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ORIGINAL PAPER

The impact of lockdown on the learning gap: family and school divisions in times of crisis

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Abstract

The lockdown of schools in Spain to confront the effects of COVID-19 caused an enormous impact at both societal and educational levels. Schools and families had to react rapidly to a new teaching and learning scenario without the benefit of previous planning or government guidelines. In this context, some schools were better able to adapt to the new circumstances than others. Likewise, the structure and size of families' economic, social and cultural capital produced significant differences in the learning opportunities for children from different backgrounds. This article assesses the impact of the school lockdown on the learning gap between children from different social backgrounds in Catalonia. Based on 35,419 responses to an online survey administered between 26 and 30 March 2020 to families with children aged between 3 and 18, the authors' analysis shows that learning opportunities varied significantly. Middle-class families were able to maintain higher standards of education quality in a critical context, while children from socially disadvantaged families had few learning opportunities both in terms of time and learning experiences (schoolwork and maintenance of after-school activities). Results differed by type of school (public/private) where students were enrolled, family economic, social and cultural capital, and family living conditions. In the final part of the article, the authors highlight the importance of the role of the school in ensuring learning opportunities for children from low socioeconomic backgrounds, and they discuss some policy implications of their findings.

Keywords learning gap · cumulative disadvantage · digital divide · school closure · after-school activities · informal education

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Résumé
L'impact du confinement sur les écarts en matière d'apprentissage : disparités familiales et scolaires en période de crise – La fermeture des écoles en Espagne durant le confinement pour faire face aux effets de la COVID-19 a eu d'immenses répercussions sur les plans sociétal et éducatif. Les écoles et les familles ont rapidement réagi au nouveau scénario de l'enseignement et de l'apprentissage sans pouvoir s'appuyer sur une planification préalable ou des directives gouvernementales. Dans ce contexte, certaines écoles ont réussi mieux que d'autres à s'adapter à ces nouvelles circonstances. De même, la structure et la taille du capital économique, social et culturel des familles a montré qu'en fonction de leur milieu, les enfants avaient des possibilités d'apprendre très inégales. Cet article évalue l'impact de la fermeture des écoles en Espagne durant le confinement sur les écarts en matière d'apprentissage chez des enfants de différents milieux sociaux en Catalogne. S'appuyant sur 35 419 réponses à une enquête en ligne menée entre le 26 et le 30 mars 2020 auprès de familles avec des enfants âgés de trois à dix-huit ans, l'analyse des auteurs révèle de considérables disparités concernant les possibilités d'apprendre. Les familles de la classe moyenne ont réussi à maintenir un niveau d'éducation élevé dans cette situation critique, tandis que dans les familles défavorisées sur le plan social, les possibilités des enfants étaient restreintes, tant en termes de temps que d'expériences éducatives (devoirs et maintien d'activités extrascolaires). Les résultats étaient différents en fonction du type d'établissement (public/privé) où les élèves étaient inscrits, de la situation économique de la famille, du capital social et culturel de cette dernière et de ses conditions de vie. Dans la dernière partie de l'article, les auteurs soulignent l'importance du rôle de l'école pour garantir la possibilité d'apprendre aux enfants de milieux socio-économiquement faibles. Ils abordent en outre un certain nombre de conséquences qu'entraînent leurs constatations pour les politiques en matière d'éducation.

Resumen
El impacto del cierre escolar en la brecha de aprendizaje: divisiones familiares y escolares en tiempos de crisis – El cierre de escuelas en España para hacer frente a los efectos de la COVID-19 causó un enorme impacto tanto a nivel social como educativo. Escuelas y familias tuvieron que reaccionar rápidamente a un nuevo escenario de enseñanza y aprendizaje sin contar con planificación previa o con directrices gubernamentales. En este contexto, algunas escuelas fueron capaces de adaptarse mejor a las nuevas circunstancias que otras. Asimismo, la estructura y el tamaño del capital económico, social y cultural de las familias produjeron diferencias significativas en las oportunidades de aprendizaje de los niños y niñas de diferentes orígenes. Este artículo evalúa el impacto del cierre de las escuelas en la brecha de aprendizaje entre el alumnado de diferentes orígenes sociales en Cataluña. Sobre la base de 35.419 respuestas a una encuesta en línea realizada entre el 26 y el 30 de marzo de 2020 a familias con hijos e hijas de entre 3 y 18 años, el análisis muestra que las oportunidades de aprendizaje varían significativamente. Las familias de clase media pudieron mantener niveles más altos de calidad educativa en un contexto crítico, mientras que los niños de familias socialmente desfavorecidas tuvieron pocas oportunidades de aprendizaje, tanto en términos de tiempo como de experiencias de aprendizaje (tareas

escolares y mantenimiento de las actividades extraescolares). Los resultados difieren según el tipo de escuela (pública o privada) en que estaban matriculados los estudiantes, el capital económico, social y cultural de la familia y sus condiciones de vida. En la parte final del artículo, se destaca la importancia del papel de la escuela para garantizar las oportunidades de aprendizaje de los niños procedentes de entornos socioeconómicos bajos, y se examinan algunas de las repercusiones en clave de política educativa.

