Note. Graduated response items in five levels, indicating proportions of agreement and very agreement; **= significant at 0.01; *= significant at 0.05; —= not significant.

Own elaboration with data from the Youth Covid-19 (2020) survey.

Among the uncertainties caused by the pandemic (Table 4), the fear of the death of a family member or friend stands out among young people (76.2%); equally relevant, although with a lower number, is the concern of economic problems that the crisis causes to the family (49.7%). The perception of risk is significantly more increased in female and higher education students.

In the same table 4, about 1 in 2 respondents (49.2%) expressed among their main concerns the risk of losing the school year, a figure that is particularly high among middle school students (61.5%).

In order to determine the feelings and anxieties of students in terms of losing the school year, a contrast analysis has been performed at a bivariate level (table 5), complemented with an exploration of risk profiles through multivariate classification tree modeling (Figure 1).

Table 4

Uncertainty about the consequences of the pandemic (%)

	Sex		Academic level		General
	Female	Male	High school	Higher Education	
Losing the academic year	44.2	55.1	61.5	35.1	49.2
Things will never be the same	33.7	26.3	25.1	36.3	30.3
I might die	35.7	27.5	32.3	31.6	32.0
A beloved or friend may die	78.4	73.7	70.3	83.0	76.2
Serious family economic problems	53.3	45.5	47.7	52.0	49.7

Note. The values represent multiple response calculations based on the number of cases in each response category.

Own elaboration with data from the Youth Covid-19 (2020) survey.

Overall, as reported in Table 5, concern is the feeling that predominates among adolescents during the health crisis (68.1%), followed by distress (45.8%) and fear (30.2%). These feelings have the same configuration in order of importance within the subgroup that fears losing the school year, however, the proportions they reach are slightly more increased (% column). For their part, the fear of losing the school year prevails among those who declare boredom or fear or anger (% row), with incidence of 62.3%, 60.4% and 58% respectively, otherwise statistically significant differences with respect to the comparison subgroup.

Table 5

Feelings and negative effects of the pandemic (%)

	Fear of losing the school year		General
	% Column	% Row	
Feelings			
Concern	57.8	41.6	68.1
Fear	37.2	60.4	30.2
Anger	22.2	58.0	18.8
Boredom	18.3	62.3	14.4
Anguish	43.3	46.4	45.8
Negative effects			
Insomnia	53.4	48.1	49.7
Compulsive eating	77.3	56.3	61.5
Overuse of alcoholic drinks	14.7	66.7	9.9
Irritability	54.6	51.1	47.8

Note. The values correspond to multiple response calculations according to the number of cases in each category of response;% Row= corresponds to the number of students who are afraid of losing the school year;% Column= represents the feeling or negative effect, in terms of proportions, of those who fear losing the school year.

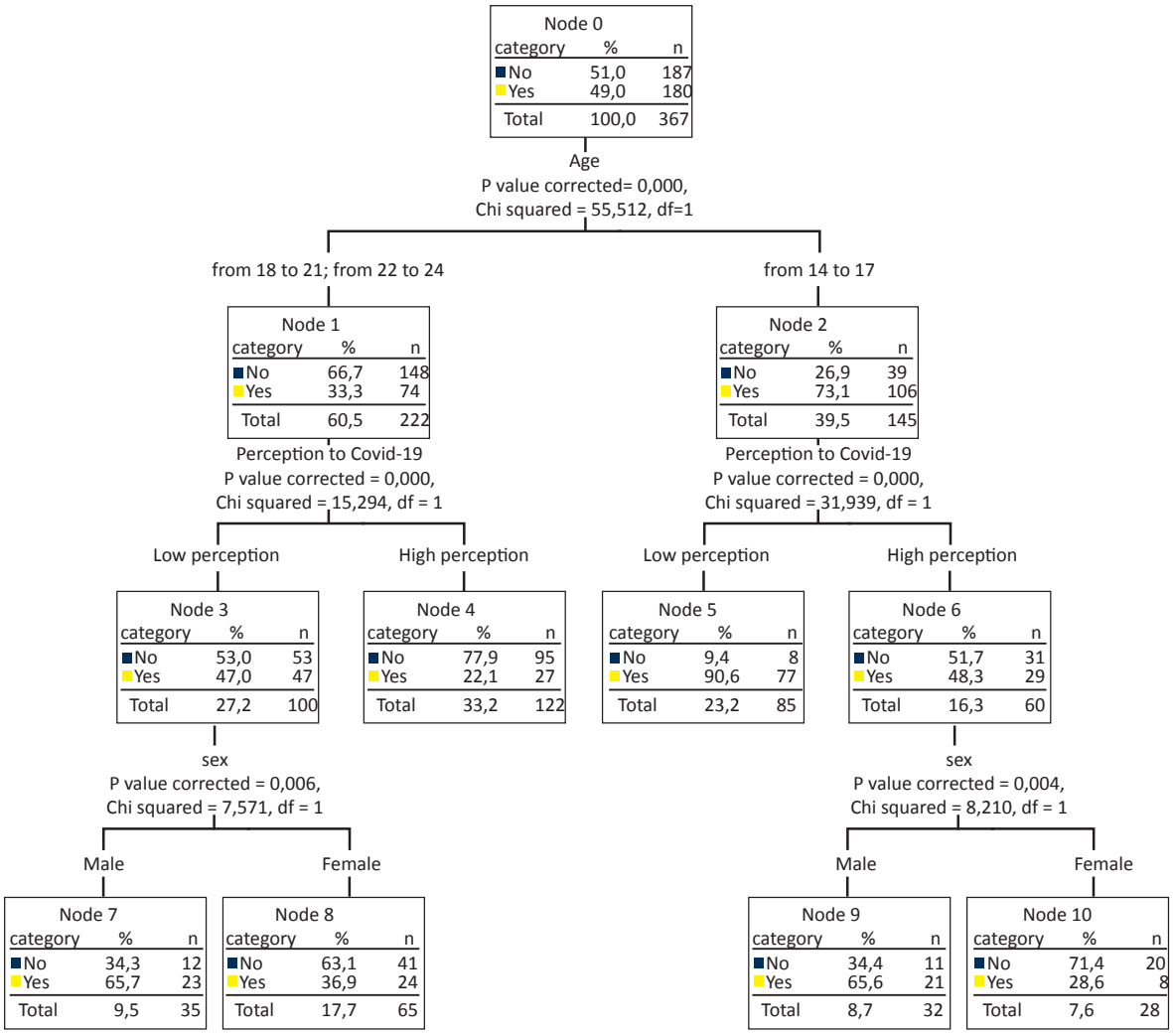
Own elaboration with data from the Youth Covid-19 (2020) survey.

In addition, among the negative effects that students attribute to the crisis are compulsive eating (61.5%), insomnia (49.7%) and irritability (47.8%). These figures are more prevalent among those who fear that they will lose the school year, particularly when it comes to overeating (77.3%). In the opposite sense, those who report alcohol abuse and compulsive eating are the ones with more fear of losing the school year (66.7% and 56.3%, respectively), with statistically significant differences compared to those who do not show such behaviors.

According to the findings provided by the classification tree (Figure 1), Age, Risk perception of Covid-19 and Sex are the variables that hierarchically outline the fear of losing the school year. Age is positioned as the attribute with the highest discriminatory capacity [x^2=55.512; p=0.00], where the youngest students, i.e., between 14 and 17 years, show a particularly high concern for their school year (73,1%; Node 2), proportion that is significantly lower than the one registered in students over 17 years (33.3%; Node 1).

Figure 1

Uncertainty for lossing the academic year



Note. Own elaboration with data from the Youth Covid-19 (2020) survey.

In a second segmentation level and for both preceding nodes, there is the variable Perception of risk to Covid-19 according to the intensity that they declare. For adolescents (Node 2), risk perception discriminates significantly [x^2=31.939; p=0.00], so that uncertainty increases in students who show low perception of the severity of Covid-19 (90.6%; Node 5). Adolescents with high-risk perception (Node 4) over 17 (22.1%) have the lowest uncertainty about losing the school year.

Sex arises among young people with low-risk perception (Node 3) and in a third hierarchical level [x2=7,571; p=0,01] as a segmentation variable, being women who manifest less uncertainty (36.9%; Node 8). On the other hand, sex also has the capacity to discriminate among adolescents with high-risk perception (Node

5) [x^2=8.210; p=0.00], being men who express greater concern about losing the school year (65.6%; Node 9).

To summarize, it can be determined that the itinerary that defines the student that shows greater concern or uncertainty about losing the school year during the pandemic corresponds to adolescents between 14 and 17 years who manifest low perception of risk against Covid-19.

4. Discussion

Most Chilean students think that the Covid-19 crisis is a serious issue, whose consequences are observed on various dimensions of their daily life, being particularly relevant those related to family and school. However, a high number consider that adults exaggerate, and that young people are highly immune, perceptions that are significantly higher among those in secondary education.

A self-perception of relative invulnerability against danger increases in adolescence and there is tolerance to physical and emotional risk, facts that are exacerbated in the relationship with others and the attempt to get their attention and recognition (Alvites, 2019). This perception is paradoxically set in one of the stages of special vulnerability, where family, neighborhood and socioeconomic factors can affect satisfactory growth and development (Di Segni, 2019).

Additional to this apparent contradiction between an adolescent attitude with high risk tolerance and a vital stage of vulnerability, there is the neurophysiological maturation process through which young people go through, which motivates behavioral, hormonal and psychological changes. In the complex relationship of these components appears the feeling of immunity, explaining risky behaviors as an extension of attempts to strengthen identity, improve social adaptation, capture the recognition of others and/or affirm autonomy (Suárez Relinque *et al.*, 2017). This phenomenon is widely reported in terms of research on teenage pregnancy, risky sexual practices, early sexual initiation and/or alcohol and drug use (Alvites, 2019; Corona and Peralta, 2011).

People may be aware of the risks, but awareness does not prevent or inhibit certain behaviors. The search for rewards or pleasant sensations, which usually involve the presence of significant others, causes the feeling of invulnerability that takes everything, over which parental control is clearly uncomfortable, if not pernicious (Alonso Stuyck and Aliaga, 2017). This could explain the high number of young people who believe that adults exaggerate (46.1%), despite having an idea of the severity of the crisis.

Despite the fact that the media have repeatedly warned about the seriousness of the pandemic, adolescents continue to doubt its scope and impact. There is a number of students influenced by conspiracy theories who believe that the virus is a laboratory creation, a common cold that as a result of global information manipulation exacerbates its dangerousness as a means of social control, although there are adults who also believe on it (Bisso Andrade, 2019; Trujillo, 2020).

Indeed, the coincidence observed between the perception that young people do not get infected and that adults exaggerate refers to a reduced, if not distorted, perception of risk, recurrent from the age stage they go through, which can violate their health or that of the family members by contravening the security and social distancing measures ordered by the health authority. Although in strict terms this negligent behavior is also observed among the adult population, so it would be unfair to attribute it as a distinctive and exclusive feature of young people, it is not less true that these behaviors are presented more frequently in adolescents.

The spread of Covid-19 led to the immediate closure of schools, so that students had to be confined to their homes, leading to a loss of autonomy and greater parental control of which they have sought to gradually detach. Parents now can monitor and supervise their behaviors, establish more rules regarding outings and com-

panies, causing conflict with the emancipation of adolescents, hence perceiving that adults exaggerate the risks of the pandemic.

Despite the sense of invulnerability described above, young people are aware of the danger that Covid-19 poses to the health, life and economic and emotional well-being of themselves and their significant environment, where the fear of death stands out, especially of a family member or friend, is a present idea, particularly in female students and those pursuing higher education; likewise, concerns remain that things will not be as they were before in about a third of the student population. The spread of Covid-19 has led to serious economic impacts on the family and represents a threat to health, increasing a set of negative feelings among which the fear of death, some of which will surely continue after overcoming this crisis.

After the pandemic, many young people could prolong habits and routines acquired by confinement and not attending face-to-face classes, such as sedentary lifestyles, excessive food consumption, overexposure to the computer and irregular sleep patterns. These are unhealthy behaviors that affect physical and psychological health and have increased during the pandemic (Bartlett *et al.*, 2020).

The duration of the physical and psychological consequences of the pandemic will depend on the nature and severity of the experiences lived. Traumatic events such as job loss, infection, hospitalization or death of a loved one generate high levels of stress. These problems are lived by other experiences that can be categorized as subjective but not less relevant, such as fear of contagion, feelings of vulnerability, uncertainty and pessimism for the future (Espada *et al.*, 2020). Therefore, it is difficult to estimate how long its effects on well-being will last.

Not only traumatic experiences but also simple forced and prolonged confinement can be distressing for young people, generating depression, stress and/or anger (Alvites Huamaní, 2020). It can get worse by the participation in social networks, the main means of information among the young population, where there is many fake news, reaching a vast group of netizens, bet on the discrediting of official sources and promote wrong perspectives on reality, its problems and solutions (González, 2019; Huarcaya, 2020).

This socio-emotional deterioration affects family relationships and the motivational willingness towards education. The presence of stressors harms some cognitive functions in the area of memory processing and executive function, essential for learning, and the online modality stresses the adaptation, learning processes and school performance (Cortés, 2020).

Additionally, the fear of losing the school year emerged. A major concern is expressed by 1 out of 2 young people (49.2%) and is more marked among those in secondary education (61.5%). Studies are not only the basis on which personal projects will be founded as an engine of social mobility and human development (Gilbert, 2012), but also is the activity that requires more time, planning and efforts. The social, family and personal pressure that falls on young people regarding the importance of educational progress would explain the emergence of feelings such as worry, anguish and fear of stagnating in their formative process and/or losing the school year, even more so among those who are close to graduation.

This concern increased as the school year progressed in an online modality through virtual platforms, which was more the result of an innovation forced by the conditions of the pandemic than a planned and efficient proposal by school institutions. The different members of the educational communities not only manifested problems of accessibility and management of platforms to organize and conduct classes or distribute study courses, but communication between students, teachers and parents was also hindered (Cáceres Muñoz *et al.*, 2020; Leiva Guerrero *et al.*, 2022). Moreover, evaluation policies changed, where the conventional paper tests that focused on the acquisition of knowledge became obsolete and impractical; this fueled

the uncertainty regarding the policy of school promotion.

Both contents and evaluations on online education were condensed and changed the approach, acquiring evaluative factors not always considered by the traditional modality, such as attendance and participation in classes or the delivery of guides and works. In addition to this great improvisation that was deployed during 2020 to overcome the school year, the uncertainties inherent in the pandemic, its direct and indirect effects on the young population increase the fear of remaining at the same level for another year.

On the other hand, the emergence of the online modality meant uprooting young people from their routines to install new ones that required competencies not necessarily developed. The greater autonomy derived from distance education requires proper and responsible time management, procrastination being a particularly risky behavior. Indeed, the habit of postponing academic assignments or commitments became a recurrent practice that deepened the anguish and uncertainty about the successful completion of the school year. An event was accepted by parents because they assumed that losing the school year in this situation of health crisis was not the real problem.

Both the importance attributed to the educational process and the risk behaviors towards re-approval also promoted socio-affective conditions such as compulsive eating, irritability and insomnia, facts that, being part of the range of responses of young people in the context of pandemic, deepen among those who fear losing the school year. This feeling is set, according to the tree multivariate classification technique, preferably among young people who have low perception of risk against Covid-19, either because they consider that adults exaggerate or believe that they cannot be infected.

