



# Online Education during the COVID 19 lockdown and school closures in Spain. Teachers' perceptions

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## Online Education during the COVID 19 lockdown and school closures in Spain. Teachers' perceptions

**Abstract.** *This empirical study explores non-university teachers' attitudes and perceptions with regard to online education and ICT use during the COVID 19 lockdown and the accompanying school closures in Spain. It is also aimed at uncovering some of the limitations of ICT that have been found in certain areas, and at detecting potential differences of opinion about online education among teachers at different educational levels. An ad hoc online questionnaire was designed for the purposes of the study, and it was completed by 700 teachers from all over the country. Results show that the applied instrument is valid, reliable and capable of discriminating different views about online education in different educational stages. Findings show that teachers' perceptions about online instruction are not favourable, and that teachers in compulsory educational stages had more negative views than those involved in more vocational courses. Many participants also reported that online teaching implies a work overload and an additional economic burden to teachers. In addition, online instruction brings with it serious difficulties stemming from the lack of emotional connection with students. Based on these results, it is concluded that the school closings caused by the COVID-19 lockdown required an exhausting process of adaptation on the part of teachers, who were forced to modify their educational strategies. They had to find unprecedented new ways of interacting with their students.*

**Keywords:** ICT; online education; digital inclusion; Covid 19.

## Educación online durante el cierre escolar por COVID 19 en España. Percepción del profesorado

**Abstract.** *Este estudio empírico explora las percepciones del profesorado no universitario sobre la educación online y el uso de las TIC durante el cierre de los centros educativos españoles por la COVID 19. También pretende determinar las limitaciones encontradas en algunos aspectos, y las diferencias de opinión entre el profesorado de distintas etapas educativas. Para ello, se diseñó un cuestionario ad hoc destinado al profesorado de toda España del que se obtuvieron 700 respuestas. Los resultados muestran que el instrumento utilizado es válido, fiable y capaz de discriminar diferentes puntos de vista sobre la educación online en diversos tipos de enseñanzas. Asimismo, revela que la percepción del profesorado sobre la instrucción online no es favorable, siendo más negativa en las etapas obligatorias que en las más vocacionales. Además, la educación online supone una carga de trabajo extra, un coste económico adicional, y lleva aparejadas algunas dificultades derivadas de la falta de contacto físico-emocional con el alumnado. Se puede concluir que la pandemia ha llevado al profesorado a realizar un esfuerzo extenuante por adaptarse al nuevo escenario educativo y por modificar sus estrategias, todo lo cual ha causado innumerables inconvenientes y ha propiciado novedosas formas de interacción con el estudiantado.*

**Palabras clave:** TIC; educación online; inclusión digital; Covid 19.

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## Introduction

Education must not cease in an emergency, as UNICEF's 2020 report states, since it is an essential element in a crisis recovery process. It provides normality, a sense of routine, knowledge, and the necessary skills that people need to protect themselves in the face of exceptional situations of social and economic vulnerability. Education also helps bridge the kinds of social, economic and educational gaps that often exist between certain parts of the population. More specifically, in a crisis like the COVID-19 lockdown, maintaining instruction is highly positive because it ensures learning and helps reduce the stress associated with the emergency and the emotional impact on children. In such cases, education, regardless of mode or place, takes on special importance, as it offers a protective framework for children, particularly for the most vulnerable among them.

Bearing in mind these principles, many governments in the countries most severely affected by COVID-19 decided not to suspend educational processes, but instead attempted to continue offering schooling through online instruction, when possible. This meant that everyone involved had to quickly adapt to new teaching-learning models (Gourlay, 2021). The lockdown brought with it sweeping changes to the educational context and ICT integration, as these tools have come to be viewed as indispensable (Frau-Meigs & Torrent, 2009; Jonassen 2006) in this time of difficult teaching conditions all over the world (Mishra et al., 2020).

