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## Use of ICTs and the Digital Competences of Foreign Language Teachers before and during the State of Alarm

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### Abstract

The situation generated by the pandemic has caused irreversible changes in society and the educational world, manifesting a necessary change in methodology in the teaching and learning process. The purpose of this study, which is part of a doctoral thesis investigation, was to analyze the use of Information and Communication Technologies (ICTs) and the digital competences of teachers in the Foreign Language classroom, before and during the state of alarm provoked by the pandemic Covid-19, based on sociodemographic factors. A non-experimental, ex post facto, descriptive study was carried out using a single measuring instrument. The final sample consisted of 117 foreign language teachers from bilingual schools of Primary and Secondary Education in Andalusia (Spain), both public and semi-private. The results indicate that teachers improved their digital skills as a result of the increased frequency of ICT use during the pandemic, and men under 30 years of age felt more motivated to use and incorporate new technologies in their classes. Even so, teachers continue to express the need for greater training opportunities in the use of ICTs for both educators and students, which will pose new challenges in the acquisition and development of digital competencies and from which new needs will emerge.

**Keywords:** primary education, secondary education, ICT, digital competences, foreign language, Covid-19

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## **1. Introduction**

Over the last decade, the field of technology has undergone considerable advances that have revolutionized the modern world and our daily lives (Al-Obaydi et al., 2023). There is no person, organization, company or government that can ignore the vertiginous development in the field of technology (Soto, 2009, p. 5) nor can deny that “the outstanding technological progress has blurred the boundaries and limitations of the stages and fields in which technology is acquired” (Cadavieco et al., 2012, p. 2971). The new model of society in which we live, the information and communication society, has had a significant impact on many aspects of our lives and has naturally led to the incorporation of Information and Communication Technologies (ICTs) in the Spanish education system. The rapid growth and improvement of ICTs have turned digital competence into one of the key competencies that citizens must acquire, the importance of which is highlighted in the Recommendation of the European Parliament and of the Council of December 18, 2006 on key competencies for the lifelong learning (2006/ 962/CE).

Despite the fact that the digital competence of teachers and the use of ICTs in teaching are aspects that have been studied in the last decade, the need to update them is crucial, considering that in 2020 we experienced a change in education as we knew it and it was necessary to use ICTs in an emergent way, a situation caused by the COVID-19 pandemic. According to Romero et al. (2021) after the COVID-19 pandemic, both the institutions and mainly the teachers were forced to implement emergency remote teaching in order to carry out their preparation and offer an education through virtual technologies. It has also been observed that teachers had to learn how to use some ICT tools to stay in communication with students during the pandemic, which created a difficulty in the education system and especially in the delivery of classes through ICTs, since a series of challenges arose due to the need to transfer physical classes to virtual (Palominos & Martínez, 2020).

After taking into account that the pandemic exposed different weaknesses of the education system regarding the implementation of ICTs in the classroom and the teachers’ digital competence, and that there is not a great volume of literature shedding light on these aspects in the subjects of the foreign language, we set out the purpose of the study to analyze the use of ICTs and digital competencies presented by teachers in the Foreign Language classroom, before and during the state of alarm produced by the Covid-19 pandemic and to find out the major changes that have occurred in them.

## 2. Literature Review

The importance of teacher training in subjects related to ICTs has been thoroughly studied by different authors who have concluded that one of the main aspects that compromise the effectiveness of the implementation of new technologies in the classroom is teacher training (Almerich et al., 2011; Cabero & Marín, 2014; Fernández-Cruz et al., 2018; García Arango et al., 2020). At the same time, some studies have focused on the use and the frequency of the use of ICTs by teachers, concluding that teachers who use new technologies outside the classroom are more likely to incorporate them into the classroom as well (Área et al., 2016), and others that relate the frequent use of ICTs with higher academic performance by students and greater autonomy and motivation (Huertas & Pantoja, 2016).