5. Conclusions

The situation of young Chileans during the pandemic has been characterized by a multidimensional and widespread concern. Not only is there a risk that they or their family and friends will suffer from Covid-19, but they are also exposed to the experience of negative feelings, new routines and lifestyles and heightened uncertainty about the future, especially what will happen with their school year.

According to data from the Covid-19 Youth Survey, a high number of this population group recognizes that the health crisis is serious, a view that coexists with the perception that they cannot be infected and that adults exaggerate both the magnitude of the threat and precautionary measures. The health emergency established routines and disrupted activities that are particularly important for young people in terms of leisure, recreation and meeting with peers. Confinement not only forced adolescents to stay at home, but also reactivated a capacity for parental guardianship which, due to the transition to adulthood, they believed to be relatively emancipated, a regression that causes family problems.

Young people also report high levels of uncertainty as a result of the pandemic. In general terms, a varied range of feelings affecting well-being is evident, especially the fear of the death of a family member or friend, a concern based on the unexpected mortality recorded by the coronavirus among population at risk, which daily floods traditional media and social networks. Moreover, due to the lack of definitive measures to counter the advance of Covid-19 to date, this fear becomes latent and inevitable, forcing the state of constant alert, an issue that wears down and increases reactivity.

Although the pandemic generates a state of generalized uncertainty, the fear of losing the school year becomes relevant, a feeling present among young people under 18 with a low perception of risk to Covid-19. This situation worsens feelings of worry, anguish and fear, socio-af-

fective states that are linked to compulsive eating, insomnia and increased irritability.

Adolescents are in a phase of change in their educational cycle, they have relatively less autonomy and are more inexperienced than their older peers, factors that increase the sense of vulnerability and uncertainty regarding their educational process given the forced emergence of an educational model characterized by virtuality and new protocols for school evaluation. This scenario is complemented by the policy of content condensation in schools and the risk implicit in procrastination that would lead to more educational autonomy, all of which has effects on the levels of curricular appropriation and development of academic competences, eventually compromising the success of future educational processes.

In short, the health crisis of Covid-19 not only puts at risk the health of young people and the well-being of their family but causes negative feelings such as anguish, fear and worry, states of uncertainty that go beyond the family and influence the educational level, whose effects can extend even beyond the end of the pandemic. Hence the need, on the one hand, to design and carry out socio-educational interventions at the end of the process in order to face the difficulties and consequences of the pandemic. On the other hand, it is necessary to conduct in the future data surveys to explore the negative effects after the pandemic, particularly its impact on the subjective welfare state, school coexistence and learning conditions.

References

Alonso-Stuyck, P. and Aliaga, F. (2017). Demanda de autonomía en la relación entre los adolescentes y sus padres. *Estudios sobre Educación, 33*, 77-101. https://doi.org/10.15581/004.33.77-101

Alvites, C. (2019). Adolescencia, ciberbullying y depresión, riesgos en un mundo globalizado. *Etic@net: Revista científica electrónica de Educación y Comunicación en la Sociedad del Conocimiento, 19*(1), 210-234. https://bit.ly/3Cn69OJ

Alvites-Huamaní, C. (2020). Covid-19: Pandemia que impacta en los estados de Ánimo. *CienciAmérica, 9*(2). http://dx.doi.org/10.33210/ca.v9i2.327

Bartlett, J., Griffin, J. and Thomson, D. (2020). *Resources for supporting children's emotional well-being during the COVID-19 pandemic.* Child Trends. https://bit.ly/3D75fYs

Bisso-Andrade, A. (2019). COVID-19: Un reto más allá de lo imaginable. *Revista De La Sociedad Peruana De Medicina Interna, 33*(3), 93-95. https://doi.org/10.36393/spmi.v33i3.543

Cáceres-Muñoz, J., Jiménez, A. and Martín-Sánchez, M. (2020). Cierre de Escuelas y Desigualdad Socioeducativa en Tiempos del Covid-19. Una Investigación Exploratoria en Clave Internacional. *Revista Internacional de Educación para la Justicia Social, 9*(3), 199-221. https://doi.org/10.15366/riejs2020.9.3.011

Chacón-Fuertes, F., Fernández-Hermida, J. and García Vera, M. (2020). La psicología ante la pandemia de la COVID-19 en España. La respuesta de la organización colegial. *Clínica y Salud, 31*(2), 119-123. https://bit.ly/3hLjk2q

Corona, F. and Peralta, E. (2011). Prevención de conductas de riesgo. *Revista Médica Clínica Las Condes, 22*(1), 68-75. https://bit.ly/3CnfYw2

Cortés, M. (2020). Coronavirus como amenaza a la salud pública. *Revista médica de Chile, 148*(1), 124-126. https://dx.doi.org/10.4067/S0034-98872020000100124

Di Segni, S. (2019). *Adultos en crisis. Jóvenes a la deriva.* Noveduc.

Espada, J., Orgilés, M., Piqueras, J. and Morales, A. (2020). Buenas prácticas en la atención psicológica infantojuvenil ante la COVID-19. Clínica y Salud. Avance online. *línica y Salud, 31*(2), 109-113. https://dx.doi.org/10.5093/clysa2020a14

Gervilla, E. and Palmer, A. (2009). Predicción del consumo de cocaína en adolescentes mediante árboles de decisión. *Revista de Investigación en Educación, 6*, 7-13. https://bit.ly/3EOgUNa

Gilbert, J. (2012). *Introducción a la sociología.* LOM.

Gómez, C. (2020). Las niñas, los niños y los adolescentes (NNA) y el Covid-19. *Mirada legislativa* (196), 1-26. https://bit.ly/3sS47mr

González, M. (2019). Fake News: desinformación en la era de la sociedad de la información. *Ámbitos. Revista Internacional de Comunicación* (45), 29-52. http://dx.doi.org/10.12795/Ambitos.2019.i45.03

Gutiérrez, J. and Varona, J. (2020). *Análisis de la posible evolución de la epidemia de coronavirus COVID-19 por medio de un modelo SEIR.* Departamento de Matemáticas y Computación, Universidad de La Rioja. https://bit.ly/34s162U

Hincapié, E. (2020). Cuando termine la cuarentena, cuando termine la pandemia. En N. Molina (Ed.), *Psicología en contextos de COVID-19, desafíos poscuarentena en Colombia* (pp. 65-80). Ascofapsi.

Huarcaya, V. (2020). Consideraciones sobre la salud mental en la pandemia de COVID-19. *Revista Peruana de Medicina Experimental y Salud Pública [Internet], 37*(2), 327-334. https://doi.org/10.17843/rpmesp.2020.372.5419

Leiva-Guerrero, M. V., Sanhueza-Mansilla, J. I., Soto-Calderón, M. P. and Muñoz-Lameles, M. E. (2022). Monitoreo de aprendizajes en escuelas públicas chilenas en contexto COVID-19. ALTERIDAD.Revista de Educación, *17*(1), 89-102. https://doi.org/10.17163/alt.v17n1.2022.07

Mendiola, M. S., Hernández, A., Torres, R., Carrasco, M., Romo, A., Mario, A. and Cazales, V. (2020). Retos educativos durante la pandemia de COVID-19: una encuesta a profesores de la UNAM. *Revista digital universitaria*, *21*(3), 1-24. http://doi.org/10.22201/codeic.16076079e.2020.v21n3.a12

Pérez, M., Gómez, J. and Dieguez, R. (2020). Características clínico-epidemiológicas de la COVID-19. *Revista Habanera de Ciencias Médicas, 19*(2), 1-15. https://bit.ly/3hNSGWv

Saravia-Bartra, M. M., Cazorla-Saravia, P. and Cedillo-Ramírez, L. (2020). Nivel de ansiedad de estudiantes de medicina de primer año de una universidad privada del Perú en tiempos de Covid-19. *Revista de la Facultad de Medicina Humana , 20*(4), 568-573. https://dx.doi.org/10.25176/rfmh.v20i4.3198

Salas, G., Santander, P., Precht, A., Scholten, H. and Moretti, R. L.-L. (2020). COVID-19: impacto psicosocial en la escuela en Chile. Desigualdades y desafíos para Latinoamérica. *Avances en Psicología Latinoamericana,, 38*(2), 1-17. https://bit.ly/3IZvUHd

Suárez-Relinque, C., Arroyo, G., Ferrer, B. and Ochoa, G. (2017). Baja percepción de riesgo en el consumo de alcohol en adolescentes españoles. *Cadernos de Saúde Pública, 33*(7), 1-14. https://doi.org/10.1590/0102-311X00129716

Taylor, S. (2019). *Psychological reactions to pandemics.* Cambridge Scholars Publishing.

Trujillo, J. (2020). La vida social del Covid-19: una etnografía del escepticismo y el negacionismo en poblaciones informales de Ciudad de México. *Perifèria, 25*(2), 141-153. https://bit.ly/3vKZcFP

UNICEF. (2020). *Encuesta de Percepción y Actitudes de la Población. El impacto de la pandemia COVID-19 en las familias con Niñas, Niños y Adolescentes.* UNICEF Argentina. https://uni.cf/3CpSqqi

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Research exercises in the classroom identifying differences among concepts on peace

Ejercicio de investigación en el aula identificando diferencias entre conceptos sobre la paz

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Abstract

In Colombia, the General Education Law 115 of 1994 and Law 1620 of 2013 are elements that allow exploring fields of socio-cultural research in the classroom. The objective of this research is to determine if there are differences between the concept of peace between students. Records of exercises in class of 973 children between 10 and 15 years old were used, in the subject of Peace Chair in Grades 6, 7, 8 and 9 of the José Asunción Silva Educational Institution, Municipality of Palmira, Colombia. The appropriate ethnographic methodology was applied to the educational context for the observation and recording of information. In the cases of the variables Patience, Justice, Agreement, Tolerance, Hope, Protect, the H0 is rejected. In this research it was possible to identify two types of concepts associated with peace: 1. Stable and 2. Unstable. Despite the differences recorded in the analysis, all the concepts are part of the diversity of meanings that our student community associates and applies in the daily process of coexistence. As a whole, this exercise allows the use of indicators to evaluate and adjust pedagogical and curricular elements that are more closely related to the environment and the particular context of the classroom. At an academic level, it allows broadening the understanding of the relationship between the classroom community and the local community, facilitating the application of ethnographic techniques as part of the pedagogical process and enriching the teaching-learning dichotomy.

Keywords: Peace, perception, classroom, concept, teaching program, evaluation.

Resumen

En Colombia, la Ley General de Educación 115 de 1994 y Ley 1620 de 2013 son elementos que permiten explorar campos de investigación sociocultural en el aula. El objetivo de esta investigación es determinar si existen diferencias entre el concepto de paz entre estudiantes. Se utilizaron registros de ejercicios en clase de 973 niños y niñas entre 10 y 15 años, en la asignatura de Cátedra de Paz en de los grados 6, 7, 8 y 9 de la Institución Educativa José Asunción Silva, Municipio de Palmira, Colombia. Para la observación y registro de la información se aplicó la metodología etnográfica adecuada al contexto educativo. En los casos de las variables Paciencia, Justicia, Acuerdo, Tolerancia, Esperanza, Proteger se rechaza la H0. En esta investigación fue posible identificar dos tipos de conceptos asociados a la paz: estables e inestables. A pesar de las diferencias registradas en el análisis, todos los conceptos hacen parte de la diversidad de significados que nuestra comunidad estudiantil asocia y aplica en el cotidiano proceso de convivencia. En conjunto, este ejercicio permite usar indicadores para evaluar y ajustar elementos pedagógicos y curriculares de mayor relación con el entorno y el contexto particular del aula. A nivel académico permite ampliar la comprensión de la relación entre la comunidad del aula y la comunidad local, facilitando la aplicación de técnicas etnográficas como parte del proceso pedagógico y enriqueciendo la dicotomía enseñanza-aprendizaje.

Descriptores: Paz, percepción, aula, conceptos, programa de enseñanza, evaluación.

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1. Introduction

There is a branch of knowledge in Colombia that defines pedagogical research in general and classroom research in particular, and has evolved since the 80s. It is a field of study in continuous growth that has served to progressively model the concept of "Master Researcher Model" since the 90s, gradually increasing in the country (Ossa, 2015). Known as Research-Pedagogical Action, several studies have been conducted, focused on designing strategies to build pedagogical knowledge applied to particular contexts. These studies have also demonstrated the improvement of curricula, pedagogical practices and teaching-learning processes from classroom research (Quiceno, 2002; Restrepo, 2003a, 2003b; Ávila, 2005).

The construction process of pedagogical knowledge from classroom research has defined at least three approaches: 1. Teacher research on their pedagogical work, 2. Teacher research on student practices and 3. Teacher research on the student research process and its accompaniment (Vélez, 1980; Restrepo, 2009). This research is mainly defined within the second approach mentioned, although it is possible to consider a transversal process to all others. It can also be understood as a complementary part of the research exercise that has been called in other ways as research of formative evaluation, research of performance evaluation, research of reflective practice, transversal reflection or ethnography of the classroom (Porlán, 1987; Goetz and Lecompte, 1988; Porlán and Martín, 1991; Parra Sabo, 1998; Álvarez, 2011; Guzmán *et al.*, 2017).

1.1 Research objective

The concept of peace and its reflection in peaceful coexistence are learned in the family and in the direct social contexts of the individual experiences, especially during the stage of growth. For some authors who are focused on research in the classroom, the concept of peace in the school environment has been investigated as the reflection of opinions on the understanding and application of elements such as: 1. The design of the coexistence manual, 2. The development and implementation of the subject of Peace; and 3. The regulations applied to conflict mediation within educational institutions. In this way, the school emerges as a space where social processes, both conflict and peacebuilding, are manifested and are oriented from government bodies that help mediate daily coexistence (McKernan, 1999; Laguna and Sánchez, 2005; Cardozo-Rusinque *et al.*, 2020).

In Colombia, since the implementation of the General Law of Education 115 of 1994 and Law 1620 of 2013, the bases were founded to organize the National System of School Coexistence and Training for the Exercise of Human Rights, Education for Sexuality and Prevention and Mitigation of School Violence, establishing the legal mechanisms that open the space to be applied through the Manual of Coexistence and the organization of the Committees of School Coexistence. Subsequently, the promotion of culture for peace is established from Law 1732 of 2014 to be applied in educational institutions and its obligatory since Law 1874 of 2017.

These elements issued in recent years have allowed to explore various fields of socio-cultural research in the classroom and its community environment. One of them is the understanding of the phenomenon of generation and social support of critical thinking related with the process of meaningful and supportive construction of knowledge. For the Ministry of National Education, the concept of peace is defined as the result of school coexistence, i.e., the group reflection of the action of living in the company of other people in a peaceful and harmonious way. This process is understood as the basis for social development and the exercise of citizenship. Following this idea, the space where training to know how to live peacefully and constructively in society is called School and is defined in official educational institutions from their committees

and subjects related with the topic (Marrugo-Peralta *et al.,* 2016).