In Spain, the state of alarm caused by COVID-19 pandemic went into effect on March 15th, 2020, with educational institutions closing and citizens locked down in their homes. This governmental measure meant that 8,276,528 students and 724,803 teachers had to continue with their teaching and learning activities from home until the end of the academic year in June 2020 (Ministerio de Educación y Formación Profesional, 2020). As the lockdown was unexpected, educational authorities did not have time to react and provide teachers and students with the necessary tools and resources to implement this digital schooling. Therefore, many educators were forced to start teaching virtually without the appropriate training and without some of these essential tools. Similarly, students, their families and teachers had to modify their way of understanding and experiencing education. At present, online teaching is happening alongside face-to-face instruction in many Spanish schools, especially when groups of students are confined after close contact with a COVID-19 positive person, or when instruction takes the form of a blended or hybrid model, combining online teaching with face-to-face instruction (students only attend school a few days a week).

Generally speaking, educational research on ICT has "focused mainly on improving students' learning processes. However, research on how teachers have been affected by the emergence of the technologies

that make improved student learning possible is scarce" (Fernández-Batanero et al., 2021, p.1).

For this reason, and in light of the obstacles and difficulties teachers have faced (König et al., 2020; Van der Spoel et al., 2020), this research was designed with the aims of learning about teachers' real attitudes and opinions about online teaching-learning and ICT usage; validating an *ad hoc* questionnaire addressed to teachers in order to examine their use of ICT during lockdown; determining teachers' ICT usage weaknesses in terms of issues such as methodology and assessment, and finally, analysing if there were differences of opinion about online instruction among teachers from different educational stages: Pre-school (3-5), Primary (6-12), Secondary (12-16), Upper Secondary (16-18), Vocational Training, and other teaching modalities (official language schools, official music schools and official arts schools).

In order to carry out this empirical study, an online questionnaire was designed and sent to in-service teachers working in different educational stages all over Spain. As a result, 700 questionnaires were completed, and the data collected were analysed as described below.

In the educational context of the lockdown, ICT played a crucial role, as lessons moved from face-to-face to virtual. As a consequence, significant technological changes had to be implemented, resulting in new working conditions for teachers and having wide-ranging implications for their families, relationships and working environments (Fernández-Batanero et al., 2021; Pozo et al., 2021). At the same time, all this underlined the need for teachers to improve their digital competence in order to use ICT more effectively (Gisbert & Lázaro, 2015), as had already been suggested in various reports by the European Commission (2012, 2013, 2014) and UNESCO (2008, 2011, 2013).

ICT integration in schools was already seen as a pressing and urgent need due to the fact that educational community digital competence development is required to facilitate closer interaction between teachers and students (Ministerio de Educación y Formación Profesional, 2020). Meanwhile, the use of e-learning tools also encourages learners to be more creative and to believe more in their contributions (Condeza et al., 2014), which is crucial if they are to achieve optimal results. These are some of the reasons why technology should be incorporated as soon as possible even into schools where teachers have been reluctant to embrace it.

It should be taken into consideration that teachers require specific training and digital competence development to introduce and integrate ICT into the teaching-learning process successfully, since they have to guide their students throughout the information building process (Aparicio, 2018). Besides, teachers are responsible for selecting appropriate and pertinent contents carefully, depending on the task to be carried out. They should also teach students how to think critically about their ICT use and how to ensure that they fully harness the transformative potential of

technology (Mesa, 2012; Zhao et al., 2002). All of this has led to added difficulties, which have already been explored in previous research (Mesa, 2012).

In this online teaching context, many teachers have been forced to integrate technology into their practices despite lacking training in the matter and despite being largely unaware of the educational potential of ICT tools. As a consequence, their struggle with technology has caused them fatigue, tension and anxiety (Kyriacou, 2003).

Thus, improving teacher training is one of the educational authorities' priorities (Baturay et al., 2017). This training should take into account all the possible scenarios, trends and contexts that are in progress in education (Barger, 2020). Additionally, teacher-training programs have also placed special emphasis on offering new modules on technology to students (Mazman, 2019).