Taking into consideration that this study has focused on digital teaching competencies and the use of ICTs in the Foreign Language classroom, the impact of new technologies on these subjects is one of the main aspects that has been examined. Even though the studies carried out on the area of the foreign languages in primary and secondary education are scarce or outdated, there are authors who argue about the benefits of using ICTs as a motivating tool in the foreign language classroom and claim that ICTs really promote their learning since they produce a great positive impact in learning a foreign language (Burbat, 2016; Bedoya et al., 2018; Contreras, 2010; Derakhshan, 2021; González, 2015; Morchio, 2014; Zayas, 2014).

On the other hand, a compilation of studies have placed special emphasis on the lack of digital skills by teachers in general and more specifically in areas such as the creation of digital content and the research and collection of information (Cabero, 2004; Chandrasena, 2019; Domingo et al, 2020; Fuentes et al, 2019; Galanouli et al., 2004; López et al., 2019; Losada & Rodríguez, 2019; Valdivieso & Gonzáles, 2016; Nowak, 2019), while others have examined the same aspects in the postcovid era. The study carried out by Sánchez et al. (2020) basically highlights that it is practically impossible to comply with education if it is carried out through technology and even more so if there is a lack of use of ICTs in teacher training, which is why difficulties were faced by teachers during COVID-19. Among these challenges, the importance of ICT coordinators is also noticed in both precovid and postcovid era, given that, on many occasions, the effectiveness in the use of different digital tools relies upon their presence in the educational context (Area,

2010; Fernández-Cruz et al., 2018; Valverde et al., 2010;). Díaz-Arce and Loyola-Illescas (2021) also highlight that teachers are not adequately prepared and have not acquired sufficient digital skills to face the new era of digitization, while others have determined the lack of motivation and self-esteem by teachers during the use of ICTs (Huertas & Pantoja, 2016; Pérez et al., 2011).

Finally, after examining the existing literature on the use of ICTs and the teachers' digital competencies, it was observed that a great compendium of studies have focused on the university level and less on the primary and secondary education levels. It was also noticed that there is a crucial need to explore in a greater depth these questions in the Foreign Language Classroom and especially in the postpandemic education system.

### **3. Methodology**

#### **3.1. Design**

A quantitative, non-experimental, ex post facto, descriptive study was carried out using a single group measuring instrument.

#### **3.2. Participants**

The sample consisted of 117 foreign language teachers from bilingual schools of Primary and Secondary Education in the Autonomous Community of Andalusia (Spain), both public and semiprivate. Specifically, 67.5% teach in a public school ( $n = 79$ ), while 32.5% do so in a semiprivate school ( $n = 38$ ).

Table 1 shows that the majority of the participants are women ( $n = 78$ ). Likewise, it is observed that the majority of participants are women whose ages range from 31 to 40 ( $n = 22$ ; 18.8%), regarding the general information on the foreign language class before the state of alarm caused by the COVID-19 pandemic.

**Table 1**  
*Distribution of the Population According to Sex and Age Groups*

	Frequency	Percentage
<b>Males under 30</b>	8	6.8%
<b>Males between 31 and 40</b>	4	3.4%
<b>Males between 41 and 50</b>	17	14.5%
<b>Males over 50</b>	10	8.5%
<b>Females under 30</b>	17	14.5%
<b>Females between 31 and 40</b>	22	18.8%
<b>Females between 41 and 50</b>	19	16.2%
<b>Females over 50</b>	20	17.1%
<b>Total</b>	117	100.0%

### 3.3. Measuring Instruments

In order to carry out the study, an ad hoc questionnaire called Questionnaire for FL teachers on the use of ICTs was designed, with a total of 47 items aiming to measure the use of ICTs in the Foreign Language classroom of FL teachers and their digital competencies. Likewise, this instrument aims to verify the current situation in the different schools regarding the resources offered to teachers and their professional training, and finally discover the opinions and attitudes of teachers towards ICTs and the impact of the state of alarm caused by Covid-19 in the previously mentioned areas in order to determine the challenges faced by teachers and the needs that have arisen.

