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THE DIGITAL GAP IN PRIMARY EDUCATION IN SPAIN

IMPACT OF THE SCHOOL CLOSURE FOR LEARNING AND EQUAL OPPORTUNITIES

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RÉSUMÉ

Les centres éducatifs en Espagne ont été fermés de mars à juin 2020 en raison du coronavirus. L'enseignement télématique a remplacé l'enseignement en face-à-face et la possession d'ordinateurs et la maîtrise des compétences digitales est devenue essentielle dans le processus de formation à tous les niveaux d'enseignement. Cet article aborde la fracture digitale dans l'enseignement primaire et montre les effets négatifs sur l'apprentissage, en particulier sur les élèves les plus défavorisés sur le plan socio-économique et les plus scolarisés dans l'enseignement public, augmentant ainsi l'inégalité des opportunités éducatives dans les écoles ouvertes.

MOTS CLÉS

Enseignement primaire. Inégalité des opportunités éducatives. Fracture digitale. Enseignement public/privé. COVID-19.

ABSTRACT

Schools in Spain were closed from March to June 2020 due to the coronavirus. Online learning repleaced face-to-face learning, and possession of computers and mastery of digital skills became essential in the training process at all educational levels, but specially in primary education. This article analyzes the digital gap in primary school and shows the negative effects of the Covid-19 pandemic on learning, specially on the most socioeconomically disadvantaged and enroled in public education, which had led to an increase the inequality of educational opportunities.

KEYWORDS

Primary School. Inequality of Educational Opportunities. Digital gap. Public/Private Education. COVID-19.

Introduction

The closure of schools between March and June 2020 in response to the COVID-19 crisis represents an unprecedented event in the Spanish educational system. Teaching has returned to schools in a traditional way since September 2020, except for sporadic closures due to a posterior outbreak of coronavirus. The school closure generated multiple problems in education, specially in primary education, where the training is designed to be face-to-face.

First of all, the lack of digital devices and internet connections to monitor education in certain homes prevents the generalization of this alternative teaching digital.

Continuous Household Survey (ECH-2019) of the National Institute of Statistics in Spain (INE, hereinafter, 2020a) shows that at least the 5.5% of households do not have a computer, a proportion that doubles in single-parent households with one or more children (Life Conditions Survey, ECV-2018, INE). Equipment and Use of Information and Communication Technologies in Households (TIC-H'19), of INE (2020b), shows also that 7% of households with children do not have a computer, a proportion that multiplies by three, up to 18%, in single-parent households with at least one child[1]. The lack of a computers athome is unevenly distributed across households and territories in Spain.

The proportion of computer and internet connections at home is notably lower in lower income households (High Commissioner Against Child Poverty, 2020a) and in lower income municipalities and regions, located mainly in the South of Spain (Extremadura, Andalusia, Murcia, Castilla La Mancha and the Canary Islands), compared to municipalities and regions in the North (Navarre, the Basque Country, Aragon, Madrid and Catalonia) (Cabrera, 2020)[2].

However, the digital gap does not refer only to access to electronic devices. Online learning requires school support and digital skills of

1 In Spain 10.1% of households are single-parent.

2 The digital resource gap reaffirms the territorial variability of wealth inequality in Spain, structurally and slightly upward for decades. All regions improve, but some more rapidly than others (Cabrera, 1995, 2013).

students. Moreover, in primary education, these digital skills are also required for the parents, who must act as "teachers" at home. This situation will have an unequal impact on learning opportunities, according to their circumstances, witch can be a new source of educational gap, the family digital gap (European Commission, 2020 ; UNICEF, 2020 ; UNESCO, 2020 ; OECD, 2020a, 2020b, 2019a, 2019b, 2018 ; OEI, 2020), nationals (High Commissioner Against Child Poverty 2020a, 2020b, 2021) and researchers (Bonal and González, 2020 ; Rogero, 2020 ; Cabrera, 2020 ; Tarabini, 2020 ; Sainz and Sanz, 2020).

Additionally, we also have the teaching digital gap. Not all primary school teachers have digital teaching skills (Bonal and González, 2021 ; Cabrera, Pérez and Santana, 2020). Thus, in online learning, the school system faces the challenge to design inclusive educational projects that favor equal learning opportunities, to compensate the most disadvantaged families and territories (Feito, 2020).

This article shows that the participation of mothers and fathers in the online learning process of their children in primary education, particularly in the sixth and the last year of primary school (11-year-old), depend on the socioeconomic status, the type of families and the educational levels have more opportunities to help their children. These families have more economic resources, hence they have more and better motivation and educational support for their children to follow up the online learning and compensate for their deficiencies. On the contrary, families with low educational levels show a clear disadvantage, specially if they are single parents (single mothers in 90% of this type of household).

Our findings support that online learning in primary education worsens students' general learning since families in their homes do not have digital skills to support their children and that teachers are not still prepared for this mode of teaching. Although this negative impact is generalized for all students, it is worsening for more disadvantaged students, hence it will increase inequality of opportunity in education.

Methodology

Data for Spain come from different INE Surveys : The Continuous Household Survey -ECH- (2019), Survey of Living Conditions -ECV-

(2018), Survey on the Equipment and Use of Information and Communication Technologies in Households (TIC-H'19, 2019), and from the statistical records of the Ministry of Education and Professional Training (MECD and/or MEyFP, hereinafter). The general data for the Canary Islands come from the Primary Education Diagnostic Assessments (EEDD, hereinafter) of the Canary Islands Agency for Educational Evaluation and Quality (ACCUEE, hereinafter) applied to the 6th grade primary school students in June 2019, and provide a fundamental reference to contextualize the state of primary education before the pandemic[3].

We complement this general information with a novel survey conducted for the Municipality of Santa Cruz de Tenerife (Tenerife) and specially designed to analyze the effects derived from the school closure during the pandemic and its consequences on primary education. Santa Cruz de Tenerife is the capital of the province and had 209,194 inhabitants (ISTAC, 2020).