Introduction

Reducing physical contact has been the most common strategy adopted by governments to reduce the spread of COVID-19. It has led most countries around the world to close their schools for periods of time. The lockdown of schools in Spain, one day before the declaration of a *state of alarm*[1] on 14 March 2020, has had an enormous impact at both societal and educational levels. Schools and families had to rapidly adjust to a new teaching and learning scenario without the benefit of previous planning or guidelines from the Spanish Ministry of Education or regional departments of education. In this context, some schools were better able to adapt to the new circumstances than others. Likewise, the structure and size of families' *economic, social* and *cultural capital*[2] (resources) produced significant differences in the learning opportunities for children from different socioeconomic backgrounds.

While the COVID-19 pandemic has no precedent in terms of effects on the economy and social life, schools have previously experienced periods of closure. For example, large-scale outbreaks other diseases (such as Ebola and influenza), teacher strikes, natural disasters and violent conflicts have already forced schools to stop their activity in the past. Researchers and international organisations have studied the effects of school closures on students' learning and found a measurable loss in the acquisition of basic skills, particularly for the most disadvantaged children (Quinn et al. 2016; Cattaneo et al. 2017). It is highly likely that the current pandemic will have a dramatic long-term impact on students' competencies and increase existing education inequalities.

[1] The Constitution of Spain (GoS 1978, section 116) defines three degrees of exceptional circumstances granting the government extra powers: the lowest is a state of alarm (*estado de alarma*), the second is a state of emergency and the highest one is a state of siege. A *state of alarm* is "proclaimed by the Government, by means of a decree agreed in [the] Council of Ministers, for a maximum period of fifteen days. The Congress shall be informed and must meet immediately, and without its authorization the said period may not be extended. The decree shall specify the territory to which the effects of the proclamation apply" (ibid., section 116.2).

[2] According to French sociologist and philosopher Pierre Bourdieu, "capital can present itself in three fundamental guises" (Bourdieu 1986, p. 243). They are *economic capital* (e.g. money, property); *social capital* (e.g. a good network of friends, colleagues etc.); and *cultural capital* (e.g. education). The latter two are potentially "convertible, on certain conditions, into economic capital" (ibid.).

In this article we reflect on how school closure produces unequal learning opportunities in terms of both formal and non-formal education[3] for children and youth from different socioeconomic backgrounds attending different types of schools in Catalonia. During the COVID-19 Catalan lockdown, the instructional time received by students from different social backgrounds has been unequal, as has the educational value of the activities developed at home in non-school time.

We investigated what learning opportunities were available to students from different backgrounds by administering an online survey during the second week of the state of alarm (i.e. between 26 and 30 March 2020). Hypothesising that exposure to learning (both formal and non-formal) among children from lower-income households was likely to be lower than for their peers from higher-income families, we expected this to irremediably increase the existing learning gap between them. Based on the results of our survey, this article reflects on how students' social background and conditions of confinement were associated with their learning opportunities. These unequal opportunities, in turn, are likely to exacerbate existing inequalities in skills acquisition and academic performance.

We begin our article with a review of existing evidence on learning losses and their unequal impact on different groups of students due to past periods of school shutdown. The next section provides information on the context in which we conducted our own survey and the methodology we used to analyse the data. We then present our key findings regarding inequalities in formal and non-formal education, while the final section draws conclusions and discusses some policy implications of our findings.

The impact of school closure on learning and learning inequalities

Although it has only been a few months since schools in many countries around the world closed due to the COVID-19 pandemic, research on the educational effects from that closure has already been notably rich. Obviously, most of these studies have measured the short-term effects of the lockdown. It is certainly too early to know whether these effects can be considered a learning loss or just a temporary effect as a result of disuse that can be easily regained with practice (Coe et al. 2020).

Beyond this recent evidence, several previous studies based on student absenteeeism and past school closures have focused on the impacts of being out of school on learning outcomes (Abadzi 2009; EEF 2018). These research studies can help us understand the potential effects of current school closures on learning and the mechanisms by which educational inequalities occur. Some of the reasons causing schools to reduce or even stop their activity in the past range from summer school

[3] *Formal education* refers to traditional schooling followed by university or college. *Non-formal education* refers to any organised educational activity, designed for a particular learning group with clear learning objectives, outside the established formal system. A third kind, *informal education*, refers to experience-based and often accidental learning, occurring e.g. at home or during a leisure activity. Together, these three forms of education and learning form the spectrum of lifelong learning.

holidays, student or teacher absenteeism and teacher strikes to violent conflicts. Extant research evidence based on these experiences identifies the existence of a general loss of learning connected to school absence, which can be more or less severe depending on students' previous performance, family characteristics, age, and education pathway, among other factors.

School closure, even when distance (remote) learning is offered, usually implies a reduction in *instructional time*[4] and, by consequence, also a decline in *learning time*.[5] Past studies have consistently identified a positive relationship between learning time and student achievement – along with other educational outcomes (Abadzi 2009; Hanushek 2015; Scheerens 2014). Therefore, some studies have used instructional time as a proxy for "opportunities to learn". Variables that measure exposure to curriculum seem to show a greater effect on learning than variables related to teacher behaviour or school climate. Students' prolonged and repeated exposure to stimuli and feedback has been identified as a key educational resource. Even though evidence is not always conclusive (Cattaneo et al. 2017), most research suggests that students with a migrant background, and those who are socioeconomically disadvantaged, will be slower learners. Thus, these students are likely to benefit more from an increase in learning time than their peers (Dahmann 2015; Gromada and Shewbridge 2016; Huebener et al. 2017). Consequently, not going to school reduces learning opportunities for all, but particularly for students from low-income backgrounds and less-skilled children.