Since the implementation and application of the subject for Peace in the I. E. José Asunción Silva de Palmira since 2015, it has been part of the teaching task to collect information on the generation and social consolidation of knowledge around the culture of peace, as well as its reflection in processes of critical group thinking in the educational community. This research presents the results of the analysis of information collected between 2015 and 2020 in the regular courses of Peace at I.E. José Asunción Silva of the City of Palmira (Colombia) between grades 6, 7, 8 and 9. The main objective of this research is to determine if there are significant differences between the structures of understanding the concept of peace between groups and over time. It is believed that the development of this objective through research in the classroom will improve the pedagogy in the area and facilitate reflection on the teaching-learning process in the context of this educational institution. The results described here serve to adjust and improve the curriculum in the area towards the future.

2. Methods

The records of permanent observations of exercises in class were used, which were carried out during the classes of Peace to 973 children between 10 and 15 years from grades 6, 7, 8 and 9 of the school José Asunción Silva, Municipality of Palmira, Valle del Cauca. Between 2016 and 2020 (until April 17, 2020, due to compliance with the school on preventive isolation due to Covid-19 in public schools established by the Colombian Government through Decree 457 of 2020), there were changes in the configuration of some groups due to the natural behavior of the enrollment processes. Also, in most cases, boys and girls moved on to the next grade and their responses can correspond to all the years considered, a few others repeated the year and doubled the records. For these reasons, data were collected by grade and year. The exercise of this research was carried out in an ordinary session of classes at the beginning of the school year (diagnostic classes) where an open question was asked, and the children were asked the following: Write the word that you consider most similar to the concept of Peace. In the explanation, it was mentioned in detail that the students had to write a short word or explanation that for them meant the same as "Peace", that was a synonym for them or that evoked a state of peaceful coexistence with other people.

In this research the ethnographic methodology appropriate to the educational context was applied (mixed approach of exploratory character). The concept of "classroom ethnography" or "school ethnography" is usually defined as an ethnography carried out in the specific field of school (Stenhouse, 1984; Goetz and Lecompte, 1988; Martínez Rodríguez, 1990; Aguirre Baztán, 1995; Rojas, 1996; Parra Sabaji, 1998; Serra, 2004; Ortiz Cobo, 2006; Jociles and Franze, 2000 8; Álvarez, 2011). According to this definition, the ethnographer in the classroom must live continuously with the group that studies in order to facilitate the dialectical understanding between social interactions and meanings. This process helps to achieve holistic relations between cultural objects through reflective description. Following the above, a technique that adapts very well to these needs is participant observation, combined with the interview and the survey. These three mechanisms related to the inspection of the data allow to obtain a robust set of information (Goetz and Lecompte, 1988; Álvarez, 2011).

The answers to the question were used as a source of open survey information and were systematized in Excel and then in a table of SPSS v16, counting each time the synonym appeared. Some students interested in the exercise helped systematize information in Excel and subsequent classroom discussions in the class. The analysis was made by degrees, years and variables. A set of 27 common variables was obtained for all groups

in all years. The criterion was that the endpoint should occur at least once in all grades during the five years observed. There were 49 cases that mentioned anonymous or non-corresponding variables (empty or unknown) and were excluded from the database. Statistical procedures suggested by several authors were followed (Pessat, 1966; Pérez-Tejada, 2008; Congacha, 2015). The first step of the analysis was to calculate the descriptive statistics of each variable in each year. Then, a goodness of fit test was performed to check if the distributions of each data set corresponded to a normalized distribution. In this step, the H0 referred the sets of data of grades and years obtained from standardized samples. Because in most cases the samples for each grade and year approached or exceeded 50 individuals (opinions), it was decided to use the Kolmogorov-Smirnov tests:

$$KS = \sup | F_n (X_i) - F_o (X_i) | 1 \leq i \leq n$$

Where KS is the largest absolute difference observed between the cumulative frequency (*Fn*) of the i-th value observed in the sample and the theoretical cumulative frequency (*Fo*), obtained from the probability distribution that is specified as null hypothesis.

The second step was the application of the hypothesis test to check if there were significant differences between the sets of peace synonyms of each group and year. In this step, the H0 proposed was that the compared degrees are similar in their means. The T-student test was applied for those data sets with normalized distributions. Mann-Whitney U test was applied for data sets with non-normalized distributions:

$$\text{T-}s = (x\text{-}\mu)/(s/\sqrt{n})$$

Where T-*s* is equal to the average of the variable x minus the population average μ, divided over the standard deviation of *n*. On the other hand, for the Mann-Whitney test, U is equal to the sample sizes *ni* compared to the sums of the ranges of both samples *ri*:

$$U = \Sigma\, (n_{1i}\, n_{2i} + (n_i+1)/2) - r_{1i}\, r_{2i}$$

3. Results

The Kolmogorov-Smirnov test for the variables allows rejecting or not the H0. In most cases the hypothesis is not rejected, but in the cases of the variables Patience, Justice, Agreement, Tolerance, Hope, Protection it is rejected. This means that these variables come from datasets with non-normalized distributions. A significant difference was found in the frequency of some concepts such as respect, dialogue, honesty and tolerance. When comparing grade 6 with grade 9, there is a significant difference when using the concept of respect as a synonym for peace. The same corresponds to the concept of dialogue when comparing grades 6 to 8 and 8 to 9. The concept of honesty demonstrates significant differences when comparing grades 6 to 7 and 8 to 9. Finally, the concept of tolerance shows significant differences when comparing grades 8 and 9. Kolmogorov-Smirnov goodness of fit test results are shown in Table 1:

Table 1

Kolmogorov-Smirnov Test Results

Variable	Normal parameters	More marked differences				Kolmogo-rov-Smirnov Z	Sig. asynt. (bilateral)	H_o is approved
	Mean	Typical deviation	Absolute	Positive	Negative			
Tranquility	2.2	0.834	0.245	0.245	-0.205	1.095	0.182	Si
Love	2.25	0.91	0.258	0.258	-0.192	1.155	0.139	Si
Solidarity	2.45	1.146	0.184	0.166	-0.184	0.825	0.505	Si
Harmony	2.1	1.165	0.284	0.284	-0.173	1.271	0.079	Si
Respect	2.55	1.234	0.222	0.222	-0.128	0.993	0.278	Si
Considera-tion	2.15	1.04	0.216	0.216	-0.193	0.964	0.31	Si
Union	2.35	1.348	0.302	0.302	-0.158	1.352	0.052	Si
Kindness	2.45	1.099	0.209	0.209	-0.142	0.934	0.347	Si
Dialogue	2.25	0.967	0.202	0.202	-0.181	0.904	0.388	Si
Liberty	2.15	1.137	0.252	0.252	-0.156	1.129	0.156	Si
Equality	2.15	1.137	0.302	0.302	-0.198	1.353	0.051	Si
Equity	2.4	1.046	0.249	0.249	-0.151	1.113	0.168	Si
Trust	2.25	1.251	0.229	0.229	-0.159	1.025	0.244	Si
Stillness	1.85	0.988	0.255	0.255	-0.195	1.141	0.148	Si
Calmness	2.25	1.118	0.288	0.288	-0.212	1.29	0.072	Si
Opinion	1.95	0.887	0.258	0.258	-0.232	1.153	0.14	Si
Honesty	1.6	0.598	0.298	0.292	-0.298	1.333	0.057	Si
Help	1.7	0.865	0.291	0.291	-0.209	1.301	0.068	Si
Patience	1.65	0.988	0.345	0.345	-0.255	1.541	0.017	Si
Justice	1.75	1.07	0.308	0.308	-0.242	1.379	0.045	Si
Loyalty	2	0.795	0.3	0.3	-0.25	1.342	0.055	Si
Compren-hension	2.05	0.887	0.222	0.222	-0.178	0.995	0.275	Si
Agreement	1.65	0.875	0.321	0.321	-0.229	1.436	0.032	Si
Solution	1.6	0.598	0.298	0.292	-0.298	1.333	0.057	Si
Tolerance	1.65	0.875	0.321	0.321	-0.229	1.436	0.032	Si
Hope	1.15	0.489	0.52	0.52	-0.38	2.327	0	Si
Protect	1.1	0.308	0.527	0.527	-0.373	2.358	0	Si

Note. Concepts that do not approve the H0 are in gray.

Hypothesis tests were performed for paired groups considering the goodness of fit test. The objective in this step was to test the H0 between pairs of degrees and to observe if there were significant differences between the means of each concept. The test for normalized groups is shown in Table 2 and the test for non-normalized groups in Table 3. Table 4 collects the results of the rejection or not of the H0 in this research, i.e., that the grades of students do not present significant differences between the means of the distributions for each variable compared.

Table 2

T-student test results for grades with normalized means

	t test for mean equality among grades with																	
	Grades 6 y 7			Grades 6 y 8			Grades 6 y 9			Grades 7 y 8			Grades 7 y 9			Grades 8 y 9		
	t	gl	Sig.	t	gl	Sig.	t	gl	Sig.	t	gl	Sig.	t	gl	Sig.	t	gl	Sig.
Tranquilidad	.000	8	1.000	.577	8	.580	-.632	8	.545	.943	8	.373	-1.265	8	.242	-1.789	8	.111
Amor	1.206	8	.262	1.890	8	.095	.894	8	.397	.302	8	.771	-.667	8	.524	-1.342	8	.217
Solidaridad	.516	8	.620	1.089	8	.308	.211	8	.838	.784	8	.455	-.254	8	.806	-.802	8	.446
Armonía	.873	8	.408	.930	8	.380	1.549	8	.160	.000	8	1.000	.667	8	.524	.784	8	.455
Respeto	1.270	8	.240	1.807	8	.108	2.546	8	.034	.566	8	.587	1.265	8	.242	.649	8	.535
Consideración	.000	8	1.000	-.739	8	.481	.000	8	1.000	-.885	8	.402	.000	8	1.000	1.000	8	.347
Unión	1.789	8	.111	.385	8	.710	1.492	8	.174	-1.897	8	.094	-.447	8	.667	1.443	8	.187
Amabilidad	2.021	8	.078	1.033	8	.332	1.131	8	.291	-.949	8	.371	-1.095	8	.305	.000	8	1.000
Diálogo	-2.121	8	.067	-4.000	8	.004	-1.500	8	.172	-.667	8	.524	1.000	8	.347	2.236	8	.056
Libertad	-1.387	8	.203	-2.214	8	.058	-1.500	8	.172	-.447	8	.667	.535	8	.608	1.206	8	.262
Igualdad	.873	8	.408	.825	8	.433	1.132	8	.290	.000	8	1.000	.535	8	.608	.408	8	.694
Equidad	-1.443	8	.187	-.649	8	.535	-1.890	8	.095	.788	8	.453	.000	8	1.000	-.973	8	.359
Confianza	.400	8	.700	.802	8	.446	.447	8	.667	.250	8	.809	.000	8	1.000	-.302	8	.771
Quietud	.283	8	.784	.000	8	1.000	-.485	8	.641	-.447	8	.667	-.849	8	.421	-.649	8	.535
Calma	.422	8	.684	.422	8	.684	.647	8	.536	.000	8	1.000	.408	8	.694	.408	8	.694
Opinión	-.649	8	.535	.316	8	.760	-.649	8	.535	1.095	8	.305	.000	8	1.000	-1.095	8	.305
Honestidad	-3.162	8	.013	.000	8	1.000	-1.633	8	.141	.000	8	1.000	1.500	8	.172	2.449	8	.040
Ayudar	.566	8	.587	.000	8	1.000	.000	8	1.000	-.730	8	.486	-.894	8	.397	.000	8	1.000
Lealtad	.000	8	1.000	-.949	8	.371	-.535	8	.608	-.949	8	.371	-.535	8	.608	.784	8	.455
Comprensión	.000	8	1.000	.577	8	.580	.302	8	.771	.756	8	.471	.408	8	.694	-.408	8	.694
Solución	.447	8	.667	.447	8	.667	.894	8	.397	.000	8	1.000	.577	8	.580	.577	8	.580

Note. the concepts that do not approve H0 are in gray.

Table 3

U Mann-Whitney Test Results for Grades with Non-Normalized Means

	U test for mean equality among grades with non-norm distributions											
	Grades 6 y 7		Grades 6 y 8		Grades 6 y 9		Grades 7 y 8		Grades 7 y 9		Grades 8 y 9	
	U	Sig.	U	Sig.	U	Sig.	U	Sig.	U	Sig.	U	Sig.
Tolerancia	11.500	.811	10	0.513	5.5	0.118	9.5	0.439	8.5	0.381	4	0.054
Esperanza	10.000	.317	12.500	1.000	10.000	.317	10.000	.317	12	0.881	10	0.317
Proteger	10.000	.317	12.500	1.000	10.000	.317	10.000	.317	12.5	1	10	0.317
Paciencia	10.500	.606	11.000	.735	11.500	.811	9.000	.408	11	0.699	9	0.419
Justicia	12.500	1.000	9.000	.432	11.500	.811	9.000	.432	11.5	0.811	8	0.309
Acuerdo	8.000	.309	12.500	1.000	11.500	.811	8.000	.309	9	0.432	11.5	0.811

*Note.*The concepts that do not approve H0 are in gray.

4. Discussion and conclusions

It was possible to identify two types of concepts associated with peace: 1. Those which are frequently used by most of the high school students and whose association with the concept of peace is similar during the six years at school. These concepts can be called "stable" and belong to the set of elements of meaning that help our students to understand and act based on a peaceful coexistence scenario in the educational community. These concepts also enrich the language that can be used in the teaching-learning process in the area of peace subject, 2. Those concepts that are infrequent and have notable differences (meaning) between some students. These concepts can be called "unstable" and they create a set of dissimilar ideas that allow to broaden and diversify the students' understanding of the peaceful life they build. Despite the differences recorded in the analysis, all concepts are part of the explicit diversity of meanings that our student associate and apply in the daily coexistence process.

From the pedagogical point of view, the "stable" concepts identified can help to mediate and facilitate the teaching process of the teacher through its articulation and inclusion in activities, readings and practices in the classroom. This may suggest more participation of students in the curriculum design of the subject, in the feedback of participatory components by adjusting the coexistence manual, and in the design of clear strategies for solving conflicts among students. As a whole, the "stable" concepts help to familiarize the pedagogical practice with the learning process of the student, having a direct impact on the improvement of the strategies for qualitative and quantitative assessment of the components of the social sciences area and their reflection in competencies that the student will remember more easily in the future. A pragmatic use of these learnings can help to reflect progress in external tests on civic competences.

On the other hand, the "unstable" concepts identified can contribute to establish other exercises in the pedagogical practice, seeking to establish positive and constant associations that allow to include them progressively in the experiential process of peaceful coexistence. They also constitute future research to distinguish why abrupt differences between grades occur in students when these concepts are used.

In general terms, the "unstable" concepts identified in this research are used daily by students as synonyms of peace and are part of their concepts about what it means to live peacefully together. A greater scope in its meaning shows that the school context, as a research element,

allows understanding peace as an object of study that brings together a set of emotional states and diverse social interactions between the actors of the educational community. The concept of Respect has been identified, and its use as synonym of a state or sense of peace among students changes and differs between grades 6 and 9. In this sense, the progressive relationship of closeness and treatment between students delimits a space of trust that generates reasons for them to carry out peaceful coexistence in small groups. Respect as a synonym of peace can indicate an element of change in social interaction that is important in the social growth of students. In the four years of difference between baccalaureate degrees, students experience processes of social interaction that lead them to configure and integrate this concept in their representation system and application of peaceful coexistence. Similarly, it is observed how something similar happens between students of grades 6 and 8 when they use the concept of dialogue.

