



UNIVERSIDAD DE JAÉN
Centro de Estudios de Postgrado

Master's Dissertation/ Trabajo Fin de Máster

The use of ICTs in an emergency situation as a model for the traditional English classroom-based teaching, in light of a future emergency situation and a possible educational reform.

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Dpt.: English Philology

November, 2020

CONTENTS / INDEX

1. INTRODUCTION
2. LITERATURE REVIEW
3. OBJECTIVES
4. MATERIALS AND METHODOLOGY
 - 4.1. Sample/participants
 - 4.1.1. *Overall sample*
 - 4.1.2. *Students*
 - 4.1.3. *Teachers*
 - 4.2. Variables
 - 4.3. Instruments
 - 4.4. Data collection process
 - 4.4.1. *Questionnaire design*
 - 4.4.2. *Questionnaire validation*
 - 4.4.3. *Questionnaire administration*
 - 4.5. Data analysis: Statistical methodology
5. RESULTS AND DISCUSSION
6. LIMITATIONS OF THE STUDY
7. LINES FOR FUTURE RESEARCH
8. CONCLUSION
9. REFERENCES

ABSTRACT

During the school year 2019-2020, the global pandemic caused by the SARS CoV-19 forced several countries to undergo all academic centres' closure. Spain was one of those countries and teachers had to adapt their syllabuses, methodology, materials and classes to impart them through a virtual modality, since both teachers and students had to stay at home due to the alert state established countrywide. This paper focuses on the study of a sample of teachers of different specialization and academic level and two groups of English students of different levels from Spain, to assess their perceptions and experience with the use of ICTs in the English area as a second language before and during the alert state caused by the pandemic, as a proposal for a future emergency situation as the one experienced during the school year 2019/20.

RESUMEN

Durante el curso escolar 2019/20, la pandemia global causada por el SARS CoV-19 forzó a varios países a sufrir el cierre de todos los centros educativos. España fue uno de ellos y los profesores tuvieron que adaptar sus programaciones, metodología, materiales y clases para impartirlas a través de una modalidad virtual. El presente trabajo se centra en el estudio de una muestra de población de profesores de distintas especializaciones y niveles de enseñanza y dos grupos de alumnos de Inglés de varios niveles, para examinar sus percepciones y experiencia con el uso de las TIC en el área de Inglés como segunda lengua antes y durante el periodo de estado de alarma provocado por la pandemia, como posible propuesta de cara a una futura situación de emergencia similar a la vivida durante el curso escolar 2019/20.

1. INTRODUCTION

It is a noticeable fact that the New Information and Communication Technologies (ICTs) development has a huge and growing impact in our society today. People are eager to be socially connected and this is easier through the use of ICTs since they allow to break some physical barriers such as time, place, culture, etc. Even those who are not connected are considered excluded from a society based on the Internet for business, learning and socialization (Castells, 2001).

These ICTs development and improvements have come too quickly to even let our society to accept and adapt to their complexity. Education is one of the biggest fields affected by this situation. This unpreparedness to deal with the use of ICT has led to keep them, to some extent, apart from the classroom. This is, the teaching community has included some of their benefits, as using the Internet to play a video or a song, using the interactive whiteboard to work with some educative applications, teaching students how to use certain software, etc. But this usage is minimum compared to all that the Internet and ICT can offer us. This situation causes a clear imbalance between the use of technological resources in the school and outside school, since students have more resources and make greater use of them in their personal environment (Fundación Telefónica, MECD, 2016).

At this point, an education change would be reasonable. Schools and other education centres are too standardized and education needs to be reformed and move forward along with technological advances.

Up until now, the traditional teaching style has gone on positively without the interference of any big consequence. But, between late 2019 and 2020 the whole world has been affected by a global pandemic caused by the spread of the coronavirus SARS-CoV-2 (commonly known as COVID-19). Many governments from various countries such as Spain had to implement a National state of emergency to limit the number of people congregating in public places. Such state of emergency has interfered directly with the ordinary school life.

The SARS-CoV-2 pandemic is, according to the United Nations Development Programme (2019) the defining global health crisis of our time and the greatest challenge we have faced since World War Two. Other situations like extreme weather, natural disasters or armed conflicts may produce a similar effect in education normalcy.

Given the complexity of how education is impacted by this type of emergencies, innovative solutions are needed to ensure that disruption to education is minimized (GEM Report, UNESCO, March 2017)

Particularly in Spain, there wasn't a contingency plan available for this kind of situations. One of the first consequences in Education was that professionals from educative centres weren't prepare to face a situation in which they have had to change and adapt the classroom-based teaching and learning processes to a 100% virtual model in a matter of days.

In general, the problems teachers and students of all levels have had to face through this quick adaptation are the following:

- Those teachers who used to work with updated and innovative methodologies, resources, materials and activities before the pandemic had to reorganize their syllabuses, but quite superficially. Their students only had to adapt to the new situation (which was not easy) and follow the lead of their teachers. All of them already learnt how to use most of the technological resources and materials they had to work with online because they frequently worked with them before the pandemic.
- Teachers who were lagging behind and usually worked with traditional and outdated methodologies, resources, materials and activities had to change their syllabus quite substantially. This forced process of adaptation and updating must have been a significant struggle, especially for them. Their students did likely struggle in their adaptation too not being used to study and work with ICT resources and materials: either they lacked the necessary IT resources at the moment or they lost the beat and part of the contents planned for the academic period.

- Some other students struggled, not having their devices available at home, either because their parents were home-working too and needed them most of the time or because they were more than one student at home with the same or similar timetable.

In this situation, a number of curricular, methodological and assessment adjustments were forced to be implemented in every educational project of any country. With this, the need for greater attention to the digital competence has been placed in evidence. When we get back to normal, it would be unsustainable to go back to the same standardized and entrenched education, mostly because we don't really know if "normal" would be the same as it was before.

According to the epidemiological characteristics of SARS-CoV-2, it is unclear for how long we will need to uphold social distancing measures. So, in this situation, the reopening of schools and returning to traditional classroom-based teaching with 20-25 students in the same classroom would be totally unreasonable and risky to the population of any country for the time being.

Whether we can go back to normal at schools or not, we have learnt a lot from this experience and we should use that to normalize the situation as much as we possibly can and benefit from the advantages ICTs can bring us to facilitate the learning and teaching processes in the future.

This study aims at learning about how English teachers and students of different levels in Spain experienced the shift to online learning and finding out about their preferences and impressions for a future educative normalcy.

2. LITERATURE REVIEW

To move forward, improve and express. That is the purpose of education. (Linways Team, 2016)

As we can read on the UNESCO (United Nations Organization for education) website, Information and Communication Technology (ICT) can complement, enrich and transform education for the better.

We can find worldwide researches over the past two decades that demonstrate and ensure that the implementation of ICT in education improves students learning results and the use of better teaching methods. A report made by the National Institute of Multimedia Education in Japan, proved that an increase in the use of ICT in education with integrating technology to the curriculum has a significant and positive impact on students' achievements. The results specifically showed that the students who are continuously exposed to technology through education have better 'knowledge', presentation skills, innovative capabilities, and are ready to make more efforts into learning as compared to their counterparts. (March, 2007)

According to Çakici (2016) there are many advantages in the use of ICT in teaching English as a second language (SL):

- Their use enhances and facilitates foreign language learning
- Their use raises students' motivation and language awareness (Altun, 2015)
- The implementation of ICT will lead to variety in English content, contexts and pedagogical methods in teaching environments
- ICT makes English language environments interactive, flexible and innovative. (Qin and Shuo, 2011)
- The application of computer technologies in language instruction provides a student-centred learning environment
- It enables teachers to vary lesson presentation styles to motivate students of varying interests
- It provides learning opportunities outside the classroom
- It caters more for individual differences
- Integrating technology into language instruction reduces students' language learning anxiety, but encourages them to be risk takers to practice target language as they are digital natives (Al-Mahrooqi and Troudi, 2014)
- The availability of a large body of authentic materials facilitates presenting and practicing language
- ICT fosters learner autonomy as ICT tools provide learners to take responsibilities for their own learning
- Students are free to choose the material convenient for their learning styles
- ICT provides authentic situations and real life learning environment

- As ICTs offer different types of facilities and availability of teaching materials, EFL teachers only suggest and design these tools as complementary teaching materials
- As for assessment, with the ICTs both receptive and productive skills are easily and effectively assessed

Çakici also talks about an effective use of ICT, not their simple implementation. The mere presence of technological resources in schools with the high capacities of students from the “Technological Generation”, are not sufficient to develop in students the digital competence (Fernández and Fernández, 2016).

The European Commission identifies the Digital competence, which refers to the confident and critical usage of the full range of digital technologies for information, communication and basic problem-solving in all aspects of life. The *Eurydice report* (2012) shows us that almost all European countries have a specific national strategy related to digital competence.

But one of the biggest issues to consider regarding the development of the digital competence is how educational institutions are integrating the ICTs in the classroom (Ruiz and Sánchez, 2012; Sigalés, Mominó, Meneses and Badía, 2009) since around two thirds of schools don’t have specific plans for an effective integration of ICT.

If schools don’t have an agreed and well developed project related to the use ICTs, the biggest consequence is that in most of the teaching practices carried out with the use of digital technologies, important aspects such as a meaningful learning or the use of innovative teaching methodologies are not being considered (Area, 2010), and this doesn’t represent a true innovation or improvement concerning traditional teaching practices (Christian and Mathrani, 2014).

Dr. Ruben Puentedura designed a framework that categorizes four different degrees of classroom technology integration: Substitution, Augmentation, Modification, and Redefinition. Those 4 degrees give the name to Puentedura’s model, the “SAMR” model. According to the SAMR model, the way most of public and charter schools are implementing the ICTs corresponds to the first level, Substitution degree, which means that “technology acts as a direct tool substitute with no functional change”, and sometimes

to the second level, Augmentation degree: “technology acts as a direct tool substitute with some functional improvement”.

In the end, schools are replacing traditional tools with technology, which makes little sense. Layering technology into antiquated tasks isn’t going to improve the learning experience. But purposefully altering the substance of these tasks to address the skills students need today (and those they’ll need tomorrow) will improve learning. (Schoology, 2017)

Many researchers conclude that the main reason of this superficial implementation of ICT in schools is the lack of training or knowledge to use technological tools by the teachers. (Valverde, Garrido and Sosa, 2010; Adu et al., 2013; Seaman and Tinti, 2013; Araujo, 2014; Cabero and Marín, 2014; Vázquez and Cabero, 2015; Fernández and Fernández, 2016)

According to UNESCO, successful integration of ICT into teaching and learning requires rethinking the role of teachers in planning and applying ICT to enhance and transform learning.

With the recent impact suffered from the SARS-CoV-2 pandemic, those deficiencies in Education institutions have been highlighted.

The State government of most countries had not planned a Contingency Program in Education against critical situations like the one we have been facing with the closure of academic centres and social distancing measures.

Under these circumstances teachers struggled to keep up with their teaching duties, remaking the substance of their classes, reinventing themselves and adapting to the hurdles faced with the new situation but also to the range of possibilities available in today’s online world.

According to Reimers and Schleicher, in their paper *A framework to guide an education response to the COVID-19 Pandemic of 2020*, the pandemic is likely to generate the greatest disruption in educational opportunity worldwide in a generation. This disruption will impact the livelihoods of individuals, and the prospects of their communities.

The global health crisis caused by SARS-CoV-2 is categorised as an emergency situation. Although there are many classifications of the possible emergency situations, we will use a brief summary of the classification established by Mladjan and Cvetkovic (2013:304):

- Natural emergency situations: Earth natural phenomena (earthquake, tsunamis, avalanches), meteorological phenomena (storms, hurricanes, floods) and biological phenomena (bugs overrun, epidemics or infectious diseases)
- Man-made emergency situations: technological (fire, poison release), explosions (chemical, nuclear), pollutions (chemical, atmospheric pollutions), transport related (air, road, rail), at public places (fire, collapse), production (failure of computer systems, distribution of faulty goods), wars (nuclear, chemical, political)
- Hybrid-combined emergency situations: combination of human error and natural forces (floods that devastate a community, location of settlements at the foot of active volcanoes)

The issue that is of direct concern to us in this paper is the emergency situations in which students have a physical impediment to attend school or other academic centre while they have access to technology. That is, some of natural and man-made emergency situations, considering their magnitude, intensity, damage and time to recover (Mladjan and Cvetkovic (2013:298), among others.

As stated in the Emergency handbook (UNHCR, 2020), “Education in emergencies provides immediate physical and psychosocial protection, as well as life-saving knowledge and skills (for example, with respect to disease prevention, self-protection and awareness of rights). If children and youth receive safe education of good quality during and after an emergency, they will be exposed less frequently to activities that put them at risk. They will also acquire knowledge and mental resources that increase their resilience and help them to protect themselves. Inclusion in national education systems enhances these protection benefits”.

According to Carlson (2013), “conflict and/or crisis affected environments are particularly challenging, but information and communication technologies (ICT) have considerable potential to improve the quality of education in these settings”.

The technological alternative to classroom-based teaching these days is virtual learning. This modality of education meets the needs in a situation of emergency in which students do not have the opportunity to attend school but have access to technology. Virtual learning is also known as teletraining, distance learning, online learning, e-learning, etc. There are also some other modalities such as b-learning (blended learning), that combines face-to-face learning with distance learning, or m-learning (mobile learning), learning through mobile devices. (*E-learning introduction*. 2018:10)

To be brief, we could use a summarized definition of virtual or e-learning as the one offered by Cabero (*Pedagogic bases of e-learning*. 2006:2): “Training that uses the network as an information distribution technology, being this one either an open network (Internet) or closed (intranet)”. E-learning has been also defined as a learning environment which uses information and communication technologies (ICT's) as a platform for teaching and learning activities. Also known as "pedagogy empowered by technology". (en.wikiversity.org)

Kulik (1994) showed in his meta-analysis study that on an average students who used ICT-based instruction, learn more and score better. ICT based instruction makes the classroom interesting and attractive to the students. Attwell and Battle (1999) examined the relationship between having a computer at home and school performance. The findings revealed that students who have access to a computer at home for educational purposes, have improved scores in reading and mathematics. Cabero (2001) reported that "the flexibilization time-space accounted for by the integration of ICT into teaching and learning processes contributes to increase the interaction and reception of information. Such possibilities suggest changes in the communication models and the teaching and learning methods used by teachers, giving way to new scenarios which favour both individual and collaborative learning". (Musheer. *ICT as a catalyst for teaching-learning process: A meta-analysis study*. 2018:62)

According to Musheer in his research, “ICT has a major role not only on what learner should learn, but also on how the learner should learn. Along with this change of domain from “content-centered” to “competence-based”, the medium of information delivery has also now been shifted from “teacher centered” to “student-centered” method of delivery. ICT enhances motivation to learn among students”. (2018:63)

According to Cabero (*Pedagogic bases of e-learning*. 2006:3), e-learning has the following distinctive characteristics:

- Learning mediated by computer
- Use of web browsers to access the information
- Teacher-student connection separated by space and time
- Use of different communication tools, either synchronous or asynchronous
- Multimedia
- Hypertext-hypermedia
- Storage, maintenance and management of materials on a web server
- Flexible learning
- Learning highly supported in tutoring
- Digital materials
- Individualised learning versus collaborative learning
- Interactive
- Use of TCP and HTTP protocols to facilitate communication among students and the learning materials , or the resources

E-learning implementation in emergency situations and also in any other situation has its own advantages and disadvantages.

