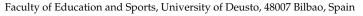*Article*

COVID and ICT in Primary Education: Challenges Faced by Teachers in the Basque Country

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Abstract: This article focuses on the digital competency of primary school teachers in the Basque Country Autonomous Region (Spain) during the COVID-19 pandemic. The temporary closure of schools forced teachers to adapt face-to-face teaching-learning processes in order to operate remotely, making use of technology infrastructure and digital resources. While several educational policies have been developed with the aim of incorporating Information and Communication Technologies into schools, including the "Escuela 2.0" programme, research has shown that there is a lack of Information and Communication Technology training for teachers. The main objective of this study is to further understand the challenges faced by primary school teachers in adapting to remote teaching due to the COVID-19 during stay-at-home lockdown restrictions. An ad hoc quantitative questionnaire was used, which was validated in a trial by eight experts. A total of 1069 primary school teachers participated in the survey. The main results show the participants' emphasis on their effort to reorganise and redesign subjects and their willingness to make use of information and communication technology infrastructure and resources. However, a high percentage of teachers reported that either they lacked information and communication technology training or considered themselves self-taught in these skills, and expressed interest in lifelong learning programmes in Google Classroom, Google Sites and Google Meet applications, among others.

Keywords: digital competency; technological resources; online learning; primary education

1. Introduction

The DeSeCo project [1] established eight key competencies for lifelong learning, with a special emphasis on digital competency (DC). Since February 2020, this competency has been given even greater importance due to the consequences arising from the pandemic. Spanish Decree 463/2020 [2] declared a state of emergency in order to manage the COVID-19 health crisis. Article 9 of this Decree established two lockdown measures specific to education and training: Ceasing face-to-face educational activities in all institutions at all stages, cycles, degrees, courses and levels of education, as well as of any educational and training activities taught in both public and private institutions; conducting educational activities remotely by using online teaching and learning tools, whenever possible.

The educational community was compelled to urgently implement their DC at a dizzying speed, adapting contents and methodologies to non-face-to-face teaching [3–5]. However, this pandemic has sometimes drawn attention to the lack of digital resources in schools, the competency-based learning model, and DC training for both teachers and pupils. This is particularly serious considering that the development of DC is stipulated and promoted in different educational laws [6–9], including Decree 236/2015, which established the Basic Education curriculum to be implemented in the Basque Country Autonomous Region (BCAR) [10].

The low level of teachers training in how to use ICT with pupils is an important factor [11] that was evidenced during the pandemic [4,12]. This situation becomes even

more challenging because there are no resources in place "to implement mandatory lifelong learning programmes" [13] (p. 20) to help improve it.

Therefore, the main objective of this study is to further understand the challenges faced by primary school teachers in adapting to remote teaching due to the COVID-19 stay-at-home lockdown restrictions.

In addition, in order to empower pupils and contribute to their development as successful citizens, teachers should also be empowered to do the same for their pupils [14]. Moreover, teachers should have appropriate training to contribute to the development of pupils' DC and teach them to make critical, creative and responsible use of ICT.

This paper is structured as follows: In Section 1 there is a literature review about the impact of COVID-19 on teaching-learning processes and the digital educational resources available to primary school teachers; Section 2 details the research objectives and hypotheses, the instrument used, and finally, the sample and data collection followed; Section 3 describes the results; the last section presents the discussion and main limitations and future research lines of the study.

1.1. The Impact of COVID-19 on Teaching-Learning Processes

According to the United Nations Educational, Scientific and Cultural Organization [15], at the end of March 2020, 166 countries around the world decreed the temporary closure of all their educational institutions and almost 1.5 billion students at all levels of education (82.8% of the world's total) stopped having face-to-face classes.

With a view to completing the academic year, the most striking change was converting a face-to-face setting into a digital learning environment. However, this adaptation did not simply mean digitising content, but required teachers to rethink their subjects, adjust pedagogical and didactic practices, and create dynamic materials that stimulated distance learning [16]. In this virtual scenario, teachers were required to have technological and pedagogical-digital knowledge in order to innovate, reflect and transform their teaching ideas, while they met curricular objectives [17].

Teachers' DC was particularly important in this situation. As Trujillo-Sáez et al. [18] concluded, this became "a prerequisite for pupils' learning and competency development in a distance learning context". Teachers were very often faced with the immediate challenge of developing competencies and skills that had not necessarily been part of their training. In addition, they were compelled to rethink their teaching practice without any specific theoretical or practical frameworks [19].

One of the first international studies on educational responses to COVID-19 [20], released in 2020, noted that the most challenging aspects of the educational response were the availability and management of technological infrastructure, addressing students' emotional health, and the right balance between digital and screen-free activities. In addition, a significant percentage of participants saw that the changes caused by the crisis brought about some unexpected positive educational outcomes, such as the introduction of technologies and other innovative solutions, and an increase in pupils' autonomy to manage their own learning.

As the ECLAC-UNESCO report [21] pointed out, in the face of current challenges, teachers in Latin America are faced with a lack of training and available resources while the time they have to spend preparing classes and monitoring their students, among other things, has also increased significantly. This report also highlighted the fact that, given educational inequalities and unequal access to curricular coverage, the learning achievement gap is expected to widen. The international study conducted by Cáceres-Muñoz et al. [22] also stressed that the COVID-19 health crisis is increasing educational inequality.

