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Learning at a Distance

Children's remote learning experiences in Italy during the COVID-19 pandemic

Giovanna Mascheroni, Marium Saeed, Marco Valenza, Davide Cino, Thomas Dreesen, Lorenzo Giuseppe Zaffaroni and Daniel Kardefelt-Winther

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A lower secondary school student does her homework online, Rome, January 2021.

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Recommendations and key findings

1. **Provide families across Italy with additional resources and improved connectivity to ensure digital remote learning is accessible to all children, especially those from poor and marginalized households.** A stable internet connection and quality digital devices are necessary preconditions for digital remote learning. However, cost can be a major barrier to access. Estimates by the Italian National Institute of Statistics (ISTAT) suggest approximately 3 million Italian students may not have been reached by remote learning due to a lack of internet connectivity or devices at home. Among the internet-using children surveyed for the present report, six per cent were unable to take part in remote learning due to a poor internet connection. One in four households reported that schools provided a paid internet connection to ensure access. These efforts should be strengthened to reach more children, to build a more equitable remote learning system that can be leveraged during any future school closures.

2. **Ensure access to digital devices, particularly for larger households who tend to have fewer digital devices per child.** Despite many families acquiring new devices during lockdown, 27 per cent of families reported not having enough devices to support remote schooling or work needs. This was especially problematic for larger families that might face a greater financial burden to keep up with the increased demand, and also need to overcome lower bandwidth resulting from multiple devices using a single internet connection.

3. **The Italian Government should assess students' learning outcomes, identifying areas of greatest learning loss, to tailor support to students and subjects most impacted, and to improve remote learning delivery in the future**. Schools in Italy combined digital remote learning tools with traditional, paper-based learning materials. About two thirds of children had access to video conferencing tools and school-provided virtual learning environments. Many used email or digital communication apps to stay in touch with their school. While this is promising, it is unclear how these efforts influenced children's learning. Assessing children's potential learning loss as they return to school will be crucial to identify areas for support and remediation.

4. **Encourage teachers and caregivers to provide younger children, who also tend to have weaker digital skills, with more support to fully benefit from digital remote learning.** While many children report feeling motivated to participate in remote learning, younger adolescents (aged 10–11) from our sample of primary and secondary age students were slightly more likely to express concerns about their ability to do so. This could be because they have less developed digital and transferable skills that are important in an online learning environment. It is therefore important to support teachers and parents in helping children develop competencies such as critical thinking and information seeking from a young age.

5. **Equip parents with the tools and the time to support their children's remote learning. This includes school-provided resources and guidelines on how best to support children's learning, in addition to employers establishing flexible working arrangements and shorter workdays if necessary.** During lockdown, many parents had to take on the role of teacher in addition to their regular daily responsibilities. While many parents said they had the digital skills to support their child's remote learning, almost one third of parents said they did not have enough time to do so during lockdown, and 82 per cent called for more school guidelines around how parents can support their child's remote learning.

6. **Develop methods to improve the social and extracurricular aspects of remote schooling.** When asked how schools can better enable parents to support their children's learning, a majority of parents asked for interactive activities for children and ideas for extra-curricular activities that can be done at home. Schools do more than deliver education; they also provide key experiences for children to build social and emotional skills, in and outside of the classroom. Supporting these areas of children's development should not be forgotten during a lockdown, and should be incorporated into children's school days, irrespective of whether they happen online or not. This includes providing guidance to encourage physical exercise and play for children during school closures, either indoors through exercise games or in safe outdoor environments.

1. Introduction

By March 2020, school closures in response to the COVID-19 pandemic left more than 90 per cent of the world's enrolled children out of school.[1] Italy was the first country in Europe to implement a nation-wide lockdown. Schools and universities began to close in late February 2020, starting with the north of Italy (Lombardy, Emilia-Romagna, Liguria, Piedmont, Veneto, and Friuli Venezia Giulia). By 10 March 2020, the Government extended lockdown measures to all regions in the country.

Children and their families lived in almost complete isolation for almost two months until 3 May 2020, and schools remained closed until September. Excluding scheduled academic breaks, students in Italy missed 65 days of regular school due to COVID-19 lockdown measures, as compared to an average of 27 missed days among high-income countries worldwide.[1,2] This prolonged break is of concern, as evidence from previous school closures shows that even short breaks in schooling can cause significant loss of learning for children.[3]

To mitigate the impact of school closures, countries around the world invested rapidly in remote learning solutions delivered through different channels, including online platforms, broadcast media (TV, radio), and paper take-home packages.[4,5] In Italy, the Ministry of Education allocated 85 million euros for remote learning activities. This included 70 million euros to provide children from lower socioeconomic backgrounds with digital devices and connectivity, 10 million for schools to acquire digital learning platforms, and 5 million for training teachers.

Media outlets reporting on some preliminary results of a survey by the Ministry of Education claimed that by 18 March 2020, 67 per cent of schools (including preschools and kindergartens) had moved all of their classes online, potentially reaching 6.7 million of the 8.3 million students in Italy.[6,7] However, based on 2019 data on internet connectivity in Italian households, ISTAT estimated that around 3 million children aged 6–17 might have faced difficulties with remote learning during lockdown due to a lack of connectivity or devices at home.[8] Similarly, a survey conducted by Save the Children showed that 28 per cent of children aged 14–18 in Italy knew at least one classmate who stopped attending school (remotely or in-person) since lockdown, with internet connectivity problems as the most-often cited reason for not attending remote classes (28 per cent of respondents, N=160).[9] This could lead to educational inequalities over time.

1 UNESCO. (2020). Education: From disruption to recovery. Retrieved November 19, 2020, from https://en.unesco.org/covid19/educationresponse

2 UNESCO, UNICEF and the World Bank (2020). *What have we learnt? Overview of findings from a survey of ministries of education on national responses to COVID-19.* Paris, New York, Washington D.C.: UNESCO, UNICEF, World Bank. Retrieved from: https://data.unicef.org/resources/national-education-responses-to-covid19/

3 Alban Conto, C., Akseer, S., Dreesen, T., Kamei, A., Mizunoya, S., Rigole, A. (2020). COVID-19: Effects of school closures on foundational skills and promising practices for monitoring and mitigating learning loss. *Innocenti Working Papers* no. 13, UNICEF Office of Research – Innocenti, Florence. Retrieved from: https://www.unicef-irc.org/publications/1144-covid19-effects-of-school-closures-on-foundational-skills-and-promising-practices.html

4 Radiotelevisione Italia (RAI), the national public broadcasting company's commitment to "La scuola in tv" is especially notable during the lockdown period: http://www.raiscuola.rai.it/articoli/la-scuola-in-tv-gli-orari-delle-lezioni/45140/default.aspx

5 Dreesen, T, Akseer, S., Brossard, M., Dewan, P., Giraldo, J., Kamei, A., Mizunoya, S., & Ortiz Correa, J. S. (2020). Promising practices for equitable remote learning. Emerging lessons from COVID-19 education responses in 127 countries. *Innocenti Research Briefs no. 2020-10*, UNICEF Office of Research – Innocenti, Florence.

6 See https://www.indaginedidatticaadistanza.it/

7 Scuola 24. (2020, March 27). *Didattica digitale, raggiunti 6,7 milioni di studenti (sugli 8,3 milioni complessivi).* Retrieved November 19, 2020, from https://scuola24.ilsole24ore.com/art/scuola/2020-03-26/didattica-digitale-raggiunti-67-milioni-studenti-sugli-83-milioni-complessivi-164052.php?uuid=ADex49F

8 Istat (2020). Rapporto annuale 2020. La situazione del paese. Retrieved from: https://www.istat.it/storage/rapporto-annuale/2020/Sintesi2020.pdf

9 Save the Children (2021). I giovani ai tempi del coronavirus. Retrieved from: https://www.savethechildren.it/cosa-facciamo/pubblicazioni/i-giovani-ai-tempi-del-coronavirus

In one of the first large-scale assessments of learning loss after school reopening, findings from Belgium show significant losses in mathematics and language learning during COVID-19 lockdowns when compared to the children who were tested in the previous year.[10] Schools with higher proportions of low-income students suffered much higher levels of learning loss, widening existing inequities in learning.

This report explores children's and parents' experiences of remote learning during the COVID-19 lockdown in Italy, drawing on data from a nationwide sample of 1,028 internet-using children aged 10–18, and one of their parents.[11] Data were collected in June 2020 as part of a project implemented in 11 European countries, coordinated by the European Commission's Joint Research Center.[12] The survey was administered online because household interviews were not feasible. Thus the sample used in this report consists only of households that have digital devices and internet access, and investigates the experience of those households with remote learning. The data are self-reported and possible error and bias – due to social desirability and trouble with recall – should be considered, as should the possibility of sampling errors, which are difficult to estimate due to the nature of the target population. The findings and estimates should be interpreted with these limitations in mind.

The inability to include non-internet-using children and their experiences during the lockdown period in our research highlights the inequalities perpetuated by the digital divide, at a time when internet access has become a necessity, not just a luxury.

The report explores how internet-using children's access and use of digital technologies changed during the pandemic. It focuses on children's schooling experiences through remote learning and highlights how existing inequalities might undermine remote learning opportunities, even among those with internet access. The report also provides insights into how to support children's remote learning in the future.

10 Maldondao, J. E. & De Witte, K. (2020). The effect of school closures on standardised student test outcomes. *KU Leuven*. Retrieved from: https://feb.kuleuven.be/research/economics/ces/documents/DPS/2020/dps2017.pdf

11 See *Annex 1* of this report for more information on the socio-demographics and the geographical distribution of the sample. The data analysed in this report focus on remote schooling. Data around children's online opportunities and risks during the pandemic will be reported in a future report.

12 The data collection in Italy was supported by UNICEF in cooperation with OssCom, Research Centre on Media and Communication, Università Cattolica del Sacro Cuore, Milano.

2. Access and use of digital technology during lockdown

For all children to benefit equally from digital remote learning, a number of conditions must be met. There must be affordable and stable access to the internet, as well as high-quality digital devices that support video conferencing and digital educational platforms. Children need time to grow accustomed to new digital tools and teaching modalities to ensure they remain engaged and motivated learners. And parents, teachers and caregivers must be able and ready to support children during this transition.