## Method

This research has followed the quantitative paradigm. We have designed and administered a questionnaire to study teachers' opinions and perceptions about online teaching-learning and the use of ICT during the lockdown that affected Spanish schools. In order to design the test, psychometric guidelines such as American Educational Research Association, American Psychological Association & National Council on Measurements in Education (2014) and International Test Commission (2017) were followed.

## Participants

The sampling was incidental or non-probabilistic. The sample was made up of 700 teachers from all over Spain, 25.33% (N = 175) of whom were men and 74.67% (N = 516) were women. The average number of years of experience was 17.54 (D.T. = 10.16) (three teachers had less than one year of work experience and one teacher had been working for forty-four years). In terms of educational stages, 15.14% (N = 106) were Pre-school teachers (PSE); 19.71% worked in the in Primary education stage (PE) (N = 138); 18.57% (N = 130) taught in Compulsory Secondary Education (CSE); 26.29% (N = 184) in Upper Secondary Education (USE); 9.00% (N = 63) in Vocational Training (VT) and 11.29% (N = 79) in other educational stages (OTHERS). Finally, 67.57% (N = 473) of the teachers worked for state schools and 32.43% (N = 227) performed their functions for subsidized and / or private schools.

## Instrument

In order to build the definite version of this *ad hoc* questionnaire, and with the aim of adjusting items and collecting suggestions, a pilot test was conducted with a smaller sample of teachers from different teaching stages and regions. The final questionnaire consists of 10 items answered on a 5-point Likert-type response

scale. In order to design these items, pertinent studies such as Downing & Haladyna (2006), Fonseca-Pedrero & Muñiz (2017, 2019) and Hernández et al., (2016) were considered. This way, participants only had to read the items and mark the response, ranging from 1 (strongly disagree) to 5 (strongly agree). The questionnaire also collects information on demographic and professional variables such as: gender, professional experience, qualifications, educational stage, type of school and subjects taught.

## Procedure

Taking into account the study's theoretical framework and objectives, the research was carried out through the above-mentioned online questionnaire, which was distributed through e-mail and social networks, the latter including teachers' professional WhatsApp groups and Twitter. It was thought that these networks' immediacy would be of great interest for the research, given the uncertain and complicated work situation during the school lockdown and the subsequent period.

Teachers were informed about the researchers' commitment to confidentiality and anonymity, and the deadline to fill in the instrument was set at two months from the time it was received.

## Data analyses

The dimensional structure of the test was calculated with an exploratory factor analysis using the maximum likelihood method, checking previously data sampling adequacy (Ferrando & Anguiano-Carrasco, 2010; Lloret-Segura et al., 2014), and calculating the test's reliability with Cronbach's Alpha (Cronbach, 1951). In order to conduct these analyses, negative items such as "Online education does not allow emotional connection with students" were decoded. The descriptive statistics of the items were also estimated: mean, standard deviation, asymmetry, kurtosis and discrimination indices. Given that the global test and the items did not show a normal distribution according to the Kolmogorov Smirnov test, some non-parametric tests, such as the Kruskal Wallis test and the Mann-Whitney U test, were applied. The level of significance was 0.05, and the analyses were performed using IBM SPSS 20 statistics for Windows.

## Results

Shown below are the research findings corresponding with each of the objectives:

### Evidence of internal structure and internal consistency

The analysis applied to determine data factorial structure showed it was adequate [KMO =.77; Bartlett's Sphericity test was statistically significant,  $\chi^2 [(45, N = 700) = 1019.81, p < .01]$ ], being an essential one-dimen-