In the study performed in Spain by Trujillo-Sáez et al. [18], teachers emphasised the need to expand infrastructures (spaces and technological resources) and staff numbers, and noted that they have felt abandoned by the education authorities. They also expressed a desire to be trained in DC and teaching strategies in virtual contexts, as well as in active

methodologies, assessment systems, feedback, and monitoring of students beyond the academic sphere. In the same line, Sánchez-Cruzado et al. [4], found that teachers have a low self-perception of their digital skills, and underlined the importance of developing a training program for teachers to reach optimal levels of DC. Different studies in the Spanish context support these results [12,16,23].

In the Basque Country, Portillo et al. [24] explored the perceptions that teachers of all educational stages had of their performance in remote teaching during lockdown. The greatest difficulty reported by teachers was the shortfall in their digital skills training, which led them to perceive an increased workload and negative emotions. In addition, DC was poorer at lower educational levels, which are the most vulnerable group in online teaching environments.

1.2. Digital Educational Resources Available to Primary School Teachers

In Spain, educational policies aimed at incorporating ICT in schools began in the 1980s with the Atenea programme, among others, but it was not until the 2009–2010 academic year that they came to the fore with the "Escuela 2.0" programme. Its objectives were: To provide ICT resources for both teachers and pupils; to promote teacher training; to encourage the development and creation of digital materials; to offer values education for the responsible use of technology. The aim was to promote a '1-to-1 model' and to provide each teacher and pupil in the 5th and 6th years of primary education with a technological device. In addition, interactive whiteboards and Internet connection were installed in classrooms [25].

In 2012, the "Escuela 2.0" was discontinued and replaced with two technological projects: The 2015 Framework Agreement on School Connectivity, to provide ultra-fast Internet access in schools; the Digital Culture at School Plan, to design repositories of open educational content, digital textbooks, and connectivity in schools [26]. The education authorities in the Basque Country provided grants for the production of digital teaching materials (EIMA 2.0), the acquisition of digital devices, and the design of innovation projects for teaching-learning with digital resources ("Sare Hezkuntza Gelan") [27].

Resulting from the circumstances surrounding COVID-19, the 10th Additional Provision of Spanish Organic Law 3/2020 [9] established that the Ministry of Education and Vocational Training, in collaboration with the education administrations, will design a Contingency Plan model to ensure that learning activities continue to be offered and guarantee pupils the right to education under any circumstances. This plan includes the organisational and operational aspects of schools; liaising between governing and teaching coordination bodies; measures that facilitate communication with the educational community; participation of the different members of the educational community in mitigating and addressing the emergency situation; measures that guarantee DC is acquired by pupils and teachers, reducing the digital gaps in access and use as far as possible; provisions for reviewing the elements of the curriculum and the teaching programmes focused on the most competent aspects of the curriculum.

However, COVID-19 has also led to the closure of schools, creating multiple problems in teaching and learning. The fact is that non-university education institutions in Spain are designed for face-to-face rather than remote learning. The digital divide in Spanish households must also be taken into account. According to the latest report on ICT Equipment and Use in Households [28], 81.4% of households with at least one member aged 16 to 74 have some kind of computer and 95.4% of households have an Internet connection. According to the OECD [29], 61% of students in Spain in the highest-income households have three or more computers at home, while 44% of the lowest-income households have only one, and 14% have none. Therefore, it can be said that not all families have the same technological conditions. According to Rodicio-García et al. [30], one in three students, despite having technology at home, does not have the necessary resources. It was found that this perception is influenced by the size of the population where the individual lives and having the knowledge to be able to use the technology. The presence of technological

resources is not enough for the true integration of ICT in the classroom [31]. Faced with this situation, there have been many proposals and programmes for open educational portals and resources to help teachers, pupils, and families to keep up with the pace of the academic year and try to compensate for possible deficiencies in educational processes [32]. There are currently numerous Web 2.0 tools available to be applied in education, such as those used for information searching, communication, or the creation of materials [31]. Governments and institutions in different countries have also developed teaching guides with resources and materials [19,20].

2. Materials and Methods

The main objective of the study is to further understand the challenges faced by Basque primary school teachers from having been forced to adapt to remote learning due to the COVID-19 lockdown between March and June 2020.

In Table 1 the relationship between objectives and hypotheses is presented.

Table 1. Relationship between objectives and hypotheses.

Specific Objectives	Hypotheses
1. Analyse the impact of a range of social and working variables on the teachers' professional field during the pandemic.	H1.1 A range of social and working variables impact the teachers' professional field during the pandemic. H1.2 There are significant differences in the impact on the teachers' professional field with respect to the general context variables.
2. Analyse the digital infrastructure and resources that schools offer for distance learning.	H2.1 Schools generally provide teachers with a wide range of digital infrastructures and resources.
3. Explore the technological resources used by teachers for distance learning activities.	H3.1 Teachers use a wide range of digital infrastructures and resources for distance learning.
4. Analyse the differences in terms of digital infrastructure and resources with respect to the general context variables.	H4.1 There are significant differences in terms of digital infrastructure and resources provided by schools with respect to the general context variables. H4.2 There are significant differences in the teachers' use of digital resources with respect to the general context variables.
5. Analyse teacher training needs and interests in the face of the forced adaptation caused by the pandemic.	H5.1 A high number of teachers need ICT training. H5.2 Teachers show interest in having lifelong training in technological tools.

