The Limitations of Distance Education in Spain During the 2020 Covid-19 Pandemic

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Abstract. The widespread close down imposed on the Spanish population as a result of the Covid-19 health crisis has had radical consequences especially for children and youth who have seen their daily lives completely disrupted. For many weeks, social contact was confined to family life in the home, occasional online interaction with extended family and friends, and access to educational and extracurricular activities which had been made available online with greater or lesser success. It will take time for the consequences of this confinement for the lives of children and youth to emerge, and especially for the educational differences engendered by the transition to online teaching. The crisis caused a sudden change from face-to-face teaching to distance education for all levels – preschool, compulsory and higher education, with no or little training or provision of resources. Many students were cut off due to the digital divide associated either to unequal access to technology, generally due to economic and infrastructure issues such as internet connection, data or equipment limitations, but also due to the family's low level of cultural capital (little or no digital literacy) or lack of effective support at home or from the school. This paper offers a first examination and discussion of the three types of digital divide (economic, cultural and institutional) in relation to the Spanish case and the context of school closures during the Covid-19 pandemic, and a preliminary review of the available evidence especially related to the most vulnerable groups.

Keywords: Covid-19, Digital Divide, Digital Literacy, Distance Education.

1 Introduction

The onset of the Covid-19 pandemic forced the Spanish authorities to curtail freedom of movement among the Spanish population. This in turn forced the education system to adapt to provision of distance learning for the remaining 2019/2020 school year, at all levels from early childhood education to post-graduate studies[1]. The state of alarm announced by government in mid-March 2020 resulted in the immediate closure of schools and called for sudden implementation of distance education. Despite an in-

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crease in the digitization of Spanish education at both the compulsory and post-compulsory levels, the situation led to an unprecedented scenario where schools were forced to introduce a complete change to their educational model. The only way to continue provision of education was through the provision of distance teaching, a model with which Spanish teachers were unfamiliar, and lacked the tools, training and material required for good distance teaching.

In this paper we discuss some of the social issues that have received insufficient public attention such as the digital divide in Spain which derives from the pre-existing social gap and deepens educational inequality. In this context, the digital divide increases the difficulties and limitations imposed on families and students related to accessing and taking advantage of the new distance education arrangements. We consider the conditions surrounding the implementation of the distance education model which was introduced suddenly with no prior organization or preparation for schools, teachers or students. However, there is a digital divide also in health and economic conditions which affects social actors at different psychological and physical levels, and influences the structural and organizational levels of institutions and administrations. The fact that distance education was imposed as a result of force majeure does not mean that we should not analyze the experience to try to improve the resilience of the education system.

Section 2 discusses the theoretical framework and section 3 describes the methodology. Sections 4 and 5 present and discuss the results and section 6 concludes the paper.

2 Theoretical Framework

Since the 1990s, there have been changes to the education system based on the use in schools of information and communication technologies (ICTs) mainly as learning support tools. Many schools provide digital and computer skills training which allows students to participate in the new social context and respond to the demands of the digital society. At the beginning of the 21st century there was an increase in the opportunities provided by these new technologies in the context of education, and new pedagogical approaches emerged based on the using ICT in schools and for the provision of distance education.

2.1 Distance Education in Spain

There are four main phases in the development of distance education: correspondence courses, multimedia teaching, telematics teaching, and Internet teaching (Aretio, 2001).

- Postal/correspondence courses were the first type of distance learning provision. They involved limited communication between teacher and student and depended on the student's ability to work independently. It did not require use of digital technology; all materials were in paper format and were exchanged through postal mail. During the Covid-19 confinement, some education provision was by correspondence.

- Multimedia teaching began in the 1960s in western countries, based on the spread of radio and television. In schools, teaching based on written texts began to be supported by audio and visual elements. During the Covid-19 confinement, the state broadcaster provided programs with educational content, adapted to age groups which many students were required to watch.

- Telematics' teaching emerged during the 1980s, and involved the integration of telecommunication with other educational media. In this phase, education and especially in higher education was based increasingly on widespread use of personal computers.

- Internet teaching emerged at the end of the 20th century, and is based on platforms representing "virtual university campuses" , virtual teaching via videoconferencing and multimedia workstations. It depends on systems connected via the Internet and can be delivered synchronously for all participants, or asynchronously to facilitate individual access. During the Covid-19 confinement this was the preferred way to provide distance education and in some regions of the country tablets and/or data SIM cards were distributed to some students.