The questionnaire was distributed among public schools, families, teachers, and principals. Data were collected between June 15th and July 20th, 2020. Summing up, we collect information from 16 principals, 85 teachers, and 521 families of 25 public primary schools. This simple represents approximately 70% of the public schools in the Municipality, and 11% of the students enrolled in the 2018-2019 academic year[4]. For our purposes, it is very relevant that this information was collected just after the lockdown, hence they truly reflect the opinions and situation

3 In this case, census data are available for 6th grade primary school students, both from their responses to context questionnaires and from the results of external evaluation tests. In addition, context questionnaires are also available for the families, the teachers, and the school's principals in the Canary Islands : around 20,000 students, their families (responses of almost 13,000), their teachers (910 teachers), and the principals of their schools (610 in primary school). This information provides information related to the overall situation just before the pandemic, which will influence the different educational gaps during 2020.

4 According to data provided by the Ministry of Education of the Government of the Canary Islands. We have obtained geographical representation of the five districts of the Municipality, a desirable result to capture the inequalities that may exist between areas in the Municipality. In addition, the distribution of families' responses was relatively uniform distributed across the six grades of Primary education, which also guarantees the representativeness of the results.

lived during the school closure period (Cabrera, Sicilia, Marrero, Pérez and Bethencourt, 2020).

Social and school context of primary school students

Primary school students in Spain

Primary school students in Spain in the 2018-2019 academic year reached almost three million, which is similar to the ones in the 2020-2021 academic year. The breakdown by course is relatively uniform, with an overall 68% of primary school students attending public education. However, the territorial distribution varies considerably. Public education is more present in the South (Extremadura, Castilla La Mancha, Andalusia, with around 80%, and the Canary Islands with about 74%) and the percentage is quite smaller in Madrid (54%), and in the Basque Country (52%), (see Annex, Figure 1).

This geographical distribution is correlated with regional income, educational resources, and social classes (see Annex, Table 1). For example, southern regions show higher percentages of students enrolled in public schools, at the same time they face a lower percentage of the population aged 25-64 years with higher education (ISCED ≥ 5) and higher population in this age with less income (Pérez, Serrano and Uriel, 2020 ; Colino, Jaime-Castillo and Kölling, 2020 ; Andrino, Grasso and Llaneras, 2019 ; Cabrera, 1995, 2013). These differences affect the way each región deals with the school closure.

The differences in schooling between public and private schools have a lot to do with the family's socioeconomic level, whatever the territory is considered (Tarabini, 2020). Among other reasons, this is because the way the school can influence the students is closely related to the socioeconomic environment where students live (Colino, Jaime-Castillo, and Kölling, 2020, p.35). As far as this situation can lead to socioeconomic segregation, that may affect subsequent educational achievement and have a long-lasting impact on the economy (High Commissioner against Child Poverty, 2020, December, 2021 ; Andrino, Grasso, and Llaneras, 2019).

From PISA-2015 we find that private education serves 65% of 15-year-old students from more favorable socioeconomic backgrounds ; 27% of

medium environments and 8% of unfavorable environments. Conversely, only 8% of students attending public schools come from better-off families, 60% from medium environments, and 33% from more disadvantaged contexts. These percentages are even more disperse in southern Spanish regions, all that Word has a direct impact on their average school performance (Pérez, Serrano, and Uriel, 2019, p. 250-252, graph 7.5b and 7.5c and table 8.1, p.295; Cabrera and Cabrera, 2008). This situation creates a vicious circle that increases structural educational inequality at the regional level over time (Pérez, Serrano and Uriel, 2019, p.282; Cabrera, 1995, 2013 ; Sicilia and Simancas, 2018).

Income and socioeconomic inequalities are translated into digital inequality in households. Thus, in households inhabited with children between 10 and 15 years old (corresponding to the last two years of primary school and the four years of compulsory secondary school), computer ownership reaches 89.7%, an average level, with important differences by region (i.e. 82.8% in the Valencian Community and 99.2% in Navarra)[5]. Internet connection reaches 92.9% in these households (88.6% in the Balearic Islands, or 97.4% in Asturias ; while the mobile phone ownership share is 66.0% at the national level, with 57.0% in Galicia, and 77.6% in Extremadura (see Annex, Table 1). At this macro level strong and positive correlation (0.6) between the possession of computers and the proportion of people with higher educational levels in the región (ISCED ≥ 5, in the UNESCO Classification, 2011), as well as significant and negative correlation, between the possession of computers and the proportion of people with compulsory educational levels or less (ISCED ≤ 2) (see Annex, Table 1).

As commented above, an even more important issue is the existing gap in the use and the skills with digital devices and online resources. For example, internet use differs notably by the level of training (Table 2 in the Annex): 77.6% of adults indicate having used the internet at some time and the use is close to 100% in the population with tertiary studies. Assuming that primary levels of attained education (or less) are

5 Gerturdi-Barrio (2009) found that in Spanish society, young people, naturally move towards digitization, even with the lack of computers in education primary. Although this does not mean that it can the students of the first years of primary school, digital natives, their have digital ability to follow online classes, even more so when in primary schools the use of computers is fragmentary and a subsidiary in many cases (Mur Sangrá, 2016).

assigned almost entirely to the older population, without children already in school, we can point out that the reference for internet use is at a value close to 74% in those with a minimum compulsory secondary education (Table 2 in the Annex).

Another relevant source of information is the International Program for the Assessment of the Competencies of the Adult Population (PIAAC), carried out by the OECD (2013). This report shows that the mean scores obtained in mathematical competences vary greatly in adults who took the test using computers or using paper (Spanish Report, MECD, 2013), with statistically significant differences in all countries. This result evidences that mathematical competence is affected by the use of ICTs, hence the technological "gap" affects the results. In Spain, this difference stands at 49.6 points, very close to the difference observed in the OECD average (48.6). It is concluded (MECD, 2013, p.72) that in all the participating countries there are adults without or with very limited abilities in the use of technological devices : 14% in the OECD, and 15% in the EU, ranging between 7% and 27% by countries. In Spain, 23% of adults between 16 and 65 years of age declare they have no experience in using computers or they fail in the most basic tasks, such as using the mouse. However, when adults have tertiary education, the results are much better in reading comprehension and mathematics : on average, more than 50 points of difference in OECD, and around 60 points in Spain, compared to those that have not reached complete upper secondary education (MECD, 2013, p. 94).