Student (or teacher) absenteeism can also be understood as a lack of instructional time. Student absenteeism results in poorer academic achievement, gaps in skills development, abilities and behaviours necessary for educational success, and an increased likelihood of school dropout. Effects go beyond the school environment: absence has also been connected to risky behaviours such as smoking, juvenile delinquency, alcoholism, drug use, risky sexual behaviours or unwanted pregnancies, as well as other effects in adulthood (e.g. unemployment, alcoholism) which diminish life opportunities for young absentees (Abadzi 2009; Coe et al. 2020; González Motos 2020).

In Spain, as in other European countries, the school lockdown between March and June 2020 seamlessly merged with the beginning of the summer holidays, resulting in students' absence from school lasting six months. Past studies comparing students' learning progress during the school year with the summer break have consistently shown that achievement tends to slow or decline over the summer holidays. Although there is no agreement on the magnitude of the learning loss during holidays (von Hippel 2019), it is clear that it is steeper for mathematics than reading, and it is especially acute for upper-grade students (Kuhfeld et al. 2020, Kuhfeld and Tarasawa 2020). Moreover, research points out that this loss does not affect

[4] Instructional time is "the amount of time during which learners receive instruction from a classroom teacher in a school or a virtual context" (IBE-UNESCO n.d.-a).

[5] Learning time is "generally the amount of time during which learners are actively working on tasks and are effectively engaged in learning" (IBE-UNESCO n.d.-b).

all students equally; during the summer period, educational inequalities between socially advantaged and disadvantaged children increase (Alegre 2016).

Beyond the evidence related to breaks in the ordinary school year (e.g. absenteeism, summer break, instructional time), other research studies have analysed the effects on students' learning caused by external factors. For example, the literature on weather-related school closures (e.g. as a result of heavy snowfall or hurricanes) also contributes to a better understanding of the potential unexpected consequences of disruptive closures. Most of the evidence is based on small samples, is geographically specific and refers to short break periods. However, in all cases, studies have found a clear effect of each day of school cancellation on achievement, especially among students attending less-resourced schools or coming from low-income families (Goodman 2014; Kuhfeld et al. 2020; Marcotte and Hemelt 2008).

Teacher strikes have also forced a sudden cancellation of classes. Strikes affect student learning outcomes (mainly in terms of achievement and grade repetition) by reducing the time that children attend school, but they also affect the quality of schooling and increase the likelihood that students may engage in risky behaviour (Jaume and Willén 2019). In addition, research has found heterogeneous (uneven) effects, with children from vulnerable families being most affected by school disruptions (Jaume and Willén 2019; Belot and Webbink 2010).

The main difference between school closures examined by previous studies and the current lockdown is that this time schools have managed to maintain some contact with students, mostly through online instruction. However, despite the efforts to support remote learning, many students have not had access to it. Existing data about the digital gap and surveys conducted during the lockdown indicate that teachers have been unable to contact a significant number of students, mainly because of lack of an internet connection or adequate devices to engage in distance learning (Kuhfeld et al. 2020; Van Lancker and Parolin 2020).

Even when students have been able to connect, remote learning during school closures seems to have widened the existing attainment gap between students from different socioeconomic backgrounds (Coe et al. 2020). For instance, a recent study undertaken by researchers from Brown and Harvard universities into the use of an online mathematics programme (Zearn) before and during lockdown in the United States (Chetty et al. 2020) shows a sharp decline of student progress in mathematics in classrooms located in low-income ZIP (postal) code areas, while in high-income ZIP code areass no changes were observed (Goldstein 2020).

Before the COVID-19 pandemic, in-school learning had already been proven to be more effective than distance learning. Furthermore, student outcomes resulting from online learning have been shown to be poorer, on average, than outcomes resulting from face-to-face instruction (Heppen et al. 2017). Conditions for effective remote learning (good internet connection, and clear explanations, scaffolding and feedback from teachers) are not easy to accomplish. The combination of a digital gap with teacher inexperience in providing high-quality distance learning makes it difficult to improve students' learning opportunities (Kay et al. 2020). Moreover, there is now a significant risk that vulnerable students have less access to quality teaching than their peers, widening the attainment gap due to the school lockdown (Coe et al. 2020; Kay et al. 2020). If it has already been proven that students from low-income

families experience more interruptions and disruptions of their instructional time under normal school conditions (Abadzi 2009; Alegre and Benito 2012), then poor distance learning can be understood as a new obstacle to effective learning.

Apart from school organisation or distance learning strategies developed by teachers, parental engagement in children's learning, practised in some families alongside school attendance, becomes more important when school is *replaced* by at-home instruction. Educational studies have demonstrated that parental involvement and the quality of learning at home improve academic outcomes. Research in this field has consistently observed greater academic achievement among students whose parents are actively involved in the educational process. It has also found a clear relationship between engagement in the learning process and parental background in terms of social class and ethnicity (Oreopoulos et al. 2006). Unequal parental capacities to help children with their homework and different uses of family time have been extensively documented (Meyer et al. 2017; Mora and Escardíbul 2018). Therefore, family reactions to school lockdown are likely to produce significant differences in the learning opportunities for children from different types of social background (Burgess and Sievertsen 2020).