In Italy, most children were already avid users of digital technologies and have deeply integrated the internet into their everyday lives.[13] According to a nationally representative survey conducted in 2017, 88 per cent of children in Italy aged 9–16 use the internet at home every day. However, the COVID-19 lockdown changed the way children engaged with the internet and digital technologies. The internet was no longer just an optional space for learning, social engagement or entertainment; it quickly became the only way for children to interact with friends, to continue their education, and to connect with family members living outside their homes.

While internet access was clearly critical during lockdown, the availability of devices gained increased relevance. We found that 27 per cent of parents reported that they did not have enough digital devices for everyone to engage in remote learning or remote working when needed. Many households purchased new devices, which was likely necessary to allow multiple family members to go online simultaneously, or to replace outdated devices that did not adequately support remote learning and working. Almost half of all families acquired at least one new smartphone during lockdown, while 41 per cent of families acquired at least one new computer.[14]

Schools also provided crucial support during this time. Forty-six per cent of families in our sample received new digital devices from their child's school, and one in four families was provided with a paid internet connection to enable remote learning. This illustrates the importance of the Government of Italy's decision to invest considerable financial resources to support remote learning for children.

Families in our sample with a median household size of four people reported owning three smartphones, two televisions, two computers and one tablet in their home on average, after acquiring new devices.[15] Despite concerns that younger children might miss out on educational resources or opportunities – since they typically have more limited access – in our sample we found that children's access to digital devices at home during lockdown did not vary between younger and older children.

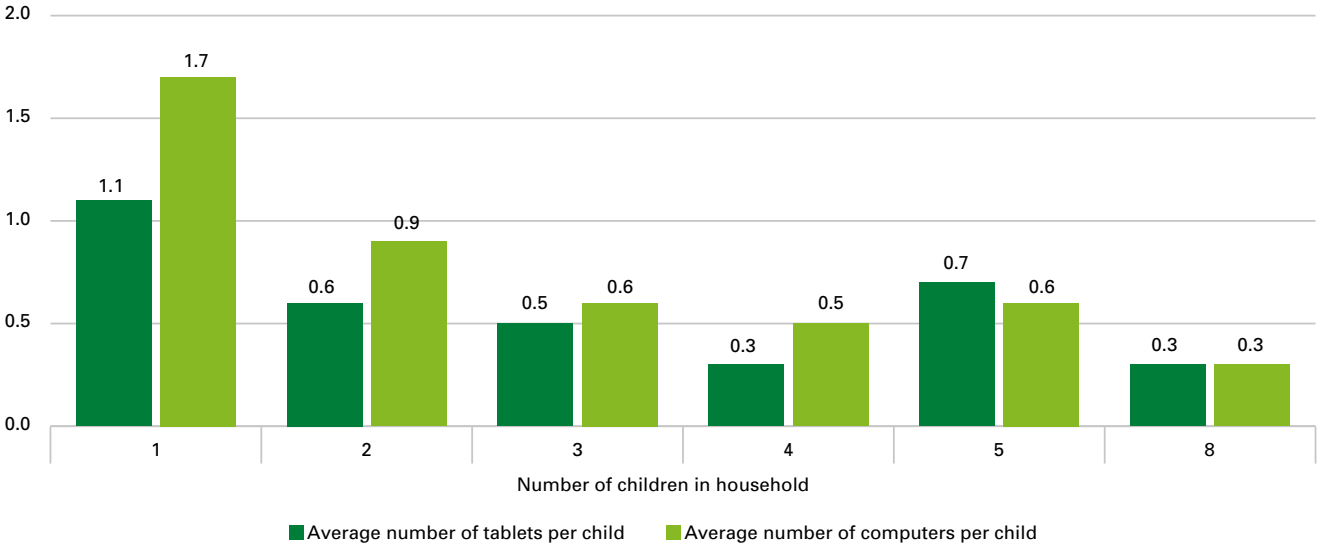
However, inequalities in access to devices among internet-connected households still exist. While larger households generally own more devices, we found that the number of available devices per child tends to decrease with household size *(see Figure 1)*. This could present a major barrier to children's participation in remote learning if, for example, a child cannot join classes or do their homework because all appropriate digital devices are used by someone else.

13 For the latest European data on children's internet use see Smahel et al., 2020.

14 Newly acquired devices include those bought by the family, provided by the employer or the school, or lent by friends or family.

15 These are rounded values. The precise mean values in our sample were 2.9 smartphones, 2 televisions, 1.8 computers and 1 tablet.

Figure 1: Average number of learning devices (tablets and computers) per child, by total number of children in the household during lockdown

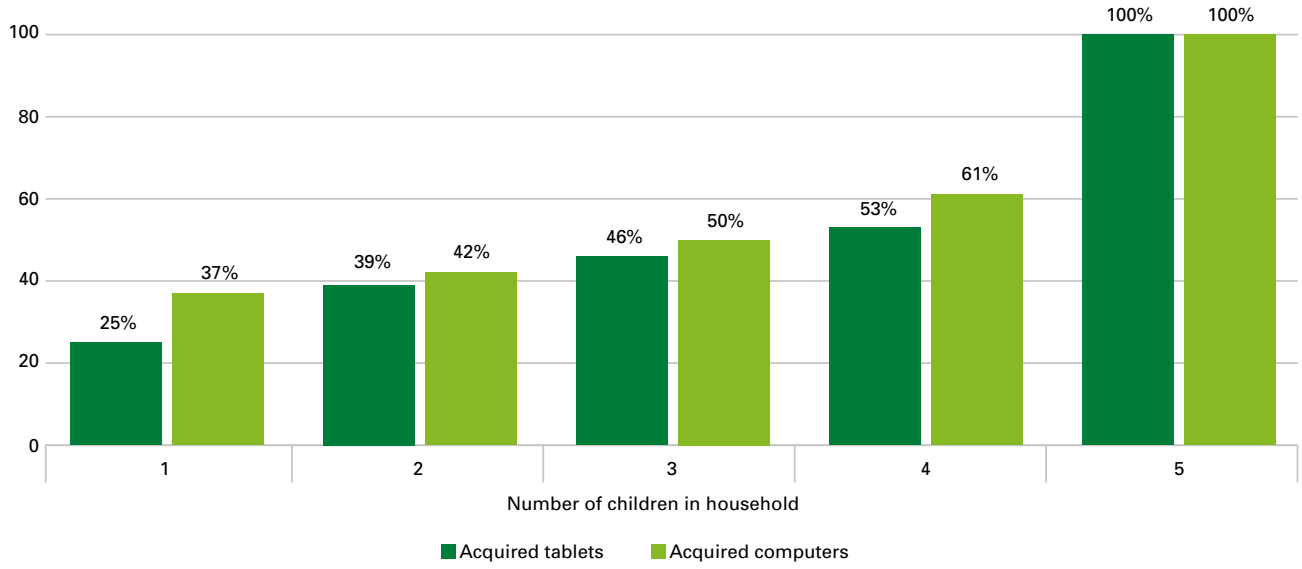


N = 1,000 households with internet-using children
Source: The KiDiCoTi project coordinated by the European Commission Joint Research Center.

As expected, households with more children were more likely to acquire at least one additional computer or tablet, compared to households with fewer children *(see Figure 2)*. This suggests that households with more children that cannot rely on government or school provisions, may face additional financial challenges because they will incur higher costs to support remote learning. Given that Telecom Italia (TIM), one of the largest telecommunication providers in Italy, reported traffic increase of 63 per cent and 36 per cent in fixed and mobile networks respectively, families might also encounter connectivity issues if a greater number of devices are used simultaneously on a single internet connection.[16]

16 OECD. (2020). Keeping the internet up and running in times of crisis. OECD. Retrieved from: https://www.oecd.org/coronavirus/policy-responses/keeping-the-internet-up-and-running-in-times-of-crisis-4017c4c9/

Figure 2: Percentage of households that acquired at least one additional tablet/computer during lockdown, by number of children in the household



N = 676 internet-using children for tablets; 684 internet-using children for computers
Source: The KiDiCoTi project coordinated by the European Commission Joint Research Center.

In summary, children require access to both digital devices and sufficient levels of connectivity to participate in digital remote learning activities. Costs related to ensuring access to devices and connectivity can be a major barrier to remote learning. Our findings indicate the aptness of the decision by the Italian Government to allocate significant resources to provide children with devices and connectivity; and that larger families may require more financial support to enable all children to participate in remote learning activities.

At the same time, access to devices and a proper internet connection is only one piece of the puzzle. While devices and connectivity are necessary enablers, how much children engage with and benefit from remote learning depends on a range of other factors, such as children's digital and transferable skills, how and when they connect with teachers, the tools and resources available to them, the inclusivity and accessibility of remote learning content, and how well their parents can create a conducive remote learning environment at home.

Finally, it is again worth noting the estimates from ISTAT that approximately one third of Italian children were unable to access remote learning due to a lack of internet connectivity or devices at home. Even in our sample of children with internet access, 6 per cent of respondents said that they were unable to take part in remote learning due to a poor internet connection. Additional resources for families and improved connectivity across Italy are important if we hope to leverage the full potential of remote learning and avoid exacerbating existing inequalities.