From this point, dialogue is established as an important resource to build individual references about those actions that allow living in harmony with others. On the other hand, there are significant changes in the differences between grades 8 and 9, when concepts such as honesty and tolerance are referred to as peace synonyms. This may be due to the accelerated change in the levels of academic demands, the confrontation with new academic and family scenarios, the pressures exerted by interest groups and friendship groups, all of them hypothetical and impossible to associate directly with this research, opening interesting research that can be conducted in the future. In a year, honesty and tolerance go from being with little-quoted concepts to becoming main elements in the meaning of a peaceful coexistence environment. Their learning and resignification can be a generator of conflicts that are sporadically reflected among some students.

Overall, this research has led to indicators of change when relating diverse concepts with peace. At the institutional level, it will allow the use of indicators to evaluate and adjust pedagogical and curricular elements more related to the local environment and the context of the classroom, assessing its usefulness. Finally, at the academic level, it has allowed to broaden the understanding of the relationship between the classroom and the local community, allowing the application of ethnographic techniques and statistics as part of the pre-pedagogical process and enriching the teaching-learning dichotomy of the high school curriculum in the aforementioned school.

References

Aguirre, A. (1995). *Etnografía. Metodología cualitativa en la investigación sociocultural.* Marcombo. https://bit.ly/3NMYnDq

Álvarez, C. (2011). El interés de la etnografía escolar en la investigación educativa. *Estudios Pedagógicos XXXVII, 2*, 267-279. https://bit.ly/3NO4nM0

Ávila, R., (2005). La producción de conocimiento en la investigación acción pedagógica (IAPE): balance de una experimentación. *Educaçao e Pesquisa, Sao Paulo, 31*(3), 503-519. https://bit.ly/3TlO3mM

Cardozo-Rusinque, A. A., Morales, A. L. and Martínez, P. A. (2020). Construcción de paz y ciudadanía en la Educación Secundaria y Media en Colombia. *Educ. Pesqui., 46.* São Paulo. https://bit.ly/3Up6OqY

Congacha J. W. (2015). *Estadística aplicada a la educación con actividades de aprendizaje.* EAE Publishing. https://bit.ly/3WIIm5s

Goetz, J. P. and Lecompte, M. D. (1988). *Etnografía y diseño cualitativo en investigación educativa.* Morata. https://bit.ly/3NRr567

Guzmán, G., Fals-Borda O. and Umaña E. (2017). *La violencia en Colombia.* Tomo I. Imprenta Pontificia Universidad Javeriana. https://bit.ly/3DSLsuV

Jociles, M. I. and Franze, A. (2008). *¿Es la escuela el problema? perspectivas socio-antropológicas de etnografía y educación.* Trotta. https://bit.ly/3WKVwio

Laguna, J. A. and Sánchez, A. (2005). *El maestro investigador: alternativas didácticas para su preparación inicial*. Universidad Pedagógica Holguín de Cuba.

Marrugo-Peralta, G., Gutiérrez-Hurtado, J. and García, I.C. (2016). Estrategia de convivencia escolar para la formación de jóvenes mediadores de conflictos. *Revista Escenarios, 14*(1), 72-84. https://bit.ly/3NOSMwa

Martínez Rodríguez, J. B. (1990). *Hacia un enfoque interpretativo de la enseñanza: etnografía y curriculum.* Servicio de Publicaciones de la Universidad de Granada. http://bit.ly/3OxOIAQ

Mckernan, J. (1999). *Investigación-acción y curriculum.* Morata. https://bit.ly/3tcyiE7

Ortiz Cobo, M. (2006). La mediación intercultural en contextos escolares: reflexiones acerca de una etnografía escolar. *Revista de Educación, 339*, 563-594. https://bit.ly/3FYaV92

Ossa Montoya, A. F. (2015). Lo pedagógico y el maestro investigador. *Revista Virtual Universidad Católica del Norte, 44,* 102-118. https://bit.ly/3EyNMaS

Parra Sabaj, M. E. (1998). La etnografía de la educación. *Cinta de Moebio: Revista de Epistemología de Ciencias Sociales, 3,* 64-81. http://bit.ly/3ACHcPk

Pérez-Tejada, H. E. (2008). *Estadística para las ciencias sociales, del comportamiento y de la salud.* Cengage Learning Eds. https://bit.ly/3hlFZW1

Pessat, R. (1966). La práctica de la demografía. Fondo de Cultura Económica. https://bit.ly/3UH8JH0

Porlán, R. and Martín, J. (1991). *El diario del profesor. Un recurso para la investigación en el aula* Diada. https://bit.ly/3ThjX3X

Porlán, R. (1987). El maestro como investigador en el aula. Investigar para conocer, conocer para enseñar. *Revista Investigación en la Escuela, 1,* 63-69. https://bit.ly/3hotg4U

Presidencia de la República de Colombia. (2020). Ministerio del Interior, Decreto 457 del 22 de marzo de 2020: por el cual se imparten instrucciones en virtud de la emergencia sanitaria generada por la pandemia del Coronavirus Covid-19 y el mantenimiento del orden público, Bogotá. https://bit.ly/3TjP0we

Quiceno, H. (2002). La expedición: una pedagogía nueva, una nueva escuela. *Revista Nodos y Nudos, 2*(3), 3-10. https://bit.ly/3DUiXgn

Restrepo, B. (2003a). Investigación-acción pedagógica: variante de la investigación-accion educativa que se viene validando en Colombia. *Revista Universidad de La Salle, 42,* 92-101. https://bit.ly/3tcwTgX

Restrepo, B. (2003b). Investigación formativa e investigación productiva de conocimiento en la universidad. *Revista Nómadas, 18,* 195-206. Universidad Central de Bogotá, https://bit.ly/3zYaDeE

Rojas Soriano, R. (1996). *Investigación-acción en el aula.* Plaza y Valdés.

Serra, C. (2004). Etnografía escolar, etnografía de la educación. *Revista de Educación, 334*, 165-176. http://bit.ly/3GIhQDE

Stenhouse, L., (1984). *Investigación y desarrollo del curriculum.* Morata. https://bit.ly/3WPuAxR

Vélez, M. (1980). Note. sobre la investigación en educación. *Revista Colombiana de Educación, 7,* 46-47. https://bit.ly/3hudohv

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Conceptions on disability of Spanish university students

Concepciones sobre la discapacidad de estudiantes universitarios españoles

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Abstract

In the context of education and, specifically, in the university stage, the presence of people with disabilities in Higher Education is today a reality, both in Spain and in other international contexts. Currently, there is a global movement that claims the right to access, permanence and success of non-traditional students, including those with disabilities. This study aims to present and analyze the conceptions of 676 university students (undergraduate and postgraduate) from different areas of knowledge of the University of Seville (Spain) on disability. A quantitative methodology has been used with the application of the Intercultural Scale of Disability Concepts (EICD). The results showed a preponderance of the social conception of disability, followed by the biological/medical aspects. Differences were observed in relation to the variables analyzed, younger university students and those who were doing postgraduate studies indicated the prevalence of statements linked to the social model of disability. No significant differences were found between participants with and without disabilities. Among the conclusions, we can highlight the relevance of understanding disability as a social phenomenon for the offer of inclusive psychosocial and psychoeducational practices. This decision then reveals that accepting the review of social paradigms to resignify concepts in the social conception of disability is a possible for the recognition of the differences that constitute the human.

Keywords: University students, disability, concept formation, evaluation measures, public policy, social psychology.

Resumen

En el contexto de la educación y, concretamente, en la etapa universitaria, la presencia de personas con discapacidad en la Educación Superior es hoy en día una realidad, tanto en España como en otros contextos internacionales. En la actualidad, existe un movimiento global que reivindica el derecho al acceso, permanencia y éxito de estudiantes no tradicionales, entre los que se encuentran las personas con discapacidad. Este estudio pretende presentar y analizar las concepciones de 676 universitarios (grado y posgrado) de diferentes áreas de conocimiento de la Universidad de Sevilla (España) sobre la discapacidad. Se ha utilizado una metodología cuantitativa con la aplicación de la Escala Intercultural de Conceptos de Discapacidad (EICD). Los resultados mostraron una preponderancia de la concepción social de discapacidad, seguida de los aspectos biológicos/médicos. Se observaron diferencias en relación con las variables analizadas, universitarios más jóvenes y aquellos que realizaban estudios de posgrado señalaron la prevalencia de afirmaciones vinculadas al modelo social de discapacidad. No se encontraron diferencias significativas entre los y las participantes con y sin discapacidad. Entre las conclusiones, podemos destacar la relevancia de la comprensión de la discapacidad como un fenómeno social para la oferta de prácticas psicosociales y psicoeducativas inclusivas. Esta decisión revela entonces que, aceptar la revisión de los paradigmas sociales para resignificar conceptos en la concepción social de la discapacidad, es un camino posible por el reconocimiento de las diferencias que constituyen lo humano.

Descriptores: Estudiantes universitarios, discapacidad, formación de conceptos, medidas de evaluación, política pública, psicología social.

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1. Introduction

Disability is a complex, multidimensional phenomenon and is constructed according to different cultural, social and historical contexts (Gallagher *et al.*, 2014). This notion implies an interaction between the biological characteristics (sensory, intellectual, motor and emotional functions of people) and the characteristics of the society in which they live (attitudes, accessibility to transportation and infrastructure, or social support) (Organización Mundial de la Salud, 2018).

Studies reveal that theoretical models that explain the understanding of the phenomenon of disability have been and continue to be marked by contradictions to discuss disability as a constitutive mark of the human in the historical-cultural context (Martins, 2013).

Society has looked at people with disabilities from different perspectives. Following the model proposed by Leite and Lacerda (2018), some people show an organic conception of disability as the possibility of [...] "the individual to interpret disability as an inherent attribute of the individual, adopting as a reference the deviation of an organic pattern of normality, or the presence of a failure or limit leading to a malfunction of a given organism [...]" (p. 436). Other people show a psychosocial conception, interpreting disability as [...] "a distinct organic condition, associated with causal factors of social, emotional, economic and/or educational nature that influence the human condition [...]" (p. 436). Other people show a historical-cultural conception and disability is explained "[...] as dynamic, relational and processual based on an association between individual and sociocultural context, causing a differentiated human development, adjustable according to expectations and attitudes towards it [...]" (p. 436). Finally, the authors point out that there are people who show a metaphysical conception linked to the vision that characterizes disability [...] "as something that transcends the human condition, and may be linked to spiritual and/or religious causes, or to supernatural factors. Therefore, it is a phenomenon set in motion, which depends little on the action of man [...]." (p. 436).

In a complementary way and in relation to the understanding of disability by the metaphysical conception in medieval times, it is justified to transcend the human responsibility, the metaphysical conception, superimposing the idea of having a demonic soul or divine designs (Pessotti, 1984). For this reason, such position of Strelhow (2018) states that this conception of disability is represented in the Christian tradition, which shows that this is a complex issue, and it is necessary to understand it as a phenomenon attributed to people in this condition. In making a historical digression, the author analyzes the influence of Christianity in the interpretation of disability today, stating that it is not [...] rare to find common sense speeches that qualify people with disabilities as "a gift from God, angel, enlightened, the will of God" (Strelhow, 2018, p. 276). Because of this religious influence, it is quite common for people with disabilities to adopt charitable practices, i.e., reproducing the care of Christian communities in earlier times.

From another theoretical model, a difference is made between the medical and social conception of disability (Oliver, 1990). In the first one, it is assumed that the problem is in the person and must be solved by experts based on a diagnosis. In other words, the focus is on "normalizing" disability (Barton, 1996), moving closer to organic conception. However, it is necessary to move towards a conception of disability based on the social model of disability (Moriña and Carnerero, 2020), approaching the social conception. The understanding of disability as a social phenomenon has allowed us to think of diversity as something distant from the homogenizing model that denies difference as constitutive of the human being. Hence the social model of disability seeks to overcome the clinical biomedical model of normality, respecting human

diversity, regardless of the different functional limitations existing in the individual.

In the social model of disability, political and practical attitudes generate barriers and/or aids access, as well as the participation of the person in different contexts. (O'Byrne *et al.*, 2019). Therefore, social, cultural and economic structures can be more or less disabling and oppressive to people with disabilities (Cunnah, 2015; Hutcheon and Wolbring, 2013). In Ochoa's words, social inclusion and equity in access to rights favor the implementation [...] of participatory strategies, creating the conditions and mechanisms necessary for everyone to participate (2019, p. 193).

In the context of education specifically at the university, the presence of people with disabilities in higher education is now a reality, both in Spain and in other international contexts. Today, there is a global movement that claims the right to access, stay and success of non-traditional students[1], including those with disabilities (Sandoval *et al.*, 2020). In fact, there is an increase in these students in higher education institutions. As an example, in Spain, in 2011 there were 12 775 students, which increased in 2018 to 21 435 (Fundación Universia, 2018).

As for studies on conceptions[2] about disability at the university, a work conducted by Baker *et al.* (2012), explored the conceptions of both students with disabilities and without disabilities. The data suggest conceptions based on the social model, showing signs of educational inclusion. Regarding the conceptions of students with disabilities, it is highlighted that they felt welcome and included at the university. Another study analyzed that university students demonstrate a positive attitude towards disability and that their conceptions approximated the social model of disability (Leiva *et al.*, 2019).

On the other hand, the systematic review on conceptions of disability of the teachers and students conducted by Moriña and Carnerero (2020) studied that the conceptions mainly rely on the medical model, i.e., organic conception. Therefore, disability is considered as an inherent problem of the person (Eleftheriou *et al.,* 2013; González and Cortés, 2016). One conclusion of this study is that conceptions determine attitudes and practices towards an inclusive educational response towards people with disabilities (Hockings *et al.,* 2012; Van Jaarsveldt and Ndeya-Ndereya, 2015). Other research has found that attitude towards disability is related to variables such as gender, education or relationships with people with disabilities and professional experience (Graça *et al.*, 2018; Polo *et al.*, 2020). In this regard, women appear to have more positive attitudes towards disability than men (Li *et al.*, 2012; Novo-Corti *et al.*, 2015).

A correlation has also been found between training and conception of disability, i.e., the attitude is more positive at a higher academic level. Specifically, Goddard and Evans (2018) noted that university students in the last years of their training were more sensitized towards their classmates, suggesting that training favors inclusive responses to disability. In this line, it has been considered that the information and training on disability offered at the university seems to determine attitudes towards them (Diego, 2017).

In addition, Bain and Hasio (2011) mention that direct experience with students with disabilities helps college students analyze their own belief to work with these classmates. Gibbons *et al.* (2015) and Polo *et al.* (2020), say that university students who have frequent contacts with people with disabilities show a more positive attitude towards them. Likewise, other

1 Students who traditionally have not had access to university, such as: women, mature students, students from disadvantaged socioeconomic backgrounds, as well as those with disabilities and many others.

2 Conception is defined as a way of "... understanding or interpreting some phenomenon that can guide the actions of the subjects against a certain object or situation. Therefore, the concept of disability is defined as a concept based on a theoretical-practical construct that guides actions based on it" (Leite ***et al.***, 2021, p. 574).

studies indicate that having relationships with family or friends with disabilities fosters a positive attitude towards inclusion in future teachers (Barr and Bracchitta, 2015; Goddard and Evans, 2018). Polo *et al.* (2020) mention the importance of previous experiences with people with disabilities to improve the attitudes of students at the university towards them.