2.2 The digital divide in Spain, a framework

The digital divide has been defined as "the unequal access of people to institutions and the use of technologies through which the most important information and knowledge is produced and distributed" (Tedesco, 2015, p. 11). The digital divide is not a new type of inequality generated by the emergence of the information society and the popularization of ICT use. Rather it is a new concept which adds the characteristics and effects of pre-existing social inequality to the integration of ICTs, and represents a new form of inequality in this new context. The digital divide is increasingly identified with unequal access to education.

The digital divide results in unequal digital knowledge and access to new technologies among different classes in the same society. "The digital divide is an automatic consequence of economic and social inequality, so the real reasons for the digital divide would not be technological but social" (Almenara, 2003, p. 8). The increased use of ICTs and the Internet in daily life in increasing social gaps, and unequal access to these technologies is increasing inequality among social classes. "Digital gaps are reasons for exclusion from the knowledge society, and configuration of a social and personal marginalization, that democratic welfare states should not, and cannot assume as unsolvable" (Almenara, 2003, p. 18).

The unequal access to digital knowledge and digital tools, the integration of ICTs in education, and the emergence of a new digitized technological landscape should not be seen as substituting the pencil for the computer, but rather as a change in how these tools are used (Andalucía, 2009). "There must be a profound change in the educational methodology ... in favor of the individual needs of the student ... creating a new framework of relationships ... offering a creative and flexible methodology closer to diversity and special educational needs "(Andalucía, 2009, p. 3).

The transition to an education model which includes more use of ICTs, digital activities and digital tools must take into account that it will require the Spanish population to have some basic knowledge about the use of these new tools and to have access to them to reduce inequality in this period of change. It means that the introduction of ICTs in education will require both teachers and students, and also families to have some digital skills training which will involve both resources and time (Cortés, et al., 2017) since "a person who is not trained in the use and interaction with ICTs will not be able to obtain the supposed benefits that arise from their use" (Almenara, 2003, p. 9)

The face-to-face format of compulsory education makes it possible to detect and act to alleviate inequalities among individual students. However, distance education does not allow this possibility and there may be barriers to accessing it. The digital divide includes both lack of knowledge about use of ICTs, lack of access to the Internet and lack of the required tools all of which impede participation in online education for a relevant part of the student population.

Online teaching can be effective but depends on the context. The results can be positive or negative since on its own the model does not guarantee greater education efficiency, quality or equity. The functionality of an alternative educational model is limited to the historical, social and political context in which it is developed, and the possibilities for its application at each educational level and in each social group. "It is necessary to place the strategies for incorporating ICTs in education within the framework of a systemic educational policy aimed at reducing inequalities and breaking social determinism of learning outcomes. That mission does not come naturally from ICTs. It comes from outside" (Tedesco, 2015, p. 15).

In the context of three imperatives which comprise what we understand as educational quality, Capdevilla (2003) proposes a list of deficiencies related to distance education which must be considered when analyzing the possible limitations of the new educational model:

First, distance education is a barrier to the functioning of schools as socializers and as encouraging communication, since in most online education models the opportunities for interactions between students and teacher are rare. Also, this model does not provide opportunities for cultural or sporting activities which allow interactions between pupils and the community. Thus, the socialization function of schools is greatly compromised.

Second, we need to consider the cost of adapting to a distance education model from a traditional face-to-face system. On the one hand, there are the material costs related to implementing the infrastructures required by both teachers and students, and on the other there are the costs related to students' loss of direct contact with the teacher - especially important for children and young people (aged between 6 and 16 years) whose learning depends not a great extent on the teacher's motivation and support. A change in the system of delivery of education may allow the students more freedom to organize their time but requires a high level of self-discipline which tends to be rare in the younger age groups.

Access to distance education can be limited by economic and technical aspects as well as cultural and social factors. Virtual education accessed over the Internet is restricted to the population with the relevant resources. These include a good network connection allowing access to the Internet and access to a computer. In addition, a certain level of knowledge is required by both teachers and students to use these tools and engage in distance teaching and learning.