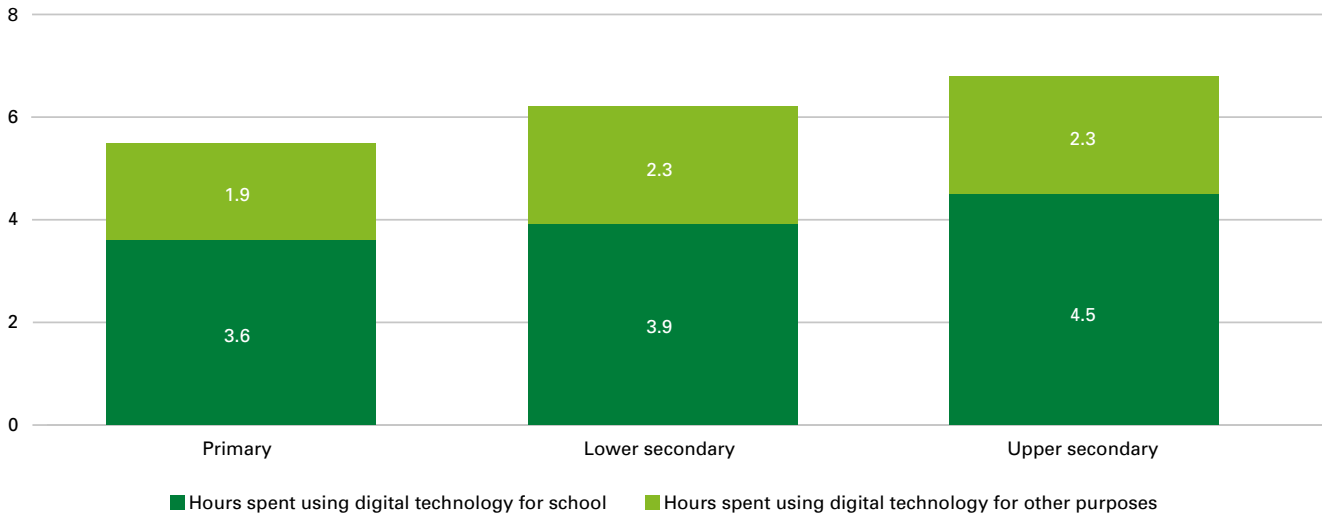
3. Children's experiences of remote learning in Italy

This section of the report explores children's engagement in schooling and non-schooling activities online during lockdown, including their experiences with, and feelings about, various aspects of remote learning. We focus specifically on findings by school level to identify the types of challenges and opportunities children experience at different ages. Throughout this report, primary school students are those aged 10–11, lower secondary are children aged 12–14, and upper secondary are those aged 15–18.

In line with the Italian Ministry of Education's early study, we found that almost all children (93 per cent) included in this study reported some kind of change in teaching arrangements as a direct result of the COVID-19 lockdown.[5,6] A majority (75 per cent) of children reported that their schools moved all their classes online.

Lockdown measures, coupled with online learning activities, have resulted in children spending more time using digital technology than before. Increases in screen time among young people has long been a source of concern for parents and educators, although public perception around this topic seems to have changed considerably in the context of this pandemic.[17,18] Older children spend more time per day using digital technology compared to their younger peers, both for leisure and for school-related activities *(see Figure 3)*. Upper-secondary-aged children spend almost seven hours a day online, compared to 5.5 hours per day for primary-aged students.

Figure 3: Average number of hours spent by children using technology on a typical weekday, by school level



N = 1,028 internet-using children
Note: Data are self-reported. School levels are based on the child's declared age.
Source: The KiDiCoTi project coordinated by the European Commission Joint Research Center.

17 Kardefelt-Winther, D. (2017). How does the time children spend using digital technology impact their mental well-being, social relationships and physical activity? An evidence-focused literature review. *Innocenti Discussion Paper 2017-02*. UNICEF Office of Research – Innocenti, Florence. Retrieved from: https://www.unicef-irc.org/publications/pdf/Children-digital-technology-wellbeing.pdf

18 Blum-Ross, A., & Livingstone, S. (2018). The trouble with "screen time" rules. In Mascheroni, G., Ponte, C. and Jorge, A. (2018). *Digital parenting: The challenges for families in the digital age* (pp. 179–187). Retrieved from: https://www.nordicom.gu.se/sv/publikationer/digital-parenting

When compared to the latest nationally representative data for Italy, this marks a considerable four-to-five-hour increase in children's screen time per weekday. In 2017, Italian children spent, on average, 2.6 hours online per day, ranging from 1.5 hours for primary-aged children to 3.3 hours for children in upper-secondary education. But the increase in children's time online during lockdown can be directly attributed to remote learning activities (*see Figure 3*). In fact, whereas older children used to spend about 3.3 hours online in total per weekday, our data indicate they are now only spending 2.3 hours using digital technology for non-schooling activities, perhaps due to an overall sense of saturation with screens during lockdown and remote-schooling period. There were no considerable gender differences related to time spent online, which is in line with prior studies within and outside of Europe.[19]

When thinking about the impact that closing educational facilities has had on children, it is important to remember that, in addition to education, schools serve as a place for children to interact with peers and teachers, and to develop critical social and emotional skills inside and outside the classroom. An increase in the time spent online overall should be viewed in relation to a lack of access to outdoor areas, sports facilities, and places to meet with friends during lockdown. The time children spent online doing non-schooling activities may have been their only opportunity to connect with friends, relax or even to exercise. These might all be important avenues for children to cope with an unusual and challenging situation.

Seeking to reduce children's time online during this period might not be the most beneficial approach. Rather, families, with support from local governments and other organizations, should find new ways to encourage and promote participation in physical exercise and play for children during times of school closures, either indoors through exercise games or in safe outdoor environments.[20]

3.1. Interactions between students and schools

Video conferencing (e.g., Zoom, Google Hangouts, Skype) was the digital tool most frequently used by schools to facilitate remote learning at every education level, followed by messaging apps (WhatsApp, Messenger, etc.), emails, and virtual learning environments (e.g., Moodle, Microsoft Teams, Google Classroom) *(see Figure 4)*.[21] Traditional media also remained popular; books, exercise sheets and papers continued to be widely used, followed by phone calls, and text messages.

In the context of remote learning, video conferencing and virtual learning environments have a clear pedagogical use for delivering synchronous learning interactively through lectures and group activities. Other tools – both digital and non-digital – that can enable more targeted, one-on-one interactions between teachers and students (e.g., email, SMS, and phone calls) also featured strongly in children's remote schooling. It is therefore promising that a majority of children in our sample used these tools to support their learning. However, remote learning brings considerable challenges for students, teachers, and parents which means that the quality of the education delivered and children's ability to learn and retain knowledge from remote platforms remains unclear. OECD data from 2018 show that half of Italian teachers had not received formal training in how to use technology for teaching purposes, with many of them reporting not feeling prepared to use it.[22] A lack of training for teachers could compromise the quality of remote teaching, reducing the effectiveness for children. Moving forward, it may be necessary to strengthen teachers' digital skills and to prepare them with pedagogical competencies tailored specifically for remote learning environments.

19 Livingstone, S., Kardefelt Winther, D., & Saeed, M. (2019). *Global Kids Online Comparative Report, Innocenti research report*. UNICEF Office of Research – Florence. Retrieved from: https://www.unicef-irc.org/publications/1059-global-kids-online-comparative-report.html

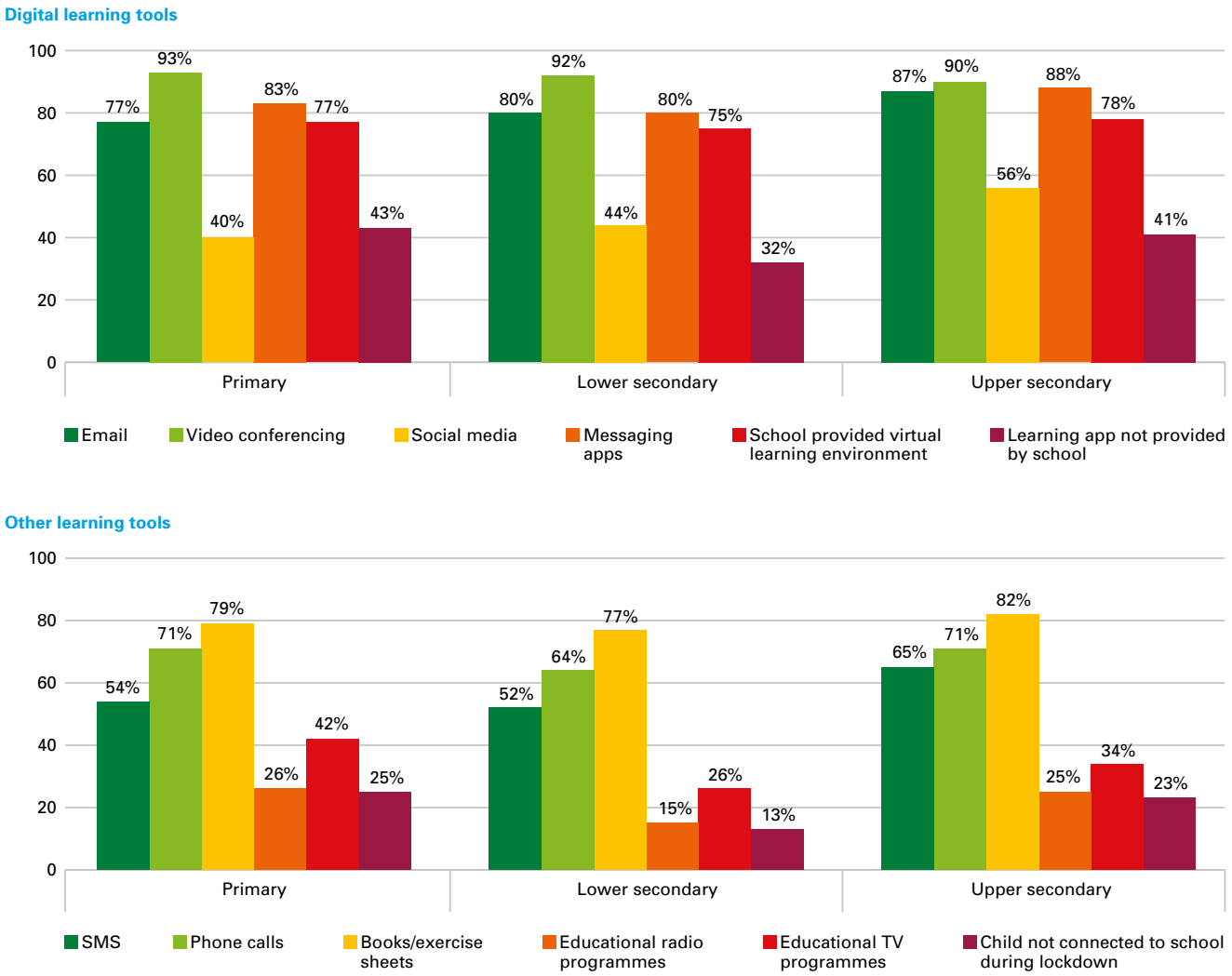
20 Efforts to reduce screen-time do not automatically increase participation in physical activity, as demonstrated through longitudinal research. Promoting physical activity in its own right may be a more effective option.