Regarding professional experience, it seems that the positive attitude for inclusion is related to the teaching experience, so that more experienced teachers, usually older teachers, show more positive attitude about inclusion (Čagran and Schmidt, 2011; Forlin *et al.*, 2011).

In short, the different studies analyzed relate conceptions of disability and more participation of people with disabilities in the educational context (Varcoe and Boyle, 2013). These findings reveal the need for inclusive universities (Moriña, 2017). This way of understanding disability as constitutive of the human being can be the "antidote" to fight the deficient conceptions of disability (Liasidou, 2014) and exclusion practices; promote the elimination of barriers that prevent students from accessing knowledge and participation; recognize and value diversity (Ainscow, 2020).

Because of the latter and understanding that the presence of students with disabilities is increasing in higher education in different university contexts (Carballo *et al.*, 2019), this study aims to present and analyze the conceptions of disability in students in a University of Spain. The article is part of a broader research on an international network[3], of which the University of Seville is a collaborator. The study aims to analyze the relationships according to some variables, such as area of specialization and/or academic background, enrollment periods (freshmen and/or graduates), age group and gender.

2. Methodology

2.1 Instruments and participants

Data collection was carried out by applying the Intercultural Scale of Disability Concepts-EICD, [4] composed of statements referring to the three main aspects of the concepts of disability: biological, social and metaphysical (religious). The scale is composed of 43 items, distributed in 17 items for biological conception, 15 for social conception and 11 for metaphysics, followed by five alternative answers (Likert type), of which only one could be marked by the participant. Each item is sorted with values: totally disagree (1), disagree (2), neither disagree nor agree (3), agree (4), and totally agree (5).

The total sample consisted of 676 students who completed the entire form. The details of the participants are described in Section 3 of the Results.

2.2 Data collection

Respecting the ethical procedures of human research, data collection was carried out with the consent and participation of the group surveyed. A form was requested through the Google Forms platform, first asking for information about the course, studies, campus, country of origin, year of birth, gender, if the person has a disability and other variables to profile the sample. The second part of the form presented an initial description with guidelines for its completion.

The online collection was available on the website of the University of Seville, after being approved by the different faculties. We contacted the team of all faculties to inform and distribute the survey to the students. They were all postgraduate students of the institution. Data

3 Research entitled "Conceptions of disability in university students: studies in different international contexts", funded by FAPESP/Brazil, Proc. 2017/12721-5. It is international research and presents a favorable opinion of the Ethics Committee in Research, registered in the Brazilian Platform, under the protocol CAAE 84374018.2.1001.5398.

4 Validation processes and reliability of the instrument, through psychometric studies, were published in Leite *et al.* (2021)

collection began at the end of March and ended in October 2019. This period was extended due to the summer holidays of the university.

2.3 Data analysis

Data was initially tabulated and coded in Excel, and later introduced to IBM SPSS version 20 statistical analysis software. The data were processed by the software and general descriptive analyzes and parametric inferential analyzes were performed, such as Pearson's corrections, the Student's T-test and the ANOVA.

3. Results

This research is a mixed study, which included statistical treatment, descriptive and inferential analysis, as well as interpretative analysis of the results obtained. The total sample consisted of 676 students who completed the entire form, and who are between 17 and 55 years old (year of birth, minimum 1964 and maximum 2002). The gender distribution was not homogeneous, 485 (71.7%) of the students mentioned they were women, 181 (26.8%) said they were men, 2 (0.3%) declared themselves "other" and 8 (1.2%) "preferred not to respond".

Of the overall sample, 20 (3%) declared themselves disabled and 656 (97%) were non-disabled. Among the types of disability were Asperger's, auditory, physical, visual and others. Most students 634 (93.8%) were studying at the university and 42 (6.2%) in post-graduate school. The sample of participants came from 38 different courses, distributed in the main areas of knowledge, being 529 (78.3%) of the human area, followed by 87 (12.9%) of the exact area and 60 (8.9%) related to the biological area.

As for the year of admission, 187 (27.7%) participants entered university in 2019, in a range from 2011 to 2019. Around the year in which the students were part of the research, almost half, i.e., 321 (47.5%) were freshmen. It is reported that the largest number of participants, 569 (84.2%), were enrolled in four-year courses.

The Intercultural Scale of Conceptions of Disabilities (EICD) has the following ranges of disagreement or agreement. The number of items, the minimum and maximum values and the cut-off value in each of the three conceptions are: i) social conception (15 items, with values ranging from 15 to 30 —disagreement, 31 to 37.4 —tendency to disagree, 37.5 to 59 —tendency to agree and 60 to 75 —agreement with 37.5 as cut-off); ii) biological conception (17 items, values ranging from 17 to 34 —disagreement 35 to 42.4 —tendency to disagree 42.5 to 67 —tendency to agree and 68.5 —agreement, with a cutoff value of 42.5); iii) metaphysical conception (11 items, values from 11 to 22 —disagreement, 23 to 27.4 —tendency to disagree, 27.5 to 43 —tendency to agree and 44 to 55 —agreement, with a cutoff value of 27.5).

Table 1

Disability score and descriptive concepts

	Social	Metaphysical	Biological
Mean	47.45	14.44	49.42
Median	48.00	11.00	50.00
Mode	45	11	51
Standard deviation	11.535	6.730	11.808
Minimum	17	11	19
Maximum	74	55	81

The high standard deviation indicated a heterogeneous sample in all conceptions, mainly in the social and biological conception. Another relevant data from Table 1 is that participants tend to agree with the statements of these conceptions when analyzing means, but there was no mean indicating full agreement with any of the three conceptions investigated. For the statements of the metaphysical conception, there is a position indicating disagreement with this factor.

The Pearson correlation test was performed to identify if there was a significant correlation for the dimensions of disability with the year of birth of the participants. Table 2 indicates that there was an inverse proportional correlation of the year of birth (older age) of participants with the social dimension, i.e., a greater tendency to agreement was observed as age increased. It was also tried to identify if there was a significant correlation of the conceptions also with the academic year of the students, and a significant correlation directly proportional to the social conception was identified, i.e., more advanced students usually present a social conception of the disability and inversely proportional correlations were identified in the biological and metaphysical conceptions, indicating that the students of the first years tend to be more in agreement with these conceptions.

Table 2

Correlation of conceptions with year of birth and academic year

Year of birth	Social	Metaphysical	Biological
Pearson correlation	-.121	.066	-.003
p	**.002**	.087	.945
N	676	676	676
Pearson correlation	.136**	-.075*	-.081*
p	**.000**	**.050**	**.036**
N	676	676	676

In Table 3, the sample was divided into two groups, undergraduate and graduate students, and scores were compared according to these subgroups. The analysis of the data shows significant differences between both groups. Specifically, it has been found that social conception is more present in postgraduate students and biological and metaphysical in undergraduate students.

Table 3

Comparison of means between undergraduate and graduate students

	Groups	N	Mean	Typical deviation	Student T (p)
Social	Degree	634	46.89	11.422	0.000
	Master	42	**55.93**	9.898	
Metaphysical	Degree	634	**14.62**	6.868	0.000
	Master	42	11.71	3.055	

	Groups	N	Mean	Typical deviation	Student T (p)
Biological	Degree	634	**49.77**	11.662	0.000
	Master	42	44.12	12.843	

Regarding gender, only statistically significant differences were found in the biological conception of disability. This conception was more present in men than in women (Table 4).

Table 4

Comparison of means according to gender

	Groups	N	Mean	Typical deviation	p	T
Social	Female	485	47.94	11.767	0.138	1.48
	Male	181	46.44	10.963		
Metaphysical	Female	485	14.43	6.854	0.703	-0.38
	Male	181	14.65	6.553		
Biological	Female	485	48.52	11.571	0.000	-0.35
	Male	181	52.14	11.927		

Another objective of this work was to compare the conceptions of disability presented by students with and without disability. The data collected in Table 5 show that students with disabili-ties have a higher average in social and biological dimensions, although these differences were not statistically significant.

It is interesting to note the results of Table 5, where it is observed that the difference be-tween the responses was very narrow for the two subgroups, students with and without disabilities. Specifically, the highest recurrence rate was found in the social dimension, followed by the biologi-cal and metaphysical dimensions. These data suggest that students with disabilities, in proportion to the sample investigated, understand disability in a scaled vision similar to those who do not have any disability.

Table 5

Comparison of means between students with and without disabilities

	Groups	N	Mean	Typical deviation	P	T
Social	Disability	20	32.90	11.369	0.874	-0.12
	Without disability	656	28.42	11.753		
Metaphysical	Disability	20	14.60	8.127	0.234	1.22
	Without disability	656	11.90	3.403		
Biological	Disability	20	31.30	16.887	0.181	1.33
	Without disability	656	26.56	11.290		

Finally, the ANOVA test was applied to verify possible differences in mean between the participants according to the areas of knowledge: exact sciences, human and biological. As seen in Table 6, significant differences were identified in the social and biological conceptions according to the different areas of knowledge.

Table 6

Comparisons of means among participants according to the area of knowledge

	Groups	N	Mean	Typical deviation	P	F
Social	Human	529	47.75	11.851	**0.006**	5.23
	Biological	60	**49.78**	8.477		
	Exact	87	44.06	10.803		
Metaphysical	Human	529	14.56	6.709	0.555	0.58
	Biological	60	14.48	6.806		
	Exact	87	13.71	6.839		
Biological	Human	529	48.64	11.750	**0.003**	5.79
	Biological	60	51.28	11.348		
	Exact	87	**52.91**	11.824		

On the one hand, it was found that the social conception was more present in participants belonging to the biological sciences, followed by those who were part of the human sciences and exact, respectively. On the other hand, biological conception, linked to the medical model of disability was more present in students of the area of exact sciences.

Therefore, the data reveal that not necessarily students of the biological area are the ones who support a coherent conception with the biological model, medical model, and that it is also not the context of the study of the human sciences that reveals a social conception.

4. Discussion

The data generally allow inferring that either in general or when noted in the subgroups investigated (gender, age, academic year, area of knowledge, students with or without disability), there is a tendency according to statements that explain disability from a social and/or biological model, and disagreement with the metaphysical conception to understand disability.

Regarding gender, Rosado-Nunes (2005) stresses that men throughout the history of humanity seem to invest more in the production of the "sacred" in different societies, being responsible for the norms, rules, doctrines and beliefs of religions, while women are responsible for transmitting these religious beliefs and rituals, and in the context of the Spanish university, these differences are not observed.

In this regard, it should be noted that [...] "We face different identities (each of them representing different parts of us), from which it is possible to choose" (Hall, 2006, p. 75). The results problematize the correlation between gender and the conception of male students who have greater concordance with biological factors. In other words, they understand deficiency as an organic and individual phenomenon.

In general, women have played and continue to play secondary roles in the symbolic imaginary of the different peoples of society, such as those responsible for the surveillance of homes, motherhood, basic care of children and the family, and care for the unprotected, facts that may explain the differences observed.

In the results found on the conceptions of disability among university students, there are similarities between students with and without disability. When reviewing the studies dealing

with this topic (Ciantelli and Leite, 2020; Gesser *et al.*, 2012; Leite *et al.*, 2019), it is necessary to consider the role and contribution of social psychology in the debates on understanding the phenomenon of disability and its constitution in relation to the social, political, economic inclusion/exclusion processes of the sample. In this sense, it can be said that participants with disabilities in the Spanish university context, analogous to the other participants of the study, pointed to the social model as being the most recurrent. In this regard, social psychology can reduce the reductionist conceptions imposed on people with disabilities in our society.

To this reflection is added the role of society in the development of public policies that allow the access and participation of people with disabilities in the different academic spaces, and the services offered by those who study at the university. Studies in this regard have revealed that the role of future teachers or university students in the field of education is a key element in the development of inclusive practices with students with disabilities (Forlin, 2013; Kraska and Boyle, 2014).

The concordance of the social model of disability is more present in postgraduate students compared to undergraduate students. Similar findings were found by Gràcia *et al.* (2022), who identified attitudes towards disability of students of higher education at the University of Barcelona.

When comparing the results among the participants according to the areas of knowledge of their careers, it is observed that diverse conceptions are built in all the areas investigated (social, biological and metaphysical). On the other hand, the idea of a model initially proposed by the field of human and social sciences, i.e., the social model, is deconstructed; for example, nowadays it extrapolates to the different areas of knowledge (Diniz, 2013; Nepomuceno, 2019; Palacios, 2008; Santos, 2016). These differences may be related to the experiences lived by people with disabilities, family members, peers and friends with disabilities, which generate a more positive attitude for inclusion.

In this way, universities must move towards change and the development of strong, sustainable, flexible and inclusive curricula that address the needs of students with disabilities. Above all, they should promote the development of positive attitudes towards disability in future teachers. In this sense, it is important to highlight the need to review the curricula of education, paying special attention to the development of competencies and positive attitudes to achieve quality educational practices for all students (Kent and Giles, 2016). As concluded in some studies, having contact with people with disabilities has positive effects on attitudes regarding disability (Goddard and Evans, 2018).

Ultimately, universities should promote practical work experiences, especially with future teachers and students with disabilities, as such experiences promote a more positive attitude about people and students with disabilities (Barton-Arwood *et al.*, 2016).

5. Conclusions

As indicated by Barton (2009) or Gesser *et al.* (2012), ignoring disability in public policies related to leisure, housing, education, work and health is a major obstacle to understanding disability as a present reality in our society.

Therefore, to pursue the ideals of the struggle for a just, equitable and inclusive society, it is necessary to create policies that support and set the course for society, in which education is discussed as an inalienable right of all people in society.

In this scenario, we refer to the understanding of disability as a social phenomenon located in the historical-cultural context, based on fairer and more equal patterns for the distribution of world wealth, in favor of transformations, the material demands of infrastructure and human capital that aim to fulfill the rights of sustainable social, economic and cultural par-

ticipation of each state or nation, including the participation of people with disabilities.

It can be said, then, that the contemporary movement for an inclusive society indicates a revision of social paradigms, which allows resignifying concepts in the social conception of disability. In other words, it means accommodating all those who enter the educational system, promoting quality education, adapting to the needs of students, respecting the pace and processes of learning, thus opposing this society that disables and highlights the limitations to academic progress.

It is necessary to broaden the debate that seeks to shorten the perceptions of disability and its implications in the university context, since the university has a main role in the training of professionals committed to public policies aimed at guaranteeing social rights for all.

This approach is consistent with the principle and advocacy of an education system capable of promoting lifelong learning at all education levels, so that they can achieve the maximum possible development of their physical, sensory, intellectual and social talents and abilities. This is related to the claim that the inclusion of people with disabilities in higher education has been a recent fact in different countries, and it follows the prerogatives of those who claim and need differentiated support for the permanence and satisfactory completion of university studies.

Based on the constructs of the theory of critical social psychology, this research alludes to the understanding of disability as a social phenomenon in a way to offer inclusive psychosocial and psychoeducational practices. Disability will be understood from the person who lives it, along with those who favor the fight for fundamental rights, the exercise of citizenship and respect for human uniqueness(s).

The findings of this study allow to infer that the way in which society conceives disability can influence social relations and planned actions in relation to a person with a disability. Thus, it is important to conduct research that can promote more participation of these individuals in different social contexts, through actions that reduce the stigma, prejudice and social discrimination often conferred on them.