Cabero makes a classification of e-learning advantages and disadvantages according to the ones most referred to in other studies (2006:3,4):

Advantages:

- It makes a wide volume of information available to students
- It facilitates the update of information and contents
- It increases the flexibility of the information, regardless of the time and space where the teacher and students are
- It allows the relocation of knowledge
- It facilitates student autonomy
- It promotes a just-in-time and just-for-me training
- It offers different tools of synchronous and asynchronous communication for students and teachers
- It promotes a multimedia learning

- It facilitates group and collaborative learning
- It promotes the interactivity in different areas: with the information, with the teacher and among students
- It facilitates the use of materials, learning objects, in different courses
- It allows the registration of students' activity in the server
- It enables saving costs and commuting

Disadvantages:

- It requires a higher investment of time by the teacher
- It requires minimal technological competences by the teacher and students
- It requires students' abilities to autonomous learning
- It may diminish learning quality if teacher-students ratio is not adequate
- It requires more workload than conventional teaching
- It entails a low quality in many courses and current contents
- It faces a resistance against the change of the traditional educational system
- It imposes solitude and the absence of physical references
- It depends on a high-speed Internet connection
- Teachers are little trained
- It entails security and authentication problems by the student
- There is no experience in its utilization
- There is a digital divide

Cabero also adds: "we must indicate that some of the disadvantages will be disappearing as we acquire a greater experience in its utilization, and its presence becomes more usual in our educative system, while other disadvantages will remain".

According to García-Valcárcel and Tejedor (2012), there are many reasons why the ICT integration processes fail in the educational world:

- Deficient teacher training
- Lack of coordination and group work
- Lack of ICT coordination
- Lack of technological infrastructure and educative resources

(Tejedor and García-Valcárcel, 2006; Becta, 2004)

The educational policies applied in a decentralised way have been other constraints that have impacted the ICT integration plans in an uneven way in a centre. (De Pablos, Colás and González, 2010; Area, Hernández and Sosa, 2016)

(Fernández, Fernández, and Rodríguez. *The integration process and pedagogical use of ICTs in Madrid schools*. 2018:398)

According to *Atresmedia*, through the “*Levanta la cabeza*” initiative (Madrid, 2020), online teaching is the key to mitigate the consequences of an emergency situation as the one lived in 2020 with the pandemic, but lots of centres, less-favoured areas and certain families are not prepared to receive online classes.

Many educative centres consider that implementing virtual platforms in their teaching-learning processes is something impossible because some of their students do not have access to Internet or even to a computer and many teachers, during the schools closure caused by the pandemic, needed additional time for the planning and adaptation of the tasks due to the different situations of their students.

However, according to the initiative “*Levanta la cabeza*” (Madrid, 2020) many university students, who ensure they are used to a continued use of ICTs in their studies, did not find great difficulties with the access to technology or the use of virtual learning, since a great number of universities already worked with educative technological platforms, such as Moodle, in which teachers offer different courses with a very high level of student participation.

Such problems in schools of lower educational levels (early childhood and primary) may probably be caused by, according to Cabero’s disadvantages of e-learning, the resistance against the change of the traditional educational system, the scarce experience in its utilisation and/or the centres and teachers’ low training in the implementation of e-learning or ICTs for educational purposes.

Now, based on the research made on the use of ICTs to keep or improve the quality of education in situations of emergency, we will review some requirements, steps and guiding principles for the designing or programming of an educational technology project.

Burde et al. (2015) in their research *What works to promote children's educational access, quality of learning, and wellbeing in crisis affected contexts*, talk about the *Theory of change*, which is “based on the assumption that conflicts and disasters disrupt or undermine education by destroying infrastructure, forcing migration, and/or increasing psychological distress and/or intolerance among groups within a region or state. Programmes intended to support education in the context of these disruptions aim typically to intervene with *additional administration, infrastructure, and resources*, or to provide revised educational *content and practices*”. We can see the development of this idea in Figure 1.

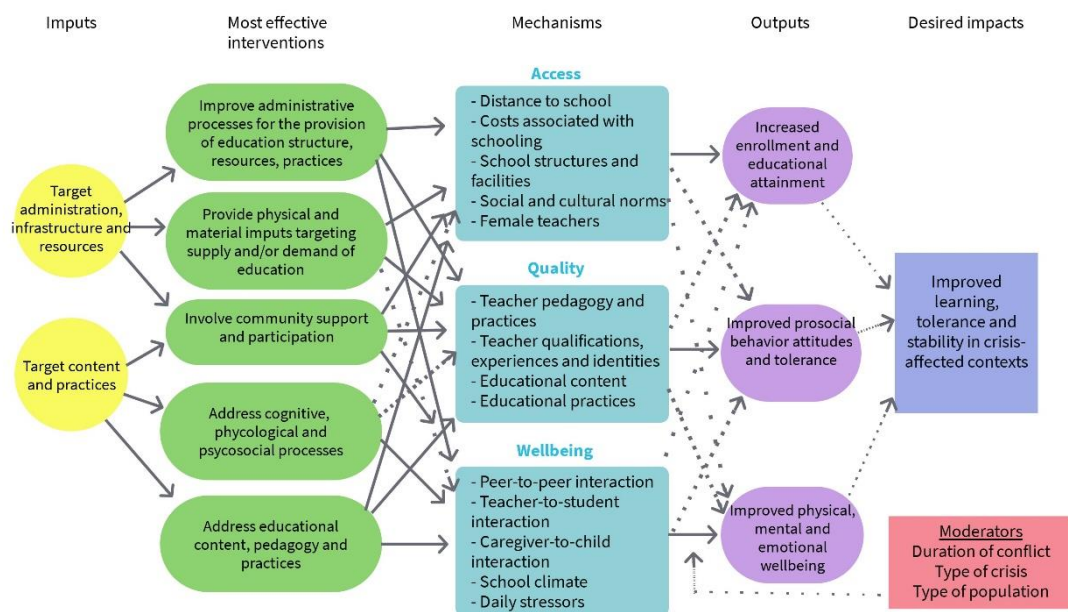


Figure 1: Theory of change, Burde et al. (2015:11)

As mentioned above, this theory of change distinguishes between two types of interventions intended to improve educational *access, quality, and wellbeing* towards the goal of promoting learning. These are the following:

- Interventions that focus on improving *administrative support* (e.g., community-based schools, safe spaces), *infrastructure support* (e.g., prefabricated schools, improvement of existing schools), and *financial resources/support* (e.g., cash transfers, scholarships, school feeding programmes).
- Interventions that focus on changing *content and practices*: these may use programmatic and material inputs that address cognitive and psychological

processes, educational content, and pedagogy (e.g. contact peace education programmes, teacher training, or cognitive behavioural therapy).

Carlson in his work *Using technology to deliver educational services to children and youth in environments affected by crisis and/or conflict* (2013) develops 10 guiding principles “for designing an educational technology project or component in a challenging resource-constrained environment”. They are well substantiated by some studies reviewed in the same paper. “Adhering to them, while adapting them to the specific country in question as needed, would greatly increase the likelihood of the program’s success”. We will summarise these guidelines as follows:

1. Clarify objectives: To clarify the highest priority objective of the program and then consider whether educational technology is the best option to achieve it.
2. Fit for purpose: To specify the target educational levels, disciplines and geographic areas to be reached through educational technology and design accordingly.
3. Embrace failure: This requires a programmatic commitment to learn and adapt through experimentation and iteration, supported by robust and regular monitoring and evaluation.
4. Know your time horizon: To make a lasting impact, the first-order concern is planning for equipment breakdown, reductions in funding, etc., and consider incentives among program participants and local communities to keep it going.
5. Prioritize the human-ware: Invest in high-quality, iterative, multi-method training for teachers including face-to-face, peer-based, on-line, and self-paced training, emphasizing how technology can create improved learning experiences for students.
6. Content is king: Make sure the content is relevant, interesting, activity-oriented, and in the appropriate language. Clarify what educational content can and should be accessed by technology and how it will be used by students to learn.
7. Connectivity is queen: Wherever the spread of telecommunications infrastructure makes connectivity possible, even in countries affected by crisis and conflict, exploit this advantage.
8. Simplicity is golden: Keep the technology as simple, easy to use, and reliable as possible, because maintenance and technical support cannot be guaranteed. Design for the hardest-to-reach classroom environments.

9. Power up: Choose devices that use less power in the first place. For example, smartphones, radios, and small LCD projectors can now be re-charged through renewable energy sources which offer a big advantage.

10. Do not “reinvent the flat tire”: Dumping hardware in schools, offering one-time teaching training on the cheap via a cascade model, considering educational content only after the hardware has rolled out, making a big bet on an unproven technology or single vendor just hoping to avoid 'lock-in' – these facts appear to save money, time, effort, and other resources, but ultimately they result in failure to achieve the program’s objectives. (Carlson. 2013:32-34)

Reimers and Schleicher in their essay *A framework to guide an education response to the COVID-19 pandemic of 2020*, present a checklist for an education response to the SARS-CoV-2 pandemic, which we will summarize below.

1. Establish a task force or steering committee that will have responsibility to develop and implement the education response to the Pandemic (e.g. various departments curriculum, information technology, teacher, parent and students representatives).

2. Develop a schedule and means of frequent and regular communication among task force members, during the period when social distancing will be in effect.

3. Define the principles which will guide the strategy and help prioritize time and other limited resources (e.g. protecting the health of students and staff, ensuring academic learning and providing emotional support to students and faculty).

4. Establish mechanisms of coordination with public health authorities so that education actions are in synch and help advance public health goals and strategies.

5. Re-prioritize curriculum goals given the reality that the mechanisms of delivery are disruptive. Define what should be learned during the period of social distancing.

6. Identify the feasibility of pursuing options to recover learning time once the social distancing period is over.

7. Identify means of education delivery. Those should include online learning, as it provides the greatest versatility and opportunity for interaction.

8. Clearly define roles and expectations for teachers to effectively steer and support students’ learning in the new situation, through direct instruction where possible or guidance for self-directed learning.

9. Create a website to communicate with teachers, students and parents about curriculum goals, strategies and suggested activities and additional resources.

10. If an online education strategy is not feasible, develop alternative means of delivery (e.g. TV programs, podcasts, radio broadcasts, learning packages, etc.).
11. Ensure adequate support for the most vulnerable students and families during the implementation of the alternative education plan.
12. Enhance the communication and collaboration among students to foster mutual learning and wellbeing.
13. Create a mechanism of just-in-time professional development for teachers and for parents to be able to support learners in the new modality of instruction.
14. Define appropriate mechanisms of student assessment during the exigency.
15. Define appropriate mechanisms for promotion and graduation.
16. As needed, revise regulatory framework in ways that make online education and other modalities feasible, and in ways that support teacher autonomy and collaboration.
17. Each school should develop a plan for continuity of operations. Education authorities can provide curated examples of plans in other schools.
18. When the school provides meals to students, develop alternative means of distribution of food to students and their families.
19. When the school provides other social services, such as mental health support, develop alternative forms of provision.
20. Schools should develop a system of communication with each student, and a form of checking-in daily with each student.
21. Schools should develop mechanisms of daily checking in with teachers and school staff.
22. Schools should provide guidance to students and families about the safe use of screen time and online tools to preserve student well-being as well as provide protection from online threats to minors.
23. Identify other school networks or systems and create forms of regular communications with them.
24. Ensure that school leaders get the financial, logistical and moral support they need to succeed.
25. Develop a communications plan. Map key constituencies, and key messages to support the execution of the education strategy during the exigency and ensure those are effectively communicated through various channels.

We could say that considering Carlson's guiding principles and Reimers and Schleicher's list of suggestions to act and deal with education in an emergency situation like a pandemic with the help and use of ICT, the next thing to consider should be how to successfully implement ICT for educational purposes in educative centres as the key to make everything else above-mentioned work.

In agreement with Cabero in his work *The challenges of the ICTs integration in education. Limits and possibilities* (2010:56), we must consider that ICTs incorporation in academic centres will impact on "the organisational structures, the subjects' organisational knowledge, the engagement level, the balance of power, the horizontality, the power hierarchies, or the verticality of information".

According to Cabero (2010:50), to benefit from all the possibilities that ICT educational implementation can deliver, develop its full potential and minimize its limitations (above-mentioned disadvantages), we should begin by considering the following measures:

- To increase ICTs physical presence until they reach invisibility
- The existence of catalyst centres
- The transformation of the current teaching conceptions and the current perception of ICT's role
- Teacher training
- Curriculum change
- To overcome the uncertainty every change produces
- The technological-media literacy
- To transform the organisational structures
- The educational investigation strengthening

Something that Cabero (2010:56) also adds and should be highlighted and truly considered is that "for the use and curricular implementation of ICTs, instead of a mere additive, we should probably forget more about the source and focus on the other variables: teacher, students, contents, etc. (...) Probably today's problems are not technological, we have highly friendly technology to use; probably problems come from knowing what to do with them".

From those nine measures, we could emphasise two that may be more relevant in order to implement ICT in education concerning emergency situations, as a starting point:

- The educational investigation strengthening. It is necessary to foster ICT educational investigation in order to reduce the current lack of knowledge about the educative performance of those technological tools and resources at our disposal.
- Teacher training: As Cabero suggests, the limitations in the use of technology for education purposes could be directly related with its knowledge. This could be minimized considering *teacher training* as key in ICTs implementation and addressing it from different angles:

According to UNESCO (2018:8), we can specify six aspects of a teacher's professional practice regarding their pedagogical use of ICT:

1. Understanding ICT in Education Policy
2. Curriculum and Assessment
3. Pedagogy
4. Application of Digital Skills
5. Organization and Administration
6. Teacher Professional Learning.

UNESCO (2018:21-47) also defined 3 levels or stages of teachers' pedagogical use of ICT (See Figure 2):

- Level I: *Knowledge Acquisition*. The goal is to enable teachers to support students to use ICT to be effective learners and productive members of society.
- Level II: *Knowledge Deepening*. The goal is to increase the ability of teachers to support students to apply knowledge to solve complex, high-priority problems encountered in real-world situations of work, society and everyday life.
- Level III: *Knowledge Creation*. The goal is to enable teachers to engage in, and benefit from, knowledge creation, innovation and lifelong learning. Teachers should be able not only to design classroom activities that advance these goals but also to develop programmes to support them throughout the school environment and beyond.

“The underlying idea is that teachers who have competencies to use ICT in their professional practice will deliver quality education and ultimately be able to effectively guide the development of students’ ICT competencies”.

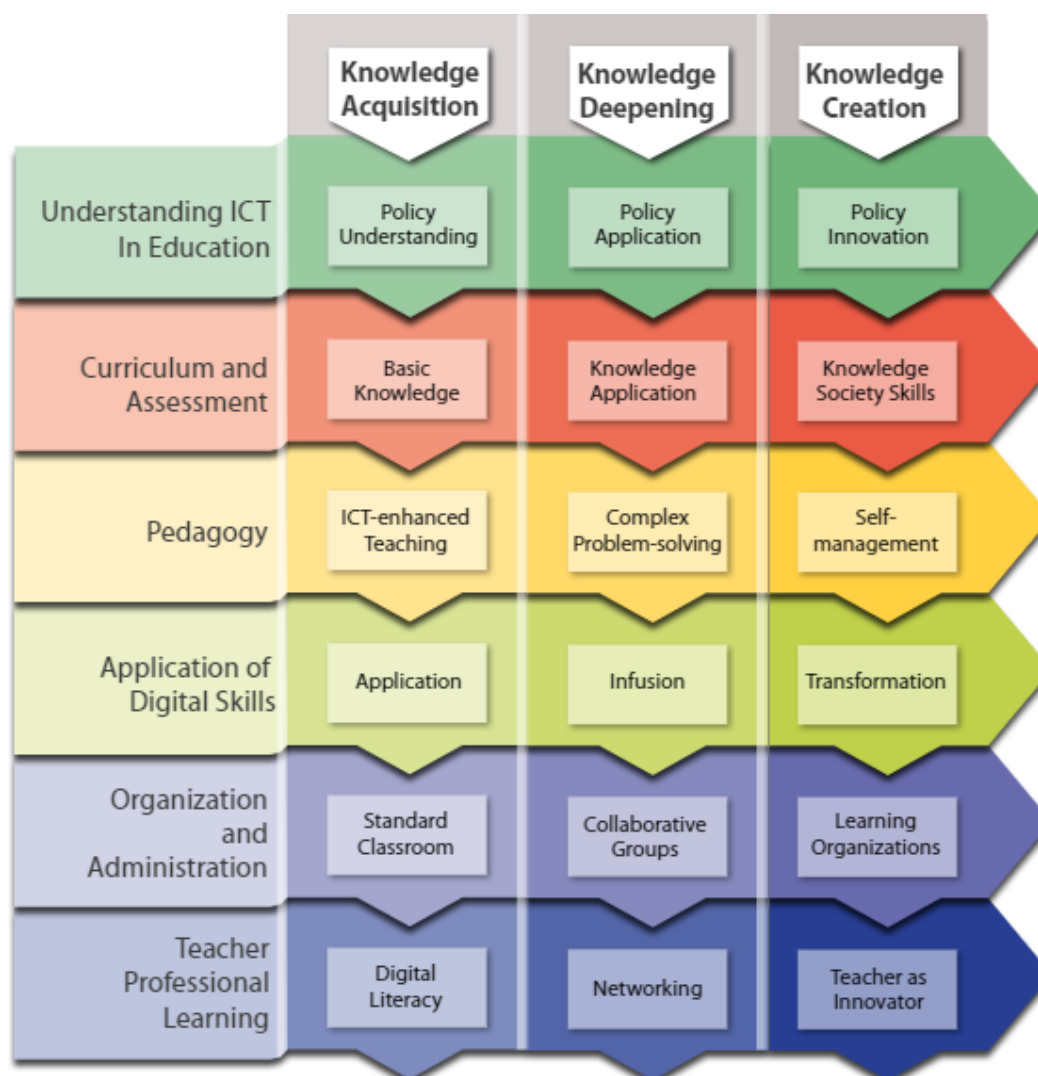


Figure 2. Three levels of teachers’ pedagogical use of ICT. UNESCO. 2018:2.