21 The various educational tools in this report are defined as follows: Video chat or video conferencing (e.g. Zoom, Hangouts, Skype, WebEx); Texts (e.g. SMS); Social media (e.g. Facebook, Instagram, TikTok, etc.); Messenger apps (e.g. WhatsApp, Messenger, Signal, Telegram, etc.); School-provided Virtual Learning Environment (e.g. Microsoft Teams, Google classroom, Moodle); A learning app or digital platform not provided by school (e.g. Padlet, Khan Academy).

22 OECD (2020), *TALIS 2018 Results (Volume II): Teachers and School Leaders as Valued Professionals*, TALIS, OECD Publishing, Paris, https://doi.org/10.1787/19cf08df-en

Similarly, effective uptake of learning in the household is influenced by teacher and parental support, regardless of modality (digital or non-digital). Recent global evidence indicates that it is critical for educational institutions to engage with learners and families for remote learning to be effective.[23] In this respect, it is promising that most students (75 per cent) in our sample said their school provided digital-messaging apps to facilitate communication between schools and families. In addition, children at all school levels (89–94 per cent) overwhelmingly report engaging in some form of online activity with their teachers during lockdown.

Figure 4: Use of digital and non-digital teaching modalities during the COVID-19 lockdown, by school level



"Were you using any of the following for school activities while classes at your school were changed due to the coronavirus?"
N= 952 internet-using children. Note: This was a multiple choice question, so responses do not add up to 100%
Source: The KiDiCoTi project coordinated by the European Commision Joint Research Center.

23 Alban Conto, C., Akseer, S., Dreesen, T., Kamei, A., Mizunoya, S., Rigole, A. (2020). COVID-19: Effects of school closures on foundational skills and promising practices for monitoring and mitigating learning loss. *Innocenti Working Papers* no. 13, UNICEF Office of Research – Innocenti, Florence. Retrieved from: https://www.unicef-irc.org/publications/1144-covid19-effects-of-school-closures-on-foundational-skills-and-promising-practices.html

Recent analysis from 118 countries using the first round of the UNESCO-UNICEF-World Bank survey on national education responses to school closures found that, on average, 70 per cent of countries used a combination of digital and non-digital approaches to reach children at all school levels.[24,25]

Italy was no different and provided educational materials on television and radio channels, in addition to supporting online education. However, our findings show that educational television programmes were not used by the majority of the internet-using children surveyed, especially by older children. We find similar results for educational radio programmes. However, it is plausible that children with limited or no internet access, and therefore not included in our sample, might rely more on television or radio programmes to access educational content. Further research is needed on the impacts of using various modalities of remote learning as educational tools on learning outcomes, especially if not supplemented with targeted support from teachers or parents.

Across all grade levels, it appears schools in Italy managed to combine digital remote learning tools – especially video conferencing and digital learning environments – with more traditional paper-based learning materials (*see Figure 5*). The network map illustrates the relationships between different remote learning tools, indicating that broadcast media was not only least frequently used on its own, but also not frequently used in conjunction with other forms of remote learning. It also shows that use of digital remote learning tools is associated with both online and offline communication from teachers.

However, there is still a lack of evidence on how the respective modalities are used together and if they are effective for achieving learning outcomes. This is an important area for future research on the remote learning experiences of children, in Italy and globally, during the COVID-19 lockdown. Furthermore, this report does not include children at the pre-primary age level, who globally are far less likely to have been reached by remote learning policies.[26] This gap in the implementation and understanding of remote learning for the youngest students should be a priority, especially given recent estimates suggesting that every dollar spent in increasing pre-primary enrollment returns US$9 in benefits to society.[27] Special attention should be given to understanding the equity effects of various remote learning modalities for children from different economic backgrounds, migrants, and those living with disabilities, who may otherwise be left behind.

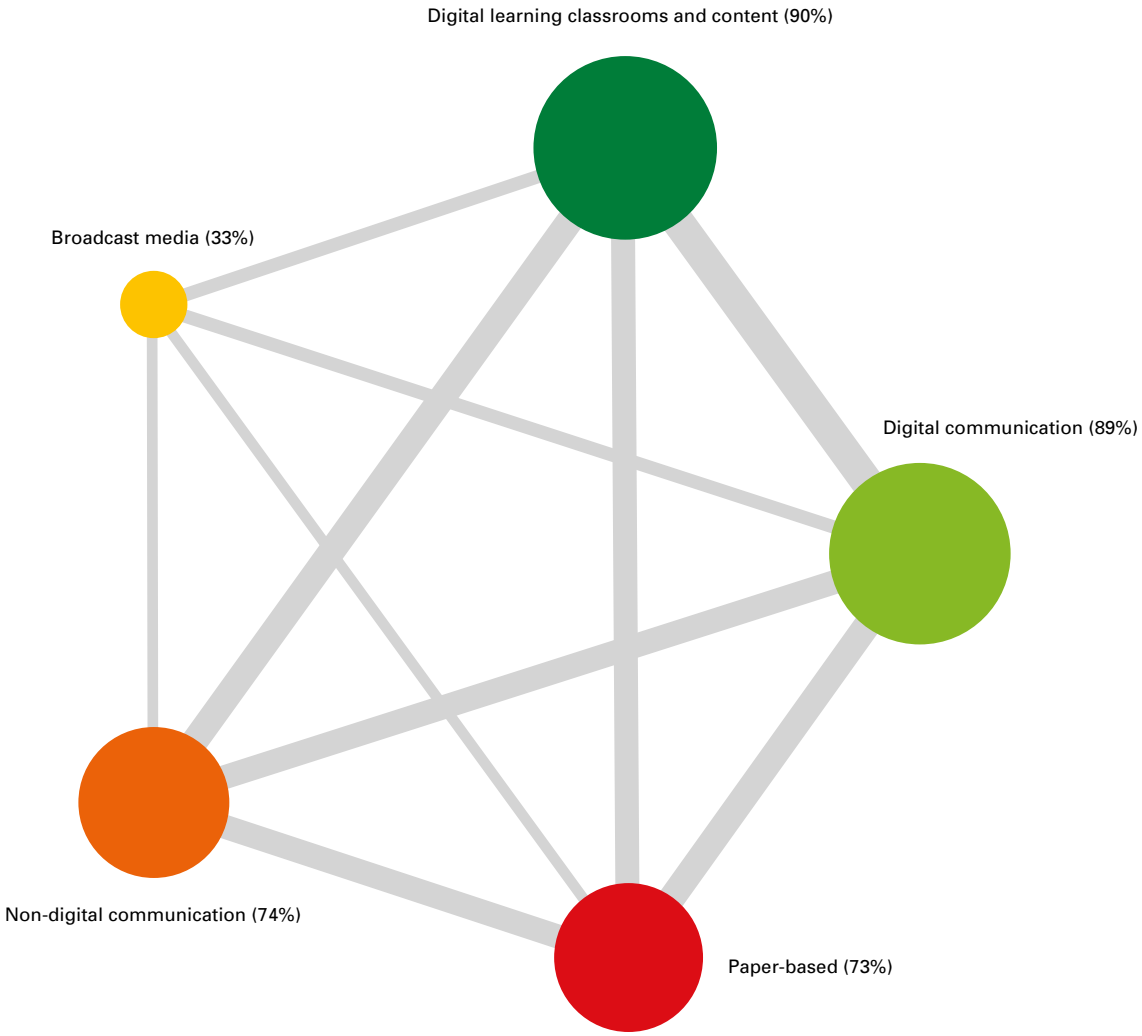
24 UNESCO, UNICEF and the World Bank (2020). *What have we learnt? Overview of findings from a survey of ministries of education on national responses to COVID-19.* Paris, New York, Washington D.C.: UNESCO, UNICEF, World Bank. Retrieved from: https://data.unicef.org/resources/national-education-responses-to-covid19/

25 Alban Conto, C., Akseer, S., Dreesen, T., Kamei, A., Mizunoya, S., Rigole, A. (2020). COVID-19: Effects of school closures on foundational skills and promising practices for monitoring and mitigating learning loss. *Innocenti Working Papers* no. 13, UNICEF Office of Research – Innocenti, Florence. Retrieved from: https://www.unicef-irc.org/publications/1144-covid19-effects-of-school-closures-on-foundational-skills-and-promising-practices.html

26 UNICEF. (2020). COVID-19 and School Closures: Are children able to continue learning. Retrieved 20 November, 2020, from https://data.unicef.org/resources/remote-learning-reachability-factsheet/

27 Muroga, A., Zaw H., Mizunoya S., Lin, H., Brossard, M., Reuge, N. (2020). COVID-19: A reason to double down on investments in pre-primary education, Innocenti Working Papers no. 2020-11, UNICEF Office of Research – Innocenti, Florence Retrieved from: https://www.unicef-irc.org/publications/1137-covid-19-a-reason-to-double-down-on-investments-in-pre-primary-education.html ; Nugroho D., Lin, H., Borisova, I., Nieto, A., Ntekim, M. (2020). COVID-19: Trends, Promising Practices and Gaps in Remote Learning for Pre-Primary Education, Innocenti Working Papers no. 2020-15, UNICEF Office of Research – Innocenti, Florence. Retrieved from: https://www.unicef-irc.org/publications/1166-covid-19-trends-promising-practices-and-gaps-in-remote-learning-for-pre-primary-education.html