2.1. Instrument

First, a questionnaire was designed based on the research by [17,18,33–38]. Subsequently, 8 experts in education and ICT were asked to assess the suitability of the items, their clarity, and whether there was a need to add any further categories.

Based on the expert assessment, the questionnaire consisted of 7 dimensions: General context; psychological impact; psychological causes and consequences; technological infrastructure and resources; ICT uses; ICT training; interest in ICT. Questions 1–4, 7, 11, and 13 were multiple-choice (single-answer) responses; questions 5, 6, 14, and 16 were open-ended; question 15 was a ranking question; the remaining questions were on a Likert-type scale ranging from 0 to 10. It was not compulsory to answer every question.

Finally, a pilot study was conducted to examine the overall performance of the measuring instrument. Five primary school teachers with similar characteristics to the target population participated in this study. They corroborated the degree of understanding of the items in the instrument.

2.2. Sample and Data Collection

The sample of the study was comprised of Primary Education teachers from the Basque Country.

The questionnaire was hosted on Qualtrics, a web-based survey platform in the two official languages of the BCAR, Spanish and Basque platform. The estimated response

time was 15 min. The questionnaire was sent to schools on 7 January 2021 and, after two reminders, closed on 12 February 2021.

The final sample consisted of 1069 teachers, 8.9% of the total sample. The sample was considered to be representative, as the total number of primary school teachers in the Basque Country was 11,891 [39] in the 2018–2019 academic year. Table 2 shows the participation percentages and those related to context variables.

Table 2. Sample participants.

General Context Variables	Type	Total (N = 1069)		Questions on the Impact of Variables in Their Professional Field (N = 731)		Questions on the Type of Technological Resources Used for Distance Learning Activities (N = 692)	
		Absolute	%	Absolute	%	Absolute	%
Institution	Public	735	68.75	479	65.53	447	64.6
	Private or publicly funded private	334	31.24	252	34.47	245	35.4
Area	Bizkaia	589	55.09	407	55.68	386	55.78
	Gipuzkoa	316	29.56	241	32.97	202	29.19
	Araba	164	15.34	110	15.05	104	15.03
Socio-economic environment	Low income	154	14.40	106	14.5	99	14.31
	Middle-low income	489	45.74	323	44.19	308	44.51
	Middle-high income	406	37.97	284	38.85	268	38.73
	High income	20	1.87	18	2.462	17	2.457
School years taught	First stage	507	47.42	353	48.29	327	47.25
	Second stage	562	52.57	378	51.71	365	52.75
Gender	Woman	851	79.60	575	78.66	540	78.03
	Man	210	19.64	148	20.25	144	20.81
	Other	8	0.74	8	1.094	8	1.156
Age	21–30	190	17.77	123	16.83	117	16.91
	31–40	245	22.91	176	24.08	170	24.57
	41–50	287	26.84	205	28.04	194	28.03
	51–64	347	32.46	227	31.05	211	30.49
Years' teaching experience	0–10	342	31.99	234	32.01	226	32.66
	11–20	302	28.25	211	28.86	202	29.19
	21–30	230	21.51	150	20.52	140	20.23
	31 or more	195	18.24	136	18.6	124	17.91

3. Analysis and Results

The statistical package for the Social Sciences (SPSS, version 27, IBM, Armonk, NY, USA) was used for data analysis. A descriptive analysis and analysis of variance were performed in this study. The internal consistency of the questionnaire was determined using Cronbach's alpha coefficient. Nunnally [40] recommended a minimum level of 0.7 and Field [41] a level of 0.8 to be considered good. For this questionnaire, the total Cronbach's alpha coefficient of the instrument was 0.87, which showed adequate internal consistency reliability.

The two scales of the questionnaire used in this article measured the impact of certain variables on the teachers' professional environment and the type of technological resources they used for their distance learning activities. The Cronbach's alpha for each was 0.88 and 0.7, respectively. Therefore, they both achieved an adequate level of internal consistency.

The principal component factor analysis has been grouped in the same way as in the questionnaire; thus, the questionnaire met the validity criteria.

Table 3 shows the means and standard deviations of the evaluation scale in relation to the impact on the teachers' professional environment during lockdown. As can be seen, the variables that had the greatest impact were the reorganisation of work time and subject redesign, while the lack of support from the management team, failure of the VLEs, and lack of support from other teachers were the items that scored lowest.

Table 3. Impact on teachers' professional environment.