3. OBJECTIVES

The main focus of this study is to assess Spanish teachers and students’ experience and their teaching-learning practice performed during a specific period of time – the closure of academic centres forced by SARS-CoV-2 pandemic in the school year 2019/20 – in order to use the insights gathered as a model for the traditional classroom-based teaching aimed at a future similar situation of emergency and a potential educational improvement.

This purpose may be defined and structured by the following objectives:

1. To design, administer and validate questionnaires addressed to both stakeholder groups and analyse the results in order to accomplish objectives 2 and 3.
2. To identify teachers and students' perceptions
 - 2.1. To learn about the methodology, technological resources and materials that teachers used before the pandemic period.
 - 2.2. To learn about the methodology, technological resources and materials this population used during school closures in the alert state.
 - 2.3. To inquire how teachers experienced their teaching work with the closure of their academic centres.
 - 2.4. To know about college and university students' perceptions of ICT to learn English as a second language (SL).
3. To establish a comparison between both cohorts
 - 3.1. To know about the concerns and suggestions of both groups (teachers and students) regarding a future teaching/learning experience after the social, political and economic impact caused by the pandemic.
 - 3.2. To conclude, according to their opinions, what the most optimal way will be for the implementation of ICTs in English teaching and learning processes in similar future emergency situations.
 - 3.3. To conclude, according to their opinions, what changes the current teaching system in Spain should undergo in the next academic courses for the improvement of the teaching and learning processes concerning the implementation of ICT to foster a better preparedness in future crisis or emergency situations.

4. MATERIALS & METHODOLOGY

This paper is framed within the non-experimental research. It is an *ex-post facto* investigation, since it is not possible to manipulate the independent variables and the research has been carried out once the facts have passed naturally in order to analyse

them. Further, the present paper is qualitative in nature because it is based on non-participatory observation and it is intended to find the opinion of the participants in the areas related to the present research topic aim. This is also a primary research since the information is directly collected from the participants through questionnaires (online surveys). This research employs a *method* to address it from multiple perspectives:

- It involves data triangulation, since it is conducted with different stakeholder groups: teachers of different specialities and teaching levels and English students from different language and academic levels.
- It involves environmental triangulation through the use of different locations: participation of teachers from centres in different Spanish locations (Andalusia – Huelva, Cordoba, Seville, etc., Murcia, Valencia, Madrid and Barcelona), teachers from all education levels centres (childhood, primary, secondary – college, vocational training, university and postgraduate studies) and centres with different types of subsidy (public, charter, and private academic centres) and, finally, English students from two different centres in Jaen and Granada.

4.1. Sample/participants

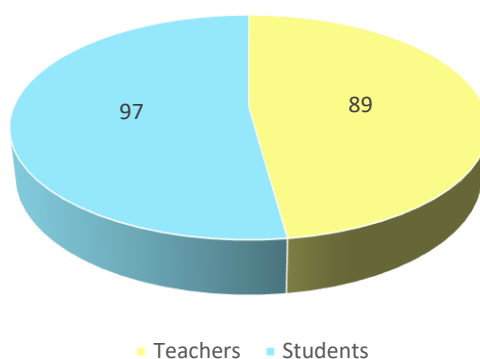
This paper work focuses on the study of two different cohorts of investigation: teachers from different locations of Spain and students from Granada and Jaen, Andalusia. A breakdown of both cohorts will be made below.

4.1.1. Overall sample

First, it is important to highlight the difficulties faced in collecting participants from both cohorts due to the different situation schools and other academic centres where dealing with through the development of this study. As mentioned in a previous section, since the impact caused by the SARS-Cov-2 pandemic, the Spanish State declared the alert state countrywide and the closure of schools with it. Even though the pandemic situation is precisely one of the main topics of this paper work, the initial proposal pretended to analyse a wider range of population: teachers and students from all educative levels –childhood and primary education included, but this was complicated for those two cohorts with the difficulties they were facing.

Participants represent a randomly selected sample in order to get more reasonable results and an unbiased depiction of population. The number of participants involved in this research is 186 in total: 89 teachers and 97 students (cf. Graph 1).

STAKEHOLDER GROUPS

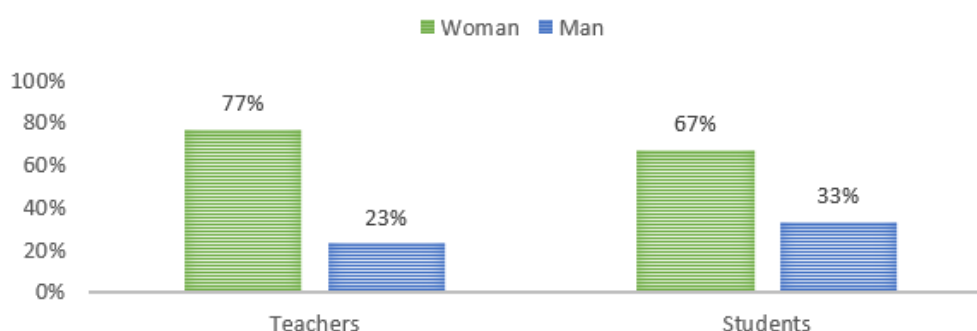


Graph 1. Breakdown of the overall sample in relation to cohort

All participants live and/or work in Spain, although information related to their nationality was not collected, since it was considered an irrelevant fact for the purpose of this research.

According to the gender of the participants, we can appreciate that both cohorts revealed a higher percentage of female (77% for teachers and 67% for students) than male participants (23% for teachers and 33% for students). (cf. Graph 2)

GENDER

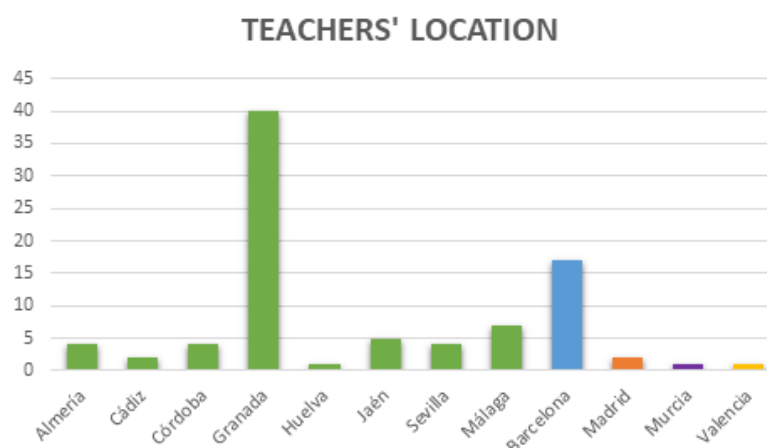


Graph 2. Gender comparative display

Information collected about other identification variables and the breakdown of other means of the study related to both cohorts are specified below.

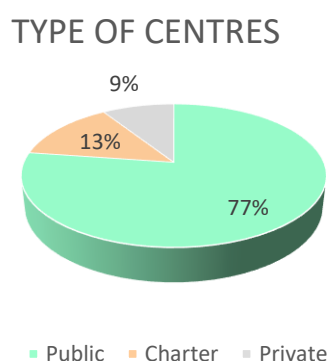
4.1.2. Teachers

Teachers from different locations of Spain participated in this study. Most of them, 75% comes from Andalusia, because of the proximity to the place where the study took place, Granada, with a total of 45.5% of the teachers. The 25% left corresponds to teachers from Barcelona, Madrid, Murcia and Valencia. (cf. Graph 3)



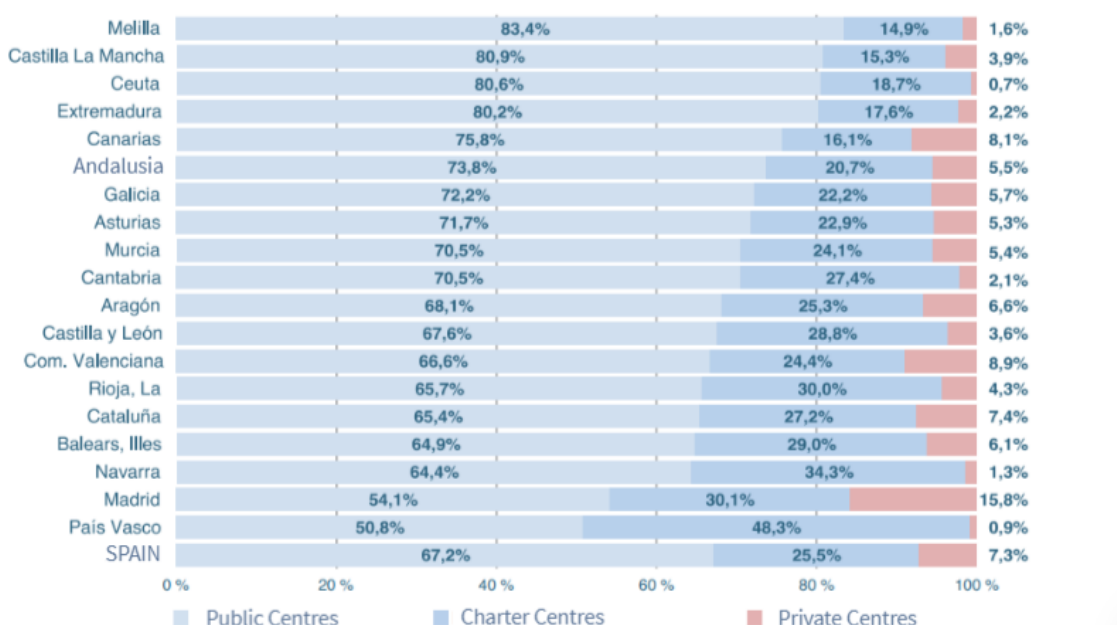
Graph 3. Location of teachers' centres

The schools or academic centres participants belong to, can be of different types of subsidy (public, charter, and private centres). As it is clearly appreciated (cf. Graph 4), most of the participants work in public education, 77.5%, 13.5% works in charter centres and the remaining 8.9% in private centres. This higher percentage of teachers from public schools matches the statistical results gathered by the Spanish Ministry of Education concerning the funding type of educational centres in Spain in the school year 2019-20 (cf. Graph 5). In Graphic 5 we can see that 73.8% of educational centres in Andalusia are public, while there is 67.2% of public centres in Spain (cf. Graph 6).



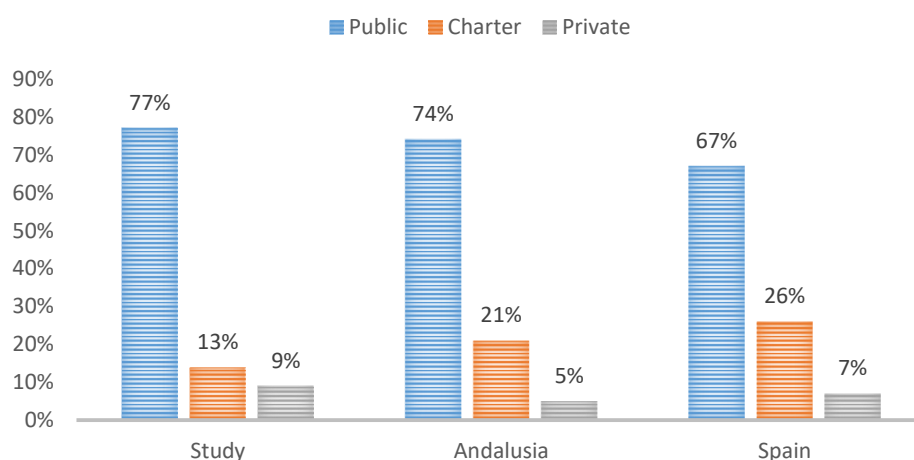
Graph 4. Different centres where teachers work concerning the type of funding

Educational centres by funding and Spanish autonomous regions



Graph 5. Current type of centres rate in Spain

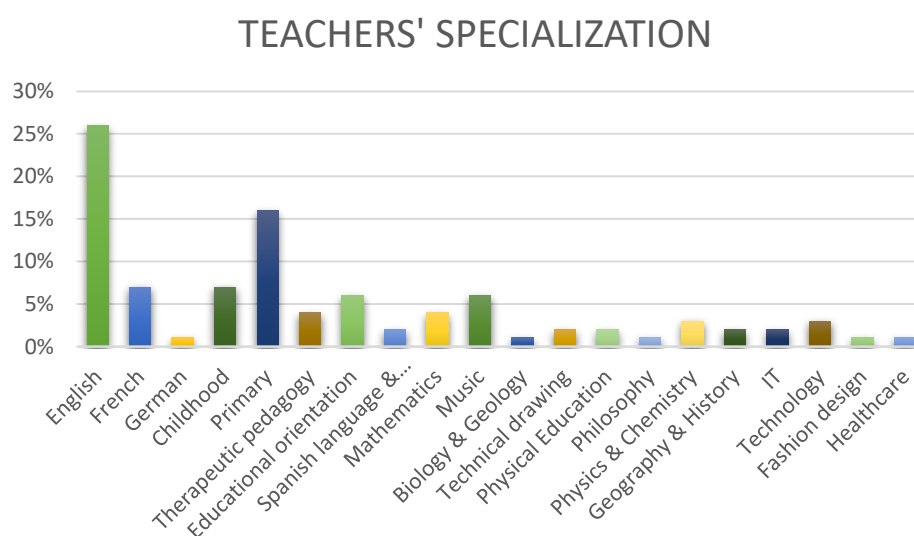
TYPE OF CENTRES COMPARISON



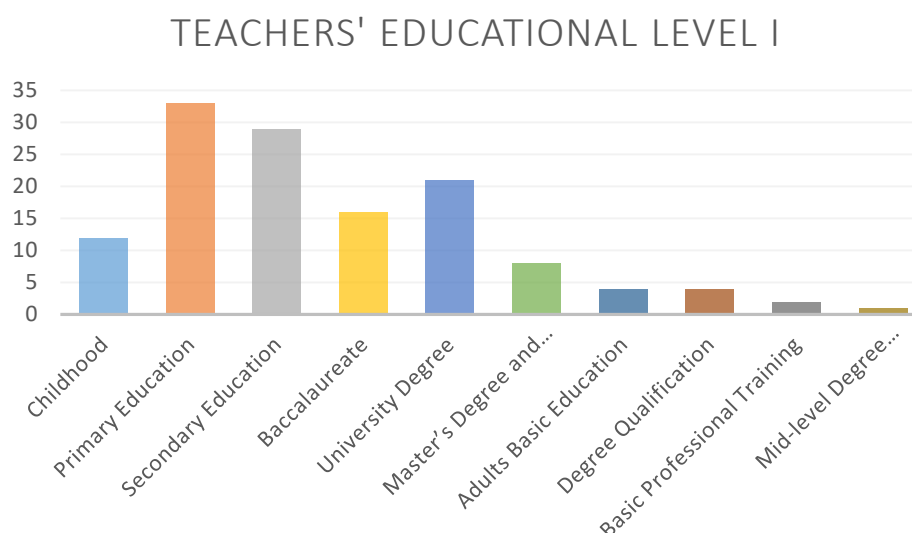
Graph 6. Comparison between the results obtained in the study and Spanish Ministry of Education data of centres regarding the type of funding