This is another source of the educational gap under an online learning system. The lack of technological abilities affects at least a quarter of the adult population, and it is specially concentrated in people with lower levels of education.

Results for the 6th grade students in the Canary Islands

We analyze next the Diagnostic Evaluations applied in the Canary Islands in June 2019 to all 6th grade students by ACCUEE[6]. This analysis confirms, first, the correlation between the schooling

6 In the 2015-2016 academic year, the 6th grade census tests were carried out in 631 schools with 20,411 students (ACCUEE, 2016).

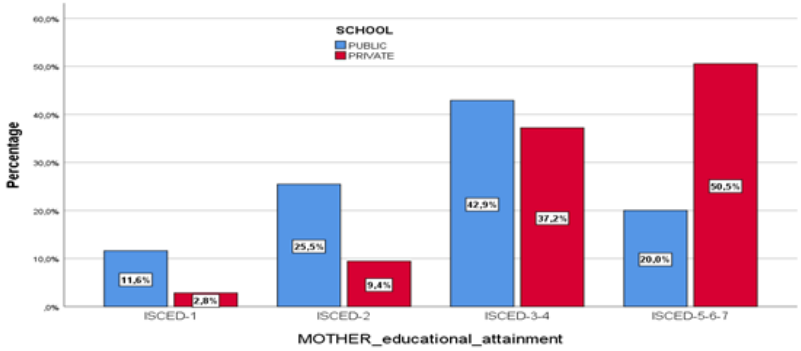
enrollment by type of school (public/private), and the socioeconomic, and cultural level of the families (mothers and fathers). For example, half of the students enrolled in private schools have mothers with tertiary studies (20% in the case of public schools) (Figures 1 and 2).

Likewise, among children with mothers with tertiary education, we find statistically significant higher results (in external and common evaluation tests) when the children go to private schools tan to public schools (Figure 3).

This Diagnostic Evaluation shows also 70% of students in 6th grade live with both parents at home, 15.5% only with their mother (5% more than 10,1% of single-parent households in Spain, including parents), and 7.7% with their mother and partner (other situations are almost irrelevant).

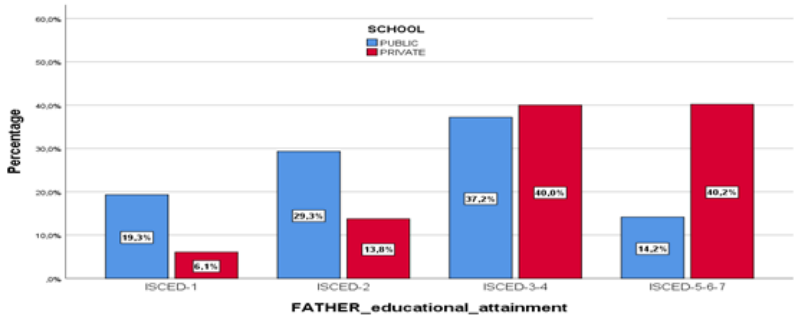
This higher proportion of single-parent households in the Canary Islands, concerning the Spanish average, also varies by school type (see Table 1): it increases somewhat in public schools (reaching 16.5%) and decreases in private schools (of about 11.9%). This situation also represents a lower capacity of families to provide technical support to their children in public schools in an online learning scenario tan in compared with private schools.

Figure 1. Percentage of students enrolled in public and private schools, mother's educational attainment (ISCED). Canary Islands, 2018-2019 academic year.



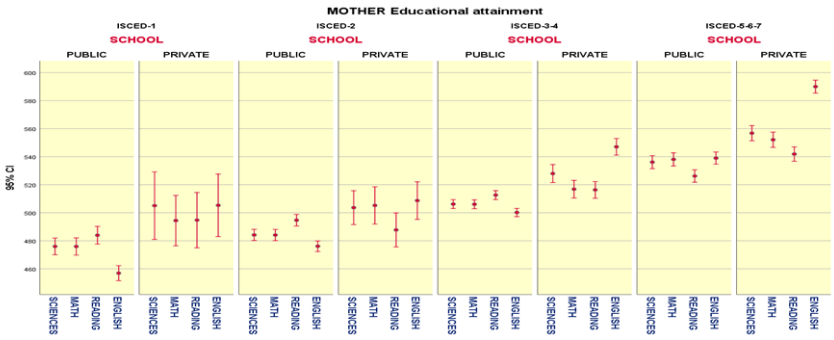
Source : Author's own calculations based on microdata from the 6th grade of Primary Education Diagnostic Assessment in Canary Island in the 2018-2019 academic year (provided by the ACCUEE).

Figure 2. Percentage of students enrolled in public and private schools, father's educational attainment (ISCED). Canary Islands, 2018-2019 academic year.



Source : Author's own calculations based on microdata from the 6th grade of Primary Education Diagnostic Assessment in Canary Island in the 2018-2019 academic year (provided by the ACCUEE).

Figure 3. Error Bars (95%) of test scores in Mathematics, Reading, English and Science of 6th grade of primary education student's by mother's education and school ownership. Canary Islands, 2018-2019 academic year.



Source : Author's own calculations based on microdata from the 6th grade of primary education Diagnostic Assessment in Canary Island in the 2018-2019 academic year (provided by the ACCUEE).

Table 1. Percentage of students in 6th grade of primary education by school ownership and family type. Canary Islands, 2018-2019 academic year.

			Type of HOME							
			Mother and Father with dependent children	Mother and her Partner with dependent children	Father and her Partner with dependent children	Single Mother with dependent children	Single Father with dependent children	Whithout Mother and whithout Father	Other situation	Total
SCHOOL	PUBLIC	n	6,185	733	113	1,491	140	40	348	9,050
		%	**68.3%**	**8.1%**	**1.2%**	**16.5%**	**1.5%**	**0.4%**	**3.8%**	100.0%
	PRIVATE	n	2,088	163	51	326	51	3	63	2,745
		%	**76.1%**	**5.9%**	**1.9%**	**11.9%**	**1.9%**	**0.1%**	**2.3%**	100.0%

Source : Author's own calculations based on microdata from the 6th grade of Primary Education Diagnostic Assessment in Canary Island in the 2018-2019 academic year (provided by the ACCUEE).