The items were structured into six dimensions plus five items for recording sociodemographic variables and general information about the Foreign Language (FL) class that was taught before the state of alarm. The dimensions correspond to: Use and frequency of ICT use before the state of alarm; Digital competencies of teachers; Access to ICTs before the state of alarm; Teacher training and professional support; Opinions and attitudes of teachers towards ICTs before the state of alarm and Impact of the state of alarm in the educational field.

For this study, only the items included in the dimensions Use and frequency of ICT use before the state of alarm; Digital competencies of teachers and Impact of the state of alarm in the educational field, were analyzed. A reliability  $\alpha = .800$  was obtained for this instrument, which is acceptable. The analysis of internal consistency by dimensions reflected the following values: Use and frequency of ICT use before the state of alarm ( $\alpha = .753$ ); Teachers' digital skills ( $\alpha = .937$ );

Impact of the state of alarm in the educational field ( $\alpha = .684$ ).

### 3.4. Procedure

With the aim of carrying out this research, the collaboration of 819 bilingual schools of Primary and Secondary Education in the Autonomous Community of Andalusia was requested, both public and semiprivate, provided by the education delegations of this autonomous community. Due to the pandemic situation, the questionnaire was distributed through Google Forms, via an email that included a letter detailing the nature of the study in order to obtain their informed consent. A first email was sent requesting the collaboration of the foreign language teachers, and a second email with a reminder of participation. Out of the total number of schools to which the questionnaire was sent, 117 foreign language teachers responded. Throughout the process, the right to the confidentiality of all participants has been respected. This research was carried out during the academic year 2020-2021.

### 3.5. Data Analysis

The data collected were analyzed through the IBM SPSS statistical program in its version 26.0 (IBM, SPSS Statistics, v.25.0 Chicago, IL, USA). In the first place, the normality of the sample was studied using the Kolmogorov-Smirnov test, obtaining a normal distribution. Likewise, for the analysis of the data, the study of frequencies and contingency tables was carried out. For the latter, the level of significance was established through the Pearson Chi-Square test, obtaining statistically significant differences for  $p \leq 0.05$ . To determine the internal reliability of the instrument, Cronbach's alpha coefficient was used, determining the reliability index at 95.5 %.

## 4. Results

Let us begin by describing the general aspects of the foreign language taught by the participants before the state of alarm. Regarding the professional background of the participants, most of them have been teaching for more than 20 years ( $n = 40$ ; 34.2 %) and have been using new technologies on a daily basis in their classes ( $n = 111$ ; 94.9 %). 54.7 % of the sample teaches in Secondary Education ( $n = 64$ ) and 45.3 % in primary ( $n = 53$ ), distributed as shown in Table 2.

**Table 2**  
*Classes where the Teaching of the Study Sample Takes Place*

	Frequency	Percentage
First cycle of Primary Education	9	7.7 %
Second cycle of Primary Education	14	12.0 %
Third cycle of Primary Education	11	9.4 %
Compulsory Secondary Education	29	24.8 %
Upper Secondary Education	2	1.7 %
Compulsory and Upper Secondary Education	34	29.1 %
First and Second cycle of Primary Education	3	2.6 %
Second and Third Cycle of Primary Education	9	7,7 %
First and Third cycle of Primary Education	1	0,9 %
First, Second and Third cycle of Primary Education	5	4.3 %
<b>Total</b>	<b>117</b>	<b>100.0 %</b>

Considering the distribution of students in the foreign language class, it is observed that the majority of teachers carry out their work with a ratio of between 21 and 30 students per class ( $n = 91$ ; 77.8 %) and 40.2 % of teachers teaches 3 hours per week per group.