Figure 5: Network map of the learning tools used by children during lockdown

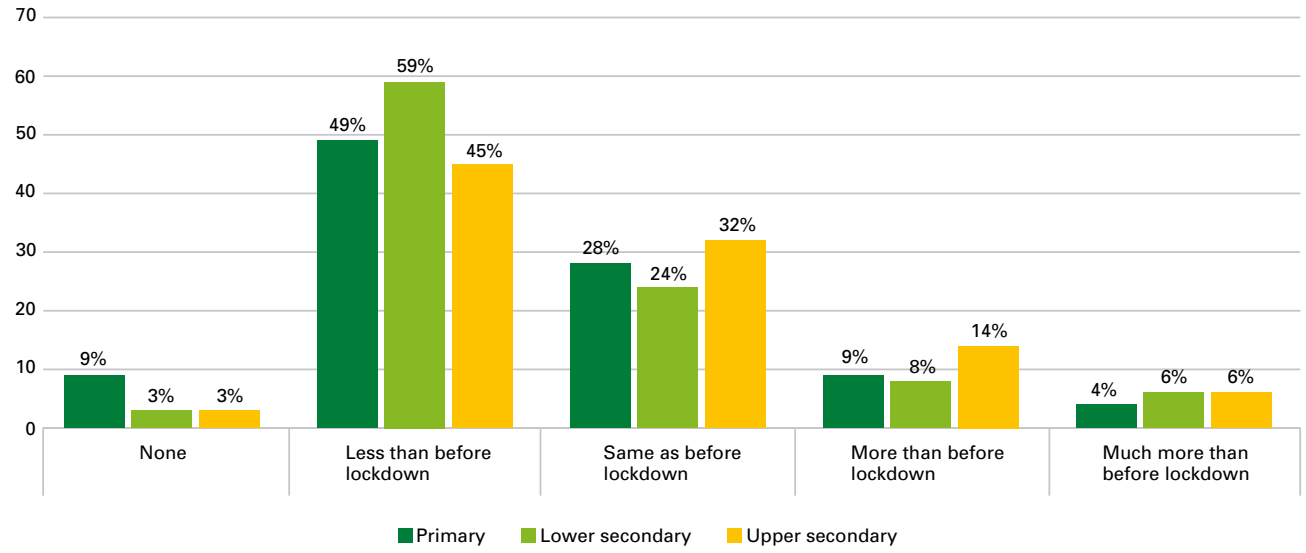


Note: the size of nodes and branches represent the frequency of use of any given remote learning mode, and the strength of binary association between any two given modes, respectively.
Remote learning tools have been categorized as follows: 1. Digital Communication tools: email, social media (e.g. Facebook, Instagram,TikTok, etc.), messenger apps (e.g. WhatsApp, Messenger, Signal, Telegram, etc.); 2. Digital learning classrooms and contents: video chat or video conferencing (e.g. Zoom, Meet, Hangouts, Skype, WebEx), digital platform or virtual learning environment by the school (e.g. Microsoft Teams, Google Classroom, Moodle), a learning app or digital platform not provided by school (e.g. Padlet, Khan Academy); 3. Non digital communication: texts (e.g. SMS) and phone calls; 4. Paper Based: books, exercise sheets/paper; 5. Broadcast media: TV and radio educational programmes.
Source: The KiDiCoTi project coordinated by the European Commision Joint Research Center.

3.2. Children's perceptions of remote learning

Moving from a regular and structured school experience to remote learning at home brings considerable change and disruption to children's lives. Even when considering homework or activities that are not necessarily done online, in addition to their online school hours, most children perceived a noticeable decrease in the time spent on school and homework overall *(see Figure 6)*. Such a decrease is unsurprising as many schools have had to reimagine the typical school day, making it unlikely that school hours would stay the same outside of a structured learning environment.

Figure 6: Amount of schoolwork (school hours and homework) during lockdown, by school level



"How much schoolwork (school hours and homework) did you have when your classes changed due to the coronavirus outbreak?"
N = 952 internet-using children
Source: The KiDiCoTi project coordinated by the European Commision Joint Research Center.

How easily children adapt to this change to the structure of their schooling will vary from one child to the next. Some may easily make the transition to remote learning while others might struggle, educationally or socially. Regardless, all children need a safe and comfortable learning environment, which prompted us to ask how they felt about their new schooling reality.

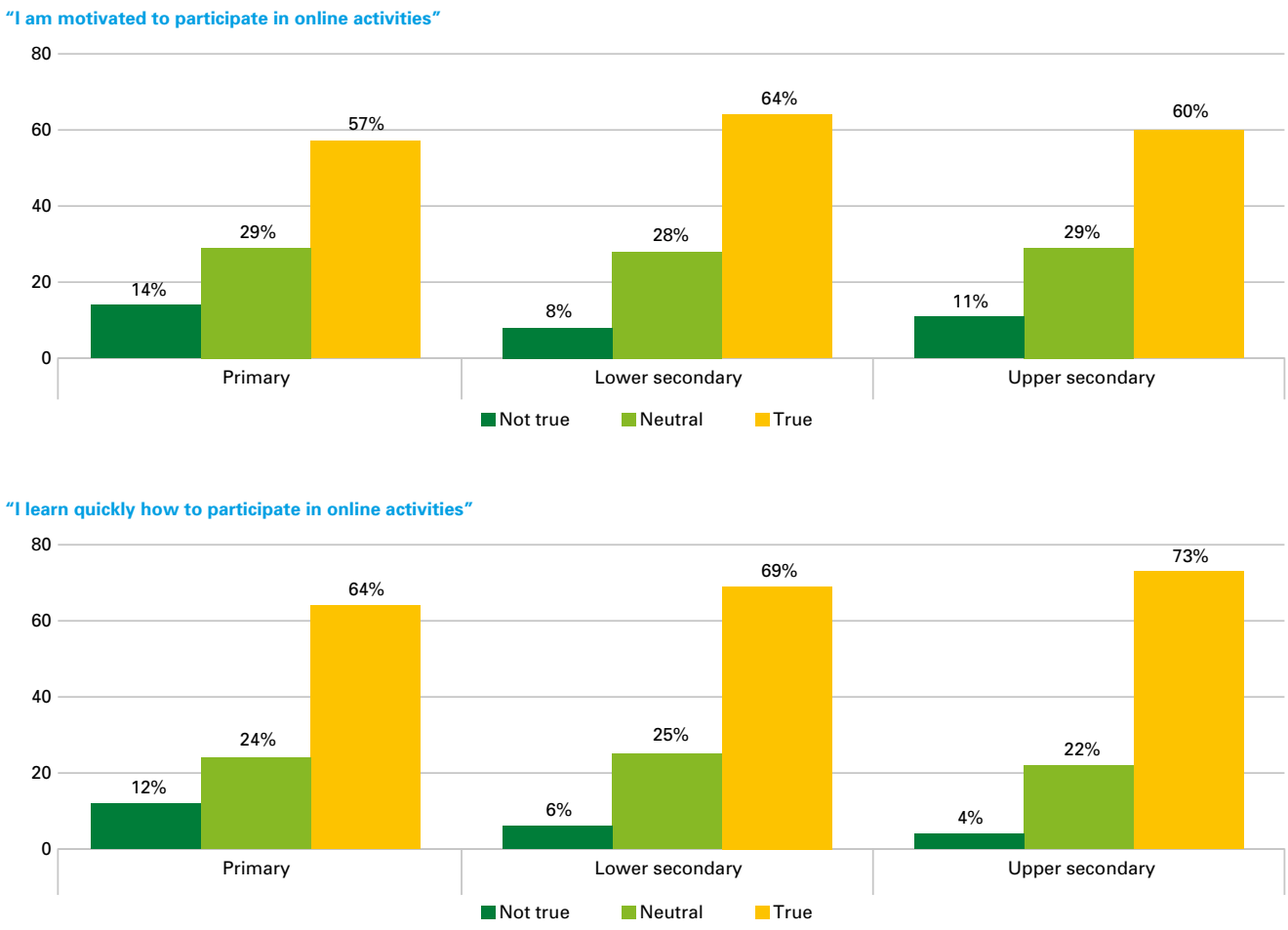
It was encouraging to see that many students reported being enthusiastic and optimistic about remote learning and felt confident in their ability to adapt to this new learning environment *(see Figure 7)*.

Across each school level, from primary to upper secondary, a majority of children (57–64 per cent) reported that they were motivated to participate in online activities. Similarly, most (64–73 per cent) reported feeling confident about learning quickly how to participate in online activities, though primary-age children were somewhat less likely to report this compared to older children.[28] This could be because younger children,

28 Differences across school levels are statistically significant for the following statements:
- I learn quickly how to participate in online activities
- I worry that it will be difficult for me in online activities
- I feel helpless when I have to do school activities and homework online

who already engage in fewer online activities overall, are also less confident about their digital skills compared to older children. Data from Italy show that in 2017, younger children reported lower skills on average than teenagers, and had not yet developed strong skills that would be needed in an online learning environment. For example only 20 per cent of 9-to-12-year-olds reported strong critical thinking skills compared to 58 per cent of 13-to-17-year-olds.[29] This could have implications for younger children's ability to feel confident in an online learning environment and to benefit from remote learning, especially if they have less frequent interactions and conversations with teachers.