In addition to the lack of digital resources at home, it is also the lack of abilities in the use of digital devices by students and teachers and the lack of computers at schools. For example, 14.5% of the principals of public schools (containing 74% of the 6th grade primary school students), point out (in June 2019) that the lack of computers is a serious inconvenience in their school ; in contrast, only 3.5% in private schools. 28.2% of principals indicate that it is not an inconvenience in their (public) schools, and 52.9% that it is not an inconvenience in their private schools (see Table 2).

Table 2. Scarcity of computers at school in primary education. Canary Islands, 2018-2019 academic year. Directors.

SCHOOL		It is not an inconvenience	It's a slight inconvenience	It's moderate inconvenience	It is a serious inconvenience	Total
PUBLIC	n	148	158	143	76	525
	%	**28.2%**	**30.1%**	**27.2%**	**14.5%**	100.0%
PRIVATE	n	45	25	12	3	85
	%	**52.9%**	**29.4%**	**14.1%**	**3.5%**	100.0%

Source : Author's own calculations based on microdata from the 6th grade of Primary Education Diagnostic Assessment in Canary Island in the 2018-2019 academic year (provided by the ACCUEE).

The lack of computers and the deficient connection to the Internet is also pointed out by 28.9% and 32.5% of the teaching staff, who make their teaching work quite or very difficult. Furthermore, 2 out of 3 teachers indicate that they use computers regularly (quite a few times or almost always) in their classroom. However, the students' responses show that their use of computers in class is tan the teachers' use : only 25% of the 6th grade students say they never use computers at school, and 14% or rarely use them at home. The results vary by school type : in private schools, their daily use in classrooms reaches 24% (in public schools, 8%) and 18.5% at home (12.9% in public schools), as it is shown in Table 3.

Likewise, daily Internet use (for learning purposes) is not a common habit in 6th grade primary school students : only 21% use the internet daily for learning purposes, and 48.6% once or twice a week ; but, instead, 30% use it very little or he/she does not use it at all, both in public and private schools (see Table 4).

Table 3. Frequency of computer use by 6th grade primary school students at home and at school, by school ownership. Canary Islands, 2018-2019 academic year.

	A8. USE OF COMPUTER		Never or almost never	sometimes	often	Every day or almost every day	Total
A8a. At home	Public Schools	N	2,042	5,800	3,904	1,732	13,478
		%	**15.2%**	**43.0%**	**29.0%**	**12.9%**	100.0%
	Private Schools	N	431	1,693	1,446	809	4,379
		%	**9.8%**	**38.7%**	**33.0%**	**18.5%**	100.0%
A8b. At school	Public Schols	N	3,431	5,962	2,919	1,149	13,461
		%	**25.5%**	**44.3%**	**21.7%**	**8.5%**	100.0%
	Private Schools	N	1,036	1,333	948	1,057	4,374
		%	**23.7%**	**30.5%**	**21.7%**	**24.2%**	100.0%

Source : Author's own calculations based on microdata from the 6th grade of Primary Education Diagnostic Assessment in Canary Island in the 2018-2019 academic year (provided by the ACCUEE).

Table 4. Internet use by 6th grade primary school for educational purposes. Canary Islands, 2018-2019 academic year.

		Never or almost never	sometimes	often	Every day or almost every day	Total
A9a. To find information for your studies.	n	1,154	4,309	8,676	3,726	17,865
	%	**6.5%**	**24.1%**	**48.6%**	**20.9%**	**100.0%**
A9a. PUBLIC SCHOOLS (100%)	%	6.6%	24.3%	49.0%	20.0%	13,488
A9a. PRIVATE SCHOOLS (100%)	%	6.0%	23.4%	47.1%	23.5%	4,377

Source : Author's own calculations based on microdata from the 6th grade of Primary Education Diagnostic Assessment in Canary Island in the 2018-2019 academic year (provided by the ACCUEE).

Summing up, there exist clear evidence of primary educational inequality in Spain. Moreover, educational inequalities would be accentuated in an online learning scenario. One reason for this inequality is that digital resources are unevenly distributed between households, schools, and regions, and this distribution strongly depends on the socioeconomic status and cultural aspects of the families. In addition, the skills abilities to use digital devices (for learning activities) by students, parents, and teachers are also unequally distributed in Spain. And, once again, disadvantages are specially found in public schools and families with lower education and social status and, less income. In general, students in private schools use the internet and computers more frequently than students in public schools ; they show also better skills in online learning tools. But, in general, the percentage of students in primary education (and teachers and parents) with high skills in the use of online learning tools is still very limited, regardless of the family socioeconomic situation and the type of school students attend.

Online learning in primary school during school closings. The digital gap of resources and digital skills in public schools of the Municipality of Santa Cruz de Tenerife.

In this section, we focus on the transition from face-to-face teaching to at-distance teaching during the lockdown and its effects on the educational community. The analysis is based on the results of a study

designed to measure the effects of the school closure in primary school students, financed by the Santa Cruz de Tenerife City Council and carried out by the Center for Studies of Inequality and Social Governance (CEDESOG) of the University of La Laguna (ULL). Families, teachers, and the principals of public schools of the Municipality of Santa Cruz de Tenerife participated in the study.

Three aspects are essential in our argument :

1. To detect the lack of digital devices and the internet connection in homes and their unequal distribution according to family income. Knowing its existence, we also look for complementary details of family digital skills.

2. To identify the total number of online classes carried out and the tasks received by the students to perform at the homes with family help during the lockdown. We suspect that the number of online classes is fewer than the number of face-to-face classes.

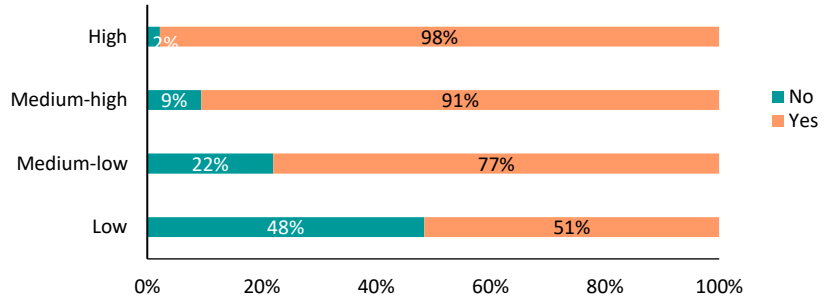
3. We consider that the school closure has meant a general loss of knowledge and non-cognitive skills among students, particularly in those students from more disadvantaged backgrounds (lower income, lower levels parental education, and monoparental family).