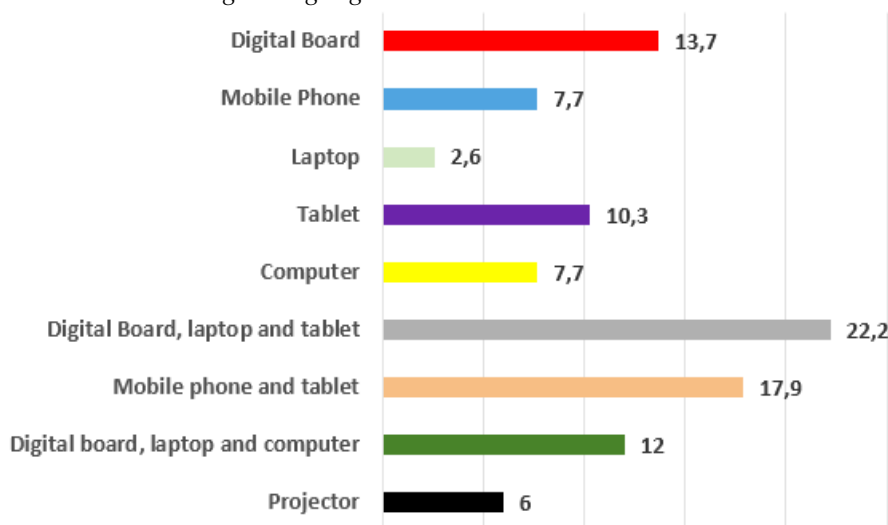
With regard to the use of ICTs, it is evident that the vast majority of teachers use ICTs of their own free will ( $n = 108$ ; 92.3 %), while only 7.7 % use them because the curriculum requires it ( $n = 9$ ). In terms of how long the teachers have been using ICTs in the development of their classes, it is observed that more than half of the sample has been using them for more than 5 years ( $n = 82$ ; 70.1 %) while only 5.1 % has been using them for less than 1 year ( $n = 6$ ).

Likewise, before the state of alarm, almost the entire sample used ICTs to prepare their classes ( $n = 114$ ; 97.4 %) and 96.6 % used them in the development of these classes. On the other hand, the frequency of ICT use has been more than 50% in the participants' classes ( $n = 45$ ; 38.5 %).

Regarding the most commonly used ICTs in the foreign language classroom, it is observed that most of the participants have used the digital whiteboard, laptop and tablet ( $n = 26$ ; 22.2 %). It is also observed that another combination widely used by teachers is the digital whiteboard, mobile phone and Tablet ( $n = 21$ ; 17.9 %). From an individual perspective, it is observed that the most used element is the digital

whiteboard ( $n = 16$ ; 13.7 %), followed by the Tablet ( $n = 12$ ; 10.3 %). A similar use is also observed for computer and mobile devices ( $n = 9$ ; 7.7 %).

**Figure 1**  
*ICTs Used in Foreign Language Classes*



On the other hand, the sample recognizes that the most common activity employed in the development of their classes before the state of alarm was the use of the textbook ( $n = 45$ ; 40.2 %). It is also observed that the majority of teachers used ICTs to obtain material and information on a daily basis in order to prepare their foreign language classes before the state of alarm ( $n = 50$ ; 42.7 %). In addition, before the state of alarm, most teachers communicated through new technologies outside of school hours ( $n = 91$ ; 77.8 %).

Concerning the digital competences of teachers before the state of alarm, it is observed that the majority showed a medium ( $n = 44$ ; 37.6 %) and advanced ( $n = 60$ ; 51.3 %) level in the management of Office programs (see Table 3). Moreover, they acknowledged an advanced level in the use of search engines ( $n = 68$ ; 58.1 %).