Figure 7: Children's motivations in relation to online learning, by school level

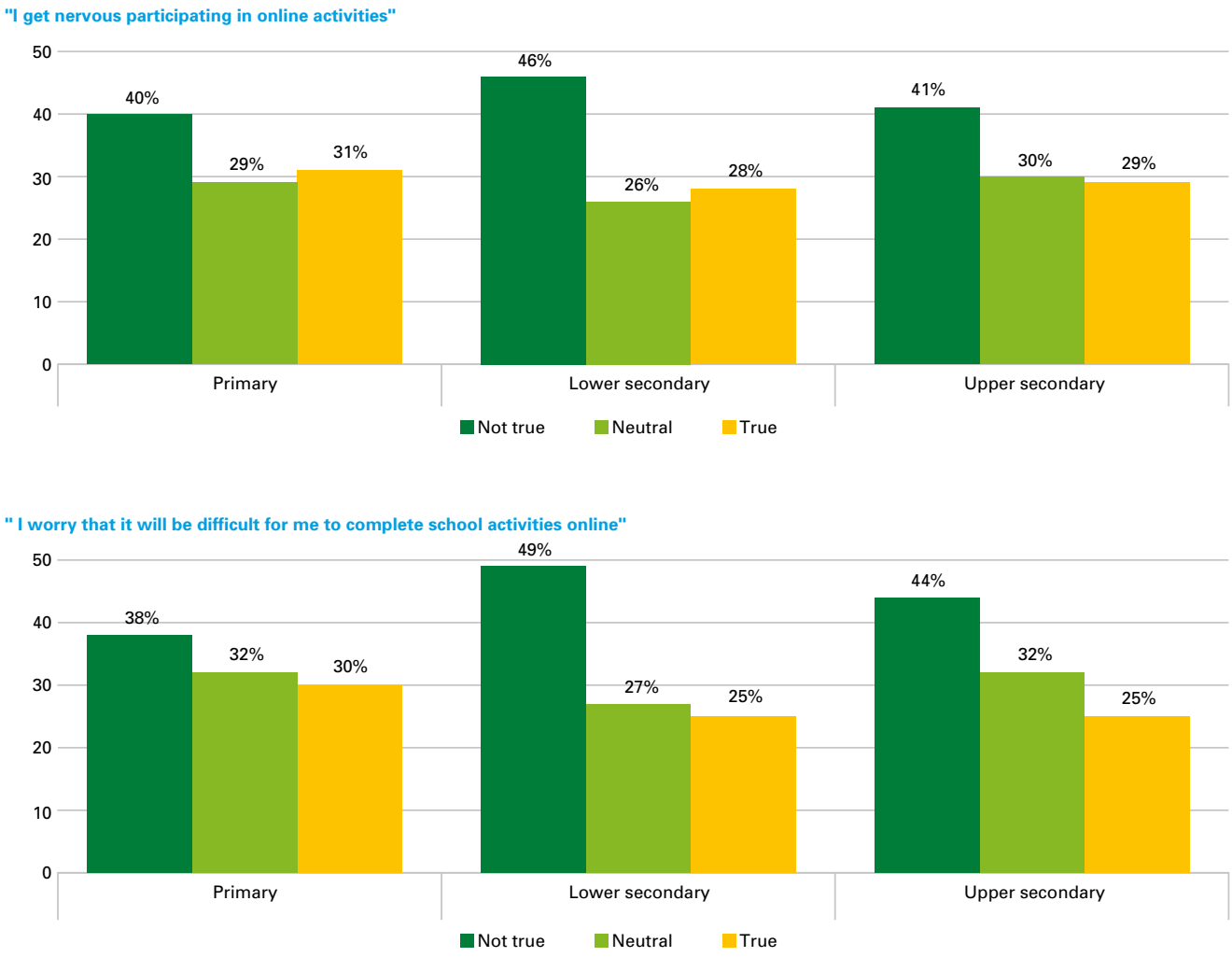


N = ~940 internet-using children
Source: The KiDiCoTi project coordinated by the European Commision Joint Research Center.

Around one in four children expressed that they were worried or nervous to participate in online activities or complete school activities online *(see Figure 8)*. Our analysis shows no clear gender differences and small age differences with regards to children's worries.

29 Mascheroni, G. e Ólafsson, K. (2018a). *Accesso, usi, rischi e opportunità di internet per i ragazzi italiani. I risultati di EU Kids Online 2017*. EU Kids Online e OssCom. Retrieved from: https://www.lse.ac.uk/media-and-communications/assets/documents/research/eu-kids-online/reports/EU-Kids-Online-Italy-report-06-2018.pdf For an English summary see: Macheroni, G & Ólafsson, K. (2018b). Access and use, risks and opportunities of the internet for Italian children. EU Kids Online. Retrieved from: https://www.lse.ac.uk/media-and-communications/assets/documents/research/eu-kids-online/reports/Executive-summary-Italy-june-2018.pdf

Figure 8: Children's concerns in relation to online learning, by school level



N = 940 internet-using children
Source: The KiDiCoTi project coordinated by the European Commision Joint Research Center.

Children's concerns may in part be related to their ability to socialize online. In addition to delivering educational content, schools offer an important space for social interaction and experiential learning; these aspects may be hard to replicate in a remote learning environment. This is especially true for younger students who require more attention from their teachers and are developing their social and emotional skills, and also have less experience, both in the educational system and of interacting with others online. This transition may be relatively easier in Italy as a result of the widespread use of the internet among children, but could prove more challenging for children in countries where internet access and use is lower.

Overall, 35 per cent of children reported that they worried about being unable to keep up with schoolwork while classes changed during lockdown, but a majority were either not worried or felt neutral about it.

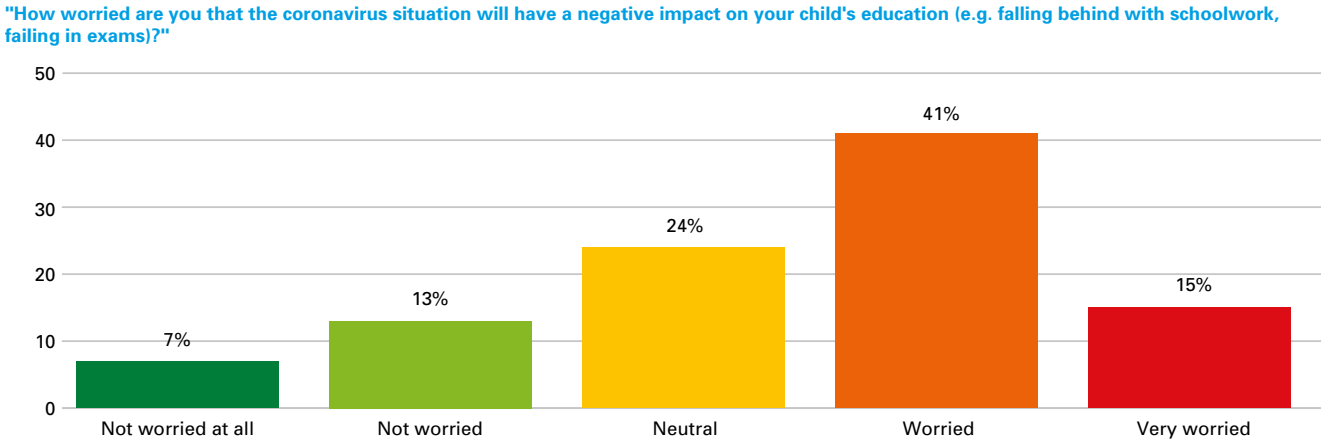
In light of the anxieties some children face in relation to remote schooling, there is an opportunity for schools to engage further with children and help them to navigate this new schooling reality. However, many children are optimistic about remote schooling overall, which could make solutions easier to implement.

4. Parental support and perspectives on remote learning

With the increase in internet use during the COVID-19 pandemic, parents and caregivers play an even more central role in helping children benefit from online opportunities while also enabling them to use the internet more autonomously, both for schoolwork and other activities.

It is understandable then that parents might share their children's worries about remote learning or feel overwhelmed by this new task. While more than one in three children reported worrying about being unable to keep up with schoolwork due to lockdown, more than half of their parents were worried or very worried about the negative impact the pandemic might have on their children's education *(see Figure 9)*. Parents with higher education levels (tertiary or post-tertiary education) were somewhat more likely to worry about the impact of lockdown on their children's education (56 per cent and 59 per cent respectively) compared to parents with lower education (47 per cent).

Figure 9: Parents' long-term perceptions about the impact of COVID-19 pandemic on their child's education



N = 1,028 parents of internet-using children
Source: The KiDiCoTi project coordinated by the European Commision Joint Research Center.

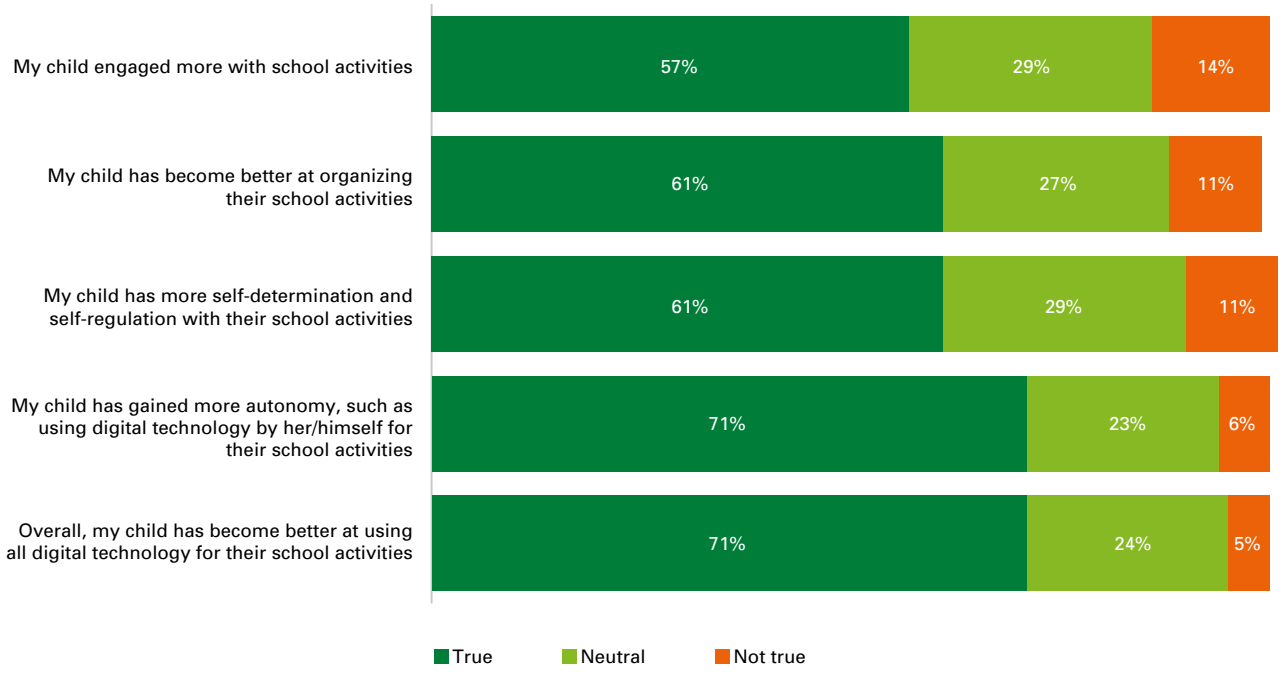
It is encouraging to note that 92 per cent of parents said they possessed sufficient digital skills to support their children's remote learning. These skills will be critical to help parents understand new technologies, navigate new remote learning platforms, and find solutions to mitigate their concerns over their child's education.