We dedicate the results found in the fieldwork to these three aspects.

Provision of digital devices at home

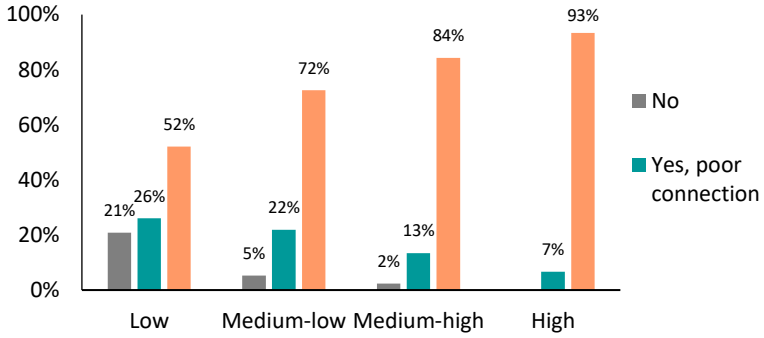
The availability of computers (or tablets) at home and internet access are clearly associated with income levels (Figure 4 and Figure 5). 98% of high-income households have a computer or tablet (representing 15% of all households with an income of 2,500 euros per month or more), by 51% of families with low-income levels (representing 18% of households with income of fewer than 500 euros per month). The same happens with internet access at home, also associated with income. The percentage of households without connection is very high in the case of low-income households (21%), while this proportion dramatically decreases as household income increases.

Figure 4 : Available computers and Tablets at home by family income.



Source : Author's own calculations based on the CEDESOG survey of learning during the lockdown (family responses).

Figure 5 : Internet Access at home by family income.

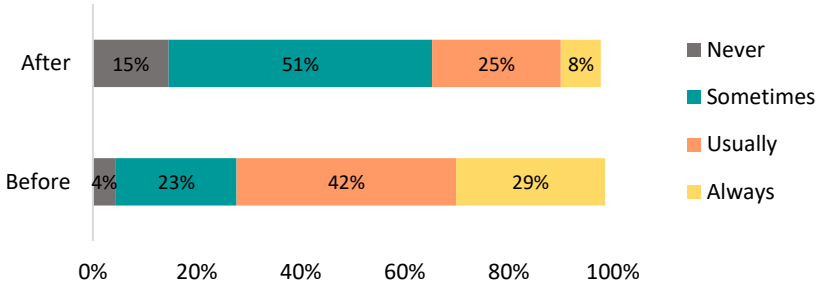


Source : Author's own calculations based on the CEDESOG survey of learning during the lockdown (family responses).

Before school closed, primary school students made little use of the internet in their daily study activities (e.g. searching for information related to learning). Specifically, only 1 out of 3 students used the internet frequently ("often" or "always"), a proportion that increased notably during school closure (to 71%). On the other hand, the percentage of children who never use the Internet is drastically reduced, from 15% to 4% (Figure 6). We found that the use of the

internet for educational purposes particularly increases in those households with mothers with higher education.

Figure 6 : Frequency of Internet use for learning purposes : before and after the lockdown.



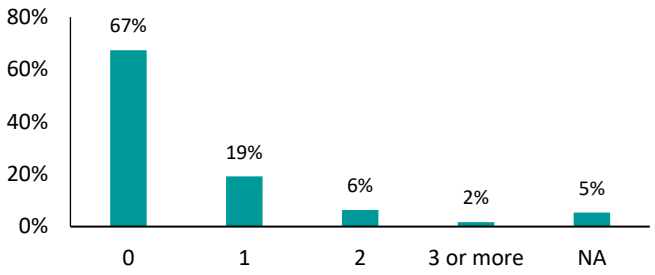
Source: Author's own calculations based on the CEDESOG survey of learning during the lockdown (family responses).

These numbers, before and after school closure, suggest a change in the digital habits of students that could have positive future, implications for the extension of digital education, if they were maintained over time and reinforced in the following school years.

Online classes and learning during school closure

The greater use of the internet in homes has not been translated into online learning. The number of hours of direct online teaching has suffered substantially compared to face-to-face. Before the lockdown, students received from 5 to 6 hours of classes in the schools, while during the school closure these classes have moved online and have been restricted to just one hour. Data online teaching is very negative: 68% of families affirm that their children have not received any online class (Figure 7).

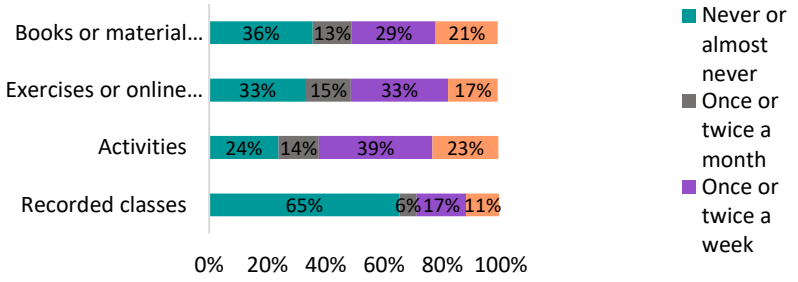
Figure 7 : Average number of daily hours of online classes received during the lockdown.



Source: Author's own calculations based on the CEDESOG survey of learning during the lockdown (family responses).

As we can see in Figure 8, an important proportion of the students do not receive direct telematic classes, but neither do they have alternative complimentary educational resources. Around 2 out of 3 students do not have recorded classes, and only 1 in 2 states that they received support activities, books or online materials, and exercises or online self-assessment tasks regularly.