**Table 3**  
*Degree of Digital Literacy in Office Programs before the State of Alarm*

	Frequency	Percentage
<b>Initial</b>	8	6.8 %
<b>Medium</b>	44	37.6 %
<b>Advanced</b>	60	51.3 %
<b>Expert</b>	5	4.3 %
<b>Total</b>	117	100.0 %

Focusing attention on the degree of competence in communication systems (email, videoconference, etc.), it is observed that the majority of the sample shows an advanced level ( $n = 71$ ; 60.7 %). Regarding the degree of competence in the text editor, it is detected that the majority of the study population shows a medium level ( $n = 51$ ; 43.6 %).

Continuing with the level in use of the virtual learning platforms, most of the population shows a medium ( $n = 48$ ; 41.0 %) and initial ( $n = 37$ ; 31.6 %) level.

As for the use of email before the state of alarm, it is evident that most of the participants show an advanced ( $n = 52$ ; 44.4 %) and medium ( $n = 42$ ; 35.9 %) level. On the other hand, in relation to the degree of knowledge of the use of ICTs for the preparation of presentations for classes, it is observed that the majority of the sample shows a medium level ( $n = 45$ ; 38.5 %) and advanced ( $n = 47$ ; 40.2 %).

The majority also recognizes that they have a medium level of competence in designing digital educational documents and creating multimedia activities ( $n = 45$ ; 38.5 %) and initial ( $n = 40$ ; 34.2%) and advanced level in the use of the digital whiteboard ( $n = 54$ ; 46.2 %).

Another important aspect in the acquisition of digital skills is the degree of competence to solve technical problems, where the majority shows a medium level ( $n = 59$ ; 50.4 %). Considering the degree of competence to understand one's own limitation in the use of digital elements, most of them showed a medium ( $n = 51$ ; 43.6 %) and advanced level ( $n = 43$ ; 36.8).

Continuing with the degree of competence to improve one's own digital literacy, it is evident that the majority of the sample claims to have an advanced ( $n = 56$ ; 47.9 %) and medium ( $n = 41$ ; 35.0 %) level. Focusing on the impact of the covid-19 alert on foreign language classes, it can be seen from Table 4 that the majority of

teachers used email, virtual teaching platforms, and other elements to teach ( $n = 68$ ; 58.1 %).

**Table 4**

*Means Used for Foreign Language Teaching during the State of Alarm*

	Frequency	Percentage
E-mail address	2	1.7 %
Virtual learning platforms	3	2.6 %
E-mail, virtual learning platforms and videoconferencing	1	0.9 %
Virtual learning platforms and videoconferencing	2	1.7 %
E-mail, virtual learning platforms and other	68	58.1 %
E-mail, videoconferencing and other	5	4.3 %
E-mail and virtual learning platforms	22	18.8 %
Email, social networking, virtual learning platforms and videoconferencing	11	9.4 %
E-mail, virtual learning platforms, videoconferencing and other	1	0.9 %
E-mail, videoconferencing, virtual learning platforms and others	2	1.7 %
<b>Total</b>	<b>117</b>	<b>100.0 %</b>

In terms of how the teachers found the resources mentioned above, most of these were found by their own search ( $n = 55$ ; 47.0 %). Likewise, it is observed that the majority of teachers used the Internet to obtain information and material on a daily basis ( $n = 64$ ; 54.7 %). The majority of participants also stated that they created their own digital material several times a week during the state of alarm ( $n = 42$ ; 35.9 %). Similarly, it is evident that they used websites or platforms to send homework and communicate with the families of the students daily ( $n = 54$ ; 46.2 %) and, they downloaded and uploaded material to a platform several times a week ( $n = 54$ ; 46.2 %). = 50; 42.7 %).

Furthermore, it is evident that the teachers participated in activities with the students in order to produce material several times a month ( $n = 45$ ; 38.5 %). In addition, it is shown that the majority of teachers prepared presentations with the new technologies several times a week during the state of alarm ( $n = 61$ ; 43.6 %) and reported feeling empowered to continue their teaching through these resources ( $n = 102$ ; 87.2 %). On the other hand, less than half of the teachers affirm that they have received support from the educational schools for the use of these resources during the state of alarm ( $n = 54$ ; 46.2 %). Likewise, most of the teachers who claimed to

have received help (Table 5) received it through online seminars ( $n = 19$ ; 16.2 %).