Regardless of their causes and mechanisms, previous crises have had a more intense and negative effect on student learning outcomes in contexts with higher proportions of disadvantaged families (Borse et al. 2011; Chen et al. 2011; Iqbal et al. 2020; Sadique et al. 2008; Shores and Steinberg 2018). Previous research also suggests that the learning loss can not only have a limited short-term effect, but may in fact result in cumulative losses (Abadzi 2009). Likewise, other researchers suggest that the current school lockdowns will widen the learning gap between vulnerable children and their peers, possibly even reversing the progress made during the last decade to narrow this gap (Coe et al. 2020; Van Lancker and Parolin 2020).

Study context, methods and data

On 13 March 2020, the Catalan government ordered the closure of all schools and colleges (universities) due to the COVID-19 pandemic. More than one million students in compulsory education[6] were asked to stay at home. During the first two weeks of confinement, the Catalan Department of Education advised schools not to provide new curriculum content, in an attempt to contain the adverse effects of the technological gap on educational inequalities. Despite the Department of Education's order, some schools reacted rapidly to the new circumstances and switched to remote learning strategies. Other schools stopped their activities entirely. Between these two extremes, there were a range of reactions and responses.

[6] In Catalonia, *compulsory education* refers to six years of primary (elementary) education (grades 1–6) followed by four years of lower secondary (high school) education (grades 7–10), and two (optional) additional *Baccalaureate* years of upper secondary education (grades 11 and 12). Even though it is not compulsory, most children are enrolled in preschool at the age of 3, progressing to primary school at the age of 6.

Between 26 and 30 March, after two weeks of school closure and before the Spanish Government ordered a more restricted lockdown, we (the authors of this article) conducted an online survey with families whose children were aged between 3 and 18. The survey was addressed to families with children enrolled in preschool (3–5 years old), primary school (6–12 years old), lower secondary education (12–16 years old) and post-secondary academic or vocational education (16–18 years old).[7]

Organised into two main sets of questions, our survey included 78 items, with a variable number of subquestions that branched out to adapt to respondents' particular contexts. The first group of items characterised the different social, spatial and technological conditions in which families had to respond to the school lockdown (such as the size of their home, the availability of outdoor spaces, access to the internet and to digital devices). The second set of questions was designed to assess children's learning opportunities in (a) *formal* education (contact with school teachers, frequency and types of school tasks, feedback provided by schools), (b) *informal* education (uses of time, family activities, support to carry out school tasks) and (c) *non-formal* education practices from home (participation in after-school activities, types of activities and forms of participation). In addition, our survey included variables to characterise respondents' social and economic conditions, such as family structure, parental education attainment, income, ethnic origin, gender and work status.

To test the survey, we conducted a brief pilot. Due to the exceptional circumstances, the pilot was implemented using an informal strategy: we asked 10 families with children of different ages and on different school pathways to complete the survey. After the pilot was completed, we distributed the final version of the survey through various online communication channels (Twitter, Facebook and Whats App). This strategy helped us to improve the survey's visibility among different social groups as well as reducing sampling bias linked to the use of social networks (Blank 2017). We also mobilised strategic contacts in the most deprived areas of Catalonia to reach those families less likely to answer online surveys.

In total, 79,668 people clicked the link to the survey, approximately 58,000 started to answer it and more than 40,000 families completed it. After excluding some respondents for reasons like incomplete answers, children's ages outside our survey's scope, families not living in Catalonia, the final sample included information from 35,419 families (with a total of 59,167 children aged between 3 and 18). As expected, high-income and highly educated parents were over-represented. Due to the lockdown and the urgent need for data collection, we were unable to complement our online survey with other strategies such as telephone calls or face-to-face interviews. We opted instead to use *non-response weighting* to bring the sample closer to the population distribution. To do this, we weighted the sample by the level of parental education attainment, as a key variable of social and cultural differentiation, and as a reliable and accurate source of census data. Table 1 shows both the weighted and unweighted samples.

[7] The survey included an ethics form ensuring anonymity and informing respondents they were giving consent by answering the survey.

Table 1 Unweighted and weighted survey samples

Parental education attainment*	Sample (*n*)	Sample (%)	Population (%)	Weight (factor)	Weighted Sample (*n*)
Compulsory education	2,387	6.74	27.4	4.1	9,916
Post-secondary education	9,911	27.98	33.0	1.2	11,689
Higher education	23,121	65.28	39.6	0.6	13,813
Total	*35,419*	*100*	*100*		*35,418*

**Note:* In two-parent families, the survey recorded the highest parental education attainment

Of our survey respondents, 86% were female, 89.3% lived in heterosexual biparental households, 9.6% lived in single-parent households and 1.1% were part of a same-sex couple. More than half of the households (53%) were composed of four members, three-member households represented 27% of the sample, and 16% of the households had five or more members.

Sample distribution according to school variables accurately reflects the distribution between the public and private school sectors.[8] In Catalonia, the proportion of children in compulsory schooling who attend public schools is 68% (this was 69.9% in our sample), while 29% of students attend private subsidised schools (27.5% in our sample), and only 2% are enrolled in private independent schools (2.6% in our sample). Our sample was also well balanced regarding children's ages, with a slight over-representation of younger students. [9]

For our data analysis, we split information across three databases according to different units of analysis. First, a "household database" included information about family members living together during the confinement. Second, a "student database" collected information about the learning activities of children aged between 3 and 18. Third, the "after-school activities database" contained information about the extracurricular activities children were involved in before and after the lockdown. We also constructed some subsamples to carry out specific analyses. In this article, we present some data based on subsamples by children's age or educational level.