Variables	Mean	Std. Deviation
Remote work overload	8.66	2.778
Reorganisation of working time	8.95	2.235
Redesign of the subject taught	8.98	2.157
Lack of time for forced adaptation	8.63	2.469
Lack of ICT training (on the part of the teacher)	6.89	3.145
Lack of ICT training (on the part of families)	8.50	2.485
Lack of ICT training (on the part of pupils)	8.04	2.661
Lack of ICT resources for the teacher	6.88	3.131
Lack of ICT resources for families/pupils	8.04	2.680
Precarious technological resources	7.26	3.013
Excessive bureaucratic hurdles from schools	6.21	3.418
Lack of clear guidelines from the management team on how to proceed and other issues	5.29	3.280
Lack of support from the management team	3.98	3.267
Failure of VLEs	4.82	3.129
Unstable Internet connection (teacher)	5.24	3.415
Unstable Internet connection (pupil)	7.26	2.874
Lack of support from other teachers	4.27	3.247
Lack of interest from pupils	6.06	2.969
Lack of family involvement	5.72	2.926

No significant differences were found in terms of the type of school, the area in which the school was located, or the school years taught by teachers; however, there were significant differences in terms of gender, socio-economic environment of families, age, and years of experience.

In terms of the infrastructures and resources available for teachers during lockdown, of the total of 723 teachers who responded to this question, more than 95% stated that they had Wi-fi connection, technological devices, digital communication tools, and digital content creation tools available. Some 74.3% stated that they had VLEs and 65% peripheral devices they could use.

There were no significant differences by territory and gender in relation to the availability of infrastructures and technological resources; however, significant differences were identified in terms of the type of school, the socio-economic environment of the families, age, years of experience, and school years taught by teachers. These differences were found in the variables related to peripheral devices, VLEs, and digital content creation tools.

With regard to the type of technological resources used by teachers for their remote learning activities, as can be seen in Table 4, the most used were digital communication tools and data storage tools, with an average of 9.51 each, and the least used were social networking tools, with an average of 3.58.

Table 4. Technological resources used in distance learning activities.

Type of Technological Resource	Mean	Std. Deviation
Information search tools	9.45	2.006
VLE	7.40	3.837
Digital communication tools	9.51	2.159
Digital content creation tools	8.13	3.096
Social media tools	3.58	3.422
Data storage tools	9.51	2.292
Others	6.28	3.606

No significant differences were perceived with respect to the type of school or the area in which it was located. The socio-economic environment of the families showed significant differences in the use of VLEs. As for age, there were again significant differences in the use of VLEs and digital content creation tools. In both cases, use decreased as the teacher's age increased. The same applies to the item on digital content creation tools and teachers' years of experience; with more years of experience, the less these tools were used.

Finally, there are also significant differences in terms of the school years taught in the use of VLEs, digital content creation tools and other possible technological resources used. In all three cases, their use was higher in the second stage.

In response to the question of whether teachers had ICT training before the pandemic, Table 5 shows the data for the different independent variables considered.

Table 5. Pre-pandemic ICT training.

Variables	Typology	Yes	No	Self-Taught
Institution	Public	31.07%	10.36%	24.30%
	Private or publicly funded private	19.44%	4.09%	10.74%
Area	Bizkaia	29.16%	6.39%	18.54%
	Gipuzkoa	14.58%	5.37%	10.23%
	Álava	6.78%	2.69%	6.27%
Socio-economic environment	Low	7.54%	1.79%	5.75%
	Medium Low	21.74%	7.16%	15.47%
	Upper intermediate	19.82%	5.12%	13.17%
	High	1.41%	0.38%	0.64%
School years taught	1st stage	21.10%	8.06%	17.39%
	2nd stage	29.41%	6.39%	17.65%
Gender	Woman	37.98%	12.28%	27.75%
	Man	12.02%	1.92%	6.91%
	Other	0.51%	0.26%	0.38%
Age	21–30	7.29%	1.66%	8.57%
	31–40	9.46%	4.73%	10.36%
	41–50	14.96%	5.50%	7.54%
	51–64	18.80%	2.56%	8.57%
Years' teaching experience	0–10	12.92%	4.73%	15.73%
	11–20	13.43%	6.14%	9.85%
	21–30	13.17%	1.66%	5.24%
	31 or more	11.00%	1.92%	4.22%
	Total	50.51%	14.45%	35.04%

Furthermore, when the answers given by teachers to this question were related to the availability of infrastructures and resources, as shown in Table 6, around 97% of the participants had Wi-fi connection and technological devices, around 96% had digital communication tools, around 85% had digital content creation tools, 75% had VLEs, and more than 67% had peripheral devices.

Finally, the types of pre-pandemic IT training that teachers reported they had were: Google Classroom, Google Drive, Google Suite, Microsoft Office, Google Sites, blog, Google Meet, Gmail, and Microsoft Word. The areas they would be most interested in having training on were, first: Editing and creation of digital material, classroom, site, blog, and liveworksheets. This was followed by VLEs, digital communication tools, social media, data storage, and digital content creation.

To sum up, the hypotheses H1.1., H2.1., H3.1. and H5.2. are confirmed, while H1.2, H4.1., H4.2. and H5.1 are partially confirmed.

Table 6. Infrastructure, resources, and previous training.