**Table 5**  
*How Training Was Received during the State of Alarm*

	Frequency	Percentage
No assistance received	59	50.4 %
Online seminars	19	16.2 %
Tools provided by the school	6	5.1 %
Professional and emotional support	18	15.4 %
Tools provided by the school and professional and emotional support	4	3.4 %
Online seminars, tools provided by the school and professional and emotional support	5	4.3 %
Online seminars and professional and emotional support	6	5.1 %
Total	117	100.0 %

Regarding the degree of knowledge after the state of alarm in the use of office programs, the majority shows an advanced level ( $n = 72$ ; 61.5 %). Likewise, most of the teachers show an advanced level in information search engines ( $n = 72$ ; 61.5 %). With respect to the degree of knowledge of communication systems, the majority of the sample shows an advanced level ( $n = 71$ ; 60.7 %) and with respect to the degree of knowledge of text and image editors, the majority of the sample shows an advanced level ( $n = 56$ ; 47.9 %).

Similarly, most of the sample shows an advanced level in sharing educational material through social networks, email or other virtual spaces ( $n = 69$ ; 59.0 %) and in preparing presentations for foreign language classes ( $n = 57$ ; 48.7 %).

With regard to designing digital documents, and creating multimedia games through software, most show an advanced level ( $n = 52$ ; 44.4 %), as well as in the use of the digital whiteboard ( $n = 61$ ; 52.1 %). They also present an advanced level in using the technological resources offered by the school ( $n = 68$ ; 58.1 %) and in solving technical problems ( $n = 50$ ; 42.7 %).

Focusing attention on their own digital competence, the majority of the sample shows an advanced level in trying to improve their digital skills on their own initiative ( $n = 58$ ; 49.6 %). As to whether teachers have had to modify their methodology and approach to student assessment, the majority of them say yes ( $n =$

108; 92.3 %). With reference to whether teachers have taken measures to avoid the exclusion of groups at risk from online teaching, most teachers state that they have implemented support and adaptations along with improved conditions. Regarding the main challenges that have arisen for teachers during the state of alarm (Table 6), these have been the follow-up support for students with special educational needs and the lack of digital resources by students ( $n = 20$ ; 17.1 %).

**Table 6**  
*Challenges Arising from the State of Alarm*

	Frequency	Percentage
Communication and monitoring of the students	16	13.7 %
Students' lack of interest	1	0.9 %
Support and monitoring of students with special educational needs	12	10.3 %
Adaptation of the evaluation criteria	11	9.4 %
My digital competence (creation of own resources and intensive use of ICTs)	1	0.9 %
Students' lack of digital resources	6	5.1 %
Lack of support and guidance from the school	3	2.6 %
Communication and monitoring of pupils and support and monitoring of pupils with special educational needs.	8	6.8 %
The adaptation of evaluation criteria and the lack of digital resources by students	17	14.5 %
The support and monitoring of pupils with special educational needs and the lack of digital resources by pupils	20	17.1 %
Support and follow-up, adaptation to assessment criteria and lack of digital resources by students	19	16.2 %
Communication and monitoring, support and monitoring for learners with special educational needs and my digital competence	3	2.6 %
<b>Total</b>	<b>117</b>	<b>100.0 %</b>

Regarding the level of satisfaction with the classes taught during the state of alarm, the majority are satisfied ( $n = 79$ ; 67.5 %). In response to the training needs experienced during the state of alarm, the majority show a need for training by both teachers and students ( $n = 34$ ; 29.1 %). Furthermore, 92.3 % of the sample think that the Spanish education system was not adapted to online teaching. In addition, despite the state of alarm, the majority of teachers still hold the same opinion ( $n = 65$ ; 55.6 %). Finally, from the Pearson Chi-Square test, statistically significant differences ( $p \leq 0.05$ ) are observed since it is stated that men under 30 years of age feel more motivated for the future use of ICTs compared to people of the same sex who are between 31 and 40 years of age (Table 7).