Figure 8 : Educational resources provided by teachers during the lockdown

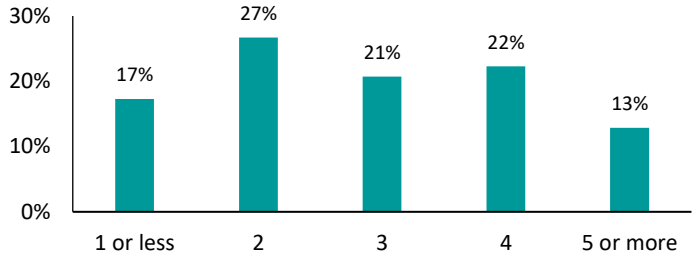


Source: Author's own calculations based on the CEDESOG survey of learning during the lockdown family (family responses).

The contact between families and teachers has been maintained through email, WhatsApp groups, and even by phone. 46% of families indicate that they have contacted their child's teacher once a week and affirm that the teachers are quite involved in giving feedback to their students about their tasks. Specifically, more than 70% of families state that their children have received individual comments from their teachers about the schoolwork they did. This result and the previous one suggest that teachers have spent most of their time correcting and supervising students' assignments.

Figure 9 shows the distribution of the number of hours spent on home learning during the lockdown, where most students dedicated between 2 and 4 hours a day to this activity (70%). These values are notably higher than those reflected by live online learning but are still low when compared with the number of hours devoted to face-to-face classes and homework before the lockdown. During face-to-face teaching, 78% of 6th grade students indicate they do homework 4 or more days a week and 60% dedicated more than half an hour a day to these tasks (data from the microdata of the EDs in 2019 provided by ACCUEE).

Figure 9 : Average daily hours spent on educational activities at home during the lockdown



Source : Author's own calculations based on the CEDESOG survey of learning during the lockdown (family responses).

The overall balance of school closure is very negative. The total learning time (classes and homework) has substantially decreased from 6-7 hours a day to about 2-3 hours a day during the lockdown. This

hourly reduction in the time dedicated to learning has been empowered by the fact that several parents report struggling with supporting home learning. This is crucial in primary education since most of the children at these ages do not have enough knowledge to be autonomous to deal with online learning[7].

Mothers and fathers have had to 'act' as teachers and support their children's learning at home. The proportion of families that dedicate more than 4 hours a day to helping their children before the school closure, has been multiplied by 10, raising from 2% to 23%. These figures perfectly illustrate the enormous effort that families have had to make to ensure that their children continue their learning at home.

Regarding the families' self-assessment about the quality of the support they provide to their children, 2 out of 3 parents consider that this support was not enough for them to continue with home learning. 66% of the families report that the school support given to their children has not been sufficient (Table 5).

Table 5 : Parents' perceived quality of their educational support offered to their children during the lockdown

Sufficient parental educational support	Answers	Distribution of answers
No	344	66%
Yes	142	27%
NA	35	7%
Total	**521**	**100%**

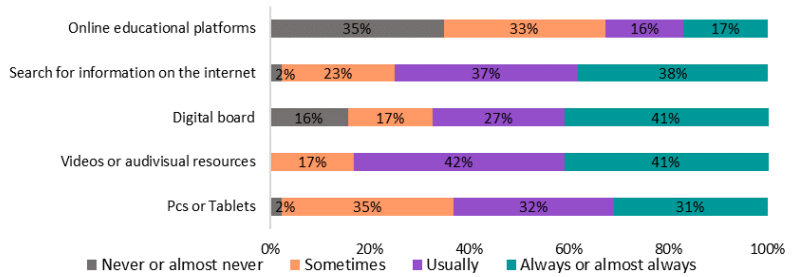
Source : Author's own calculations based on the CEDESOG survey of learning during the lockdown (family responses).

The data reported by the teachers confirm the lack of distance teaching during school closure. 45% of primary school teachers, state that they did not teach online classes during school closure, and around 42% of teachers indicate they have taught between 1 and 2 hours a day. These results are consistent, although lower, with those reported by families.

7 The help of parents in carrying out schoolwork is complicated as the educational level of their sons and daughters progresses, the school capital of parents becoming the factor that weighs the most in helping and conditions the school trajectory (Bonal and González, 2021, 54).

One important reason behind this behavior is their scarce experience in both teaching at distance and using educational platforms (Figure 10).

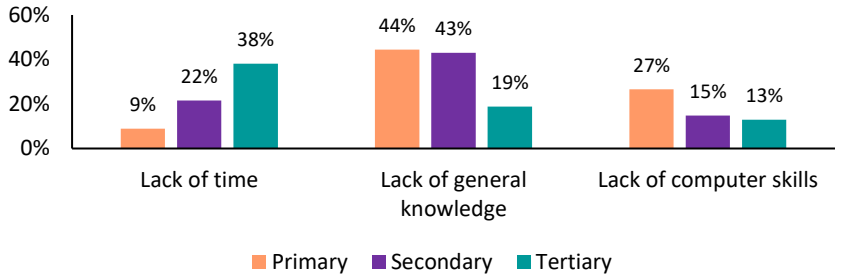
Figure 10 : Teacher's experience in the use of digital resources for virtual teaching



Source : Author's own calculations based on the CEDESOG survey of learning during the lockdown (teacher's responses).

According to the teachers, the main obstacle for families to support their children in the educational process at home has been the lack of educational resources at home and the lack of computer skills, followed by lack of time and, to a lesser extent, the lack of general knowledge. This result contrasts with the responses of the families who participated in this study, as they highlighted the main reasons for the lack of general knowledge and the lack of time (Figure 11).

Figure 11 : Sources of insufficient parental support to their children at home, by mother's education



Source : Author's own calculations based on the CEDESOG survey of learning during the lockdown (family responses).

In summary, we can point out that half of the teachers felt insufficiently prepared for online teaching (they have been taken by surprise by the school closure) and consequently, 2 out of 3 students did not receive an online class (those who did receive online classes were almost always limited to one hour per day). 44% of families with mothers with secondary education indicated that they did not have the general knowledge to help their children and 27% of mothers with primary education did not have computer knowledge either. Families who have tertiary studies state that they mainly faced time constraints in monitoring their children at home, even when they are the ones that are most involved in helping their children in the learning process. The families indicate that during the school closure they received the educational activities by email or through WhatsApp groups. Moreover, parents had to act as teachers and faced serious difficulties, specially the ones with the worst socioeconomic status. Moreover, the school closure was in parallel to a process of loss of jobs for some families and a job instability for others[8], which produced a very stressful situation with adverse emotional conditions at home that, although difficult to quantify, have been highlighted by families.