Infrastructure and Resources	Previous Training	Yes	No	Self-Taught
Wi-Fi connection	Yes	49.74%	13.17%	34.14%
	No	0.77%	0.90%	0.64%
	NA/NK	0.00%	0.38%	0.26%
Technological devices	Yes	49.74%	13.30%	33.63%
	No	0.77%	0.90%	1.02%
	NA/NK	0.00%	0.26%	0.38%
Peripheral devices	Yes	36.45%	7.03%	23.79%
	No	13.68%	7.03%	10.36%
	NA/NK	0.38%	0.38%	0.90%
VLEs	Yes	40.79%	8.57%	25.70%
	No	8.57%	4.99%	8.44%
	NA/NK	1.15%	0.90%	0.90%
Digital communication tools	Yes	49.49%	13.17%	33.12%
	No	0.77%	1.02%	1.15%
	NA/NK	0.26%	0.26%	0.77%
Digital content creation tools	Yes	45.14%	9.97%	29.41%
	No	4.48%	3.32%	4.48%
	NA/NK	0.90%	1.15%	1.15%

4. Discussion

In recent times, educational authorities and institutions have made great strides in promoting DC training for teachers and providing ICT resources, especially from the 2009–2010 academic year onwards. However, although this study shows that 50% of teachers have had ICT training (a lower percentage in state schools), the educational institutions should continue to promote it [13] to ensure that 100% of teachers are properly trained in DC and are not left to fend for themselves. As López-Meneses and Fernández-Cerero [11] have stated, there is still much to be done. The participants in this study expressed interest in continuing their training in digital resources, with Google Classroom, Google Sites, and blogs being their highest-ranked preferences, as Álvarez stated [42]. In fact, as this author referred, the edition and creation of digital content and security were pointed out as weak points during confinement. The present study highlights the need for teachers to be trained in these aspects, among others.

Contrary to the claims by Portillo et al. [24], teachers' lack of ICT training was not perceived by the participants in this study as one of the main difficulties when carrying out their professional roles. However, the lack of clear guidelines or support from the management team, the failure of VLEs, their unstable personal Internet connection, and the lack of solidarity from other teachers were mentioned as the main limitations. Moreover, the schools where families belonged to lower-income socioeconomic environments lacked DC, with less than 10% of their teachers having been trained in ICT. This is one of the digital gaps that should be addressed.

In relation to age, the percentage of teachers with pre-pandemic ICT training increased with age. This suggests there may be a shortfall in ICT training in the degree for Primary Education, as pointed out by Silva et al. [43] and Fernández-Cruz and Fernández-Díaz [44]. Yet, younger teachers had a more positive perception of their lack of training than other teachers. This may be due to the fact that they are more accustomed to the use of ICT, as they belong to the generation of digital natives.

Moreover, given the fact that ordinary school learning is face-to-face, it is not surprising that the pandemic has presented teachers with a major challenge [18,19]. In fact, this study has shown that primary school teachers in the BCAR have been overloaded with work due to the need to redesign and reorganise subjects, as shown by previous studies [16,17]. In this line, studies such as those by Álvarez-Núñez et al. [45] and Hortigüela-Alcalá et al. [46]

highlight among the most relevant difficulties perceived by teachers in primary schools some of the conclusions derived from the present study. Among them, the following stand out: The digital gap between students from different social contexts; difficulties of VLEs when dealing with a large number of participations in a limited period of time; lack of support from the educational administration; lack of support and coordination of the center team and its teaching staff.

Following the recommendations of García-de-Paz and Santana Bonilla [47] and the results obtained in this study, it is necessary to reflect on the participation of the teaching coordination teams in the decision-making process of policies that concern the integration of new learning contexts in educational proposals, among others.

In relation to the availability and management of technological infrastructures, the participants, contrary to some of the conclusions of the study carried out by Reimers and Schleicher [20], did not consider this to be one of the aspects that had the greatest impact or hindered their teaching. Additionally, in contrast to the report by ECLAC-UNESCO [21], the participating teachers claimed to have been provided with a range of ICT infrastructure and resources during lockdown. Nearly all of them had access to Wi-fi connection, technological devices, communication tools, and content creation tools. Our study clearly shows access to digital resources by teachers but does not address the quality of their use. Future research should continue to analyse the different types of digital gaps [48,49] (access, use, training, generational) and their implications for the development of DC [47]. In this line, in the context of the BCAR, a decree has recently been published for teachers to certify their level of digital competence [50].

It is also worth noting that in schools where families had a high-income socio-economic environment, the impact on the professional environment of some variables (lack of ICT training for teachers, families, and pupils; lack of ICT resources for teachers, families, and pupils; precarious technological resources; excessive bureaucratic obstacles from schools; pupils' unstable Internet connections; lack of interest of pupils and lack of involvement of families) was lower than in the rest of the schools where families came from to a low, medium-low and medium-high socio-economic environment.

The technological resources that were most often used by the teaching staff for their remote teaching activities during lockdown were digital communication tools, data storage tools, and information search tools; the least used were social media tools. After all, these have been the communication channels between teachers, families, and pupils.