**Table 7**  
*Relational Study of Sex Together with Opinion after the State of Alarm*

	¿Has your opinión towards ICTs changed AFTER the state of alarm?		
	Yes, now I feel more motivated for future use	Yes, now I feel less motivated for future use	I think the same as before, I am still negative
<b>Males under the age of 30</b>	5 62.5 %	0 0.0 %	3 37.5 %
<b>Males between 31 and 40 years old</b>	0 0.0 %	0 0.0 %	4 100.0 %
<b>Males between 41 and 50 years old</b>	8 47.1 %	0 0.0 %	9 52.9 %
<b>Males over the age of 50</b>	1 10.0 %	1 10.0 %	8 80.0 %
<b>Females under the age of 30</b>	5 29.4 %	0 0.0 %	12 70.6 %
<b>Females between 31 and 40 years old</b>	12 54.5 %	0 0.0 %	10 45.5 %
<b>Females between 41 and 50 years old</b>	9 47.4 %	0 0.0 %	10 52.6 %
<b>Females over the age of 50</b>	11 55.0 %	0 0.0 %	9 45.0 %

## 5. Discussion

In this study, we analyzed the use of Information and Communication Technologies and digital competence from the teachers' perspective, before and after the state of alarm, caused by the COVID-19 pandemic. Throughout this period, teachers have been forced to put aside the traditional classroom teaching modality and become users of technological tools with the aim of interacting with their students (Sánchez et al., 2020).

According to the UN (2020) and previous studies (Hernández et al., 2016), the changes caused by COVID-19 have impacted the education system at all levels. However, teachers have responded positively to the changes and have demonstrated that they have a good level of ICT skills. The main findings of this research lead us to affirm that, before the pandemic, foreign language teachers were familiar with computer tools such as the office, search engines, communication systems, and the preparation of presentations for their classes, which allowed them to feel empowered to carry out the teaching process during the pandemic. This does not coincide with the results of other studies that highlight the lack of confidence and

motivation in the use of ICTs (Huertas & Pantoja, 2016; Pérez et al., 2011). However, when analyzing the use and knowledge of more elaborate digital tasks, such as text editing, the design of digital documents and multimedia activities, and the use of virtual learning platforms, the majority reported an intermediate and initial level before the lockdown. This lack of knowledge and confidence in carrying out challenging and more advanced tasks definitely agrees with previous studies indicating that teacher training is not totally appropriate (Andía et al., 2020; Area 2010; Cabero, 2004; Cabero & Marín, 2014; Chandrasena, 2019; Domingo et al, 2020; Fuentes et al, 2019; Galanouli et al., 2004; López et al., 2019; Losada & Rodríguez, 2019; Valdivieso & Gonzáles, 2016; Nowak, 2019). Regarding the resolution of technical problems related to the use of new technologies before COVID-19, the participants claimed to have a medium level, a finding that makes us consider, like other authors, the figure of the ICT coordinator and teacher as a fundamental catalyst in the process of applying digital technologies in the classroom (Area, 2010; Fernández-Cruz et al., 2018; Valverde et al., 2010).

With reference to the use of ICTs before the state of alarm, almost the entire sample stated that they used new technologies in order to prepare their classes and material, as well as in the classroom, and that they had been using them for more than 5 years of their own free will and not because the curriculum imposed it. Despite these data, when asked about the educational resources most used, they stated that it was the textbook, a result that coincides with other studies (Área et al., 2016) which emphasize the importance of the frequent use of the new technologies without replacing traditional teaching methods.