From learning conditions to learning opportunities: widening the social gap

In this section, we present and discuss the data from our survey regarding social differences in the learning conditions of Catalan children and the impact of these conditions on learning opportunities during lockdown. Inequalities in families' economic, social and cultural capital impacted on student learning opportunities by

[8] In Catalonia, public (state) schooling is funded by the government, while parents pay full fees for private (independent) schooling. Subsidised private schools are formally free of charge, but all of them ask for voluntary contributions from families (a hidden fee).

[9] Data for the overall population were taken from the online database of the Institut d'Estadística de Catalunya (Statistical Institute of Catalonia; IDESCAT 2020).

different means, including school responses to the lockdown, access to digital facilities and the level of parental learning support. This section reviews how these factors are drivers of inequalities in the three domains of learning: formal, non-formal and informal.

Learning conditions at home: social and technological differences

Learning conditions at home differ on the basis of a number of variables. For example, the amount of physical space and access to technological devices both have an impact on the learning conditions of children.

Our survey included questions about the size of the household and the outdoor spaces available, to serve as indicators of the physical conditions of confinement. The responses showed that most homes of confined families had a balcony or other outdoor space/s. However, there were significant differences among residents depending on the size of the municipality (families living in cities had less access to outdoor spaces) and other social indicators, such as parental education attainment. For instance, 13% of families with an adult who had completed compulsory education did not have outdoor spaces, while this was only the case for 4% of households in which at least one adult held a university degree. Likewise, 45% of households in the poorest *income quintile* (Q1)[10] had less than 80 square metres of space, reducing to 14% in the case of the richest income quintile (Q5).

Students also had different internet connectivity conditions and unequal opportunities to access technological devices to carry out their schoolwork. Since we could only implement an online survey, we were unable to grasp the full extent of the actual digital divide. Data from the Catalan Department of Education estimate that there are currently approximately 55,000 school children without access to an internet connection (Vallespín 2020), which would situate the digital gap at between 10% and 15% of all children in the Catalan education system. Our survey revealed that 3.5% of our sample had only a mobile phone internet connection or no connection at all. Most families in our survey had access to a high-speed internet connection. However, there were important differences regarding the "possibilities of use" of technology. For example, 15.3% of respondents declared that they had access to a single device at home or only had access to a mobile phone. We calculated the number of devices per person and found that in 56% of cases there was less than one device per person. The digital divide can also be expressed in terms of access to devices based on the composition of the household. In our survey, 12% of households with two children had only one device available; 32% of households with three children had two or fewer devices available; and 48% of households with three children had three or fewer devices available.

Access to technology depends on the level of family income. While 25% of surveyed families in Q1 (the lowest income quintile) had access to only one digital

[10] Income quintiles are a measure used in the field of social statistics. They divide a population (100%) into five equal groups or *quintiles* (each representing 20% of the total population). The first income quintile (Q1) represents those 20 % of the population who have the lowest income.

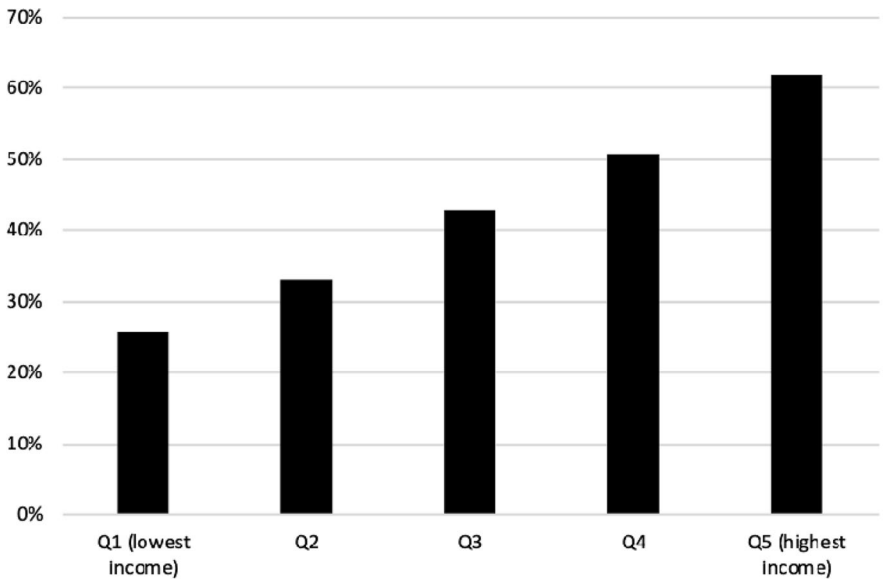

Figure 1 Catalan households with at least one digital device per person, by income quintile, March 2020

device, for families in Q5 (the highest quintile), the corresponding figure was only 4%. Furthermore, while 20% of families in Q1 had access to four or more devices, this applied to 54% of families in Q5. Taking into account the size of the household, 71% of families in Q1 did not have access to one device per person. Among families in Q5, the number of households with less than one device per person reduced to 37%. Figure 1 shows the proportion of households for each income quintile that had access to one or more device per person. Differences are sorted by income, with an inequality factor of 2.5 between Q5 and Q1.