General assessment of online learning

In general, families have negatively assessed the effectiveness of online learning compared to face-to-face teaching. There have been fewer hours of daily classes, not compensated with homework or extra activities, with lower quality of learning transmission (made by families), and with fewer interactions between students. Most families report that their children have learned less (85%), they were less motivated to do homework (78%), and that they had less fun (90%). The responses of principals and teachers are in line with those of families.

The results of the survey suggest, therefore, that the last quarter of the 2019-2020 academic year was lost for a very important percentage of the primary students. Since they did not receive reinforcement during the summer, the school closure not only has produced a negative impact on their skills progress during the 2020-2021 but also in the following

8 In the Canary Islands the December 2020 EPA from the INE (2020c), 4th-quarter, reflects a loss of 120,000 thousand jobs compared to the same period of the previous year where 930,000 employed persons were registered.

years, which could imply an increase in their repetition rates in the coming years and an increase in school failure and dropout (Bonal and González, 2021). The results of the study also indicate that the educational losses of students have been generalized, but greater for the most disadvantaged students. They come from families, with fewer resources, lower incomes, and with fewer studies, who also face more difficulties to support their children's home learning. The gap that this study reveals about relation to families and households, delves into the inequality of educational opportunities for primary school students (Bonal and González, 2021 ; Cabrera, 2020).

In addition to the school closure, we must add the closing of the schools during the summer. This represents almost seven months in a row without direct teaching and direct contact between students and teachers, with a clear deterioration in the student's training process (Bonal and González, 2021, 46 ; Von Hippel, 2019) and an additional loss of academic skills (Grewenig et al. 2020 ; Burgess and Sievertsen, 2020). All students lose training, but particularly those from disadvantaged socioeconomic and cultural backgrounds (Alegre, 2016 ; Kuhfeld and Tarasawa, 2020a and 2020b ; Marcotte and Hemelt, 2008 ; Jaume and Willén, 2019 ; Cattaneo et al., 2017 ; Dahmann, 2015).

The loss of classes reproduces unequal educational performance and widens the student achievement differential (UNESCO, 2020 ; UNICEF, 2020 ; OECD, 2020a, 2020b ; OEI, 2020 ; Sainz and Sanz, 2020). To this is added the methodological inertia in primary by the teachers based on the use of the school manual preferably, without the didactic change focused on new digital resources and tools (Mur Sagrá, 2016) and with a general predisposition to digital use only to fill in files (Trigueros, Sánchez and Vera, 2012). This represents a breakdown in the continuity of primary education in homes during the school closure. Most teachers did not participate in the new digital resources and could not extend the learning process to homes. And neither do families have sufficient resources to give pedagogical continuity to the teaching model telematic (Coe et al., 2020).

Summary and Conclusions

The school closure as a consequence of the coronavirus pandemic raises the elements of initial inequality in open schools. It is verified with the differential schooling of primary students according to the social class they belong to, the type of center they attend (public/private), and the region of residence where they live (the South of Spain with lower incomes and proportions of people with higher education compared to the North, which is richer and has more cultural capital).

This picture is not only presented in the Canary Islands (the South), but also in Catalonia (the North), where the records of Bonal and González (2021) conclude similarly. They point out that the social antecedents and the conditions of lockdown of the students are associated with their learning opportunities, and that these opportunities are unequal and have been accentuated.

We have found, as we suspected, that families with lower educational levels and lower incomes have fewer resources and knowledge to support their children with schoolwork at home. Although these inequalities are known, they have been exacerbated during school closure (Marrero, 2020). We have also verified unequal use of ICTs at home and detected that the problem of monitoring at distance teaching is exacerbated because students and teachers are not familiar with online learning and digital educational tools. The school support for their monitoring of mothers and fathers is limited and insufficient (2 out of 3 families indicate this), despite their greater involvement in their children's schoolwork during school closure (up to 4 hours and more in 4 out of 5 households).

The reduction in the time dedicated to learning during the pandemic, compared to that spent in face-to-face classes, was substantial. From 5 to 6 hours a day at school and an hour of daily homework has been transferred to an hour of an online class (usually none and exceptionally 2 or more) and 2 hours of homework. The time dedicated to homework increases, but the time dedicated to direct learning with teachers decreased as circumstances forced them to delegate, despite themselves, important teaching responsibilities to families.

The general assessment of families, teachers, and school principals about teaching during school closure is very negative when compared to face-to-face learning. Students have learned less, are less motivated, and have less fun. The only positive version is the greater family involvement in the school monitoring of their children and, the improvement of digital skills of families and teachers. In addition, if this greater family involvement, is maintained over time, it could result, as international evidence shows, in a positive effect on children's academic performance (Jeynes, 2012 ; Wilder, 2014).

Proposals for improvement involve generating inclusive educational policies that, in addition to solving the insufficiencies of digital resources in schools, improve the general training of families in computer skills, the availability of sound internet connections, and that of teachers in at distance teaching processes (OECD, 2019a). This extraordinary situation of school closure should be taken advantage of the experience, and the acquired knowledge. That is, online learning and digital resources should not be seen as a punctual solution for a particular problem but as a relevant and useful tool that should be incorporated in the learning and comprehensive training of students. Finally, for the proposed interventions to be successful, the commitment and effort of the entire educational community are required, as well as coordination between the different levels of government. This is perhaps one of the most important challenges and one that transcends the current extraordinary situation.