It is worth mentioning that this study has its limitations, since it included a sample of students from a university in Spain. Therefore, it is suggested to carry out other studies that can be supported in samples composed by different universities of the country to expand the conclusions.

References

Ainscow, M. (2020). Promoting inclusion and equity in education: lessons from international experiences, *Nordic Journal of Studies in Educational Policy*, *6*(1), 7-16. https://doi.org/10.1080/20020317.2020.1729587

Bain, C. and Hasio, C. (2011). Authentic learning experience prepares preservice students to teach art to children with special needs. *Art Education, 64*(2), 33-39. https://doi.org/10.1080/00043125.2011.11519118

Baker, K. Q., Boland, K. and Nowik, C. M. (2012). A Campus survey of faculty and student perceptions of persons with disabilities. *Journal of Postsecondary Education and Disability*, *25*(4), 309-329. https://bit.ly/3ey7z0M

Barr, J. J. and Bracchitta, K. (2015). Attitudes toward individuals with disabilities: The effects of contact with different disability types. *Current Psychology, 34*, 223-238. https://doi.org/10.1007/s12144-014-9253-2

Barton, L. (1996). *Disability and Society: Emerging Issues and Insights*. Longman.

Barton, L. (2009). Estudios sobre discapacidad y la búsqueda de la inclusividad: observaciones [Studies on disability and the quest for inclusivity: Some observations]. *Revista de Education*, (349), 137-152. https://bit.ly/2M3zNRy

Barton-Arwood, S., Lauren, L. and Shree, S. (2016). University-community partnerships in teacher preparation: changing attitudes about students with disabilities. *Journal of Public Scholarship in Higher Education, 6*, 4-20. https://bit.ly/3BvW9Uq

Čagran, B. and Schmidt, M. (2011). Attitudes of Slovene teachers towards the inclusion of pupils with different types of special needs in primary school. *Educational Studies, 37*, 171-195. https://doi.org/10.1080/03055698.2010.506319

Carballo, R., Cotán, A. and Spínola, Y. (2019). An inclusive pedagogy in Arts and Humanities university classrooms: What faculty members do. *Art and Humanities in Higher Education*. https://doi.org/10.1177/1474022219884281

Ciantelli, A. P. C. and Leite, L. P. (2020). Implicações históricas para a educação da pessoa com deficiência no Brasil: articulação entre Educação Inclusiva e Psicologia. In C. Luísa y M. L. Borges (orgs.), *Construindo a educação inclusiva* (pp.143-154). Papa-Letras.

Cunnah, W. (2015). Disabled students: identity, inclusion and work- based placements, *Disability & Society*, *30*(2), 213-226. https://doi.org/10.1080/09687599.2014.996282

Diego, P. (2017). *Actitudes de los futuros profesionales de la educación hacia la discapacidad. Necesidades formativas* [Master's Thesis, University of Salamanca]. https://bit.ly/3xh8WaT

Diniz, D. (2013). Disabilities and Social Policy-Interview with Colin Barnes. *Ser Social, 15*(32), 237-251. https://doi.org/10.26512/ser_social.v15i32.13043

Eleftheriou, P., Stamou, A. G., Alevriadou, A. and Tsakiridou, E. (2013). A comparative study of representations about disability in primary school children's drawings: a sociosemiotic approach. *Social Semiotics, 23*(5), 663-674. https://doi.org/10.1080/13573322.2013.808620

Forlin, C. (2013). Issues of inclusive education in the 21st century. *Journal of Learning Science, 6,* 67-81. https://bit.ly/3DjuBmk

Forlin, C., Earle, C., Loreman, T. and Sharma, U. (2011). The sentiments, attitudes, and concerns about inclusive education revised (SACIE-R). Scale for measuring pre-service teachers' perceptions about inclusion. *Exceptionality Education International, 21*(3), 50-65. https://doi.org/10.5206/eei.v21i3.7682

Fundación Universia. (2018). *IV estúdio sobre grado de inclusión del sistema universitário respecto a la discapacidad*. Fundación Universia. https://bit.ly/3QKU2k8

Gallagher, D. J., Connor, D. J. and Ferri, B. A. (2014). Beyond the far too incessant schism: special education and the social model of disability. *International Journal of Inclusive Education, 18*(11), 1120-1142. https://doi.org/10.1080/13603116.2013.875599

Gesser, M., Nuernberg, A. H. and Toneli, M. J. (2012). The contribution of the social model of disability to the social psychology. *Psicologia & Sociedade, 24*(3), 557-566. https://doi.org/10.1590/S0102-71822012000300009

Gibbons, M. M., Cihak, D. F., Mynatt, B. and Wilhoit, B. E. (2015). Faculty and student attitudes toward postsecondary education for students with intellectual disabilities and autism. *Journal of Postsecondary Education and Disability, 28*(2), 149-162. https://bit.ly/3Dj3CHz

Goddard, C. and Evans, D. (2018). Primary pre-service teachers' attitudes towards inclusion across the training years. *Australian Journal of Teacher Education, 43*(6). https://doi.org/10.14221/ajte.2018v43n6.8

González, J. and Cortés, R. (2016). Attitudes and beliefs towards disability in physical education classes. An educational question. *Psychology Society & Education*, *8*(2), 105-120. https://doi.org/10.25115/psye.v8i2.454

Graça, J., Calheiros, M. M., Oliveira, A. and Milfont, T. L. (2018). Why are women less likely to support animal exploitation than men? The mediating roles of social dominance orientation and empathy. *Personality and Individual Differences, 129*(15), 66-69. https://doi.org/10.1016/j.paid.2018.03.007

Gràcia, M., Leite, L. and Cañete-Massé, C. (2022). Attitudes towards disability in Higher Education. *Anuario de Psicología/the UB Journal of Psychology*, *52*(2). https://doi.org/10.1344/ANPSIC2022.52/2.37061

Hall, S. (2006). *A identidade cultural na pós-modernidade* (11a ed., Tomaz Tadeu da Silva y Guaracira Lopes Louro, trad.). DP&A.

Hockings, C., Brett, P. and Terentjevs, M. (2012). Making a difference-inclusive learning and teaching in higher education through open

educational resources, *Distance Education, 33*(2), 237-252. https://doi.org/10.1080/01587919.2012.692066

Hutcheon, E. and Wolbring, G. (2013). Deconstructing the resilience concept using an ableism lens: Implications for people with diverse abilities. *Dilemata International Journal of Applied Ethics*, *11*, 235-252. https://bit.ly/3qup4lo

Kent, A. M. and Giles, R. M. (2016). Dual certification in general and special education: What is the role of field experience in preservice teacher preparation? *The Professional Educator, 40*(2), 1-14. https://bit.ly/3BwW7f4

Kraska, J. and Boyle, C. (2014). Attitudes of preschool and primary school pre-service teachers towards inclusive education. *Asia-Pacific Journal of Teacher Education, 42*, 228-246. https://doi.org/10.1080/1359866X.2014.926307

Leite, L. and Lacerda, C. (2018). The construction of a scale on the conceptions of disability: methodological procedures. *Psicologia USP*, *29*(3), 432-441. https://doi.org/10.1590/0103-65642018109

Leite, L. P., Cardoso, H. F. and Oliveira, T. de. (2021). Intercultural scale of conceptions of disability: constructions and psychometric studies. *Revista Brasileira de Educação Especial*, *27*, e0208. https://doi.org/10.1590/1980-54702021v27e0208

Leite, L. P., Oliveira, T. de y Cardoso, H. F. (2019). Conceptions of disabilities in professionals of a São Paulo's countryside university. *Barbarói*, 153-170. https://doi.org/10.17058/barbaroi.v0i0.11309

Leiva, J., Isequilla, E. and Matas, A. (2019). La Universidad de Málaga ante la inclusión educativa de los estudiantes con diversidad funcional: ideas y actitudes del alumnado universitario [The University of Malaga and the educational inclusión of students with functional diversity: ideas and attitudes of university students]. *Revista Interuniversitaria de Formación del Profesorado*, *33*(2), 11-28. https://doi.org/10.47553/rifop.v33i2.72835

Li, C., Tsoi, E. W. S. and Wang, J. C. K. (2012). Chinese college students' attitudes toward people with intellectual disabilities: differences by study major, gender, contact, and knowledge. *International Journal of Developmental Disabilities, 58*, 137-144. https://doi.org/10.1179/2047386912Z.00000000014

Liasidou, A. (2014). Critical disability studies and socially just change in higher education. *British Journal of Special Education. 41*(2), 120-135. https://doi.org/10.1111/1467-8578.12063

Martins, C. B. (2013). In defense of the concept of society. *Revista Brasileira de Ciências Sociais, 28*(82), 229-246. https://doi.org/10.1590/S0102-69092013000200014

Moriña, A. (2017). "We aren't Heroes, we're Survivors:" Higher Education as an opportunity for students with disabilities to reinvent an identity. *Journal of Further and Higher Education, 41*(2), 215-226. https://doi.org/10.1080/0309877X.2015.1070402

Moriña, A. and Carnerero, F. (2020). Conceptions of disability in education: a systematic review. *International Journal of Disability, Development and Education*. https://doi.org/10.1080/1034912X.2020.1749239

Nepomuceno, M. F. (2019). *Apropriação no Brasil dos estudos sobre deficiência: uma análise sobre o modelo social* [Tese de Doutorado]. Universidade Federal de Minas Gerais. https://bit.ly/3xdOaJ2

Novo-Corti, I., Muñoz-Cantero, J. M. and Calvo-Babío, N. (2015). Los futuros docentes y su actitud hacia la inclusión de personas con discapacidad: Una perspectiva de género [Future teachers and their attitude towards the inclusion of people with disabilities: A gender perspective]. *Anales de Psicología, 31*, 155-171. https://doi.org/10.6018/analesps.31.1.163631

O'Byrne, C., Jagoe, C. and Lawler, M. (2019). Experiences of dislexia and the transition to university: A case study of five students at different stages of study. *Higher Education Research & Development, 38*(5), 1031-1045. https://doi.org/10.1080/07294360.2019.1602595

Ochoa, A. (2019). The type of participation promoted in schools is a constraint factor for inclusive education. *Alteridad, 14*(2), 184-194. https://doi.org/10.17163/alt.v14n2.2019.03

Oliver, M. (1990). *The politics of disablement*. Macmillan.

Organización Mundial de Salud. (2018). *Discapacidad y Salud*. https://bit.ly/2LAcVGt

Palacios, A. (2008). Plasmación del modelo social en la Convención Internacional sobre los Derechos de las Personas con Discapacidad. En A. Palacios, *El modelo social de discapacidad: orígenes, caracterización y plasmación en la Convención Internacional sobre los Derechos de las Personas con Discapacidad* (pp. 204-462). Cermi Ediciones Cinca.

Pessotti, I. (1984). *Deficiência mental: da superstição à ciência.* T. A. Queiroz.

Polo, T., Chacón-López, H., Caurcel, M. J. and Valenzuela, B. (2020). Attitudes towards persons with disabilities by educational science students: importance of contact, its frequency and the type of disability. *International Journal of Disability, Development and Education*, *68*(5). https://doi.org/10.1080/1034912X.2020.1716960

Rosado-Nunes, M. J. (2005). Gender and religion. *Revista Estudos Feministas*, *13*(02), 363-365. https://bit.ly/3Y4TAlx

Sandoval, M., Morgado, B. and Domenech, A. (2020). University students withdisabilities in Spain: faculty beliefs, practices and support in providing reasonable adjustments. *Disability & Society*. https://doi.org/10.1080/09687599.2020.1751078

Santos, W. (2016). Disability as a restriction on social participation: challenges in evaluation since the Brazilian Inclusion of People with Disabilities Act. *Ciência & Saúde Coletiva, 21*(10), 3007-3015. https://doi.org/10.1590/1413-812320152110.15262016

Strelhow, T. (2018). The conceptual influences of Christianity on disability: the role of Religious Education in the construction of subjects of rights. *Revista Educação Especial*, *31*(61), 275-284. https://doi.org/10.5902/1984686X25002

Van Jaarsveldt, D. E. and Ndeya-Ndereya, C. N. (2015). 'It's not my problem': exploring lecturers' distancing behaviour towards students with disabilities, *Disability & Society*, *30*(2), 199-212. https://doi.org/10.1080/09687599.2014.994701

Varcoe, L. and Boyle, Ch. (2013). Pre-service primary teachers' attitudes towards inclusive education. *Educational Psychology: An International Journal of Experimental Educational Psychology*. https://doi.org/10.1080/01443410.2013.785061

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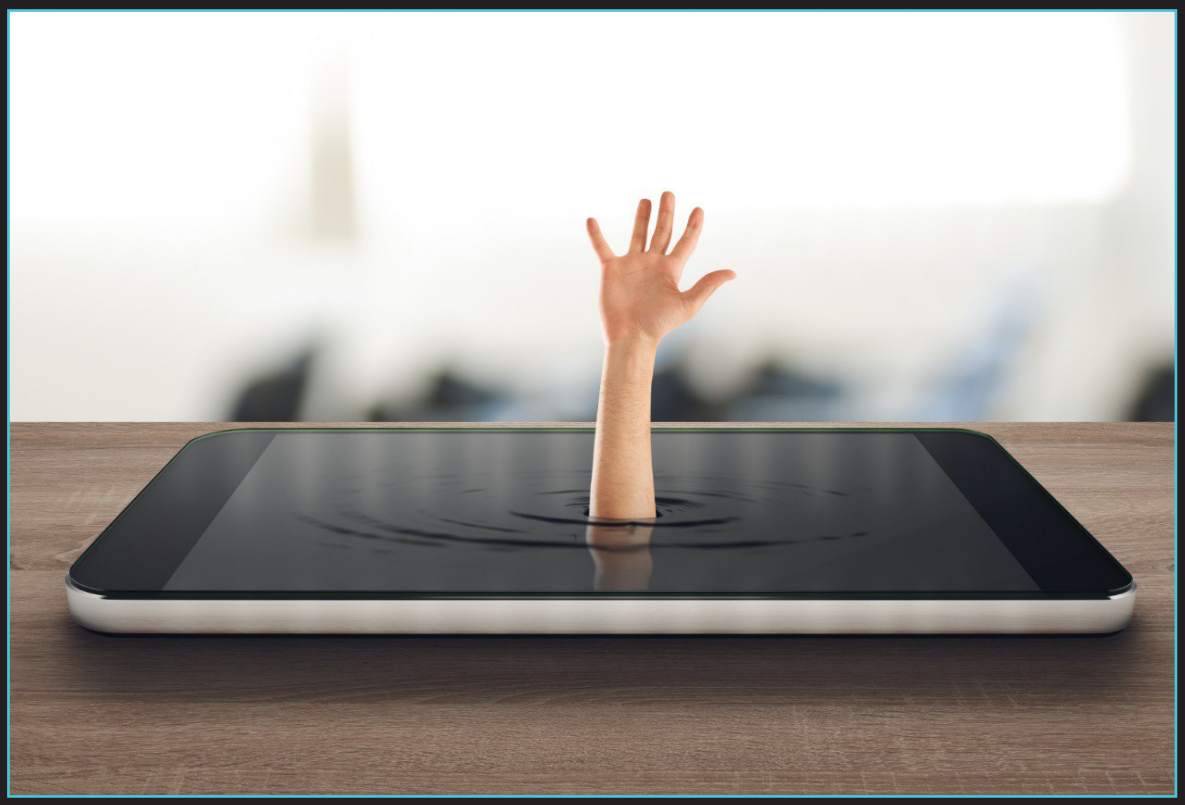

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2.1. Topics

«Alteridad» is a journal specialized in Education and its transdisciplinary lines such as Didactics, Public Policies, School Management, Edu-communication, ICT, Social Pedagogy, among others; and all those disciplines related to the main topic.