In addition, the unequal impact of the crisis on parents' working situation also altered the social and psychological conditions that ensured an adequate learning process. Our survey revealed that before lockdown, 13% of adults were unemployed, while 80% were working full-time. When we asked about the impact of the COVID-19 crisis on their working situation, these figures changed dramatically: 23% of respondents indicated that they had lost their job. Of those who were still working, only 21.5% were able to go to work "normally". The rest (39%) were working from home, either with the same schedule or with a more flexible schedule. Of those still working, 17% considered it likely that they would lose their job. Of those who were already or became unemployed, 50% knew that they were entitled to unemployment benefits, while the other 50% either knew that they were not entitled or did not know.

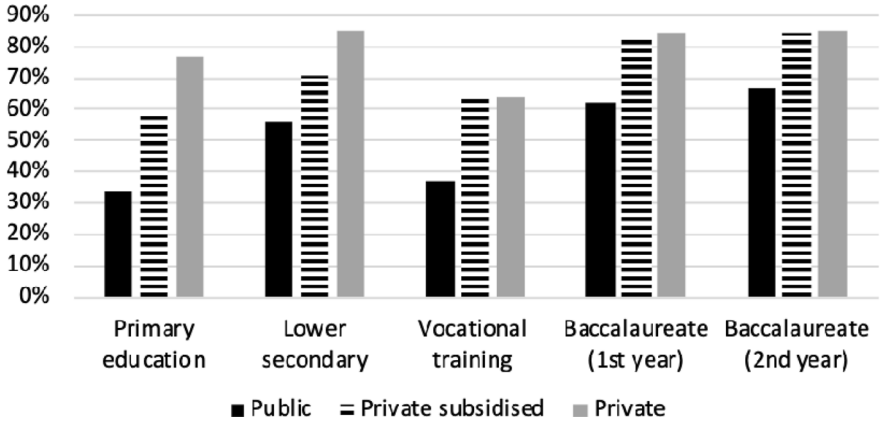

Figure 2 Opportunities to learn (OTL) index, by school sector and educational level *Note:* Baccalaureate refers to two years of optional upper secondary education preparing students for tertiary level

Schoolwork and opportunities to learn

Our survey included questions regarding how much time children invested in schoolwork every day since the beginning of the school lockdown, how frequent the contact was with their school and teacher/s, how often they received online teaching lessons, whether they had to complete specific homework tasks, and how often these tasks were reviewed and returned to children. Taking into account the intensity of all these tasks, we composed an index of *opportunities to learn* (OTL). To compose the index, which ranged from 0 to 100 points, we normalised indicators and aggregated (combined) frequencies. We only used this index for a subsample of the older children aged between 10 and 18, since assigned school tasks or online teaching were more unlikely for younger age groups.

In terms of the index, 28.3% of students had an OTL equal to 0, meaning that they dedicated less than one hour a day to school tasks, had almost no communication with teachers and did not have homework to do or to be reviewed. At the other end of the index, 7.7% of students had a maximum OTL of 100, meaning that they dedicated more than four hours per day to schoolwork, had frequent contact with their teachers and received regular feedback for school assignments. The majority (80.2%) of all surveyed students in this subsample had an OTL score below 60 points.

Interestingly, we found the OTL score to be positively related to a number of variables. Having greater access to digital devices, being enrolled in more advanced courses (older students had a higher OTL), being native to Spain or living in a higher-income household were all factors associated with higher OTL scores. Students enrolled in private schools, both independent and private subsidised ones, had significantly higher OTL scores than those enrolled in public schools. There are explanations for this difference. For example, the Catalan Department of Education announced that the first two weeks after the approval of the state of alarm would be a non-school period. Therefore, a significant number

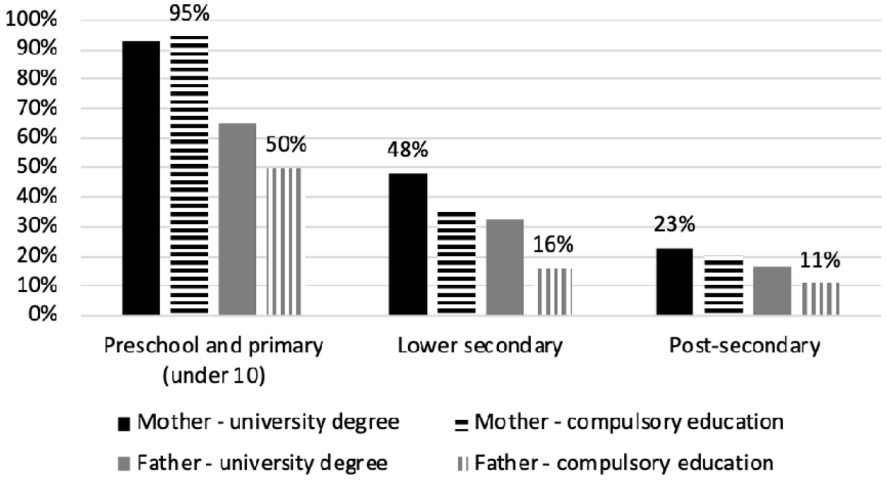

Figure 3 Adult support for school tasks, by gender and highest parental education attainment

of public schools did not develop school tasks during these two weeks, waiting for new instructions from the department. Despite this announcement, private subsidised and independent schools did not stop their teaching activity. One of the plausible explanations for this difference lies in the economic dependency of private schools on fees. They needed to keep providing a service to users despite the exceptional circumstances.