Teachers in this study are from different specializations and educational levels. The majority of them are English teachers (cf. Graph 7). This is something intentional, since the purpose of this information is to determine if there is a difference of ICT usage between English and other language subjects (French, German) and between language subjects (English, French and German) and other different specialities (Music,

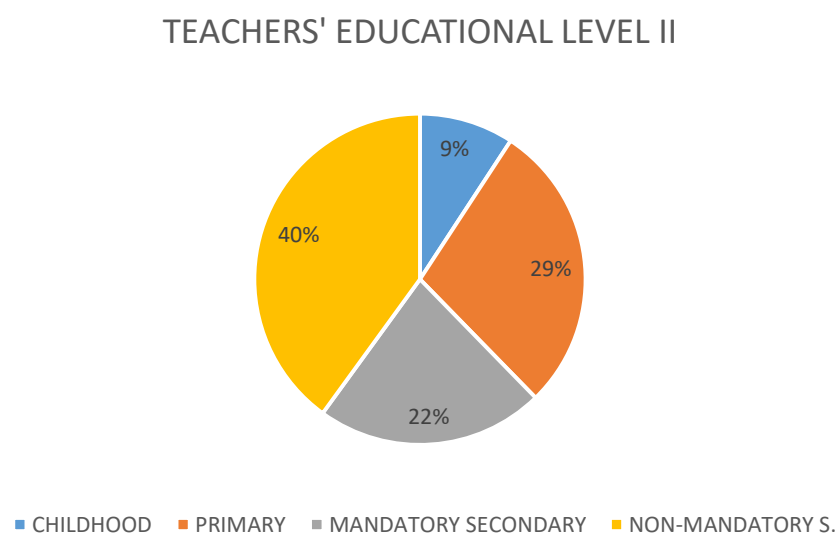
Mathematics, etc.). We intended to collect information from teachers of all educational levels according to the Spanish educational system and teachers from childhood to University studies participated in this study randomly. As we can appreciate in Graph 8, 37% of teachers work in Primary Education (33), 32% in Secondary Education (29), 18% in Baccalaureate (16), 24% teaches University Degree (21) and the minority of them in Childhood (14%), Master's Degree and Postgraduate Degree (9%), Adults Basic Education (4%), Degree Qualification (4%), Basic Professional Training (2%), Mid-level Degree Qualification (1%). We could synthesise all these levels in only 4 levels to identify teachers' participation more easily regarding their educational level: Childhood, Primary education, mandatory Secondary education and non-mandatory Secondary education (cf. Graph 9). As we can appreciate in Graph 9, the majority of teachers participating in this study corresponds to non-mandatory secondary education (Baccalaureate, Basic Professional Training, Degree Qualification, Mid-level Degree Qualification, University Degree, Master's Degree and Postgraduate Degree).



Graph 7. Breakdown of teachers according to their specialization



Graph 8. Breakdown of teachers according to their educational level



Graph 9. Teachers' educational level

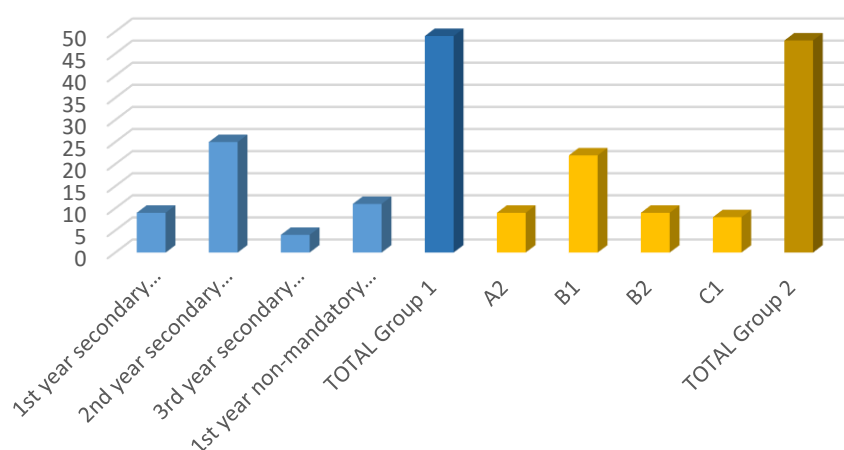
4.1.3. Students

Students participating in this research come from two different centres chosen randomly. One of the centres chosen, a public high school college, is in Jaén, Andalusia. All the students (group 1) have the same teachers, although they studied different levels in school year 2019/20. They studied first, second and third year of secondary education (so-called *Educación Secundaria Obligatoria*, also *mandatory second education* by Spanish educational system), and first year of *non-mandatory secondary education* (*Bachillerato* in Spain). The second centre, a private international university, is located in Granada, Andalusia. Their participants (group 2) are studying a Degree in Marketing.

They all have the same teachers and they are studying English on different levels: A2, B1, B2 and C1, according to the Common European Framework of Reference for Languages (CEFR). The identification of those two centres will remain confidential in order to protect teachers' identity, since they can be easily associated with the centres and they chose to remain anonymous.

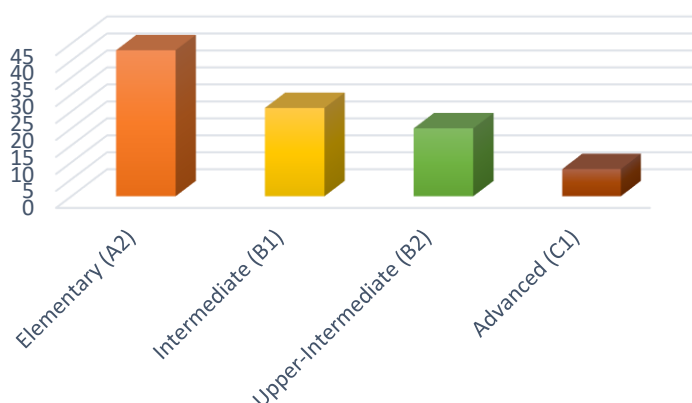
The information collected from students is focused on the use of ICT in the English classroom - English language as a Second Language (so-called *English language as a Foreign Language, second language* by Spanish educational system). We can see in Graphic 10 the degree of participation of students from the different groups within both two centres and in Graphic 11, their English level.

STUDENTS' PARTICIPATION



Graph 10. Participation of students from Group 1 and Group 2

STUDENTS' ENGLISH LEVEL



Graph 11. English level of the total of students

4.2. Variables

This study incorporates parallel sets of identification variables, with some adaptations to accomplish the specific requirements of the two distinct participants collaborating in the questionnaire. The rest of the qualitative variables contemplated within the five blocks incorporated into the teachers' questionnaires, and the four blocks in the students' questionnaires are directly related to the objectives of this study (cf. Chart 1).

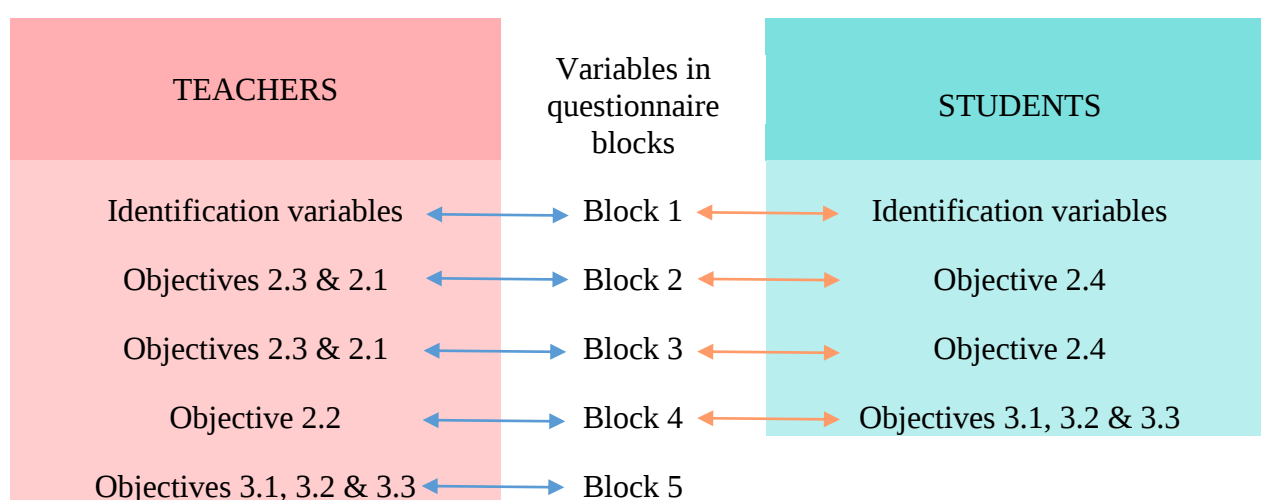


Chart 1: Relation of the variables with the objectives of the study

The variables for each stakeholder -students and teachers- are detailed below:

Teachers:

- Block 1: Identification
 - Gender
 - Educative level (Primary, Secondary, etc.)
 - Educational field or speciality
 - Type of centre (public, charter, private)
 - Setting (province)
- Block 2: Training received in the use of new ICTs
 - Opportunity to receive training in the use of ICTs
 - Valuation of the training received
 - Valuation of the importance of receiving training in the use of ICTs
- Block 3: The use of ICTs before the closure of educative centres in the school year 2019/20

- Use of ICTs in the classroom
- Use of ICTs outside the classroom (homework)
- Type of technological resources used with teaching purposes
- Frequency in the use of technological resources used with teaching purposes
- Valuation of the use of ICTs in education field
- Valuation of the current use of ICTs in the classroom in educative centres in general
- Use of innovation and incorporation of new tools and methodologies in the own academic centre
- Opinion on the possibility of a greater computerisation in education
- Block 4: The use of ICTs during the closure of educative centres in the school year 2019/20
 - Perception about the computerisation of classes and syllabus
 - Perception about students' experience
 - Difficulties experienced during computerisation process
 - Type of technological resources used with teaching purposes
- Block 5: Valuation for future teaching and other emergency situations
 - Future use of new ICTs learnt during centres' closure for teaching purposes
 - Valuation of a greater implementation of ICTs in the Spanish educational curriculum
 - Valuation of the necessary measures for a greater implementation of ICTs in the Spanish educational curriculum
 - Opinion on the integration of ICTs in education in similar emergency situations

Students:

Stakeholder perspectives on the use of ICTs to learn English.

- Block 1: Identification
 - Gender
 - Level of study (Secondary, University)
 - English level (CEFR)

- Province
- Type of centre (public, private)
- Block 2: Information about the use of ICT in the English classroom before the centres' closure during school year 2019/20
 - Type of technological resources used in the English class
 - Frequency in the use of these technological resources in class
 - Technological resources used in class in other subjects
 - Frequency in the use of technological resources in class by other teachers
 - Use of technological resources in the English class in previous courses
- Block 3: Opinion on the use of ICTs to learn English
 - Preference to learn English with/without the use of ICTs
 - Preference to learn English with/without the help of technological materials
 - Belief in the use of ICT by the English teacher as a helpful way to learn more and easier
 - Belief in the use of ICT to learn English as a fun and motivating means
- Block 4: Experience with a virtual mode of learning during school year 2019/20
 - Type of technological resources used in the English class during the centres' closure
 - Perception in the use of a virtual mode
 - Difficulties faced using e-learning
 - Missed facts using e-learning compared to face-to-face learning
 - Preference to learn English virtually or conventionally in a new/future normalcy

4.3. Instruments

The instrument used to collect the information from the stakeholder subjects for this primary research was the questionnaire. More specifically, an online questionnaire. This is the instrument chosen for this purpose due to the surrounding circumstances. This paper focuses on the use of technological resources and materials in education to take advantage of the benefits they entail in difficult or crisis situations. Due to the fact that the development and data collection process for this paper was done during the same period

of time and circumstances that was intended to be analysed, the instrument to gather the information had to be by means of technological resources too, in order to fulfil its purpose and extend to the maximum number of participants possible to provide this paper with validation, feasibility, objectiveness and authenticity.

4.4. Data collection process

The data collection process followed in this research will be detailed through the three different stages ensued to give validation to this kind of instrument in order to fulfil this paper's purpose: Questionnaire design, validation and administration.

4.4.1. Questionnaire design

For the design of the online questionnaires intended for the stakeholder groups of participants, several authors have been considered to ensure a sound end research.

Belson (1981) developed 15 sets of hypotheses (involving over 50 principles) about the nature and causes of respondent misunderstanding of survey questions (Bull, 1998: 29-39), on which the development of the questionnaires have been based.

The aim for the questionnaires was, in the first place, to produce good questions, which according to Fowler (1995) are the ones that produce answers that are reliable and valid measures of something we want to describe.

Two different questionnaires were designed for the two different cohorts: Teachers and students. Both questionnaires were first written in English, for the design and analysis of this paper work. Following Belson (1981), the questions configured were short, simple and concrete, "to make the task of reading questions, following instructions and recording answers as easy as possible for interviewers and respondents" (Fowler, 1995). A suited *question wording* was considered to create a proper communication with participants of both cohorts (Labaw, 1980).

Very special attention was paid to the structure and organisation of the questionnaires, in such a way that they, firstly, make sense to respondents and, secondly, avoid leaving the choice of the order in which questions get answered up to the respondents (Jenkins & Dillman, 1973). Also the length of the questionnaires was considered to avoid fatiguing the respondents and forcing them to answer randomly.

Both questionnaires were structured in blocks, each of them containing specific meanings according to the variables of study (see Variables section – 4.2.).

The questions in both questionnaires were closed-ended, choosing among different answers and in most of them, including an option with “other”. Closed-ended questions were selected to ensure that the context is the same for all respondents (Philip, 1980).

Different models of response scales were introduced in both questionnaires:

Several questions designed were of a ranking type (or Likert scale), providing 1-5/1-7 response grades. According to Bueno (2015), questionnaires of this type tend to be difficult to prepare at the time of selecting the different options adequately, but, if this is achieved, they allow quantification and objective analysis.

Binary or dichotomous questions were avoided since they were considered rather incomplete for the information intended to be gathered from them and due to the lack of a neutral option.

Instead, most of the question types selected were polychotomous format scales, or multiple-choice questions, since they cover all significant degrees of response (Philip, 1998).

Also, check-list questions were included in both questionnaires, since they give freedom to the respondents to choose one or more of the options available (Philip, 1998).

Once the validation process of the questionnaires was complete, they were translated into Spanish to be addressed to the stakeholders, to make it easier for them to respond and to avoid the loss of information and misunderstanding.

4.4.2. Questionnaire validation

The selection of the sample in both cohorts to complete the corresponding questionnaire has been achieved through a population filtering, since the subjects are directly related to the main focus of this study: teaching professionals and students that experienced the concrete situation being analysed.

The variables considered in this research employ a *triangulation method* to address it from multiple perspectives and to achieve validity and reliability.