The availability of digital content creation tools was lower among teachers in the second stage, despite the "Eskola 2.0" project, which is certainly surprising. However, this was not the case for the availability of VLEs, which was greater in the 2nd stage; at this stage greater use was made not only of VLEs (even though their availability was lower) but also of tools for creating digital content and other technological resources. We believe this is because the use of these platforms increases as we move up the educational ladder.

However, a large digital gap could still be seen when considering the socio-economic environment variable. The higher the income, the greater the availability of these resources and the greater the use of VLEs during the pandemic. This was also found for the variable of state-funded public schools and private schools.

The use of these virtual environments decreased as teachers' age and years of experience increased. This brings us back to the fact that younger teachers may be more familiar with the use of ICT because they belong to generation Z [44].

One of the limitations of this study is that only the situation of Primary Education teachers in the BCAR was analysed. It would be interesting to replicate the study with teachers from all the Spanish autonomous regions and all education levels, from primary education to university. As mentioned above, another possible line of research for the short term would be to analyse whether teacher DC is being further developed in the current post-pandemic era. Unfortunately, we are facing a situation of uncertainty from which educational institutions and professionals should emerge stronger and better prepared for the future in order to train true 21st century citizens. Further studies should deepen ways

to implement changes at different levels, such as the curriculum, pedagogy, institutional practices, and policies.

Author Contributions: Conceptualization, J.P.-C., A.A. and O.K.; methodology, J.P.-C. and A.A.; software, A.A.; validation, J.P.-C., A.A. and O.K.; formal analysis, J.P.-C. and A.A.; investigation, J.P.-C., A.A. and O.K.; data curation, J.P.-C.; writing—original draft preparation, J.P.-C., A.A. and O.K.; writing—review and editing, J.P.-C., A.A. and O.K.; visualization, J.P.-C., A.A. and O.K.; supervision, J.P.-C. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki, and approved by the Institutional Review Board (or Ethics Committee) of the University of Deusto.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: Not applicable.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. OCDE. Definition and Selection of Competencies: Theoretical and Conceptual Foundations. 2002. Available online: https://bit.ly/3sCwgOv (accessed on 28 July 2021).
2. *Real Decreto 463/2020, de 14 de Marzo, por el que se Declara el Estado de Alarma para la Gestión de la Situación de Crisis Sanitaria Ocasionada por el COVID-19*; 14 March 2020, BOE núm. 67; Boletín Oficial del Estado: Madrid, Spain, 2020. Available online: https://bit.ly/3r4rSUV (accessed on 21 July 2021).
3. Fernández-Martínez, M.M.; Martín-Padilla, A.H.; Luque de la Rosa, A.; Eguizábal-Román, I.A. La tecnología en el ámbito educativo ante el COVID: Una apuesta por los MOOC como estrategia formativa en el contexto universitario. *IJERI* **2021**, *15*, 130–142. [CrossRef]
4. Sánchez-Cruzado, C.; Santiago Campión, R.; Sánchez-Compaña, M.T. Teacher Digital Literacy: The Indisputable Challenge after COVID-19. *Sustainability* **2021**, *13*, 1858. [CrossRef]
5. García-Peñalvo, F.J.; Corell, A. La Covid-19: ¿Enzima de la transformación digital de la docencia o reflejo de una crisis metodológica y competencial en la educación superior? *Campus Virtuales* **2020**, *9*, 83–98.
6. *Ley Orgánica 10/2002, de 23 de Diciembre, de Calidad de la Educación*; 24 December 2002, BOE núm. 307; Boletín Oficial del Estado: Madrid, Spain, 2002. Available online: https://bit.ly/3b2stRn (accessed on 20 July 2021).
7. *Ley Orgánica 2/2006, de 3 de Mayo, de Educación*; 4 May 2006, BOE núm. 106; Boletín Oficial del Estado: Madrid, Spain, 2002. Available online: https://bit.ly/3r6pn4H (accessed on 20 July 2021).
8. *Ley Orgánica 8/2013, de 9 de Diciembre, para la Mejora de la Calidad Educativa*; 10 December 2013, BOE núm. 295; Boletín Oficial del Estado: Madrid, Spain, 2013. Available online: https://bit.ly/37TDx1m (accessed on 20 July 2021).
9. *Ley Orgánica 3/2020, de 29 de Diciembre, por la que se Modifica la Ley Orgánica 2/2006, de 3 de Mayo, de Educación*; 30 December 2020, BOE núm. 340; Boletín Oficial del Estado: Madrid, Spain, 2020. Available online: https://bit.ly/3uJK3BN (accessed on 20 July 2021).
10. *Decreto 236/2015, de 22 de Diciembre, por el que se Establece el Currículo de Educación Básica y se Implanta en la Comunidad Autónoma del País Vasco*; 15 January 2016, BOPV núm. 9; Boletín Oficial del País Vasco: Vitoria, Spain, 2016. Available online: https://bit.ly/3dDVs5Gk (accessed on 12 September 2021).
11. López-Meneses, E.; Fernández-Cerero, J.F. Tecnologías de la información y la comunicación y diversidad funcional. Conocimiento y formación del profesorado en Navarra. *IJERI* **2020**, *14*, 59–75. [CrossRef]
12. García-Zabaleta, E.; Sánchez-Cruzado, C.; Santiago Campión, R.; Sánchez-Compaña, M.T. Competencia digital y necesidades formativas del profesorado de Educación Infantil. Un estudio antes y después de la Covid-19. *Edutec* **2021**, *76*, 90–108. [CrossRef]
13. Gómez, V.; Álvarez, G. Tecnologías digitales en la escuela primaria: Las perspectivas de los docentes sobre su inclusión y la enseñanza en las aulas. *Virtualidad Educ. Cienc.* **2020**, *11*, 9–26.
14. Iruskieta, M.; Maritxalar, M.; Arroyo-Sagasta, A.; Camacho, A. *IKTak eta Konpetentzia Digitalak Hezkuntzan*; Udako Euskal Unibertsitatea: Bilbao, Spain, 2019; ISBN 978-84-1319-089-1.
15. UNESCO. COVID-19 Disrupción Educativa Respuesta. 2020. Available online: https://bit.ly/3vaIzzO (accessed on 3 November 2021).
16. Cifuentes-Faura, J. Docencia online y Covid-19: La necesidad de reinventarse. *Rev. Estilos Aprendiz.* **2020**, *13*, 115–127. [CrossRef]
17. Tejedor, S.; Cervi, L.; Tusa, F.; Parola, A. Educación en tiempos de pandemia: Reflexiones de alumnos y profesores sobre la enseñanza virtual universitaria en España, Italia y Ecuador. *Rev. Lat. Comun. Soc.* **2020**, *78*, 1–21. [CrossRef]