**Table 1.** Factor loadings and discrimination indexes of the scale

	Factor loadings	Discrimination indexes
1. Online education allows for instruction as effective as face-to face instruction	.51	.44
2. Online education involves an increased workload for teachers	.21	.21
3. Online education does not allow for emotional connection with students	.43	.36
4. Online education involves economic costs that teachers should not have to cover	.41	.35
5. Online education is not very suitable for students with special needs	.56	.46
6. Students prefer online education	.26	.24
7. Students do not take online education seriously	.48	.36
8. Students acquire much less knowledge through online education	.65	.50
9. Online education involves economic costs that families and students cannot afford	.53	.45
10. Online education allows for assessment as effective as face-to face instruction	.38	.33

sional scale, since the first factor explains 21.12% of the total of the variance; the items show factor loadings greater than .20. Regarding the reliability scale, Cronbach's alpha is 0.71, presenting items with values higher than .20 on the discrimination indexes (see table 1).

#### Opinion of online education during lockdown

Teaching staff opinion about online teaching is not positive, with an overall mean score on the scale of 2.15 (SD =.59) on a five-point scale. The results were analysed item by item to find online teaching's specific weaknesses and limitations, and the mean degree of agreement for each of the items, as well as the mode and median, are presented in Table 2.

The following items show the most frequent responses of complete disagreement: "Online education allows for instruction as effective as face-to face instruction" (M=1.83 S.D.=1.04); "Students prefer online education" (M=2.09 S.D.=1.05), and "Online education allows for assessment as effective as face-to face instruction" (M=1.89 S.D.=1.17). For another group of items, total agreement was the most common response: "Online education involves an increased workload for teachers" (M= 4.47 S.D.=.91); "Online education does

not allow emotional connection with students" (M=3.99 S.D.=1.20); "Online education involves economic costs that teachers should have to cover" (M=3.96 S.D.=1.26) and "Online education is not very suitable for students with special needs" (M=3.77 S.D.=1.22).

#### Differences of opinion according to teachers' educational stage

As a means of investigating the differences of opinion in different educational stages, a non-parametric Kruskal-Wallis test was applied. As with the previous results, Table 3, indicates statistically significant differences in the overall score ( $p < .001$ ) and in several items such as "Online education allows for instruction as effective as face-to-face instruction" ( $p < .001$ ) and "Online education allows for assessment as effective as face-to-face instruction" ( $p < .001$ ); "Online education involves an increased workload for teachers" ( $p = .003$ ); "Online education does not allow emotional connection with students" ( $p = .003$ ); "Online education involves economic costs that teachers should not have to cover" ( $p = .014$ ), and "Students prefer online education" ( $p < .001$ ).

An analysis of the results of the Mann-Whitney U test for the two groups shows that these differences specifically indicate that, on the overall scale, the average score of teachers in "Other educational stages" (Hereinafter OTHERS) is significantly higher than that of Pre-school Education and Primary Education teachers. For the item "Online education allows for instruction as effective as face-to face instruction" OTHERS also show significantly higher scores than teachers in Compulsory Secondary Education (hereinafter CSE), Primary Education (hereinafter PE) and Vocational Training (hereinafter VT). Meanwhile, Pre-School Education (hereinafter PSE) teachers show significantly lower scores than CSE, USE, VT and OTHERS. In response to the statement "Online education allows for assessment as effective as face-to face instruction", OTHERS display significantly higher scores than the teachers in the rest of the educational stages (PSE, PS, CSE and USE), except for VT. At the same time, CSE teachers record significantly higher average scores than PSE and PS teachers.

**Table 2.** Descriptive statistics of the items

Items	Md	Mo	M	S.D.	Asymmetry		Kurtosis		Min.	Max.
					Statistic	S.E.	Statistic	S.E.		
1.	1	1	1.83	1.04	1.22	.09	.80	.18	1	5
2.	5	5	4.47	.91	1.99	.09	3.87	.18	1	5
3.	4	5	3.99	1.20	.98	.09	-.14	.18	1	5
4.	4	5	3.96	1.26	.95	.09	-.21	.18	1	5
5.	4	5	3.77	1.22	.67	.09	-.55	.18	1	5
6.	2	1	2.09	1.05	.67	.09	-.15	.18	1	5
7.	3	3	3.10	1.13	.07	.09	-.57	.18	1	5
8.	3	3	3.38	1.19	.19	.09	-.83	.18	1	5
9.	4	3	3.63	1.12	.42	.09	-.53	.18	1	5
10.	1	1	1.89	1.17	1.29	.09	.77	.18	1	5

Note: Md=Median; Mo=Mode; M=Mean; S.D.= Standard Deviation; S.E.= Standard Error; Min=Minimum; Max=Maximum.