To make the best use of online education programs requires the student also to have an initial understanding of the material. Enforced online teaching could increase school dropouts and failure due to lack of motivation, difficult access, lack of digital knowledge and problems related to focusing on and following an online class.

Inequality related to differences in the resources available to different education institutions was examined by Tedesco (2015, p. 14) who indicates that: “High-resource sectors will try to differentiate themselves in the use of ICTs. Therefore, they will search for content that adapts to the needs of the students and the educational community to which they belong, even if they have to pay for them. While the low-income sectors that access the network will be trapped to consume only those that are freely distributed, that is, those produced by official portals or other portals that do not charge for access to materials".

There are additional difficulties for students with special educational needs, whether due to physical or cognitive and psychological issues: "the ICTs that exist in the centers are not for everyone, no matter how much notable efforts have been made lately, to improve them and adapt them to the physical and mental deficit that they may possess. There are not so many technologies in the centers, and those that exist tend to be standardized” (Almenara, 2003, p. 11). In the current context of the sudden introduction of generalized distance education, those students requiring educational tools adapted to their special learning needs will be particularly affected. Thus, “at present we are beginning to come across a fact, which is that the design, structuring and organization of information on the Internet is becoming an element of discrimination so that certain subjects, due to their physical characteristics, cannot access these network of information exchange and interaction” (Almenara, 2003, p. 17).

However, problems related to accessing education tools is not limited to students with special educational needs; they apply to all students who experience difficulty using ICTs. The consequences of this education inequality has negative effects including lack of motivation, due to difficult access to or lack of resources.

3 Method

The methodology relies on secondary data, i.e. statistics and data produced mainly by government and supra national institutions, NGOs and Foundations. These data provide a good overview of the on-line education context in Spain before and during the Covid-19 crisis. In addition to a literature review performed to frame this paper, our data fall into two categories.

For information on the context previous to the declaration of a state of alarm in Spain in mid-March 2020 , we obtained data from the 2019 Survey of Equipment and Use of

Information and Communication Technologies by Households (Spanish Statistical Office - Instituto Nacional de Estadística – INE), the 2019 Digital Education at School in Europe (Eurydice Report) and the 2019 2nd Survey of Schools: ICT in Education - Spain Country Report (European Commission).

For information on conditions during the state of alarm in Spain we refer to three studies: the 2020 study COVID-19 and Education II: home school and inequality (COTEC foundation); the 2020 report COVID 19: Close the Gap Educational impact and equity proposals for de-escalation (Save The Children); and the 2020 report on the Impact of the COVID-19 crisis on the gypsy population (Fundación Secretariado Gitano).

The combination of secondary data and comparison between the two time frames allow deeper investigation of the effect of Covid-19 on the Spanish education system.

4 Results

In this section we present the results of our analysis of secondary data from statistical offices, surveys and reports which describe the situation before and after the Covid-19 pandemic.

4.1 Digital education before declaration of the state of alarm in Spain

Before the Covid-19 pandemic, ICT use in Spanish schools was seen as complementing face-to-face teaching, and use of the Internet was considered as adding value as a support but not a substitute for didactic learning (Peirats-Chacón et al. 2018). This was similar to the situation in most EU countries.

The 2019 2nd Survey of Schools: ICT in Education - Spain Country Report (European Commission) makes reference to digital equipment (laptops, computers, cameras, whiteboards) per numbers of students and high broadband speed in Spain compared to the European average: “there are more highly digitally equipped and connected schools at all ISCED levels”. However, the share of Spanish students using a computer at school on a weekly basis was slightly lower share at the ISCED levels 2 and 3, compared to the European average. Also (except for use of own laptops at the ISCED 2 level) students’ use of own equipment for learning was slightly lower than the EU average.

Data from the 2019 Survey of Equipment and Use of Information and Communication Technologies in Households (INE) shows that 18% of single parent households with one child and 7% of the two-parent households with two children do not have home computing equipment of any type including netbooks, tablets, handheld devices, etc.). It shows also that 136,486 (7.7%) of single parent households with one child and 142,073 (2.2%) of two-parent households with two children have no Internet access.