18. Trujillo-Sáez, F.; Fernández-Navas, M.; Montes-Rodríguez, M.; Segura-Robles, A.; Alaminos-Romero, F.J.; Postigo-Fuentes, A.Y. *Panorama de la Educación en España tras la Pandemia de COVID-19: La Opinión de la Comunidad Educativa*; FAD: Madrid, Spain, 2020.

19. Rappoport, S.; Rodríguez, M.S.; Bressanello, M. Enseñar en Tiempos de COVID-19: Una Guía Teórico-Práctica Para Docentes. UNESCO. 2020. Available online: https://bit.ly/37VegUA (accessed on 23 July 2021).

20. Reimers, F.M.; Schleicher, A. A Framework to Guide an Education Response to the COVID-19 Pandemic of 2020. OECD. 2020. Available online: http://bit.ly/3b1rL76 (accessed on 25 July 2021).

21. ECLAC-UNESCO. Education in the Time of COVID-19. 2020. Available online: https://bit.ly/3vaaIqU (accessed on 6 September 2021).

22. Cáceres-Muñoz, J.; Jiménez Hernández, A.S.; Martín-Sánchez, M. Cierre de Escuelas y Desigualdad Socioeducativa en Tiempos del Covid-19. Una Investigación Exploratoria en Clave Internacional. *Rev. Int. Educ. Justicia Soc.* **2020**, *9*, 199–221. [CrossRef]

23. García-Plana, M.I.; Taberna-Torres, J. Transición de la docencia presencial a la no presencial en la UPC durante la pandemia del COVID-19. *IJERI* **2021**, *15*, 177–187. [CrossRef]

24. Portillo, J.; Garay, U.; Tejada, E.; Bilbao, N. Self-Perception of the Digital Competence of Educators during the COVID-19 Pandemic: A Cross-Analysis of Different Educational Stages. *Sustainability* **2020**, *12*, 10128. [CrossRef]

25. Area, M.; Alonso, C.; Correa, J.M.; Del Moral, M.E.; De Pablos, J.; Paredes, J.; Peirats, J.; Sanabria, A.L.; San Martín, A.; Valverde-Berrocoso, J. Las políticas educativas TIC en España después del Programa Escuela 2.0: Las tendencias que emergen. *RELATEC* **2014**, *13*, 11–33. [CrossRef]

26. INTEF. Plan de Cultura Digital en la Escuela. 2013. Available online: http://bit.ly/3sBcOOW (accessed on 3 September 2021).

27. Gobierno, V. Innovación Educativa. Sare Hezkuntzan Gelan. Available online: http://bit.ly/3kw7rOa (accessed on 18 July 2021).

28. Instituto Nacional de Estadística. Equipamiento y Uso de TIC en los Hogares. Año 2020. 2020. Available online: https://bit.ly/3kuOYBI (accessed on 11 October 2021).

29. OCDE. Students, Computers and Learning. Making the Connection. 2015. Available online: http://bit.ly/2NDyBHb (accessed on 7 October 2021).