**Table 3.** Factor loadings and discrimination indexes of the scale. Significance tests of the educational stages on the global scale and by items

	Stage	Range average	Chi-square	gl	p
Global scale	PSE	305.17	21.61	5	<.001
	PE	348.81			
	CSE	354.66			
	USE	330.43			
	VT	374.36			
	OTHERS	433.53			
1. Online education allows for instruction as effective as face-to face instruction	PSE	299.03	20.64	5	<.001
	PE	325.09			
	CSE	352.53			
	USE	361.24			
	VT	389.81			
	OTHERS	403.83			
2. Online education involves an increased workload for teachers	PSE	314,34	18.11	5	.003
	PE	351,08			
	CSE	372,55			
	USE	374,04			
	VT	360,09			
	OTHERS	300,20			
3. Online education does not allow for emotional connection with students	PSE	400,91	19.98	5	<.001
	PE	374,16			
	CSE	335,71			
	USE	343,49			
	VT	279,24			
	OTHERS	339,18			
4. Online education involves economic costs that teachers should not have to cover	PSE	338,53	14.25	5	.014
	PE	327,71			
	CSE	369,38			
	USE	378,10			
	VT	367,29			
	OTHERS	298,74			
5. Online education is not very suitable for students with special needs	PSE	361,76	3.49	5	.625
	PE	327,26			
	CSE	358,60			
	USE	360,19			
	VT	350,86			
	OTHERS	335,43			
6. Students prefer online education	PSE	288.06	22.06	5	<.001
	PE	321.64			
	CSE	384.80			
	USE	364.07			
	VT	366.56			
	OTHERS	383.31			
7. Students do not take online education seriously	PSE	362,47	9.98	5	.076
	PE	329,30			
	CSE	360,98			
	USE	365,87			
	VT	374,83			
	OTHERS	299,91			
8. Students acquire much less knowledge through online education	PSE	355,96	7.49	5	.186
	PE	354,90			
	CSE	356,69			
	USE	362,33			
	VT	355,56			
	OTHERS	294,63			
9. Online education involves economic costs than families and students cannot afford	PSE	391,50	6.06	5	.301
	PE	347,05			
	CSE	344,05			
	USE	342,40			
	VT	351,42			
	OTHERS	330,39			
10. Online education allows for assessment as effective as face-to face instruction	PSE	306.22	25.98	5	<.001
	PE	325.58			
	CSE	369.86			
	USE	337.27			
	VT	381.33			
	OTHERS	426.29			

With regard to teachers' workload, educators from CSE and USE registered statistically higher scores than teachers from PSE and OTHERS. With reference to the item about emotional burden, those PSE teachers show statistically higher average scores than CSE, USE and VT teachers.

Meanwhile, teachers who instruct in VT show statistically lower average ranges than those who teach in PE, CSE and USE.

In relation to the economic costs borne by the teaching staff, teachers in the category OTHERS present significantly lower average scores than those who teach in CSE and USE stages. Finally, regarding student preferences, PSE teachers show a significantly lower average score than teachers from all the other stages (see Table 3).