Figure 2 shows the distribution of the OTL index across school sectors for different educational levels. The bar chart reveals strong differences by school sector for students enrolled in the last years of primary education and for those in lower secondary education. The chart also shows how students in vocational education and training (VET) had the lowest OTL of post-compulsory education.

We also found the OTL index to be clearly related to the level of parental education attainment and to family income. For instance, 49% of children in families from the richest quintile (Q5) had an OTL score of 80 points or higher. This reduced to 33% in the case of the poorest quintile (Q1).

The role of families in the learning process

The absence of schooling increases the importance of families as teacher substitutes in the learning process. Our survey included questions regarding whether adults in the family helped students in their school tasks during the relevant lockdown period. An initial remarkable result appeared in terms of gender: while 79% of female adults stated that they supported their children to do schoolwork, only 43% of male adults did.

As expected, gender differences were clearly observed, and family support was higher in the case of younger children. Figure 3 shows that for children undertaking primary education, the support of mothers who had completed compulsory

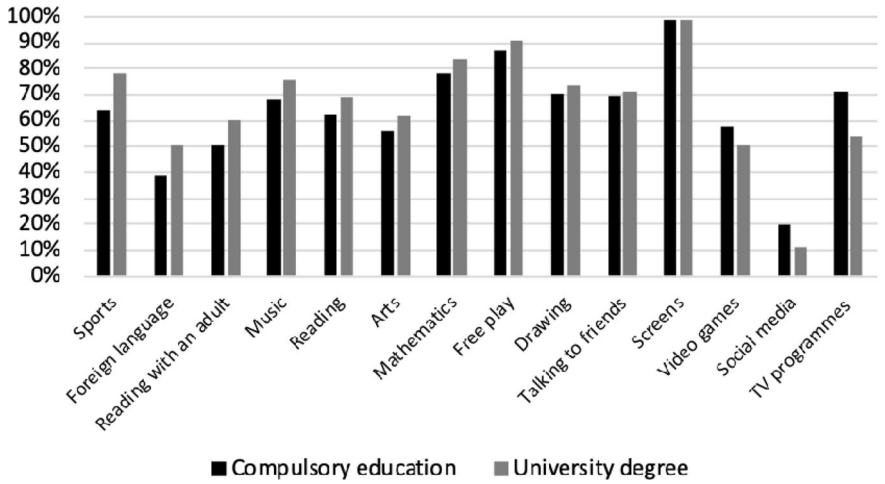

Figure 4 Informal practices among 3–8-year-old children by parental education attainment

education was comparable to that of mothers with higher educational (in Bourdieu's terms) cultural capital. However, for students enrolled in lower secondary education, the differences increased dramatically: only 35% of mothers who had completed compulsory education helped with homework, while 48% of the most educated mothers did. Providing support for school tasks to students in post-compulsory education declined to close to 20% for all groups.

There are several reasons why support for schoolwork may not have been provided by adults in a student's household. These reasons are remarkably different depending on the level of parental education attainment. In those households in our survey with children enrolled in lower secondary education, 92% of the families with an adult who had a university degree and who did not provide support for schoolwork argued that the child did not need it. This reason was only argued by 69% of respondents from those households with adults who had completed only compulsory education. In this case, a lack of knowledge was proffered as a significant reason for not giving support (by 28% of respondents), which reduced to 2% for those parents with a university degree. Differences in cultural capital are therefore reflected in the capacity and possibilities of families to help children with their school tasks.

In addition, (and not just in times of school closure) families' cultural capital and everyday informal practices have effects on children's learning experiences and opportunities. Interestingly, confinement, which maximises the interactive time between family members, provides ideal research conditions for assessing informal learning activities. Figure 4 reveals that in those households with children aged between 3 and 8, there were three activities in which social differences were especially acute. First, accompanying children in *reading* was more frequent by far in families with high cultural capital: 59% of families with an adult who had completed university studies responded that their children aged between 3 and 8 read with an adult every day. This reduced to only 37% in the case of families with an adult who had completed compulsory education. Second, differences were also visible in

foreign language informal practices: 44% of families with an adult who had completed university studies responded that foreign language practice was done daily or several days a week, while this practice was carried out by only 36% of families with an adult who had completed compulsory education. Third, *sporting activities* were practised several times a week by 81% of families with university degrees and only by 66% of families with compulsory education.

By contrast, other activities were more frequent among families with lower cultural capital. The most relevant was *playing video games:* 37% of families with an adult who had completed compulsory education reported that their children of preschool age played video games every day or several times a week. This applied to only 21.5% of families with parents who had completed university studies. The differences were also significant in the frequency of *watching educational television programmes* (52% of households with parents who had completed compulsory education and who had children enrolled in preschool education reported that their children did so every day, versus 30% of parents with a university degree), and in following and carrying out *educational activities available via social media*. In such an extreme situation of school absence, it appears that families with less cultural capital made more use of external resources to support their children's learning activities, while families with more cultural capital were more confident in their own abilities to respond to their children's learning needs.

In the case of older children, the same differences were observed, although the gap increased in musical and other artistic activities and was less pronounced in playing video games.