2.2. Sections

The journal has a semi-annual periodicity (20 articles per year), published in January and July and has two sections of five articles each by number; the first referring to a **Monographic** topic prepared in advance and with thematic topic and the second, a section of **Miscellaneous**, composed of varied contributions within the theme of the publication.

2.3. Contributions

All manuscripts must be original, and must not have been published in any other journal or must not be in the arbitration or publication process in another journal. Empirical research results are published in Spanish, Portuguese or English, and studies and state-of-the-art are also admissible:

- **Researches:** 5000 to 6500 text words, including title, abstracts, descriptors, tables and references. Particular assessment will

be made of research results, methodological rigor, the relevance of the subject, the quality of scientific discussion, the variety, timeliness and richness of bibliographic references (preferably publications indexed in JCR and Scopus). At least 35 references are expected.

- **Literature studies and reviews:** 6000 to 7000 text words, including tables and references. The debate generated, the relevance of the subject, the originality, current and selective contributions and references of around 70 works (preferably from publications indexed in JCR and Scopus) will be particularly valued.

3. Editorial process

3.1. Submission of manuscripts

Manuscripts must be submitted only and exclusively through the Open Journal System (OJS), in which all authors must register in advance, although only one will be responsible for the correspondence. No author may submit or review two manuscripts simultaneously, estimating a time of four consecutive numbers (2 years). An article may have a maximum of 3 authors, although if justified depending on the size of the study, there may be up to 5.

«Alteridad» informs the reception of the manuscript submitted by the authors; the information related to the acceptance or rejection of the manuscript is sent by email and the platform; and in the case of acceptance, the author is also informed of the editing process.

In the website of the journal, in the Guidelines section, are presented the Guidelines for the Authors, the format of the structure of the articles, the cover page and cover letter, the pre-submission list, the evaluation forms by the external reviewers and a guide for the submission of the article through OJS. Before the submission, it is strongly recommended that the manuscript be checked with the Pre-Check Protocol. Two documents should be sent simultaneously:

a) Cover page and cover letter (use the official model), on which will appear
   - Cover page (Title, Abstract and key words provided in the Manuscript).
   - Full name of each of the authors, organized in priority order; followed by the professional category, institution, email of each author and ORCID number. It is mandatory to indicate if the authors have a PhD academic degree (include Dr. before the name).
   - A **Cover letter** will also be included indicating that the manuscript is an original contribution, has not been sent or evaluated in another journal, with the signature of the authors, and acceptance (if applicable) of formal changes to the manuscript compliant with the rules and partial transfer of rights to the publisher.
b) Fully anonymized **manuscrip**t, in accordance with the rules referred to in section 4.

3.2. Revission process

Upon having received the document and in a maximum period of 30 days, the correspondence author shall receive a notification, indicating whether the manuscript is estimated or dismissed for the arbitration process by the scientific reviewers. In the case that the article has formal problems, or does not address the educational subject, or has a high similarity percentage to another document(s), the editorial board shall dismiss the work without the option to return it. Conversely, if it has superficial problems, it will be returned to the author for the corrections before starting the evaluation process. The submission date of the article will be considered based on the final submission when the article is presented with the corrections.

The articles will be scientifically evaluated by an average of three experts of the topic. Reports will indicate the following recommendations: Accept the Submission, Publishable with Modifications, Sent the manuscript back for its Review, Not Publishable. The acceptance or

rejection of the manuscript for its publication will be decided from the analysis of external reports. In the case of dissenting results, it shall be forwarded to a new opinion, which shall be final. The protocol used by reviewers is public (researches; studies and state-of-the-art).

In general, once the external scientific reviews are taken into view, the criteria justifying the decision on the acceptance/rejection of the manuscript by the Editorial board are:

- Current and novelty.
- Relevance and significance: Advancement of scientific knowledge.
- Originality.
- Reliability and scientific validity: Proven methodological quality.
- Organization (logical coherence and formal presentation).
- External support and public/private funding.
- Co-authoring and internationalization degree of the proposal and the team.
- Presentation: Good writing.

The timeline for the scientific evaluation of manuscripts, after the previous estimation procedures by the Editorial Board is a maximum of 100 days. In relation to the manuscripts sent for Calls for papers, their scientific review dates begin once the call finishes. Manuscripts that are positively evaluated and require modifications must be sent with the changes, within the next 15 days.

3.3. Editing and publishing of the manuscript

The edition and layout processes of the accepted articles is performed by the Technical Board of the journal in coordination with the Abya-Yala Editorial. «Alteridad» reserves the right to make style corrections and editorial changes if necessary to improve the manuscript. A proof of printing in PDF format will be sent to the authors for the correction of typography and spelling in a maximum of three days.

Abya-Yala Editorial will carry out, free of charge for the authors, the professional translation of the final version of the manuscript into the English language (or Spanish, according to the original version), which will guarantee the consultation and international dissemination of the manuscript. The articles will be published on the journal's platform in a timely manner. All articles, in their two language versions (Spanish and English), are published in PDF, HTML, EPUB and XML-Jats format.

3.4. Promotion and dissemination of the published article

The authors are committed to give maximum diffusion to their article published in «Alteridad». In this sense, they are encouraged to promote their published article on academic networks (Academia.edu, ResearchGate, Mendeley, Kudos), social (Twitter, Facebook, LinkedIn, also publishing the DOI), institutional repositories, web or blog staff, among others. Authors are also encouraged to share the published article through email lists, research groups and personal contacts.

«Alteridad» has a Metric Measurement System (PlumX) that allows verifying the compliance with this commitment. For the submission of future articles by authors of «Alteridad», the impact of previous works will be taken into account.

4. Structure of the manuscripts

The manuscripts shall be submitted in typeface Arial 10, simple spacing, fully justified and without tabs or white space between paragraphs. Only large blocks (title, authors, abstracts, key words, credits, and captions) will be separated with white space. The page must be 2 centimeters in all its margins. Manuscripts must be submitted in Microsoft Word document (.doc or .docx), requiring the file to be anonymized in File Properties to avoid the information related to the identification of the author/s.

4.1. Cover page

Title (Spanish and English): Concise but informative, in Spanish on the first line and in English in the second, consisting of as many significant terms as possible. The title is not only the responsibility of the authors, and changes can be proposed by the Editorial Board. A maximum of 80 characters with space are accepted.

Abstract (Spanish and English): It must be presented in a concise way and in this order: Justification, objectives, methodology used (approach and scope), more relevant results, discussion and main conclusions. It must be written impersonally "The present work analyzes...". In the case of the Abstract, the use of automatic translators will not be accepted because of their poor quality. It will be between 220/230 words.

Key words (Spanish and English): 6 keywords must be presented for each language version directly related to the topic of the manuscript. The use of the keywords presented in UNESCO's Thesaurus will be positively valued (http://bit.ly/2kIgn8I) or the controlled vocabulary of IRESIE (http://bit.ly/2mgg4m8).

4.2. IMRDC Structure

For those works involving empirical research, the manuscripts will strictly respect the IMRDC structure, with the headings of Economic Supports and Notes being optional. The works involving Literature Studies and Revisions may be more flexible under their headings, especially in Methodology, Results and Discussion. In all types of works, bibliographic references are mandatory.

1. **Introduction and state of the play:** It should include the theoretical foundations and purpose of the study, using bibliographic citations, as well as the review of the most significant literature of the topic at the national and international level. The use of high-impact references (JCR and Scopus) will be positively valued.
2. **Methodology:** It must be written in a way that the reader can easily understand the development of the research. It should contain the explanation on the approach (quantitative, qualitative or mixed) and the scope (exploratory, descriptive, correlational or explanatory). When appropriate, it shall describe the sample and the sampling form, as well as it must refer to the type of statistical analysis applied. If it is an original methodology, it is necessary to set out the reasons that have led to its use and describe the possible limitations.
3. **Results:** Efforts will be made to highlight the most relevant results and observations of the investigation, describing, without making judgments, the material and methods used for the analysis. The results will be presented in figures or/and tables according to the journal's standards (See section 4.4). They will appear in a logical sequence in the text, tables or figures, avoiding data redundancy.
4. **Discussion and conclusions:** Discussion and conclusions: It will summarize the most important findings, relating the observations with interesting studies, pointing to contributions and limitations, without resulting in data already commented in other sections. In addition, the discussion and conclusions section should include deductions and lines for future research.

4.3. Economic support and notes

Economic support (optional): Council Science Editors recommends that authors specify the source of funding for the research. Works on the endorsement of competitive national and international projects will be considered a priority. In any case, for the scientific assessment of the manuscript, it must be anonymized with XXXX only for its initial evaluation, in order not

to identify authors and research teams, which must be set out in the Presentation Letter and subsequently in the final manuscript.

Notes (optional) will go, only if necessary, at the end of the article (before references). They should be used to clarify terms or make marginal annotations. Note numbers are placed in superscript, both in the text and in the final note. Notes collecting simple bibliographic citations (without comments) are not allowed, as these should be in the references. If it contains a cite, the reference must also be found in the Bibliography section.

4.4. Bibliography

Bibliographical citations should be reviewed in the form of references to the text. Bibliography that is not cited should not be included in the text. Its number must be sufficient and necessary to contextualize the theoretical framework, methodology used and research results in an international research space: Minimum 35 for empirical research manuscripts, and around 70 for literature studies and reviews.

They will be presented alphabetically by the author's first last name (adding the second one only in case the first one is very commonly used, and joined with a hyphen). The quote should be extracted from the original documents, preferably journals and to a lesser extent books. Given the significance of citation indices and impact factor calculations, the use of references from indexed publications in JCR and/or Scopus and the correct citation following APA 6 norms is valued (http://bit.ly/2meVQcs).

It is mandatory that quotes with DOI (Digital Object Identifier System) be reflected in the References (can be obtained on https://search.crossref.org/). All journals and books without DOI must contain a link (in its online version, if applicable, and in a shorten version using Bity: https://bitly.com/), and the websites must include the consultation date using the format provided.

Journal articles must be presented in English, with the exception of those in Spanish and English, in which case they will be presented in both languages using square brackets.

Norms for the references

a) Periodic publications

- **Journal article (one author):** Ochoa, A. (2019). The type of participation promoted in schools is a constraint factor for inclusive education. [El tipo de participación que promueve la escuela, una limitante para la inclusión]. *Alteridad*, 14(2), 184-194. https://doi.org/10.17163/alt.v14n2.2019.03
- **Manuscript from a journal (until twenty authors):** Guarderas, P., Larrea, M., Cuvi, J., Vega, C., Reyes, C., Bichara, T., Ramírez, G., Paula, Ch., Pesantez, L., Íñiguez, A., Ullauri, K., Aguirre, A., Almeida, M., & Arteaga, E. (2018). Sexual harassment in Ecuadorian universities: Content validation for instrument development. [Acoso sexual en las universidades ecuatorianas: Validez de contenido de un instrumento de medición]. *Alteridad*, 13(2), 214-226. https://doi.org/10.17163/alt.v13n2.2018.05
- **Manuscript from a journal (without DOI):** López, L., & Ramírez-García, A. (2014). Medidas disciplinarias en los centros educativos: ¿Suficientes contra el acoso escolar? *Perfiles Educativos*, 36(145), 32-50. https://bit.ly/37Xd5mw.

b) Books and chapters of books

- **Complete books:** Cuéllar, J.C., & Moncada-Paredes, M.C. (2014). *El peso de la deuda externa ecuatoriana*. Abya-Yala.
- **Chapter of books:** Padilla-Verdugo, J. (2014). La Historia de la Educación desde los enfoques del conocimiento. In E. Loyola (Ed.), *Ciencia, Tecnología y Sociedad (CTS). Miradas desde la Educación Superior en Ecuador* (pp. 107-128). Abya-Yala. https://bit.ly/3etRnZH

c) Electronic means

- Aunión, J. (2011, marzo 12). La pérdida de autoridad es un problema de toda la sociedad, no es específico del aula. *t*. https://bit.ly/2NlM9Dp

Guidelines for headings, tables and figures

The headings of the article shall be numbered in Arabic. These will be without full case of capital letters, no underscores, no bold ones. The numbering must be at most three levels: 1. / 1.1. / 1.1.1. A carriage return will be established at the end of each numbered heading.

Tables and figures must be presented in the text in Microsoft Word® located on the place where the authors consider they should be. They shall be used only when necessary and suitable, their use should be limited for reasons of spaces (maximum 6 between tables and figures). Both must be listed in Arabic and titled with the description of their content. If the source of the table or figure is not of its own elaboration, the authors must incorporate the source consulted below the table [for example, Source: Romero-Rodríguez (2016, p. 32)].

Tables must be elaborated in Microsoft Word document, thus tables cut and pasted from other documents that cannot be edited in the diagramming process will not be accepted. The figures, in addition to being incorporated in the Microsoft Word document®, must be sent as supplementary material during the submission in the «Alteridad» OJS, with a quality greater than 600 dpi, in TIFF, JPEG or PNG files.

5. Fees and APC

«Alteridad» is an Open Access journal, included in the Directory of Open Access Journals (DOAJ) that offers all its production online for the entire scientific community. It also does not set any economic fees throughout the editorial process for the publication of the articles, including scientific review, layout and translation thereof. There is no publication fee, no Article Processing Charge (APC) associated with this publication, neither for authors nor for readers. The journal is also licensed by Creative-Commons Attribution-Non-Commercial-Share Equal (RoMEO blue journal), which allows free access, download and archive of published articles. All expenses, inputs and financing of «Alteridad» come from the contributions made by the Salesian Polytechnic University.

6. Ethical responsibilities

Each author shall submit a responsible statement of authorship and originality, as well as their ethical responsibilities.

- **Originality:** The works must be original and should not be evaluated simultaneously in another publication, being the responsibility of the authors to comply with this standard. The opinions expressed in the published articles are the responsibility of the author/s «Alteridad» as CrossRef®›s international partner, uses the CrossCheck® and iThenticate® anti-plagiarism tool to ensure the originality of the manuscripts.
- **Authorship:** The list of signatory authors should include only those who have contributed intellectually to the development of the work. Collaborating in data collection is not sufficient criteria of authorship. «Alteridad» rejects any responsibility for possible conflicts arising from the authorship of the manuscripts published.
- **Transmission of copyright:** the transfer of rights of the manuscript published in «Alteridad» will be included in the cover letter. The Salesian Polytechnic University (the publisher) has the copyright of published articles; it favors and allows the reuse of these under the license of use indicated above.

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Normas de Publicación en «Alteridad»

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1. Información general

«Alteridad» es una publicación científica bilingüe de la Universidad Politécnica Salesiana de Ecuador (UPS), editada desde enero de 2006 de forma ininterrumpida, con periodicidad fija semestral (enero-julio).