In terms of teacher training, according to the 2019 Digital Education at School in Europe (Eurydice Report) Spain has a Common Digital Competence Framework for Teachers which focuses exclusively on digital competences and serves as a reference for teachers and education administrators. This framework includes 21 teacher-specific

digital competences organized in five areas (Information and data literacy, Communication and collaboration, Digital content creation, Safety, and Problem Solving). It includes six progressive proficiency levels to allow assessment of competence. It appears that compared to the European average teachers' digital competency confidence is higher in Spain at the ISCED 1 level in all competence areas except safety and communication and collaboration (ISCED 2 and 3), (European Commission, 2019).

All in all, and despite the intentions of educational institutions, "the strength with which they are entering (Internet and ICT) in school ... is not comparable with the strength with which they are entering society" (Anderson, Olivar, & Daza, 2007, p. 44). At the individual level, in Spanish society, prior to the health crisis there was a greater integration of the use of the Internet and ICT in daily life than in secondary or university education.

4.2 Characterization of distance education during the state of alarm in Spain

Societal interest in analyses of the current education situation in Spain has resulted in the publication of various reports from platforms and social foundations which highlight that Covid-19 has deepened the already existing differences among students from different socioeconomic origins due to the impossibility of the distance model fulfilling the social functions of the school classroom. Organizations such as Save The Children and the Cotec Foundation have published Covid-19 reports on education, proposing sets of measures and recommendations for the return to the classroom in the school year 2020/2021, and offering preliminary summaries of the effects of the measures related to the health crisis on education.

Both reports conclude that the school closures, introduction of distance education, the pre-existing digital divide, the confinement and the resulting economic crisis have increased the education gap and damaged the physical and mental well-being of students. The Save The Children report also discusses the impact of the Covid-19 crisis on education equity.

The closure of schools in mid-March meant that students experienced the school year end remotely, and the summer break meant that most students had experienced almost six months with no face-to-face teaching. Online teaching involved reduced formal teaching time to allow for the necessary adaptations. This has particularly affected those students who had been excluded or needed special attention and increased the education gap in Spain. The months of distance education will increase differences in academic outcomes between more and less socioeconomic advantaged pupils Distance education has been less limiting for students with the economic capacity to access material and technological resources.

Save the Children describes an "activity gap" based on the level of participation of families and students during the period of distance education. Again, families with fewer resources record less activity due to the inability to combine the rhythm of classes with parents' work demands and the demands of the home. The activity gap can lead to disconnection with the school, and affect the social and emotional well-being of the student. In a face-to-face school setting, the guardianship function related to under-age

students ensures a level of activity that fits with parents' economic activities. The lack of communication with teachers and other students also has had a major impact.

However, the report highlights some positives related to online education including enabling continuance of education and providing students with an activity to fill their time during the confinement. It points to the need to adapt the curriculum and take account of individual students' digital capabilities and connectivity problems. It underlines the importance of designing measures for the next academic year to allow students who experienced difficulties in accessing or learning through distance education to receive extra attention. However, the introduction of remote learning avoided loss of all teaching for the remainder of the 2019/20 academic year. Save the Children suggests public-private collaboration to mitigate the effects of the digital divide and provide students with the necessary tools to participate in distance education.

In addition to difficulties related to accessing tools, distance education highlights differences in parents' educational levels and how much they can help their children. The sudden introduction of distance education in Spain has highlighted the gap between economically well off families and poor families and families in rural and isolated areas. There is a gap also between education institutions: " schools with more resources and in higher-income communities will also be those that probably have more tools to adapt to online education more effectively and efficiently" (SaveTheChildren , 2020, p. 7)

All these education inequality issues are aggravated by the segregation in Spain which " concentrates the most disadvantaged students in certain centers, making management more difficult … This student body requires a greater effort in terms of monitoring and tutoring, which, together with the special circumstances of the situation at a distance, acquires immeasurable dimensions with them resources available before the health emergency. " (SaveTheChildren, 2020, p. 8) The Save The Children report highlights that the Spanish education system was unfair before the Covid epidemic. Many of the effects of the health crisis will be exacerbated for education centers and groups of students who were already experiencing difficulties related to the education system.

The Cotec Foundation's diagnostic analysis of the education situation in Spain suggests that the change to a distance education model was complex and uneven due to its suddenness and lack of time for preparation. It has threatened both education quality and equity which the education systems in the west have been trying to achieve. The introduction and delivery of the new model varied greatly between the private and public education systems.