## Discussion

Integrating new technologies is, undoubtedly, one of the most pressing challenges in contemporary education. Therefore, is desirable for teachers to understand all of ICT's potential and to have the skills they need to employ these technologies (Aparicio, 2018) in a creative way (García-Sampedro et al., 2018). Consequently, new digital literacy proposals are needed to contribute to improving 21<sup>st</sup> century citizens' necessary and indispensable technological skills (Fueyo et al., 2018), and particularly, teachers' strategies and methodologies. However, this inclusion of technology faces a major obstacle, as it necessitates an extra workload for teachers, and as a result, a decrease in their attention to students (García-Valcárcel et al., 2014).

Another pertinent issue to be considered is the risk of diminishing social relations among students, and between students and teachers. Thus, it is important to promote group activities or learning communities whenever possible (Mesa, 2012). One way to accomplish this is by holding the kinds of virtual lessons that were offered using different digital platforms during the lockdown, ensuring continued interaction among students and teachers (Gonzalez, et al., 2020).

In this new context, teachers can become facilitators who help students in their learning processes (De la Torre, 2005). This change also implies that teachers must become active teaching actors, figures who guide, advise, energise, motivate and manage diverse learning environments (Mazman, 2019) while students improve their self-regulation processes and evolve into the central characters of the process (Choi et al., 2005; Dabbagh & Kitsantas, 2005).

Additionally, educational aspects such as assessment have gained new relevance. Assessment is one of the most fundamental issues in the educational processes, and it is an object of concern for both school administrators and the broader educational community. Teachers have had to modify their assessment strategies and instruments in a very short time frame (Judge, 2021; Mishra et al., 2020) while students have had to adapt to the new systems, which differ significantly

from the traditional ones (Gonzalez et al., 2020).

The present study has been very effective and useful in examining whether ICT inclusion actually took place and how this technology was used. It has also provided information on teachers' perceptions and opinions about online education in the extraordinary context of the lockdown and accompanying school closures. The unfavourable scores recorded on items measuring issues like online teaching methodology, assessment, work overload and economic cost reveal a negative opinion of online education. In this regard, teachers also believe that remote education does not allow for the same kind of emotional interaction with the students as face-to-face instruction does. In addition, they believe that this instruction modality is not suitable for students with special educational needs. Moreover, teachers were more likely to believe that their students preferred online education to face-to-face instruction when their students were older or belonged to educational stages in which autonomous study is promoted. Teachers also felt that their students valued online learning when teaching methodologies were focused on the teacher-student relationship, such as in PSE and PE, or in educational stages more related to academic and professional inclinations (as in the case of VT and other sort of official studies).

Some Spanish government initiatives have been put into place with an eye toward meeting the urgent need to include and promote ICT in Spanish schools, as their use is viewed as essential aspect in the educational system and a key requirement for future job preparation. Specifically, the Escuela 2.0 project, approved in 2009 (Gobierno de España, 2009), is aimed at promoting the use of new technologies among students and teachers in sixth grade of Primary schools and the first and second years of Compulsory Secondary Education. It is worth noting that the schools that implemented ICT successfully have observed that their methodologies and their conception of collaborative work have also changed (Hernández, 2017; Stockless, 2018).

These attempts to change educational and social processes announced the appearance of a new instructional paradigm, one intended to turn schools into places where technology has an indisputable impact. This, in turn, would influence citizens' conception of teachers' role (Parra, 2012). The educational evolution impelled by the inclusion of these technological tools offers other enormous advantages, including the emergence of new interpersonal learning contexts (Salmerón et al., 2010), more motivating lesson planning design, and more facilitating learning methodologies (Prats & Albert, 2004). Unfortunately, however, very few schools, teachers and students have benefited from this innovative teaching paradigm (Hernández-Martín & Martín de Arriba, 2017).

One example of the kinds of innovative resources that can be used is SELFIE, a free educational tool developed by the European Commission, which helped schools integrate digital technologies into teaching,

learning and assessment and to implement alternative ICT use during lockdown. The SELFIE tool fosters individual reflection about effective learning through the promotion of innovation and educational technologies.

Some teachers are reluctant to implement these new methodologies because of their lack of training. As a consequence, this new demand placed upon teachers has thrown the existence of a digital gap into sharp relief (Barger, 2020; Zook, 2000).