Es una revista científica arbitrada, que utiliza el sistema de evaluación externa por expertos (*peer-review*), bajo metodología de pares ciegos (*doble-blind review*), conforme a las normas de publicación de la *American Psychological Association* (APA). El cumplimiento de este sistema permite garantizar a los autores un proceso de revisión objetivo, imparcial y transparente, lo que facilita a la publicación su inclusión en bases de datos, repositorios e indexaciones internacionales de referencia.

«Alteridad» se encuentra indexada en el *Emerging Sources Citation Index* (ESCI) de *Web of Science*, en la *Scientific Electronic Library Online* (SciELO), en el Sistema de Información Científica REDALYC, en el directorio y catálogo selectivo del Sistema Regional de Información en Línea para Revistas Científicas de América Latina, el Caribe, España y Portugal (Latindex), en el *Directory of Open Access Journals* (DOAJ), en el *European Reference Index for the Humanities and Social Sciences* (ERIHPLUS), en la Red Iberoamericana de Innovación y Conocimiento Científico (REDIB), en el Portal Dialnet; está evaluada en la Matriz de Información para el Análisis de Revistas (MIAR), en la Clasificación Integrada de Revistas Científicas (CIRC), y en el sistema Qualis de revisión de revistas de CAPES. Además, se encuentra en repositorios, bibliotecas y catálogos especializados de todo el mundo.

La revista se edita en doble versión: electrónica (e-ISSN: 1390-8642) e impresa (ISSN: 1390-325X) en español e inglés; siendo identificado cada trabajo con un *Digital Object Identifier System* (DOI). Todos los artículos publicados en «Alteridad» tienen licencia Creative Commons Reconocimiento-No-Comercial-Compartir igual (RoMEO blue journal).

2. Alcance y política

2.1. Temática

«Alteridad» es una revista especializada en Educación y sus líneas transdisciplinares como Didáctica, Políticas Públicas, Gerencia de Centros Escolares, Educomunicación, TIC, Pedagogía Social, entre otras; y todas aquellas disciplinas conexas interdisciplinarmente con la línea temática central.

2.2. Secciones

La revista tiene periodicidad semestral (20 artículos por año), publicada en los meses de enero y julio y cuenta por número con dos secciones de cinco artículos cada una, la primera referida a un tema **Monográfico** preparado con antelación y con editores temáticos y la segunda, una sección de **Misceláneas**, compuesta por aportaciones variadas dentro de la temática de la publicación.

2.3. Aportaciones

Todos los trabajos deben ser originales, no haber sido publicados en ningún medio ni estar en proceso de arbitraje o publicación. Se editan preferentemente resultados de investigación empírica, redactados en español, portugués o inglés, siendo también admisibles estudios y selectas revisiones de la literatura (*state-of-the-art*):

- **Investigaciones:** 5000 a 6500 palabras de texto, incluyendo título, resúmenes, descriptores, tablas y referencias. Se valorarán especialmente los resultados de la investigación, el rigor metodológico, la relevancia de la temática, la calidad de la discusión científica, la variedad, actualidad y riqueza de las referencias bibliográficas (preferiblemente de publicaciones indexadas en JCR y Scopus). Se esperan mínimo 35 referencias.
- **Estudios y revisiones de la literatura:** 6000 a 7000 palabras de texto, incluidas tablas y referencias. Se valorará especialmente el debate generado, la relevancia de la temática, la originalidad de las aportaciones y referencias justificadas, actuales y selectivas de alrededor de 70 obras (preferiblemente de publicaciones indexadas en JCR y Scopus).

3. Proceso editorial

3.1. Envío de manuscritos

Los manuscritos deben ser enviados única y exclusivamente a través del *Open Journal System* (OJS), en el cual todos los autores deben darse de alta previamente, si bien uno solo de ellos será el responsable de correspondencia. Ningún autor podrá enviar o tener en revisión dos manuscritos de forma simultánea, estimándose una carencia de cuatro números consecutivos (2 años). Un artículo podrá tener como máximo 3 autores, aunque si se justifica en función del tamaño del estudio, podrán ser hasta 5.

«Alteridad» acusa recepción de los trabajos enviados por los autores, informa por email y la plataforma del proceso de aceptación o rechazo; y en el caso de aceptación, del proceso de edición.

En el Portal oficial de la revista, en la sección Normativas, están las Normas para Autores, el formato de estructura de los artículos, la Portada y Carta de presentación, el chequeo previo al envío, los formularios de evaluación por parte de los revisores externos y una guía para el envío del artículo a través de OJS. Antes de su envío se recomienda encarecidamente que se compruebe el manuscrito con el Protocolo de chequeo previo. Deben remitirse simultáneamente dos documentos:

a. Portada y Carta de presentación (usar el modelo oficial), en la que aparecerán:
- **Portada** (Título, Resumen y Descriptores previstos en el Manuscrito).
- **Nombre y apellidos completos** de cada uno de los autores, organizados por orden de prelación; seguido por la categoría profesional, centro de trabajo, correo electrónico de cada autor y número de ORCID. Es obligatorio indicar si se posee el grado académico de doctor (incluir Dr./Dra. antes del nombre).
- Se incluirá además una **declaración** (Cover letter) de que el manuscrito se trata de una aportación original, no enviada ni en proceso de evaluación en otra revista, confirmación de las autorías firmantes, aceptación (si procede) de cambios formales en el manuscrito conforme a las normas y cesión parcial de derechos a la editorial.

b. Manuscrito totalmente anonimizado, conforme a las normas referidas en el epígrafe 4.

3.2. Proceso de revisión

En un plazo máximo de 30 días, a partir de la recepción del documento, el autor de correspondencia recibirá una notificación, indicando preliminarmente si se estima o desestima para el arbitraje por los revisores científicos. En el caso de que el artículo presente deficiencias formales, no trate el tema educativo, o tenga un elevado porcentaje de similitud con otro(s) documento(s), el Consejo editorial desestimará el trabajo sin opción de vuelta. Por el contrario, si presenta carencias superficiales de forma, se devolverá al autor para su corrección antes de comenzar del

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proceso de evaluación. La fecha de recepción del artículo no computará hasta la recepción correcta del mismo.

Los artículos serán evaluados científicamente por una media de tres expertos en el tema. Los informes indicarán las siguientes recomendaciones: Aceptar el envío, Publicable con modificaciones, Reenviar para revisión, No publicable. A partir del análisis de los informes externos, se decidirá la aceptación o rechazo de los artículos para su publicación. En el caso de resultados discrepantes se remitirá a un nuevo dictamen, el cual será definitivo. El protocolo utilizado por los revisores es público (Investigaciones; Estudios y revisiones de la literatura).

En general, una vez vistas las revisiones científicas externas, los criterios que justifican la decisión sobre la aceptación/rechazo de los trabajos por parte del Consejo Editor son los siguientes:

- Actualidad y novedad.
- Relevancia y significación: Avance del conocimiento científico.
- Originalidad.
- Fiabilidad y validez científica: Calidad metodológica contrastada.
- Organización (coherencia lógica y presentación formal).
- Apoyos externos y financiación pública/privada.
- Coautorías y grado de internacionalización de la propuesta y del equipo.
- Presentación: Buena redacción.

El plazo de evaluación científica de manuscritos, superados los trámites previos de estimación por el Consejo Editor, es de 100 días como máximo; los remitidos para *Calls for papers*, sus fechas de revisión científica se inician al cierre de los mismos. Los trabajos que sean evaluados positivamente y requieran modificaciones, deberán ser reenviados con los cambios, dentro de los siguientes 15 días.

3.3. Edición y publicación del manuscrito

El proceso de corrección de estilo y maquetación de los artículos aceptados es realizado por el Consejo Técnico de la Revista en coordinación con la Editorial Abya-Yala. «Alteridad» se reserva el derecho de hacer corrección de estilo y cambios editoriales que considere necesarios para mejorar el trabajo. A los autores de artículos se enviará una prueba de imprenta en formato PDF para su corrección únicamente de tipografía y ortografía en un máximo de tres días.

La Editorial Abya-Yala realizará, gratuitamente para los autores, la traducción profesional de la versión final del manuscrito al idioma inglés (o español, según la versión original), lo que garantizará su consulta y difusión internacional. Los artículos serán publicados en la plataforma de la revista en tiempo y forma. Todos los artículos, en sus dos versiones idiomáticas (español e inglés), son publicados en formato PDF, HTML, EPUB y XML-Jats.

3.4. Promoción y difusión del artículo publicado

Los autores se comprometen a darle la máxima difusión a su artículo publicado en «Alteridad». En este sentido, se les exhorta a compartir y archivar su artículo publicado en las redes académicas (Academia.edu, ResearchGate, Mendeley, Kudos), sociales (Twitter, Facebook, LinkedIn, publicando en estos también el DOI), repositorios institucionales, web o blog personal, entre otras. Asimismo, se anima a los autores a compartir el artículo publicado a través de listas de correo electrónico, grupos de investigación y contactos personales.

«Alteridad» cuenta con sistemas de medición de métricas alternativas (PlumX) que permiten verificar el cumplimiento de este compromiso. Para la postulación de futuros artículos

de autores de «Alteridad», se tendrá presente el impacto de los trabajos anteriores.

4. Estructura de los manuscritos

Los trabajos se presentarán en tipo de letra Arial 10, interlineado simple, justificado completo y sin tabuladores ni espacios en blanco entre párrafos. Solo se separarán con un espacio en blanco los grandes bloques (título, autores, resúmenes, descriptores, créditos y epígrafes). La página debe tener 2 centímetros en todos sus márgenes. Los trabajos deben presentarse en documento de Microsoft Word (.doc o .docx), siendo necesario que el archivo esté anonimizado en Propiedades de Archivo, de forma que no aparezca la identificación de autor/es.

4.1. Portada

Título (español) / Title (inglés): Conciso pero informativo, en castellano en primera línea y en inglés en segunda, conformado por el mayor número de términos significativos posibles. El título no solo es responsabilidad de los autores, pudiéndose proponer cambios por parte del Consejo Editorial. Se aceptan como máximo 80 caracteres con espacio.

Resumen (español) / Abstract (inglés): Se describirán de forma concisa y en este orden: Justificación del tema, objetivos, metodología empleada (enfoque y alcance), resultados más relevantes, discusión y principales conclusiones. Ha de estar escrito de manera impersonal "El presente trabajo analiza…". En el caso del *Abstract* no se admitirá el empleo de traductores automáticos por su pésima calidad. Tendrá como extensión entre 220/230 palabras.

Descriptores (español) / Keywords (inglés): Se deben exponer 6 descriptores por cada versión idiomática relacionados directamente con el tema del trabajo. Será valorado positivamente el uso de las palabras claves expuestas en el Thesaurus de la UNESCO (http://bit.ly/2kIgn8I) o del Vocabulario controlado del IRESIE (http://bit.ly/2mgg4m8).

4.2. Estructura IMRDC

Para aquellos trabajos que se traten de Investigaciones de carácter empírico, los manuscritos respetarán rigurosamente la estructura IMRDC, siendo opcionales los epígrafes de Apoyos y Note.. Los trabajos que se traten de Estudios y revisiones de la literatura podrán ser más flexibles en sus epígrafes, especialmente en Metodología, Resultados y Discusión. En todas las tipologías de trabajos son obligatorias las References.

1. **Introducción y estado de la cuestión:** Debe incluir los fundamentos teóricos y el propósito del estudio, utilizando citas bibliográficas, así como la revisión de la literatura más significativa del tema a nivel nacional e internacional. Se valorará positivamente el uso de referencias de alto impacto (JCR y Scopus).
2. **Metodología:** Debe ser redactado de forma que el lector pueda comprender con facilidad el desarrollo de la investigación. Deberá contener la explicación sobre el enfoque (cuantitativo, cualitativo o mixto) y el alcance (exploratorio, descriptivo, correlacional o explicativo). En su caso, describirá la muestra y la forma de muestreo, así como se hará referencia al tipo de análisis estadístico aplicado. Si se trata de una metodología original, es necesario exponer las razones que han conducido a su empleo y describir sus posibles limitaciones.
3. **Resultados:** Se procurará resaltar los resultados y las observaciones más relevantes de la investigación, describiéndose, sin hacer juicios de valor, el material y métodos empleados para el análisis. Los resultados se expondrán en figuras o/y tablas según las normas de la revista (Ver epígrafe 4.4). Aparecerán en una secuencia lógica en el

texto, las tablas o figuras imprescindibles, evitando la redundancia de datos.

4. **Discusión y conclusiones:** Resumirá los hallazgos más importantes, relacionando las propias observaciones con estudios de interés, señalando aportaciones y limitaciones, sin redundar datos ya comentados en otros apartados. Asimismo, el apartado de discusión y conclusiones debe incluir las deducciones y líneas para futuras investigaciones.

4.3. Apoyos y Note.

Apoyos (opcionales): El *Council Science Editors* recomienda a los autor/es especificar la fuente de financiación de la investigación. Se considerarán prioritarios los trabajos con aval de proyectos competitivos nacionales e internacionales. En todo caso, para la valoración científica del manuscrito, este debe ir anonimizado con XXXX solo para su evaluación inicial, a fin de no identificar autores y equipos de investigación, que deben ser explicitados en la Carta de Presentación y posteriormente en el manuscrito final.

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Las citas bibliográficas deben reseñarse en forma de referencias al texto. No debe incluirse bibliografía no citada en el texto. Su número ha de ser suficiente y necesario para contextualizar el marco teórico, la metodología usada y los resultados de investigación en un espacio de investigación internacional: Mínimo 35 para los manuscritos de investigaciones de carácter empírico, y alrededor de 70 para los estudios y revisiones de literatura.

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Normas para las referencias

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- **Artículo de revista (un autor):** Ochoa, A. (2019). The type of participation promoted in schools is a constraint factor for inclusive education. [El tipo de participación que promueve la escuela, una limitante para la inclusión]. *Alteridad*, 14(2), 184-194. https://doi.org/10.17163/alt.v14n2.2019.03
- **Artículo de revista (hasta veinte autores):** Guarderas, P., Larrea, M., Cuvi, J., Vega, C., Reyes, C., Bichara, T., Ramírez, G., Paula, Ch., Pesantez, L., Íñiguez, A., Ullauri, K., Aguirre, A., Almeida, M., & Arteaga, E. (2018). Sexual harassment in Ecuadorian

universities: Content validation for instrument development. [Acoso sexual en las universidades ecuatorianas: Validez de contenido de un instrumento de medición]. *Alteridad*, 13(2), 214-226. https://doi.org/10.17163/alt.v13n2.2018.05

- **Artículo de revista (sin DOI):** López, L., & Ramírez-García, A. (2014). Medidas disciplinarias en los centros educativos: ¿Suficientes contra el acoso escolar? Perfiles Educativos, 36(145), 32-50. https://bit.ly/37Xd5mw

b) Libros y capítulos de libro

- **Libros completos:** Cuéllar, J.C., & Moncada-Paredes, M.C. (2014). *El peso de la deuda externa ecuatoriana*. Abya-Yala.
- **Capítulos de libro:** Padilla-Verdugo, J. (2014). La Historia de la Educación desde los enfoques del conocimiento. In E. Loyola (Ed.), Ciencia, Tecnología y Sociedad (CTS). *Miradas desde la Educación Superior en Ecuador* (pp. 107-128). Abya-Yala. https://bit.ly/3etRnZH

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- Aunión, J. (2011, marzo 12). La pérdida de autoridad es un problema de toda la sociedad, no es específico del aula. *El País*. https://bit.ly/2NlM9Dp

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