The intention and the need to adapt to a new model apply to all teachers and students but these actors and the centers involved in the Spanish education system have different starting points related to connectivity and training. In addition, some students and families did not prioritize continuation of education. Adaptation to distance education requires a pedagogic adaptations and different technologies. Although it was the only option in the conditions prevailing, it did not encompass all the functions and capacities achieved by face-to-face teaching. Also, despite efforts to provide the required materials and technological resources, not all students had access to computers and internet connections. This will exacerbate the inequality among students in the coming academic year 2020/2021.

The Cotec Foundation report claims that rather to online education the situation has resembled distance education because not all of the e students receive online education during the pandemic. When there is no alternative to distance learning, administrations and governments must ensure and maintain access to education for all students through an efficient and equitable system (COTEC, 2020, p. 6)

The reduced hours of teaching will result in reduced student learning, and this will have to be addressed through adaptations to the curriculum for the next academic year. Both of the above mentioned reports refer to this loss of learning and that it differs depending on the financial capacity of students' families. Children from upper and middle class families better able to access resources and facilities required for distance learning will suffer less learning loss than lower class families.

There are both use and access gaps, and also school gaps which determine "the capacity of educational centers and teachers to continue the educational service online" (COTEC, 2020, p. 10)

In addition, there are differences in the digital training and preparation of teachers in the public and private education sectors, and this must be taken into account when analyzing this period of distance learning. In most cases, public school teachers have fewer technical skills and use digital tools less compared to teachers in private and charter schools. Teachers in public schools also have less time and opportunity to learn how to use digital devices and effective online platforms for distance learning are less available. (COTEC, 2020).

Although access to free education is guaranteed by the Spanish constitution and the education law, access to new technologies is unequal and determined by economic income, education level and ethnicity. Despite the rapid integration of the Internet and ICTs in Spanish society, there is a large proportion of the population with limited access to high quality Internet.

This applies especially to minority communities such as the Roma because most centers where Roma children study have adapted the methodology sending content by post (85.3%) and only few using digital resources such as virtual classes (36.2%). Other support channels are the telephone (17.8%) "[...] Almost a third of Roma children cannot carry out the tasks that are being sent to them from schools, the majority because they do not have adequate equipment (58.8%), and/or school supplies (48.7%). In addition, almost half (49%), even having means, do not advance because they do not understand the subjects and do not have educational support to solve it" Fundación Secretariado Gitano (2020, pp. 9).

5 Discussion

The introduction of distance education rather than being a positive experience has led to exclusion and segregation among a relevant part of pupils based on a social and digital divide which limited access to the Internet and the platforms used and making it impossible to integrate all pupils in the remote model (García-Lastra, 2013, p. 201).

The recourse to distance education in Spain has resulted in the reemergence of correspondence courses for students without access to digital means. Distance education

requires the involvement, of families which can strengthen family ties but can be impossible especially for disadvantaged families. Lack of time and education cam make parental help impossible. Thus, the gap between students in more favorable environments and those who are disadvantaged has been made bigger by the pandemic. In the so-called 'new normal' pupils will need to be treated as individuals rather than adopting one size fits all solutions. The return to the classroom must be based on students' needs not students' ages. The immediate focus must be on those students who have suffered a greater disconnect due to lack of access to data or equipment, or low family cultural capital and lack of digital literacy and lack of support at home or from the school. It should not be assumed that all students have achieved the same amount of learning.

6 Conclusions

Most authors agree that the emergence and development of ICTs has opened the way to new, more dynamic and diverse education models and is allowing a better organization of education and family or work life. We should exploit the education possibilities offered by new technologies in order to maintain the functionality, equity and quality of education.

The introduction of new technologies is benefiting students and teachers with access to them and the ability to use them. However, they present complexities for those groups and individuals who for social, cultural, economic or personal reasons lack the access, knowledge and skills required to use them.

A more customized reintegration could also be in line with the distancing measures recommended by the health authorities and could reduce a major return to school by all students simultaneously (Gabaldón-Estevan, 2020). It would also allow teachers to assess students' needs and arrange different study programs to suit needs and restrictions. On-line sessions could be used for students with greater resources who have been able to keep abreast of the curriculum and have support in the home.

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