However, 28 per cent of parents also said they did not have enough time to support their children's learning and school activities during lockdown. In addition, 27 per cent of parents in our sample did not engage in any extra educational activities with their children outside those provided by the school.

As we might expect, this time constraint varies depending on parents' working arrangements. Parents who were able to go to their workplace in person reported greater time constraints in supporting their children's remote learning compared to those working remotely. These findings reflect results from a survey by Università Bicocca di Milano that 66 per cent of employed mothers believe remote schooling "is not compatible with work", and 30 per cent "have considered leaving work to support their children in case remote schooling continued".[30] Given that parental engagement has a strong association with learning outcomes in general, policies to support parents' flexible work arrangements and work-life balance may be particularly important.[31]

Despite these potential barriers and anxieties, many parents held positive views about their children's online schooling and skills development, with 57 per cent believing their children engaged more with school activities during lockdown compared to the pre-lockdown period *(see Figure 10)*. In terms of skills development, 61 per cent of parents believe their children became better at organizing their school activities as compared to the pre-lockdown period and more than 70 per cent of parents surveyed said their children were more autonomous while using digital technology for school.

Figure 10: Parents' perceptions of remote learning and their children's engagement and skills development



N = ~ 1,016 parents of internet-using children. N varies by statement.
Source: The KiDiCoTi project coordinated by the European Commision Joint Research Center.

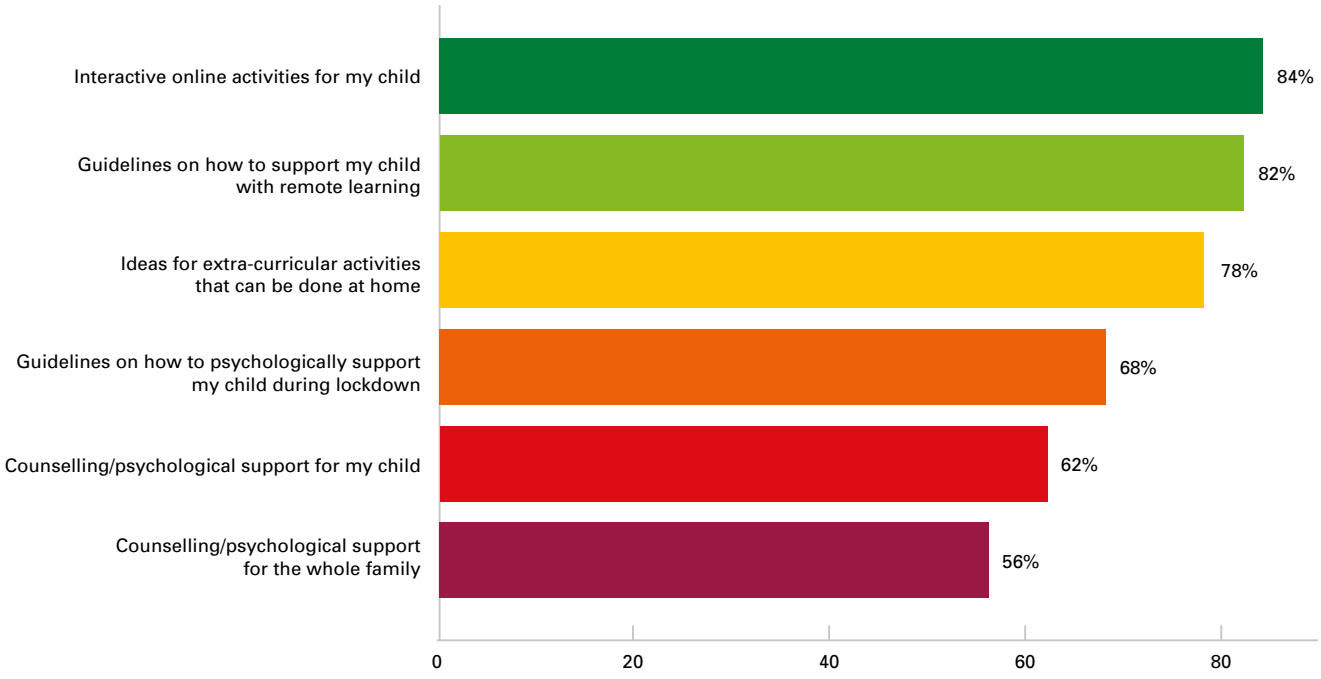
30 Pastori, G., Mangiatordi, A., Pagani, V., & Pepe, A. (2020). Che ne pensi? La didattica a distanza dal punto di vista dei genitori. Università degli Studi di Milano Bicocca. Retrieved from: https://www.unimib.it/comunicati/didattica-distanza-65-cento-delle-mamme-lavoratrici-non-ritiene-conciliabile-lavoro

31 Brossard, M., Cardoso, M., Kamei, A., Mishra, S., Mizunoya, S., Reuge, N. (2020). Parental engagement in children's learning: Insights for remote learning response during COVID-19. *Innocenti Research Briefs* no. 2020-09. UNICEF Office of Research – Innocenti, Florence. Retrieved from: https://www.unicef-irc.org/publications/1091-parental-engagement-in-childrens-learning.html

Recognizing that parents may feel increasing pressures related to their child's education during the COVID-19 pandemic, we asked how schools could better enable them to support their children's learning.

The majority of respondents wanted educational activities that allow for interaction between students, followed closely by guidelines on how to support children's remote learning (82 per cent) *(see Figure 11)*. A slightly lower percentage of parents suggested psychological guidelines, counselling, or psychological support for children and for the whole family. Taken together, these findings highlight, in addition to learning, schools could do more to address the well-being and mental health of children that may improve the overall remote learning experience for both children and parents.

Figure 11: Types of support parents would like from their child's school



N = 1,028 parents of internet-using children
Source: The KiDiCoTi project coordinated by the European Commission Joint Research Center.

5. Conclusions

As one of the first countries to deploy digital remote learning solutions at a large scale, and enforcement of a strict lockdown, the experiences of children and parents in Italy with remote learning can provide important insights to countries that face similar challenges.

A general takeaway from the COVID-19 lockdown in relation to children's digital use is that the internet, which was before an important but optional medium for learning, socializing and leisure activities, became the primary way for many children to interact with school, friends and family.

While the findings of this report represent internet-using children only, special care should be taken to support the potentially 3 million Italian children who have been unable to engage with critical services, such as remote learning, due to a lack of internet access or adequate devices.

Important inequalities also exist among internet-using families. Some of these have become more apparent during lockdown, highlighting that good-quality digital devices and a stable internet connection are necessary preconditions for remote learning. For example, among the internet-using children surveyed in this study, six per cent were unable to take part in remote learning due to a poor internet connection. Many families, especially larger families, had to acquire new digital devices to support their children's remote learning. And 27 per cent of families reported not having enough devices to support remote schooling or work needs. This could place families from lower socio-economic backgrounds under additional financial stress during the already-difficult economic circumstances resulting from a global pandemic. Providing additional public resources for families from low-income households and households with many school-aged children is therefore an important step to develop a more equitable remote learning system that can be leveraged in times of crisis. The private sector should be engaged to support remote learning through subsidizing devices, connectivity, and zero-rating educational content.[32]

During lockdown, many parents had to take on the role of a teacher in addition to their regular daily responsibilities. While most parents felt that they possess the digital skills and know-how to support their children's remote learning, almost one third said they did not have enough time to support their children's school activities. One way to address concerns around lack of time is to get more support from schools, such as guidelines around how parents can support their child's remote learning, which a majority of parents in our sample wanted. Employers should provide flexibility to employees taking on teaching responsibilities for their children, including by shortening workdays if necessary.

Children, especially younger children, also expressed some concerns and anxieties about their ability to partake in class activities during the remote-schooling period. Younger children may need more hands-on support from teachers and caregivers to provide them with the confidence and skills needed to benefit from their new schooling reality. The majority of children in this study reported strong and regular engagement with teachers during remote learning. Efforts should continue to build teachers' capacity to use technology and provide support and feedback to parents and children remotely. Financial investments to support the training of teachers in using digital technology for teaching and improved infrastructure in schools will be important to build a more resilient education system**.** A strategic deployment of the 'digital facilitator' included in the Italian National Plan for Digital Education (Piano Nazionale Scuola Digitale–PNSD) could be beneficial for many schools.[33]

32 Sometimes referred to as 'toll-free data' or 'sponsored data'.

33 https://www.istruzione.it/scuola_digitale/allegati/2016/pnsd_en.pdf

While more research is needed to understand the full impact of remote learning on children's learning and well-being in Italy and globally, it is reassuring to find that many children in Italy felt motivated to partake in remote learning and were confident in their ability to learn, even in this new environment.

Efforts by the Ministry of Education and individual schools to harness digital teaching tools were a direct and important response to the COVID-19 pandemic. However, there is also an opportunity to incorporate digital technologies as an educational tool in Italy's 'new normal'. Moving forward, as uncertainty remains about the possibilities of future school closures, investments should be made to understand how to create effective and resilient hybrid delivery systems that allow for remote learning when schools are forced to close. This should be implemented in tandem with investments in rigorous research on remote learning approaches that take advantage of the already-widespread use of digital technology by Italian children, to understand how to adjust and improve education systems.

Teacher training should be sensitive to this new reality, investing in educators' digital skills, their ability to develop and present online lessons, to manage a virtual classroom and technology within the physical classroom, and to tailor follow-up sessions with parents and caregivers. This requires additional research on how blended approaches that use technology in the classroom with face-to-face teaching can be optimally used.