Cronbach's alpha, or *coefficient alpha* was calculated to measure the degree of reliability and internal consistency (Cronbach, 1951) of each individual questionnaire. The result obtained in the teachers' questionnaires was a positive coefficient of 0,75213758 and 0,64320185 in the students' questionnaire, which according to Cronbach's alpha scores, implies a good and acceptable degree of reliance and internal consistency consecutively. (cf. Chart 2)

Grade of reliability	Cronbach's alpha score
Excellent	[0,9-1]
Good	[0,7-0,9]
Acceptable	[0,6-0,7]
Poor	[0,5-0,6]
Unacceptable	[0-0,5]

Chart 2. Grades of reliability in Cronbach's alpha results

Henceforth, we can consider Objective 1 accomplished, since the results obtained with Cronbach coefficient concluded a good validity degree of the instrument used to collect the information required for this study,

4.4.3. *Questionnaire administration*

The online questionnaires were written and designed with the help of Google Forms, an online survey administration application included in the Google Drive office suite. This application allowed to share the questionnaire very easily with all participants to collect the information. This tool facilitates three routes of sharing with the participants: via personal e-mail through a link to the questionnaire, via HTML embedded elements and providing a short link to copy and send through the desired means. The teachers participating in this study were selected randomly and their identity was intended to be preserved. The third sharing route mentioned was the most suitable for the purpose of this study since the link of the questionnaire was posted on a social network (Facebook) inside several closed groups of teachers presented with its corresponding heading and introduction. The questionnaire for students was also distributed through the same route, but, in this case, their English teachers sent it to them internally. These English teachers were selected from the same closed groups of teachers in Facebook, having a previous

contact with them to acquire the location, information needed and pertaining consent from their academic centres.

This sharing route was also selected for the administration of this instrument in order to facilitate the distribution and provide the participants with a very easy option that allowed them to complete the questionnaire on their own mobile phones spending no more than 7 minutes. This supposed a fundamental premise to deliver the questionnaire to a maximum number of suitable participants due to the difficult circumstances and the workload both groups of subjects were experiencing during the period of time chosen to collect them. Simplicity and briefness were key factors to present the instrument to the stakeholder subjects in this case.

The Google Forms tool also allowed to collect the participants' responses online and automatically and instantly have access to the information and data for their subsequent analysis.

4.5. Data analysis: Statistical methodology

The procedure of analyzing the data obtained through the questionnaires addressed to both cohorts has been executed with the help of the Excel 2013 application in its 15.0 version.

A breakdown of the statistical methodology applied to the data analysis process will be displayed in relation to the pre-designed objectives for this research:

Concerning objective 1, in order to verify and ensure the soundness of the questionnaires' design, Cronbach's Alpha coefficient was calculated with the data obtained. This calculation was performed with Excel and the results proved to be very positive in both questionnaires.

In order to accomplish objectives 2 and 3, the use of raw data, calculation of percentages, and graphical displays were performed in different stages according to the information required for sub-objectives 2.1 to 2.4 and 3.1 to 3.3. In addition, regarding objective 3, the analysis of variance in the results obtained in parallel variables of the two cohorts – teachers and students – and also in some of the variables (considered of

relevance) within the two groups of students – from Jaén and from Granada – was performed to complement and contrast the information provided in the different graphics.

5. RESULTS AND DISCUSSION

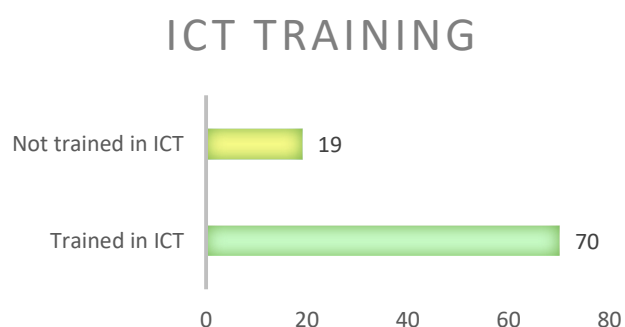
Returning to the objectives posed at the beginning of this study, it is now possible to state that we accomplished objective 1 through the validation of the instrument used to collect the information required from the stakeholders.

The display and breakdown of the results obtained through the questionnaires will be detailed in relation to objectives 2 and 3 of this study:

a) ***Objective 2. To identify teachers and students' perceptions.***

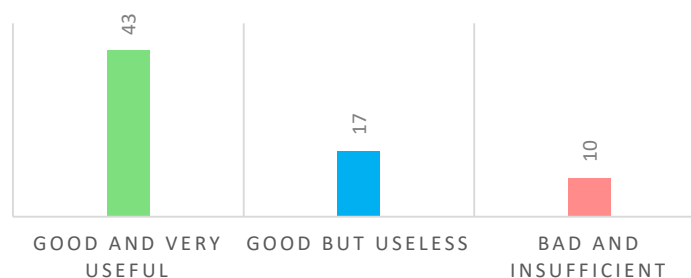
TEACHERS

Teachers were asked about the training they received in the use of ICT with educative purpose. 78.6% (70) of teachers assured they received some kind of training up to date, while 21.3% (19) of them denied receiving any kind of training in ICT (cf. Graph 12). From those teachers who did receive some kind of training in ICTs, 48.3% (43) received good quality training and they were able to implement that knowledge in their classes. 19.1% (17) enjoyed the ICT training but were not able to implement the knowledge in their classes and 11.2% (10) of them is not satisfied with the training received (cf. Graph 13). The remaining teachers (19) were those who did not receive any ICT training.



Graph 12. Training in ICT with educational purpose received by teachers

TRAINING VALUATION

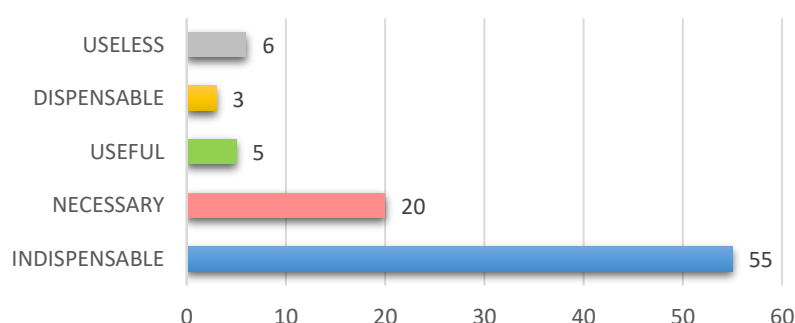


Graph 13. Teachers' valuation of ICT training courses received

These results show that only 48.3% (43) of the total of teachers (89) was able to implement the knowledge acquired in those training courses, which can lead us to conclude that more than a half of teachers (51.6%) did not receive a useful and good quality ICT training in their teaching career.

When they were asked about the value they give to ICT training for teachers in general for a good quality education, 61.7% (55) considers this as something *indispensable*, 22.4% (20) as *necessary*, 5.6% (5) as *useful*, 3.3% (3) as *dispensable* and 6.7% (6) as something *useless* (cf. Graph 14). From these results, we can appreciate that 89.8% (80 of 89) of teachers considers that receiving some kind of training in ICTs is important in education.

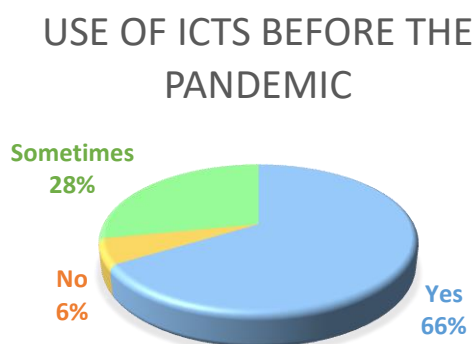
ICT TRAINING VALUE BY TEACHERS



Graph 14. Value of ICT training for teachers in general

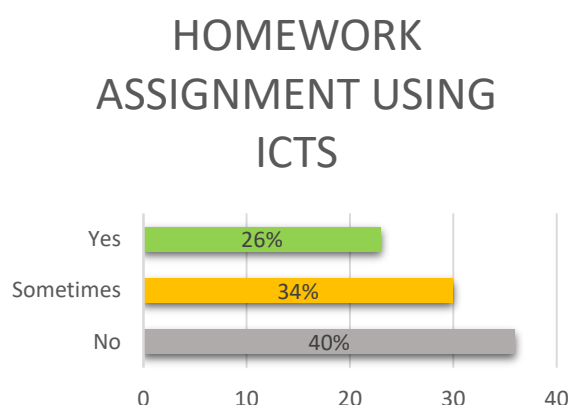
Regarding the use of ICT resources and materials for teaching before the closures of academic centres due to the pandemic, teachers report the following:

66.2% of teachers (59) affirms they used some kind of ICTs in their classes before the pandemic, 28% (25) used them only sometimes and 5.6% did not use them in their teaching process before (cf. Graph 15). A total of 94.3% (84 teachers) assures they used some kind of ICTs to some extent in their classes.

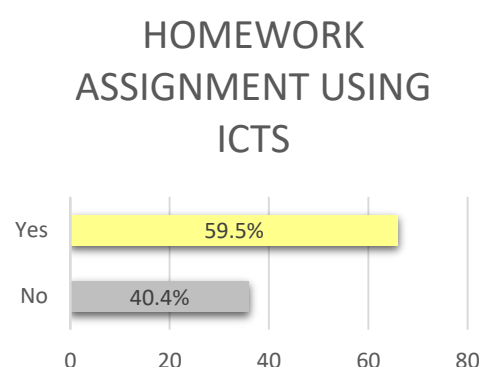


Graph 15. Teachers' use of ICTs before the pandemic

Regarding the frequency with which teachers usually assign homework to their students that require the use of ICTs, 25.8% (23) of them affirm they used them before the pandemic, 33.7% (30) used them but not very frequently (sometimes) and 40.4% of them never used ICT for their students' homework (cf. Graph 16). With these results we can appreciate that a total of 59.5% of the total cohort used ICT for this purpose to some extent (cf. Graph 17).



Graph 16. Teachers' frequency of homework assignment with the use of ICTs



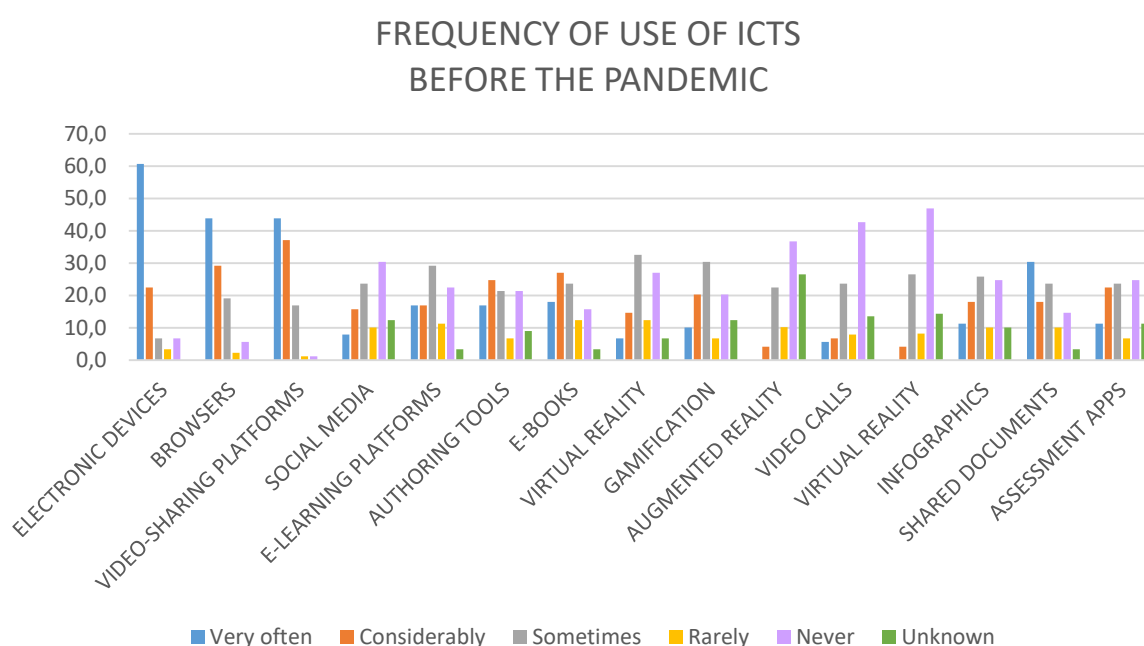
Graph 17. Teachers' use of ICTs to assign homework

The current ICT resources available to use with pedagogical purposes have been classified for the development of this study as follows:

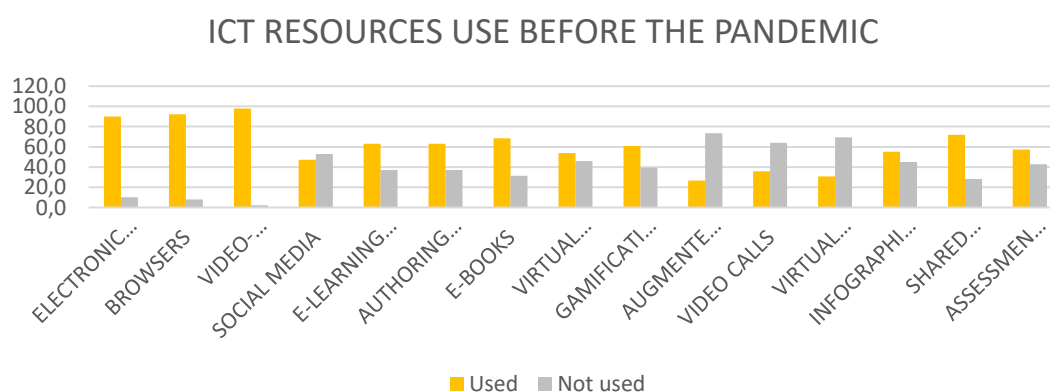
1. Electronic devices (digital whiteboard, tablet, smartphone, etc.)
2. Websites
 - a. Blogs or microblogs (Plurk, Edmodo, etc.)
 - b. Wikis (Wikipedia)
 - c. News or magazine
 - d. Social media (Twitter, Facebook, Instagram, etc.)
 - e. TV or video streaming (Netflix, HBO, VideoPrime, etc.)
 - f. Browsers (Google, Yahoo, etc.)
 - g. Video-sharing platforms (Youtube)
3. E-learning
 - a. E-learning platforms (Moodle, Microsoft Teams, Google Classroom, etc.)
 - b. E-learning authoring tools (JClic, Hot Potatoes, etc.)
4. Multimedia contents.
 - a. Virtual reality (interactive classes, visits to museums, language learning, virtual escape rooms, etc.)
 - b. E-books
5. Online applications or activities
 - a. Gamification apps (Kahoot, Quizizz, Minecraft, ClassDojo, ClassCraft, Bloomz, Powtoon, Play Brighter ect.)
 - b. Augmented reality (Aumentaty, ZooBurst, Zappar, etc.)
6. Virtual spaces for collaborative work
 - a. Video calls or meetings (Skype, Zoom, etc.)
 - b. Virtual reality or virtual worlds (Second Life, OpenSim, World of Warcraft, etc.)
 - c. Infographics (Genially, Canva, Google Charts, ICharts, etc.)
 - d. Shared documents in the cloud (Google Docs, Dropbox, Drive, etc.)
 - e. Assessment applications (Google Classroom, Google Forms, Kahoot, Quizizz, Plickers, etc.)

Considering this classification, teachers were asked about the frequency of use of most of them in their classes before the pandemic. We will detail the relevant results according to these technological resources.

In general, we can appreciate in the results and in the graphics (cf. Graph 18 and Graph 19), that the ICT resources with higher frequency of use are electronic devices, web browsers and video-sharing platforms, while the ones with a lower frequency of use are augmented reality, video calls and virtual reality.