Inequalities in after-school activities

Participation in after-school activities is a source of differential learning opportunities for children from different socioeconomic backgrounds (Bradley and Conway 2016; González Motos 2016; Lauer et al. 2003; Potter and Morris 2017). Our survey compared whether children participated in one or more after-school activities before and after the beginning of the lockdown. We found that the effects of COVID-19 on these kinds of activities have also increased the gap between socially advantaged and disadvantaged children.

Before lockdown, after-school activities were more frequent for students enrolled in primary education. This was particularly the case for children whose parent/s had completed a university degree (66%), compared to children from households with parent/s who had completed compulsory education (43%). This polarisation increased particularly for children enrolled in lower secondary education with at least one unversity-educated parent (81%) versus those whose parent/s had completed compulsory education (45%). We also found families' economic, social and cultural capital to be associated with *the number of* after-school activities in which children participated. For example, for families with two children in lower

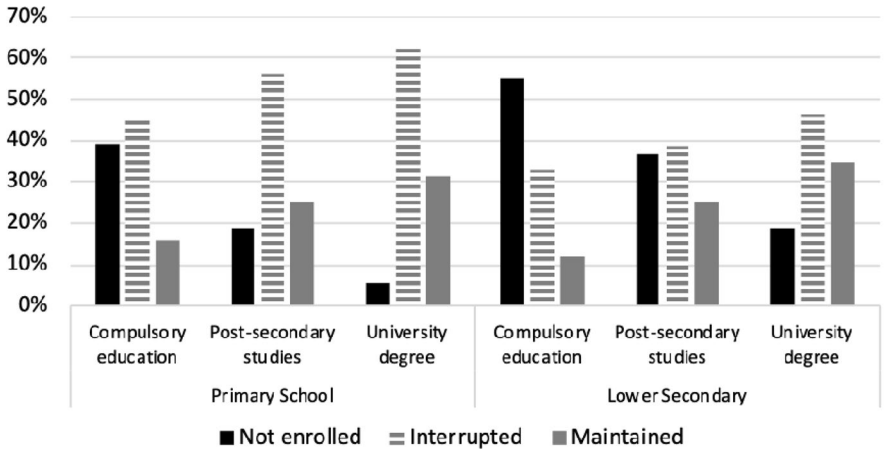

Figure 5 After-school activities before and after lockdown, by parental education attainment

secondary education, the average number of after-school activities for highly educated households was 3.3, compared to 1.5 for households with lower educational levels. Sports, foreign languages and artistic practices were the most frequently reported after-school activities. By income level, students in families in the lowest quintile (Q1) were more represented in sports and *compensatory education* activities,[11] while children from the richest quintiles were over-represented in foreign language and musical after-school activities.

As expected, we found that most after-school activities (70%) were interrupted during lockdown. However, economic and cultural inequalities were also visible in the probability of maintaining after-school activities despite the confinement. Figure 5 shows that children whose parent/s had lower educational levels already had lower participation in after-school activities before lockdown and were more likely to be unable to continue them after schools closed than children from families with higher educational levels.

There are two main reasons for this difference in after-school activities after the closure of schools. First, families with higher economic, social and cultural capital participated in activities that were more likely to continue online (e.g artistic activities, foreign languages), compared to the activities more commonly practised by families with lower capital (e.g. sports). Second, voluntary interruption of after-school activities was also higher among families with lower ecoomic, social and cultural capital, due to difficulties in coping with the costs during times of crisis. For instance, compensatory education activities – which could be undertaken online – were voluntarily interrupted by 25% of families who had previously engaged in

[11] Compensatory education, in this context, refers to those after-school classes that some students attend to reinforce their learning competencies. These classes are usually offered to students with marked learning difficulties.

them. This voluntary interruption was particularly high among children whose parent/s attained compulsory education (80%), compared to those whose parent/s had a university degree (62%).

Conclusions

Despite schools' efforts to maintain learning activities during lockdown, our analysis reflects significant inequalities in exposure to school learning depending on family characteristics (income, level of educational attainment) and school characteristics (educational level, school sector). The absence of schooling neutralises the benefits of socialisation provided by early childhood education for the most vulnerable children. It also disrupts those processes of guidance and accompaniment which are especially important for adolescent students in their study, work and life transitions. In addition, the digital divide and visible differences in access to technological devices among students have left some children and young people without options to connect to learning for at least three months or, more probably, for six months.

Inequalities in being able to maintain school-based learning are not the only existing ones. Our analysis shows that families with a lower level of parental education attainment have fewer resources and less knowledge to help their children with school tasks. These limitations become more acute when support from the school has been reduced and demands for autonomous work by students increase. Likewise, family economic, social and cultural capital also influences the adoption of everyday informal learning practices that are more or less aligned with school logic, which readily increases differences in learning opportunities and familiarity with what is considered valid knowledge. After-school activities are also more likely to be maintained among children from wealthier families, which also increases the existing inequalities in this area.

In sum, if the pre-COVID-19 school system already had significant limitations in its ability to eliminate existing social inequalities, the closure of schools during this period of lockdown poses enormous challenges for developing effective policies to compensate for learning losses and learning inequalities. School lockdown has not affected all children in the same way, and significant material and human resources will be necessary to ensure that the most vulnerable children can catch up. An educational emergency plan with social and educational objectives will be needed to restore children's socio-emotional and cognitive skills. The individual and social costs of not intervening are just too high, unfair and unequal. It is the responsibility of states and countries to ensure the right to education in these difficult times.

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