In relation to the impact of COVID-19 on the use of ICTs in foreign language class, teachers affirm that the use of technology media was daily and mainly through email and learning platforms. Taking into account that teachers declared a medium and initial level in the use of educational platforms, this last data makes us think that teachers had to adapt without prior notice or training and on their own to the new situation caused by the pandemic. In relation to the use of video conferences during the state of alarm, there were only few positive responses, showing that on many occasions teachers did not hold virtual classes with students and they did not have such a continuous and interactive relationship with them. As for the digital competencies, the first thing that is observed is that the teachers who claimed a medium level in the text editing and in the design of digital documents and multimedia activities, and a medium and initial level in virtual learning

platforms, after the state of alarm, indicated that they already had an advanced level in these aspects. This difference helps us to deduce that teachers had to become more actively involved in the development and improvement of their digital skills and, as a result of the increase in the frequency of ICT use during this time, they feel now more skilled in different tasks. At the same time, in relation to how they felt during the state of alarm, a large percentage assured that they were able to follow remote classes and that they were overall satisfied, a finding which leads us to conclude, unlike other studies (Sánchez et al., 2020), that the teaching-learning process is possible to continue on virtual contexts and via technology. Nevertheless, while some of the teachers acknowledge that they received help through seminars during the pandemic, more than half of the sample affirms that they did not receive any help during the state of alarm, whereas almost all the teachers felt that the education system was not prepared to face the situation caused by the pandemic. In that sense, the findings of the study align with previously mentioned statements by different authors arguing that the delivery of the classes in a virtual mode is only natural to create diverse problems (Palominos & Martínez, 2020) due to the fact that the teachers have not acquired the sufficient skills to help them overcome the obstacles presented by the new era (Díaz-Arce & Loyola-Illescas 2021) .

### **6. Limitations and suggestions for further research**

The limitations of the study are mainly provoked due to the state of alarm caused by the pandemic and its consequences, since it prevented us from completing the investigation using techniques of qualitative research as it was initially planned, such as semi-structured and focus groups that would allow us to achieve a fuller understanding of the changes produced regarding the use of ICTs and the development of teachers' digital skills after the pandemic. For future investigations, it is our intention to advance in this field of research from a qualitative point of view, promoting different types of sampling in various contexts.

### **7. Conclusion**

Among the challenges that arose regarding the use of new technologies during the state of alarm, the ones that stand out the most are the support and monitoring of students with special educational needs and the lack of digital resources by students,

data that makes us consider that the interruption of face-to-face classes can have a negative impact on students (Cotino, 2020). Other authors have also considered that this category of students is vulnerable and may be disadvantaged in the teaching-learning process (Harris, 2020; Román & Murillo 2014; Schmelkes, 2020).

On the other hand, it is worth mentioning that one of the most striking findings of the study is related to the age of the participants and the degree of motivation using ICTs. According to the results, males under 30 years of age feel more motivated to use and incorporate new technologies in the FL class, while participants over 31 years of age continue to think the same as before the pandemic and even from a negative stance, which is not consistent with other studies that have verified that older and more experienced teachers are the ones that have a better attitude towards ICTs (Muñoz Pérez & Delgado, 2019).

Finally, there is no doubt that the situation provoked by the pandemic has caused irreversible changes in society and in the educational world, manifesting a necessity in changing methodology and implementing new strategies in the teaching and learning process of the recent education model (Fombona et al., 2013), and pointing out that, although we live in a generation of young people who have been raised at the peak of digitization, this does not mean that their digital skills are adequate to deal with emergency situations in the classroom, such as the one we have recently experienced. Digital competencies are and will always be in development and the improvement of teachers' digital capacities will continue to be an educational challenge (Artacho et al., 2020). The continuous changes both in teacher training and in the use of new teaching-learning techniques lead us to conclude, like other authors (Laro, 2020; Soto, 2020), that ICTs will form an essential part of the post-pandemic education system.



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