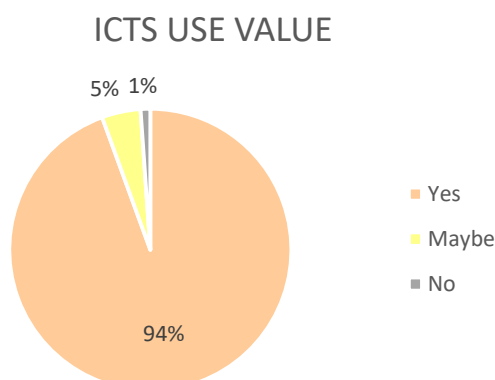


Graph 18. Frequency of use of the different technological teaching resources in percentages



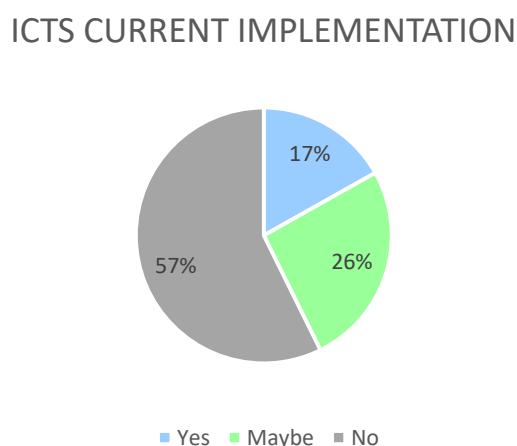
Graph 19. Use of the different technological teaching resources in percentages by teachers.

Regarding the value teachers attribute to ICTs for teaching purposes, 95.5% (85/89) of them consider they are necessary, 4% (4) thinks they could be necessary and 1% thinks their use is unnecessary (cf. Graph 20).



Graph 20. Percentage of teachers that attributes value to ICT for teaching purposes.

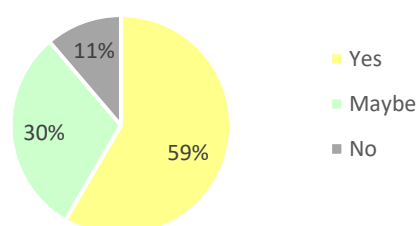
Teachers were asked about their opinion regarding the current implementation of ICT in the Spanish educational system, before any possible adaptation or reform was made due to the impact caused by the pandemic, and 17% of them responded that the current use of ICTs in Spanish academic centres is appropriate, 57% thinks their implementation is not good or appropriate, while 26% are not sure of this fact (cf. Graph 21). Here we could highlight that a surprising minority of the group considers ICTs current implementation is correct or adequate.



Graph 21. Teachers' perception about the current implementation of ICT in Spanish academic centres.

Most of the teachers consider there is an actual promotion of innovative practices and the implementation of new methodologies, resources and materials in their schools or academic centres, 59% (52) of them, 11% (10) considers this promotion is null or absent and 30% (27) of them is not sure about it (cf. Graph 22).

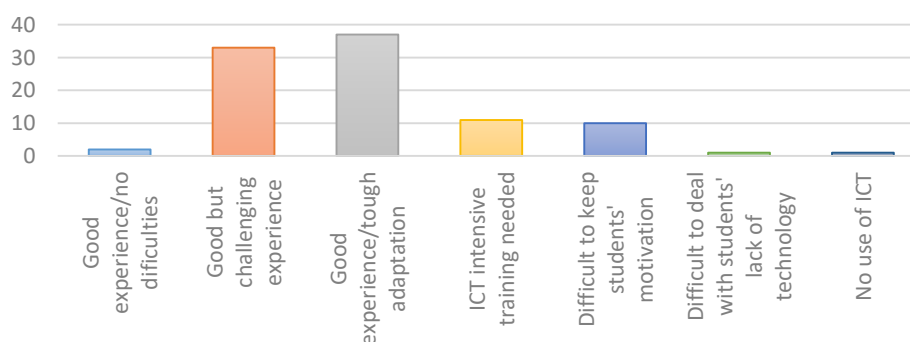
INNOVATION AND NEW METHODOLOGIES ENCOURAGEMENT



Graph 22. Teachers' perception about the encouragement of innovation and the use of new methodologies and resources in their centres.

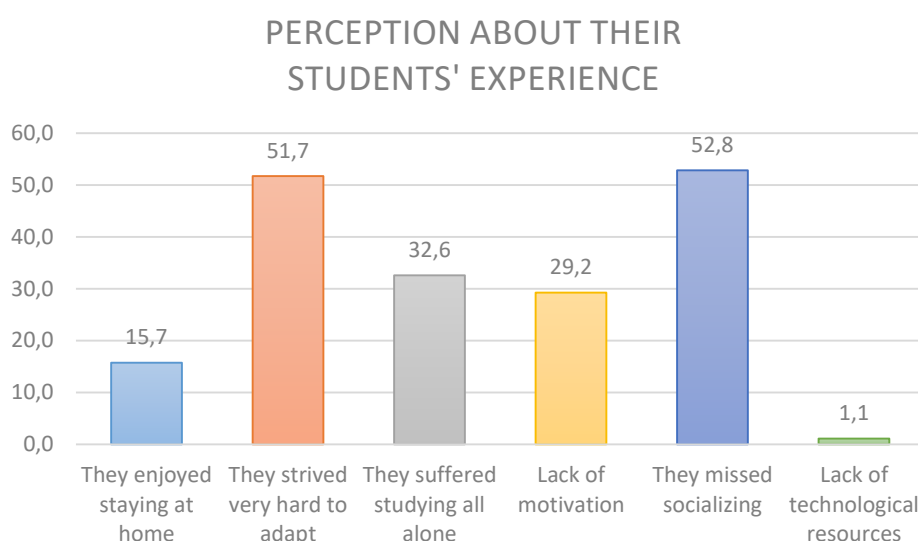
Regarding how teachers felt about the total computerization of their teaching syllabus and classes, as we can appreciate in Graph 23, 41.6% of teachers had a good experience in general, but the adaptation to the new situation was rather tough for them, 37.1% had a good experience in general too, but it was a challenging process for them. Some other significant issues they faced were that they had to go through an intensive process of training in the use of ICT (12.4% of them) and they experienced some difficulties dealing with students' low motivation (11.2%).

PERCEPTIONS ABOUT COMPUTERIZATION PROCESS



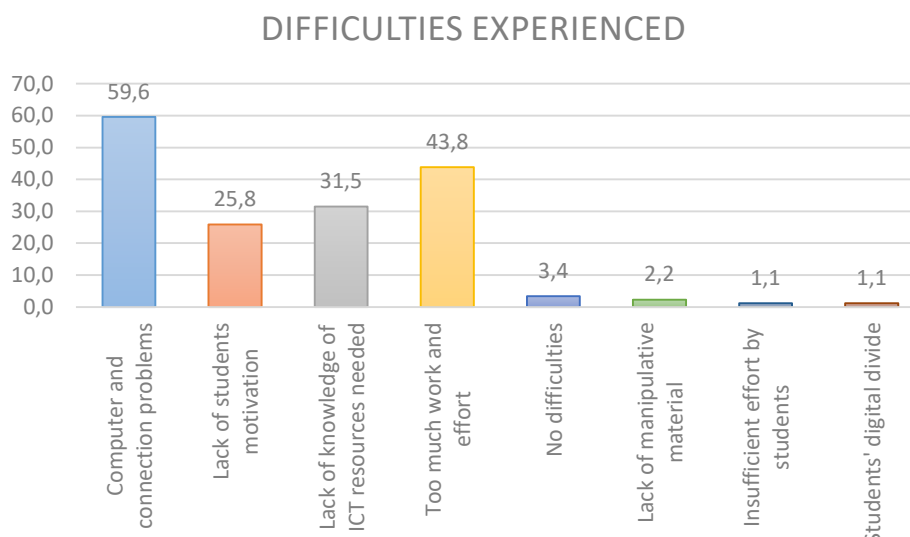
Graph 23. Teachers' experience with the computerization of the teaching process

According to the teachers' experience, they perceived the following issues in their students' behaviour during the centres' closure: 52.8% of them considers their students missed socializing, 51.7% perceived they strived very hard to adapt to this new situation, 32.6% thinks their students suffered staying at home and having to study all alone, 29.2% reported that their students dealt with a lack of motivation, 15.7% of them considers their students enjoyed staying at home because they did not study very much and only 1% appreciated a lack of technological resources in their students' homes (cf. Graph 24).



Graph 24. Teachers' perception regarding their students' experience

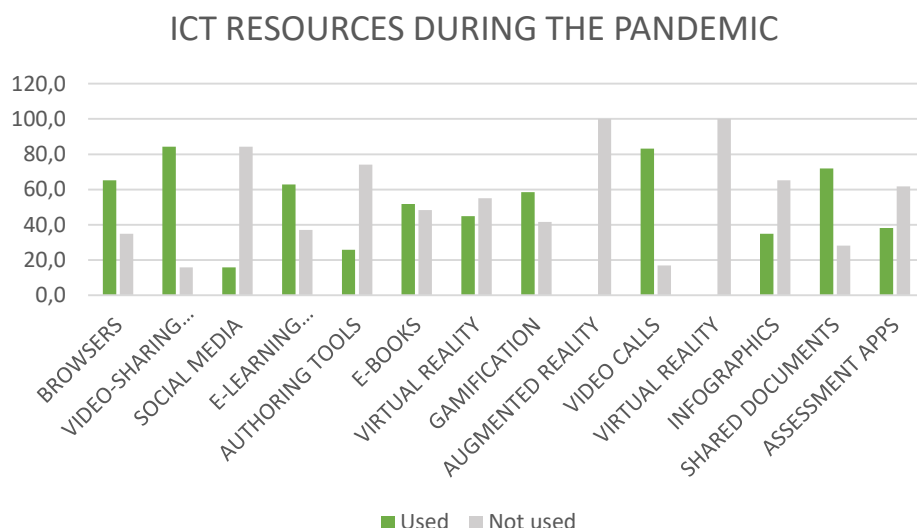
In general, the difficulties teachers experienced in their job during the period of centres' closure were computer and connection problems, according to the 59.6% of them, too much work and effort for 43.8%, the lack of knowledge in the use of technology they needed to keep the teaching and learning process up, for 31.5% of them and 25.8% underwent their students' lack of motivation (cf. Graph 25). Only 3.4% perceived no difficulties in that period of time and 2.2% missed the use of manipulative materials.



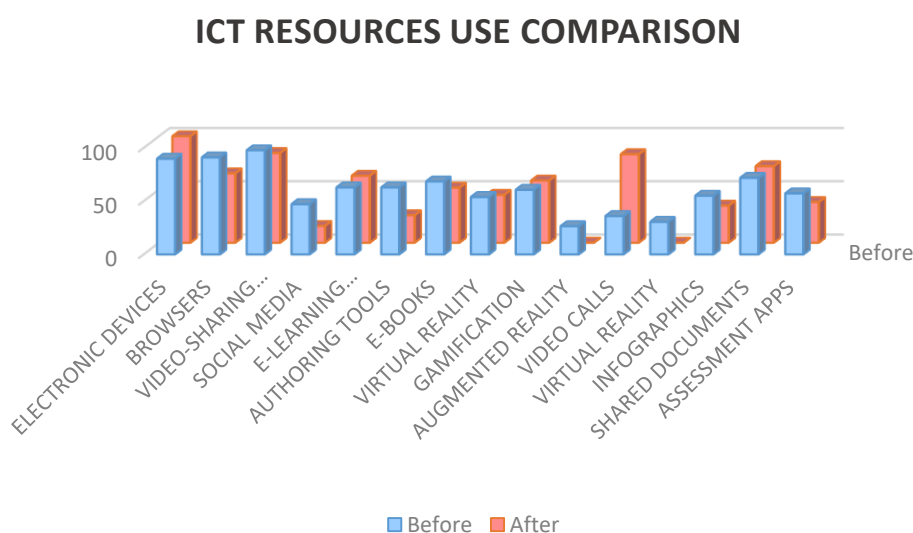
Graph 25. Difficulties experienced by teachers during the pandemic

Regarding the use of ICT resources, methodology and materials teachers used during the pandemic's period, we can appreciate in Graph 26 that the resources they used the most were video-sharing platforms (84.3%), video calls (83.1%), shared documents in the cloud (71.9%), web browsers (65.2%) and e-learning platforms (62.9%). The ones less used were, again, augmented reality, virtual reality and social media networks.

As we can appreciate in Graph 27, there is no significant difference in the use of ICT resources if we compare the before and after situations. The most relevant fact could be the increase in the use of video calls – 83.1% compared to the 36% of before.



Graph 26. ICT resources used during the pandemic by the teachers

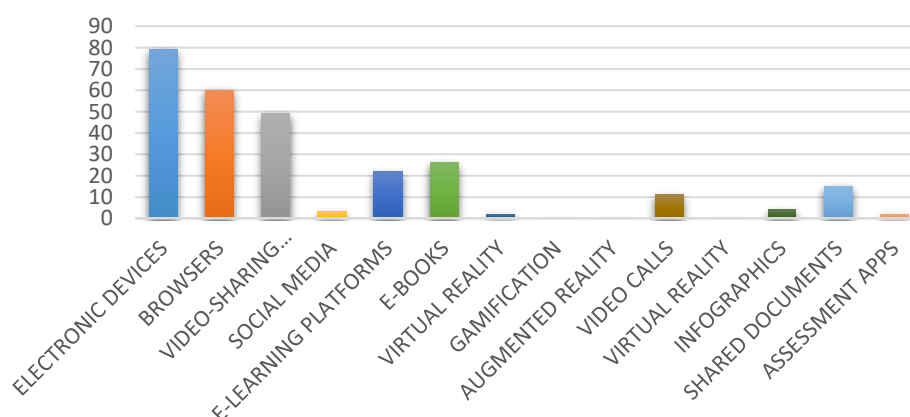


Graph 27. Comparison of the use the teachers gave to ICT before and during the pandemic

STUDENTS

According to the classification of the different kinds of ICT resources displayed in the teachers' results analysis regarding objective 2, both groups of students were asked about their use by their English teachers before the pandemic. The technological resources most used were electronic devices (81.4%), web browsers (61.9%), video-sharing platforms (50.5%) and e-books (26.8%). The remaining technological resources were barely used as can be appreciated in Graph 28.

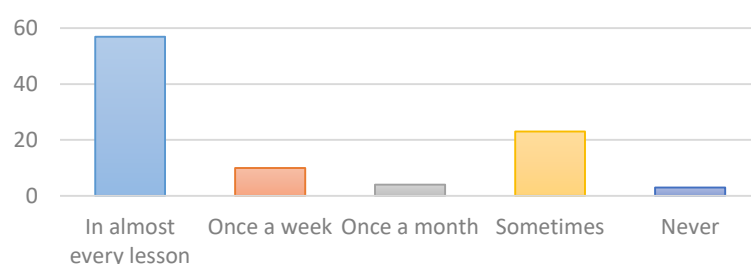
USE OF ICTS IN THE ENGLISH CLASS BEFORE THE PANDEMIC



Graph 28. Use of ICTs in the English class according to students' perceptions

Regarding those ICT resources, 58.8% of students considers they used them in almost every English lesson, 10.3%, once a week, 4.1%, once a month, 23.7% thinks that they used them only sometimes and 3.1%, never (Graph 29). Here, we have to consider that they refer to the ICT resources they specified in the previous item, not all of them.