Regarding the lack of training, the latest TALIS report (OECD, 2018) indicates that only 38% of Spanish teachers have received specific training in ICT, a very low percentage compared to other some other OECD countries, where as many as 56 % of teachers have benefited from such training. However, even before the pandemic, there was an increasing tendency to use ICT in classrooms, as explained in detail in TALIS report. More than half of the participating teachers overall (53%) and nearly the same proportion (51%) of participating Spanish teachers reported that they regularly utilise ICT during their lessons, a figure that is 14% higher than in 2013 (TALIS, 2018).

Studies about ICT inclusion and use during the lockdown have been carried out in other countries, such as Germany (König et al., 2020, Malasya (Ryn, 2020) and the Netherlands (Van der Spoel, et al., 2020). This research had similar findings, concluding that teachers have had to face profound challenges in adapting to online teaching. These studies also report that despite these difficulties teachers have been able to maintain a minimum of communication with students and to support them during their learning processes. Teachers in the studies confirmed that they have been in touch with students and families online and have been able to introduce new learning contents and to provide feedback to learners. More recent studies such as those by Pozo et al. (2021) and Zalat et al. (2021), carried out in a university context, have come to similar conclusions. Despite these successes, though, all the studies coincide in saying that online teaching presents a lot of disadvantages, and that aspects such as assessment require deeper attention in order to improve online education (König et al., 2020). All of these studies make it clear that the new situation has led many teachers to transform their teaching methods and include new ICT resources to adapt to their needs, a change that Van der Spoel et al. (2020) frame as a process of innovation and professionalization. On the other hand, in countries such as Indonesia, online education during the pandemic is considered a success, attributable to "the readiness of technology in line with the national humanist curriculum, support and collaboration from all stakeholders, including government, schools, teachers, parents and the community" (Rasmitadila, 2020, p.90).

The present study's results can be interpreted as a consequence of the unfulfilled ICT inclusion in many Spanish schools, and the fact that teachers' assessment of online education is not positive should be understood within the pandemic context in which data were

compiled. Thus, this study might be enriched and expanded by repeating the same questions to the teaching staff once the circumstances have returned to normal. That would make it possible to determine whether teachers' opinions have changed or, on the contrary, have remained stable over time. It would also be very enriching to carry out similar research in one or more other countries for the purposes of comparing previous and later results. Likewise, this study presents some limitations that could be understood as potential future lines of work. For instance, it would be necessary to extend the research to determine how students and their families have perceived this type of teaching. In this way, it would be possible to complete a full image about online teaching-learning during the Spanish schools' lockdown (March-June 2020).

In conclusion, this study echoes the findings of Van der Spoel et al., (2020), Ryn (2020) and Li (2021), who observed that educators have been forced to remodel their lessons into virtual adaptations in a short period of time and under a lot of pressure, resulting in a heavier workload. The Spanish lockdown (March-May 2020) was severe and unforeseen, and the accompanying move to online teaching could not be planned in advance. These months of confinement prompted a drastic change in the education system and unveiled both the strengths and the weaknesses of virtual approaches. The real integration and use of ICT were among the most critical factors of the moment. At the same time, it may be said that teaching work has had to become more flexible and collaborative throughout these months in which students have taken a more prominent place at the centre of the educational interaction and communication processes, a change that had already been considered advantageous by Badía & Monereo (2008) and Cortina-Pérez (2008).

All these results lead to a reflection about the necessary improvements that educational authorities should strive for when it comes to online education in general, and to ICT implementation and teacher training in particular (Baturay et al., 2017; OECD, 2018). Educational authorities should bear in mind the negative perception teachers have about online education, and they should try to address some of the associated problems and the implications that educators faced during the lockdown. If not, teaching and learning processes might be severely affected, with tremendous negative consequences for the education of future generations, as UNICEF (2020) reports.

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