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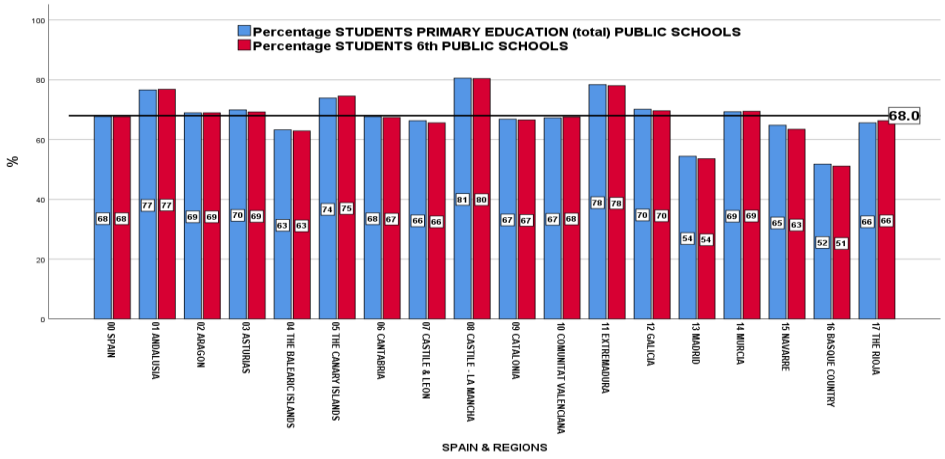
Annex

Figure 1. Percentage Students PUBLIC Primary School (total Primary and 6th grade) - Spain by Regions. Course 2018-19.



Source : Author's own calculations based in MEyFP (2020). Las cifras de la educación en España. Curso 18-19. http://www.educacionyfp.gob.es/servicios-al-ciudadano/estadisticas/no-universitaria/alumnado/matriculado/2018-2019.html

Table 1 : Children aged 10 to 15 (total) in households and proportion (%) who have a computer (%), internet connection (%) in the last three months and have a mobile (%), Average income of the Household 2018 (euros) and% of the population that has reached educational levels in ISCED 2011 (less than compulsory secondary = 0-1-2; non-university upper and upper secondary = 3-4 and university = 5-6-7-8), SPAIN by Autonomous Communities. Year 2019.

	TOTAL	Computer users % 2019	Internet users % 2019	They have mobile % 2019	Household income (euros) ECV 2018	% population 25-64 years Educational Attainment ISCED = 0-1-2	% population 25-64 years Educational Attainment ISCED = 3-4	% population 25-64 years Educational Attainment ISCED=5-6-7-8
SPAIN	**2.992,532**	**89.7**	**92.9**	**66.0**	**28.417**	**38.7**	**22.7**	**38.6**
Andalusia	585,804	86.2	90.7	64.0	24.091	47.8	21.0	31.2
Aragon	79,922	94.1	95.1	72.1	28.886	34.3	26.5	39.3
Asturias	49,085	97.4	97.4	65.1	27.069	33.1	23.6	43.3
Balearic Islands	74,412	94.1	88.6	67.1	34.007	41.4	26.7	31.9
The Canary Islands	135,184	89.9	89.0	66.0	23.048	42.7	24.5	32.8
Cantabria	34,229	96.3	91.6	63.1	26.888	31.3	26.7	42.0
Castile & Leon	125,716	93.1	96.6	68.0	27.665	38.6	23.0	38.4
Castile - La Mancha	133,738	90.2	92.5	71.5	24.401	48.5	21.5	30.0
Catalonia	503,485	92.8	95.4	66.7	32.763	36.3	21.3	42.4
Valencian Community	325,509	82.8	91.6	64.2	25.207	39.9	23.2	36.9
Extremadura	63,886	91.6	92.6	77.6	21.006	53.7	19.5	26.8
Galicia	137,970	89.9	96.2	57.0	27.658	39.4	22.7	37.9
Madrid	427,908	88.4	91.5	65.6	33.055	25.9	25.0	49.1
Murcia	108,569	90.7	95.7	65.0	24.801	47.5	20.9	31.5
Navarre	42,718	99.2	92.0	64.7	33.556	29.2	23.7	47.1
The Basque Country	130,107	97.0	95.8	73.1	35.049	27.9	21.3	50.8
The Rioja	19,656	93.2	92.7	70.9	28.549	38.4	23.3	38.3
Ceuta	7,343	86.0	88.4	46.5	28.700	50.6	23.1	26.3
Melilla	7,291	79.6	94.7	69.7	41.714	50.6	23.1	26.3

Source : Author's own calculations based in INE (2020a; 2020b, 2018) and MEyFP (2020).

Table 2. Percentage of users (16 to 74 years) who have ever used the Internet by level of training and autonomous community. Year 2019.

	TOTAL	Primary School	Secondary lower	High School	Vocational Training	University Degree	University Master	University Doctorate
SPAIN	**77.6**	**47.1**	**74.0**	**83.2**	**87.9**	**90.7**	**93.3**	**98.4**
Andalusia	77.4	51.1	78.9	87.2	87.9	91.0	93.8	97.2
Aragon	78.6	56.2	65.9	87.6	90.1	86.2	92.6	100.0
Asturias	75.0	39.2	64.9	75.2	95.6	94.3	93.3	79.8
Balearic Islands	78.3	53.2	70.1	81.2	98.0	96.8	95.4	..
The Canary Islands	75.7	45.7	77.3	77.9	87.6	91.0	93.9	100.0
Cantabria	74.9	44.8	69.3	76.9	82.2	91.1	87.9	100.0
Castille & Leon	73.1	43.4	63.2	77.8	87.1	92.9	94.2	100.0
Castile - La Mancha	72.8	47.6	70.6	82.4	87.8	90.4	87.3	90.7
Catalonia	81.0	52.5	78.0	82.5	94.3	94.2	93.1	100.0
Valencian Community	75.5	39.9	74.0	82.8	76.4	89.2	93.2	100.0
Extremadura	75.1	41.4	69.2	87.2	93.0	95.3	91.1	100.0
Galicia	67.1	22.7	60.1	79.3	85.9	84.4	93.4	100.0
Madrid	83.1	50.1	78.6	85.7	88.2	88.7	94.1	100.0
Murcia	81.5	60.9	78.5	92.6	97.6	92.9	94.9	100.0
Navarre	80.2	48.7	73.0	82.6	87.6	88.5	97.8	86.9
The Basque Country	77.8	53.1	70.4	78.7	80.8	88.7	90.7	100.0
The Rioja	75.0	39.3	67.0	84.6	87.9	85.0	91.3	46.7
Ceuta	81.9	..	48.8	85.6	100.0	71.8	100.0	..
Melilla	75.1	59.6	100.0	69.5	77.0	79.4	79.1	..

Source: Author's own calculations based in MEyFP (2020, Indicador F2.7.)