FREQUENCY IN THE USE OF ICT RESOURCES IN THE ENGLISH CLASS

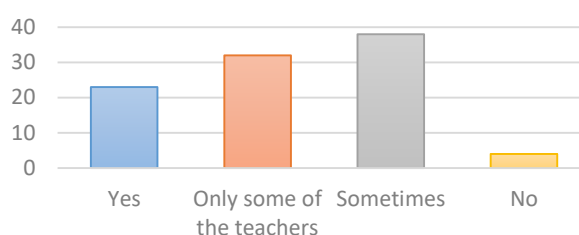


Graph 29. Students' perception regarding the frequency in the use of ICT resources in English class

According to the students, the teachers of other subjects also used ICT resources in general before the pandemic, 23.7%, 30% of them considers only some of the teachers used ICT resources, 39.2% of them affirms they used them sometimes and

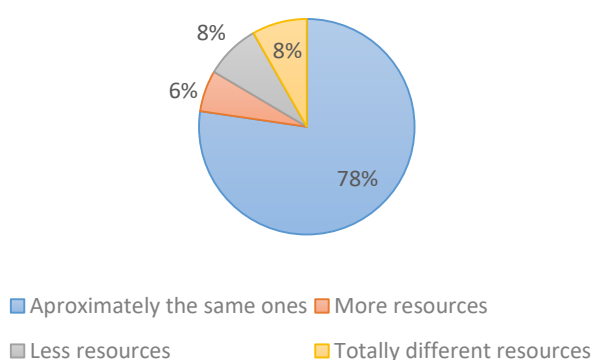
4.1% thinks the other teachers did not use ICT resources at all (cf. Graph 30). Regarding the type of ICT resources the teachers of the other subjects used before the pandemic in comparison with their English teacher, there is no significant difference, since most of them (78%) thinks they used approximately the same type of resources, as we can appreciate in Graph 31.

STUDENTS' PERCEPTION ON THE OTHER TEACHERS' USE OF ICTS



Graph 30. Students' perception regarding the use of ICTs in class comparing their English teachers with the other teachers

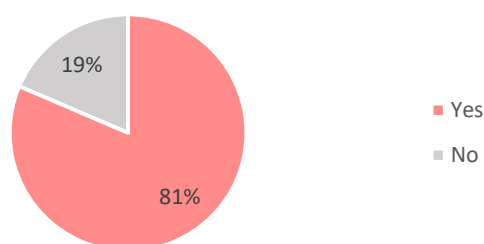
STUDENTS' COMPARISON BETWEEN THE ENGLISH TEACHER AND OTHER TEACHERS IN THE USE OF ICT RESOURCES



Graph 31. Type of ICT resources the teachers of other subjects used compared with their English teachers

In Graph 32 we can easily appreciate that most of the students, 81%, received previous English courses with the use of ICTs.

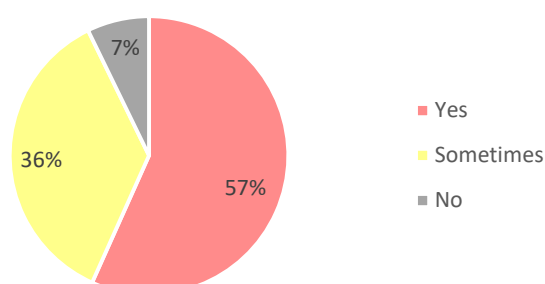
USE OF ICT RESOURCES IN PREVIOUS ENGLISH COURSES



Graph 32. Students' use of ICT resources in previous English courses

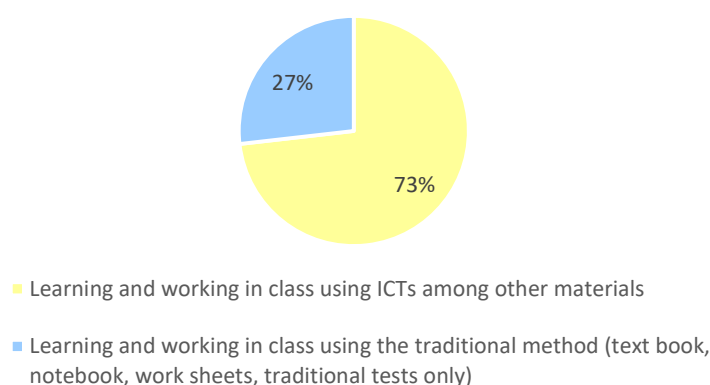
Students were asked if they would like to use ICTs in their English classes and courses as something usual, and 57% of them affirms that they would, 36% thinks that they would like it only sometimes and the remaining 7% disagree with this idea (cf. Graph 33). Most of the students also agree on the preference of using ICT resources among other learning materials in the English class (73% of them), instead of learning English with a more traditional method with the use of the text book, notebook, work sheets and traditional tests only (27% of them). (cf. Graph 34)

STUDENTS' PREFERENCE ABOUT THE USE OF ICTS IN THEIR ENGLISH CLASSES



Graph 33. Students' opinion regarding the idea of using ICT in their English classes as something usual

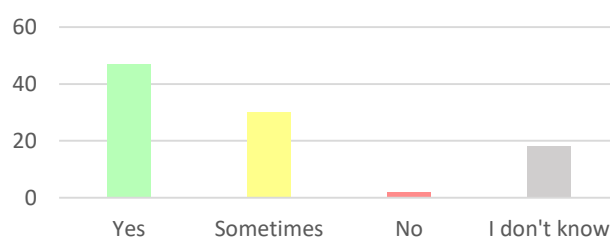
STUDENTS' PREFERENCE BETWEEN ICTS USE AND A MORE TRADITIONAL METHOD



Graph 34. Students' preference between using ICTs in the English class and the use of a more traditional method

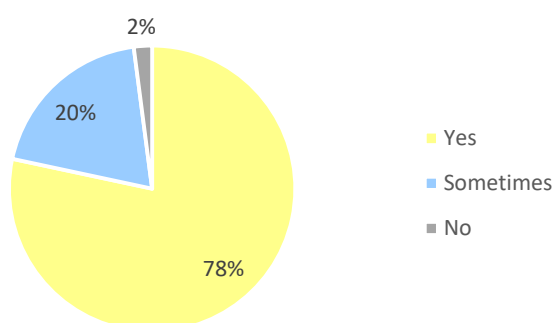
In line with the last two items, 48.5% of students considers they learn better in the English class if the teacher uses ICT resources, 30.9% of them thinks that they learn better if the English teacher uses ICTs sometimes, 18.6% is not sure about this question and a very small number of students (2.1%) considers they do not learn better with ICTs (cf. Graph 35). The majority of the students (78%) believes that learning English with the help of ICT resources is more motivating than learning without them, 20% of them considers it is more motivating if the English teacher uses ICTs sometimes and, again, a minority (2%) prefers learning without their use (cf. Graph 36).

STUDENTS' OPINION ABOUT A GREATER LEARNING WITH THE USE OF ICTS



Graph 35. Students' opinion regarding a better learning process with the use of ICTs in the English class

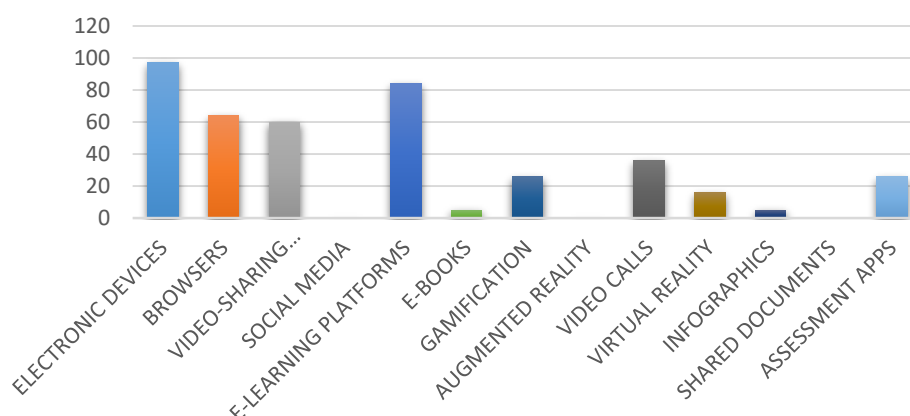
STUDENTS' OPINION ABOUT A MORE MOTIVATING LEARNING WITH THE USE OF ICTS



Graph 36. Students' opinion regarding the use of ICTs as a more motivating learning method

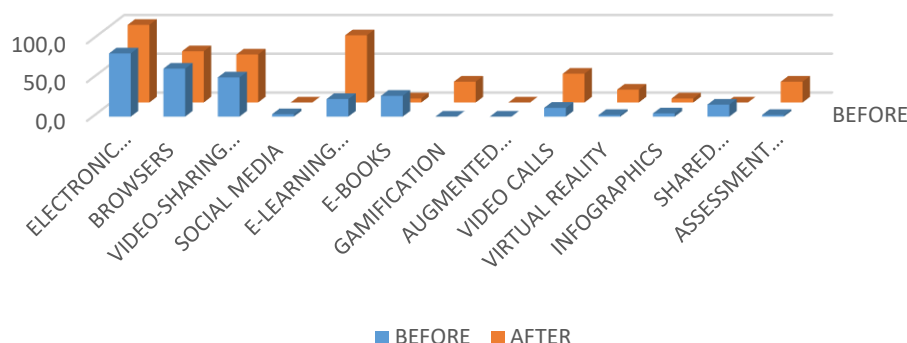
Going back to the ICT classification of the different resources, regarding their use in the English classroom during the pandemic's period, we can appreciate little differences. The use of electronic devices (100%), browsers (66%) and video-sharing platforms (61.9%) is still the most frequent (cf. Graph 37), with the only incorporation of e-learning platforms (86.6%) and a small increase of video calls (37.1%), gamification (26.8%) and assessment applications (26.8%) (cf. Graph 38).

USE OF ICTS IN THE ENGLISH CLASS DURING THE PANDEMIC



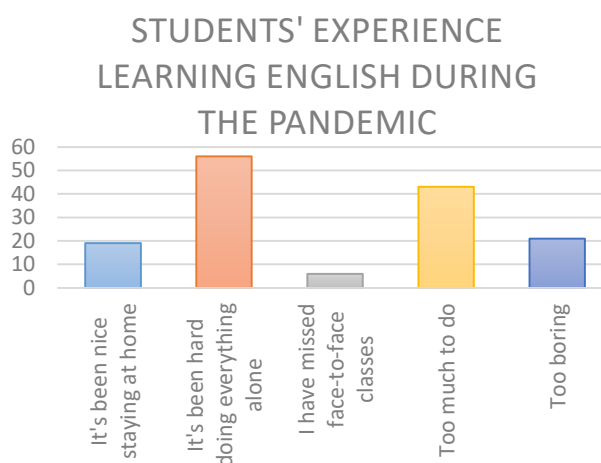
Graph 37. ICT resources used during the pandemic by students' English teachers

COMPARISON IN THE USE OF ICT RESOURCES IN THE ENGLISH CLASS BEFORE AND DURING THE PANDEMIC

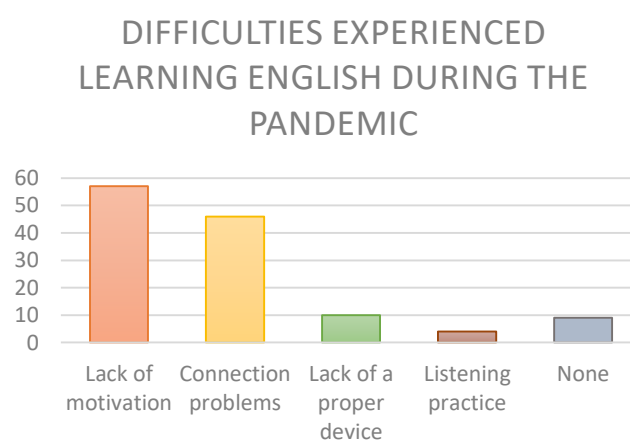


Graph 38. Comparison of the use of the ICT resources in the English class in two different periods: before and during (after) the pandemic

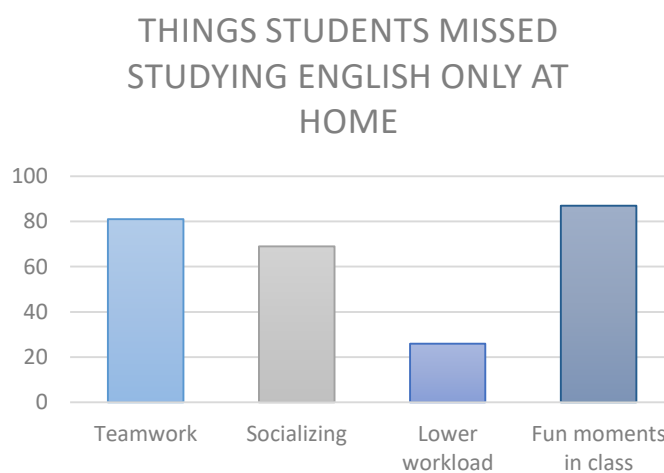
Regarding the students' experiences studying and learning with a virtual mode during the centres' closure, most of the students (57.7%) ensure they had a hard time doing everything alone at home and they had too much work to do (44.3%), while some of the students consider the process was too boring (21.6%) and a few of them enjoyed staying at home (19.6%) (cf. Graph 39). The difficulties they faced during this period of adaptation were the lack of motivation (58.8%), some connection problems (47.4%), the lack of a proper device (10.3%) and the face-to-face listening practice (4.1%) (cf. Graph 40). A few of them (9.3%) reported they had no difficulties at all though. During this period of time, students also missed some other things from the traditional classroom-based learning, such as working in groups (83.5%), socializing (71.1%), the fun class moments (89.7%) and having a lower workload (26.8%) (cf. Graph 41).



Graph 39. Students' perception about their experience learning English during the pandemic



Graph 40. Difficulties experienced learning English during the pandemic



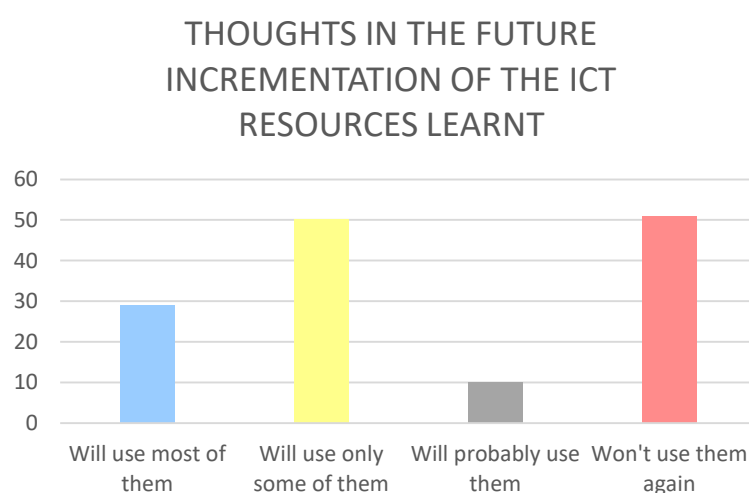
Graph 41. Things students missed studying English only at home during the pandemic

Both groups of students were considered as one in this section because the results in both groups were compared and no relevant differences were found.

b) Objective 3. To establish a comparison between both cohorts

- 3.1 To know about the concerns and suggestions of both groups (teachers and students) regarding a future teaching/learning after the social, political and economic impact caused by the pandemic.

According to the results analysed and displayed in Graph 42, a surprising percentage of the teachers, 57.3%, do not have the intention of using the new ICT resources learnt in this period for future implementation in their classes and 56.2% of them will use only some of them in future school years. 32.6% of the teachers thinks they will use most of them again and 11.2% are not very sure of it.



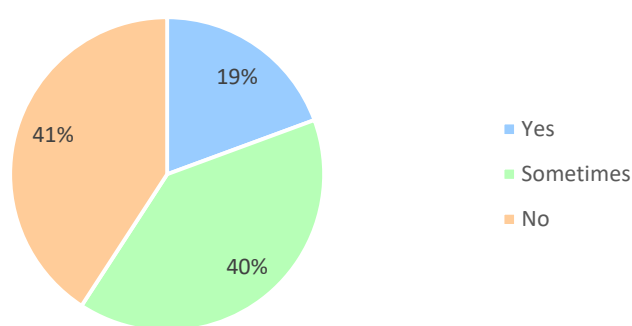
Graph 42. Teachers' intention of using the new ICT resources learnt in the future

In contrast with these results, once students have experienced both types of learning mode – classroom-based learning and e-learning – their opinion is that they prefer e-learning only sometimes (40%), but not as a regular basis (41%) (cf. Graph 43). Only 19% of them prefer e-learning instead of a classroom-based modality. According to this, we could conclude that students would prefer a learning modality that is halfway between classroom-based and e-learning: blended learning. We can also appreciate and verify this preference in Graph 44, since 74% of the students

chose the blended learning option, 26% still prefers the classroom-based mode and surprisingly, not one of them chose the e-learning option.