However, while digital learning might become more commonplace, these efforts should be centered on equity and inclusion of all Italian children. Now is the time to prepare so that those children who were unable to participate in remote learning during the recent school closures are afforded those benefits in the future, all of which will require increasing investments in infrastructure and connectivity.

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Annex 1: Household demographics

The sample of parents (N=1,028) includes respondents from the three Italian macro regions: North (47 per cent), Centre (19 per cent), South and Islands (34 per cent). The sample reflects the actual distribution of households across the country *(see Table 1)*. There are no significant differences with respect to the number of children living within households across the three macro-regions *(see Table 2)*.

Table 1: Distribution of respondents across macro regions. Sample distribution well reflects the country's actual distribution

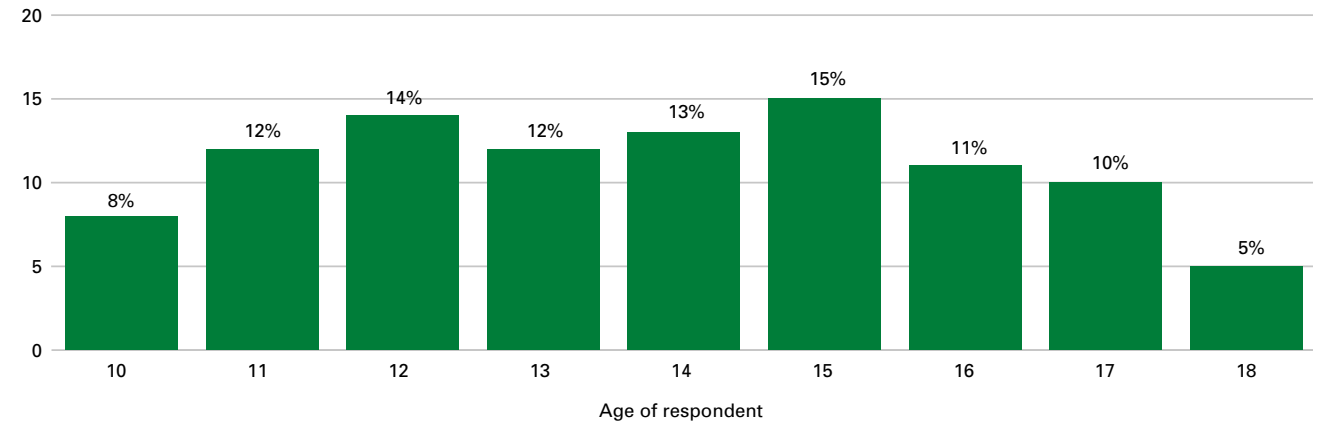
Macro-region	%
North	47
Centre	19
South and Islands	34

Table 2: Number of children living within the household, by region. N=1,016

Region	Mean	sd	min	max	N
Centre	1.729592	0.7801	0	5	196
North	1.733906	0.820444	0	8	466
South and Islands	1.728814	0.841498	0	5	354
Total	**1.731299**	**0.819494**	**0**	**8**	**1,016**

Furthermore, 60 per cent of the participating children are boys and 40 per cent are girls, all aged between 10 and 18 years of age *(see Figure 12)*.

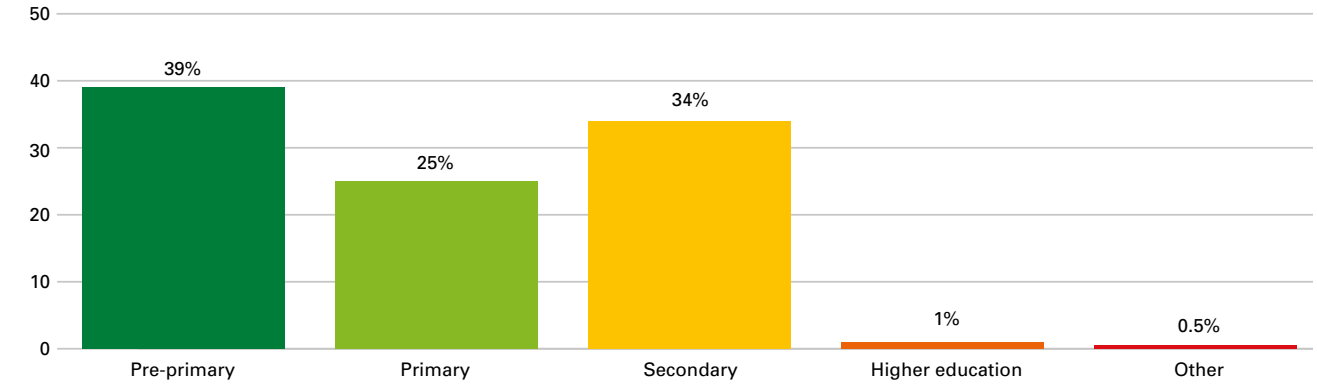
Figure 12: Age of participating children



N = 1,028 internet-using children
Source: The KiDiCoTi project coordinated by the European Commission Joint Research Center.

However, our sample had an uneven distribution of children by school level (*see Figure 13*). Specifically, 39 per cent of children living at home are enrolled in pre-primary school, 25 per cent of them go to primary school and 34 per cent are in secondary school.

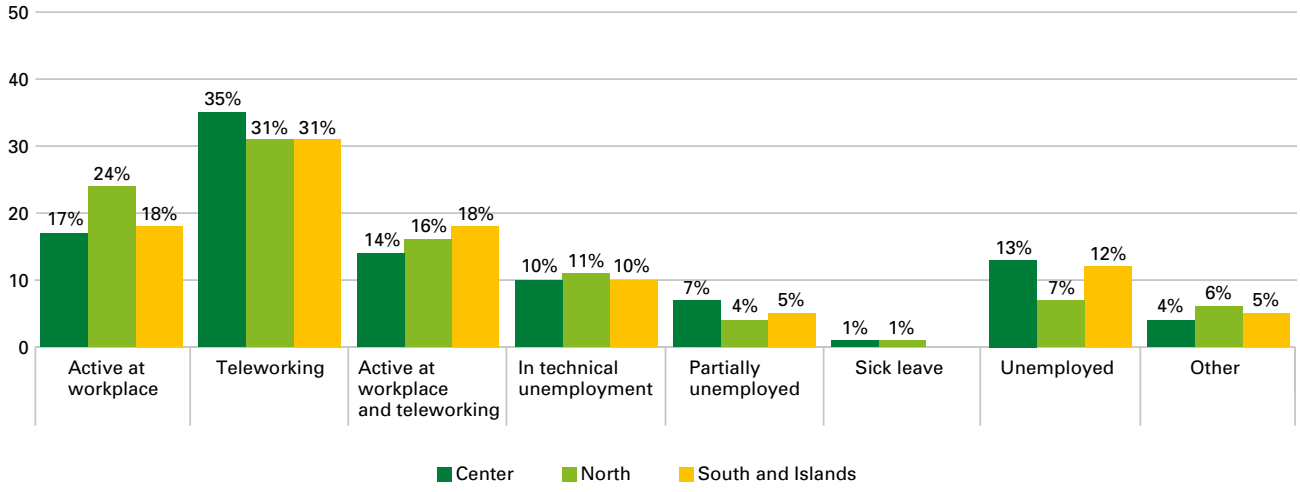
Figure 13: Number of children by school level (children living at home during lockdown)



N = 1,028 internet-using children
Source: The KiDiCoTi project coordinated by the European Commission Joint Research Center.

With regard to the employment status and mode of work of participating parents, a majority who were active in the workplace during lockdown were in the North of Italy *(see Figure 14)*. Conversely, there are no significant regional differences in the number of parents who engage with remote work.

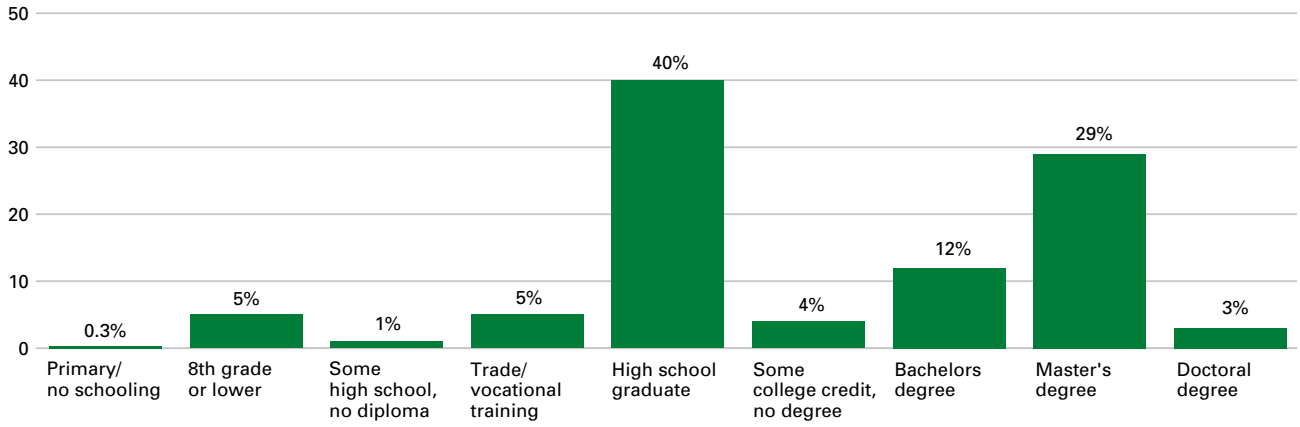
Figure 14: Parents' employment status and mode of work, by region



N = 973 parents of internet-using children
Source: The KiDiCoTi project coordinated by the European Commision Joint Research Center

The majority (40 per cent) of parents who participated in the survey hold a high school graduate diploma or equivalent *(see Figure 15)*. While 12 per cent of respondents hold lower-level degrees, the remaining 44 per cent hold higher-level degrees, such as bachelor degrees (12 per cent) and masters degrees (29 per cent).

Figure 15: Education level of participating parents



N = 1,028 parents of internet-using children
Source: The KiDiCoTi project coordinated by the European Commission Joint Research Center.

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