30. Rodicio-García, M.L.; Ríos-de-Deus, M.P.; Mosquera-González, M.J.; Penado, M. La Brecha Digital en Estudiantes Españoles ante la Crisis de la Covid-19. *Rev. Int. Educ. Justicia Soc.* **2020**, *9*, 103–125. [CrossRef]

31. Fernández, F.J.; Fernández, M.J.; Rodríguez, J.M. El proceso de integración y uso pedagógico de las TIC en los centros educativos madrileños. *Educ. XX1* **2018**, *21*, 395–416. [CrossRef]

32. Rodríguez, J.; López, S.; Marín, D.; Castro, M.M. Materiales didácticos digitales y coronavirus en tiempos de confinamiento en el contexto español. *Práxis Educ.* **2020**, *15*, 1–20. [CrossRef]

33. Quispe, F.; García, G. Impacto psicológico del covid-19 en la docencia de la Educación Básica Regular. *Rev. Investig. Cien. Tecnol.* **2020**, *1*, 30–41. [CrossRef]

34. Baptista, P.; Loeza, C.A.; Almazán, A.; López, L.A.; Cárdenas, J.L. Encuesta Nacional a Docentes ante el COVID-19. Retos para la educación a distancia. *Rev. Latinoam. Estud. Educ.* **2020**, *50*, 41–88. [CrossRef]

35. Balluerca, N.; Gómez, J.; Hidalgo, M.; Gorostiaga, A.; Espada, J.; Padilla, J.; Santed, M. *Las Consecuencias Psicológicas de la COVID-19 y el Confinamiento*; Servicio de Publicaciones de la Universidad del País Vasco: Bilbao, Spain, 2020. Available online: https://bit.ly/2PazZ4G (accessed on 21 July 2021).

36. Martínez-Garcés, J.; Garcés-Fuenmayor, J. Competencias digitales docentes y el reto de la educación virtual derivado de la covid-19. *Educ. Hum.* **2020**, *22*, 1–16. [CrossRef]

37. Burgos-Videla, C.; Vázquez-Cano, E.; López-Meneses, E.; Adaos-Orrego, R. PROYECTO DIFPRORET: Análisis de las dificultades, propuestas y retos educativos ante el COVID-19. *IJERI* **2021**, *15*, 17–34. [CrossRef]

38. Sánchez, M.; Martínez, A.M.; Torres, R.; De Agüero, M.; Hernández, A.K.; Benavides, M.A.; Rendón, V.J.; Jaimes, C.A. Retos educativos durante la pandemia de COVID-19: Una encuesta a profesores de la UNAM. *Rev. Digit. Univ.* **2020**, *21*, 1–24. [CrossRef]

39. EUSTAT. Personal Docente en la C.A. de Euskadi por Sexo, Nivel, Territorio Histórico y Titularidad 2019/20. Available online: https://bit.ly/3bYZMYM (accessed on 1 October 2021).

40. Nunnally, J.O. *Psychometric Theory*; McGraw-Hill: New York, NY, USA, 1978.

41. Field, A. *Discovering Statistics Using SPSS*; Sage: London, UK, 2009.

42. Álvarez, D. Las claves son las infraestructuras: Espacios y redes para un aprendizaje libre de coronavirus. In *Aprender y Enseñar en Tiempos de Confinamiento*; Trujillo, F., Ed.; Los libros de la Catarata: Madrid, Spain, 2020; pp. 40–50.

43. Silva, J.; Usart, M.; Lázaro-Cantabrana, J.L. Competencia digital docente en estudiantes de último año de Pedagogía de Chile y Uruguay. *Comunicar* **2019**, *61*, 33–43. [CrossRef]

44. Fernández-Cruz, F.J.; Fernández-Díaz, M.J. Los docentes de la Generación Z y sus competencias digitales. *Comunicar* **2016**, *46*, 97–105. [CrossRef]

45. Álvarez-Núñez, Q.; López-Gómez, S.; Parada-Gañete, A.; Gonçalvez, D. Cultura profesional y TIC en la formación del profesorado en tiempos de crisis: La percepción de los docentes. *Rev. Electrón. Interuniv. Form. Profr.* **2021**, *24*, 153–165. [CrossRef]

46. Hortigüela-Alcalá, D.; Pérez-Pueyo, A.; López-Aguado, M.; Manso-Ayuso, J.; Fernández-Río, J. Familias y Docentes: Garantes del Aprendizaje durante el Confinamiento. *Rev. Int. Educ. Justicia Soc.* **2020**, *9*, 353–370. [CrossRef]

47. García-de-Paz, S.; Santana Bonilla, P.J. La Transición a entornos de educación virtual en un contexto de emergencia sanitaria: Estudio de caso de un equipo docente en Formación Profesional Básica. *Rev. Educ. Distancia (RED)* **2021**, *21*, 1–24. [CrossRef]

48. Camacho, K. La brecha digital. In *Palabras en Juego: Enfoques Multiculturales Sobre las Sociedades de la Información*; Ambrosi, A., Peugeot, V., Pimienta, D., Eds.; C & F Éditions: Madrid, Spain, 2005; pp. 61–71.
49. Oviedo, M. Las plataformas educativas en la pandemia ¿Solución o reproducción de las desigualdades? *Tramando Rev.* **2020**.
50. *Resolución de 1 de Julio de 2022, de la Dirección General de Evaluación y Cooperación Territorial, por la que se publica el Acuerdo de la Conferencia Sectorial de Educación sobre la Certificación, Acreditación y Reconocimiento de la Competencia Digital Docente*; 12 July 2022, BOE núm. 166; Boletín Oficial del Estado: Madrid, Spain, 2022. Available online: https://bit.ly/3BOdNU5 (accessed on 5 August 2022).