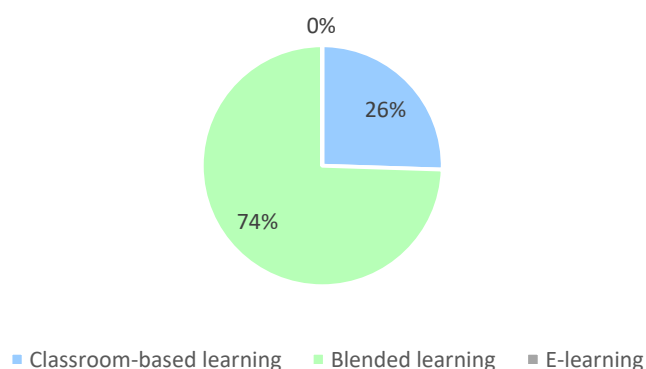
Here, we can appreciate that students really like learning English with the help of ICT resources, while teachers do not seem to be eager to increment their use in class.

STUDENTS' PREFERENCE BETWEEN
E-LEARNING AND CLASSROOM-BASED
LEARNING
AFTER THE PANDEMIC



Graph 43. Students' preference between e-learning and classroom-based learning after their experience with the pandemic

STUDENTS' PREFERENCE BETWEEN
CLASSROOM-BASED LEARNING,
BLENDED LEARNING
OR E-LEARNING

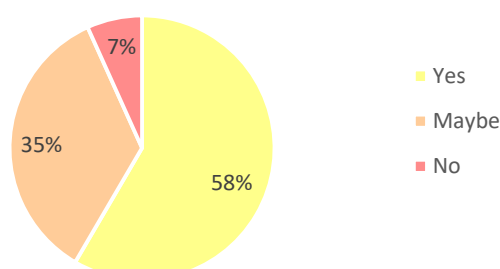


Graph 44. Students' preference between classroom-based learning, Blended learning or E-learning after their experience with E-learning during the pandemic

We can also compare graph 24 with graphs 39, 40 and 41 to determine if the teachers appreciated in their students' behaviour the same feelings and difficulties during the pandemic's period compared with what the students of the sample reported they felt.

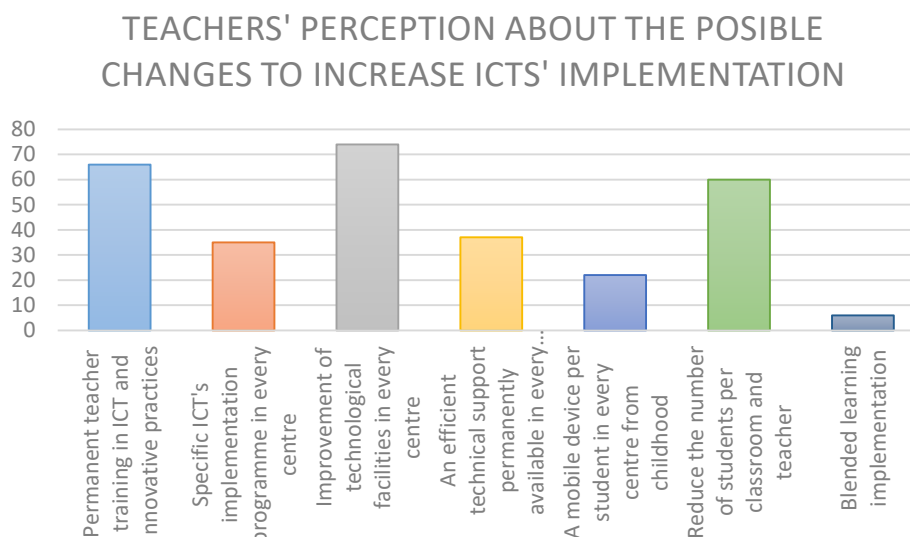
The majority of the teacher respondents, 58%, affirms that the educational curriculum should be modified in order to implement ICT' use in academic centres to a greater extent. 35% of the teachers are not sure about this modification and only 7% of them denies this possibility (cf. Graph 45).

TEACHERS' PERCEPTION ABOUT A POSSIBLE
MODIFICATION OF THE EDUCATIONAL
CURRICULUM TO INCREASE
ICTS' IMPLEMENTATION



Graph 45. Teachers' opinion regarding a possible modification of the educational curriculum to increase the ICTs' implementation in schools and other academic centres

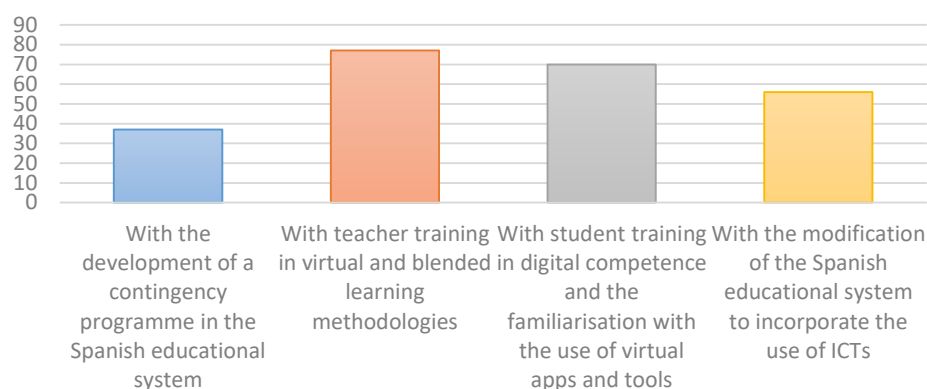
As we can observe in Graph 46, 83.1% of teachers believes that an improvement of technological facilities is necessary to increase the implementation of ICTs in every centre, 74.2% of them considers the importance of a permanent teacher training in ICT and innovative practices for quality teaching, 67.4% considers that reducing the number of students per teacher is key for this purpose, 41.6% chose an efficient technical support permanently available in every centre as a proposal for the change. A minority of 24.7% thinks a mobile device per student would help in this matter and 6.7% believes in Blended learning implementation.



Graph 46. Teachers' perception regarding the changes required to increase ICT implementation

To finish with teachers' results, the last item assessed was their opinion regarding how another emergency situation, with similar characteristics to the one lived with the pandemic, should be faced in education to ensure students' learning process. 86.5% of the total considers that teacher training in virtual and blended learning methodologies is key in the future, 78.7% of teachers believes that student training in digital competence and the familiarisation with the use of virtual applications and tools is paramount in this matter, 62.9% of them considers that the modification of the Spanish educational system to increase the use of ICTs in a similar extent to the one that could be needed if virtual education is required and 41.6% thinks that the development of a contingency programme in the Spanish educational system is a must (cf. Graph 47). Here, we can appreciate that there is not a significant difference among teachers regarding this question (also appreciated in the variance analysis), since they seem to agree on these four variables.

HOW TEACHERS THINK ANOTHER SIMILAR EMERGENCY SITUATION SHOULD BE FACED IN EDUCATION



Graph 47. How teachers consider another similar emergency situation should be faced in education

6. LIMITATIONS OF THE STUDY

One of the greatest limitations faced throughout the work of this study is the restricted representativeness of the sample. Also, and related to this limitation, both cohorts were analysed as a whole, even though the triangulation method was employed, due to the analysis of the data separately – considering the different educational levels and specialisations of the participants – would have involved a very small representation of each of them, resulting in a very subjective and insufficient study.

The selection of the data collected and analysed in this paper aimed at studying qualitative variables, albeit the topic of this study enables the possibility of selecting other data for quantitative perspectives.

The cross-sectional nature of this study, may also have supposed a limitation and further studies could be made considering posterior facts over time.

The selection of the variables was restricted due to the unlimited possibilities this topic has for further research. In this line, this study may have several limitations considering the lack of the variables missed. As an example, regarding the variable *the type of technological resources used with teaching purposes*, both teachers and students were asked about the use of electronic devices in general and they were not specified. It

is possible they answered they used them before the pandemic, meaning the digital whiteboard and during the pandemic meaning their computers. This information is relevant and should be considered for future research.

7. LINES FOR FUTURE RESEARCH

The topic of this study can be analysed from many different perspectives and other significant variables that may have been missed in the structure of this paper can be considered for future studies.

The analysis of the ICT resources for teaching purposes should be addressed from a different approach, considering not only their use, but the value and type of use teachers give them. This is, considering what type of tools they really apply, what the purpose of its use is and how the degree of competence in their use is. According to the results obtained in this study, it seems that a very high number of the teacher participants makes a very frequent use of technological resources in their classes on a daily basis, but the conclusion drawn is that the technological resources they really use in such high frequency are no more than websites, the digital whiteboard, the e-mail and the cloud to share some documents. As we pointed out in the literature review section, implementing ICTs in education is more than incorporating some technology to the traditional teaching methods.

It would ensue highly interesting to analyse the efficiency of ICT resources to assess students' competences in contrast to the traditional assessment tools commonly used.

A further research should be focused on the implementation of an ICT programme in education to face situations in which students have a physical impediment to attend school, such as some meteorological phenomena that interfere in students' capacity to commute or students with a serious physical or psychological disease that impede them from attending regular classes.

8. CONCLUSION

Returning to objective 3 (to establish a comparison between both cohorts), we only discussed sub-objective 3.1 in the results' section to use sub-objectives 3.2 and 3.3 for

the present section since they aim to draw some conclusions on the analysis of the above-displayed results.

Concerning sub-objective 3.2, “to conclude, according to their opinions, what the most optimal way will be for the implementation of ICTs in English teaching and learning processes in similar future emergency situations”, we set out to determine the following:

According to students, their preference over the type of the learning modality they would choose in future English courses proves to be significantly clear: students opt for a blended learning since they consider learning with the help of ICT is more productive and motivating and, in so doing, they can enjoy the benefits of a virtual modality without renouncing the ones offered by the classroom-based modality they already know in depth.

Teachers, on their behalf, consider the implementation of ICT for teaching purposes as an indispensable and necessary premise in every academic centre, regardless of the educational stage and teaching area. Regarding their ideas on how this implementation should be dealt with, teacher training in virtual and blended learning methodologies is key for their future vision, student training in digital competence and the familiarisation with the use of virtual applications and tools is paramount in this matter and the modification of the Spanish educational system is primary to make all those proposals become a reality.

Focusing on sub-objective 3.3, “to conclude, according to their opinions, what changes the current teaching system in Spain should undergo in the next academic courses for the improvement of the teaching and learning processes concerning the implementation of ICT to foster a better preparedness in future crisis or emergency situations”, teachers believe that an improvement of technological facilities is necessary to increase the implementation of ICTs in every centre, also, they highlight the importance of permanent teacher training in ICT and innovative practices for quality teaching. They also affirm that reducing the number of students per teacher is key for this purpose. On their behalf, students still suggest that this change should consider the implementation of a blended learning modality in the Spanish educational system to improve the current education and in order to be prepared to face a similar crisis situation in the future.

In this section, as in previous sections, the treatment of teachers' results has been referred to as one cohort of participants. Even though one of the aims of this study is to focus on the English teaching as a second language, the results obtained with the analysis of the data conclude that there are no relevant differences between the answers gathered from the English teachers compared to the ones gathered from the rest of the teachers studied. For this reason, the results displayed of all of the teachers can be considered as the results obtained of the English teachers group.

The results of this investigation show that most of the teachers that participated in this study, even though they were randomly selected, work in middle-high socioeconomic sectors of society, since only one of the teachers from the total reported experiencing difficulties with students' lack of electronic devices or other technological sources.

Another important implication is that teachers, with the total computerization of the teaching-learning process or the adaptation to e-learning, increased the number of ICT resources to some extent, but this increase was only superficial as we pointed out in previous sections (see literature review and lines for future research sections). Nevertheless, teachers appreciate the significance and potential of ICTs and their implementation in the educational system. This implication addresses us to iterate teachers' need for receiving ICT training with teaching purposes to make them able to progress, innovate and improve their teaching practice.

Teachers mostly agree on the educational system reform concerning a possible protraction of the crisis situation caused by the SARS CoV-19 pandemic or the emergence of a similar situation that may undermine the normalcy of education practices.

According to the UNESCO, in 2025, 50% of the curriculum will be imparted through online education. However, providing good quality education at a time of crisis like the present one cannot be done with one single approach, but with a flexible, and innovative approach to the many challenges. Assessing the benefits that ICTs in their various shapes and sizes can bring to the table is a must. (GEM Report, UNESCO, 2017)

9. BIBLIOGRAPHY

- Attwell, P. and Battle, J. *Home Computers and School Performance*. The Information Society. No. 1999; (15):110.
- Berry, R. *The research project. How to write it*. London. 2004.
- Brace, I. *Questionnaire Design: How to Plan, Structure and Write Survey Material for Effective Market Research*. 2008.
- Bull, M. *A framework for questionnaire design: Labaw Revisited*, 1998, 9, 29–39. 1980.
- Burde, D., Guven, O., Kelcey, J., Lahmann, H. and Al-Abbadi, K. *What Works to Promote Children's Educational Access, Quality of Learning, and Wellbeing in Crisis-Affected Contexts*. Education Rigorous Literature Review. Department for International Development. 2015.
- Cabero, J. *The challenges of the ICTs integration in education. Limits and possibilities*. University of Sevilla, Spain. Vol.49.nº1. 2010: 32-61.
- Cabero, J., Bases pedagógicas del e-learning. *Revista de Universidad y Sociedad del Conocimiento* Vol. 3 - N.º 1 / Abril de 2006
- Çakici, D. *The use of ICT in teaching English as a foreign language*. ELT Department. 2016
- Carlson, S. *Using technology to deliver educational services to children and youth in environments affected by crisis and/or conflict*. USAID: Washington DC. 2013.
- Colás, M.P, Pons, J.P. and Ballesta, J. *Incidencia de las TIC en la enseñanza en el sistema educativo español: una revisión de la investigación*. RED. Revista de Educación a Distancia, 56/2, 2018.
- Essays, UK. *Traditional versus modern methods of effective teaching*. 2018.
- Fernández, F. and Fernández, M. J. *Los docentes de la Generación Z y sus competencias digitales*. Revista Científica de Educomunicación. 2015.

Fernández, F., Fernández, M.J. and Rodríguez, J.M. *The integration process and pedagogical use of ICTs in Madrid schools*. Education XX1, 21(2), 395-416, doi: 10.5944/educXX1.17907. 2018.

Ideas Propias. *Introducción al e-learning. Introducción y objetivos*. 2018.

Mauch, J. and Park, N. *Guide to the Successful Thesis and Dissertation A Handbook for Students and Faculty*. New York. 2003.

Mladjan, D., Cvetkovic, V. *Classification of emergency situations*. Thematic conference proceedings of international significance, T. III Vol. III. The Academy of Criminalistic and Police Studies, Belgrade, 2013:304.

Musheer, Z. *ICT as a catalyst for teaching-learning process: A meta-analysis study*. International Journal of Advanced Education and Research, Vol.3, p. 61-64. 2018

Pérez, M.L. and Pennock-Speck, B. *Writing and presenting a dissertation on Linguistics, Applied Linguistics and culture studies for undergraduates and graduates in Spain*. 2015.

Reimers, F. and Schleicher, A. *A framework to guide an education response to the COVID-19 Pandemic of 2020*. OECD 2020.

United Nations Educational, Scientific and Cultural Organization (UNESCO). *ICT Competency Framework for Teachers*. Version 3. France. 2018.