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DID THE COVID-19 PANDEMIC BOOST THE SPREAD OF DIGITAL DEVICES IN HOUSEHOLDS? THE ITALIAN SITUATION FROM AN EDUCATIONAL PERSPECTIVE

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ABSTRACT

Digital devices and platforms have been of great help in overcoming the COVID-19 pandemic period. In the educational field, they made it possible to cope with social distancing through the delivery of remote teaching. This was even more felt in Italy, which was among the first countries to be affected by the pandemic and among those hardest hit. In this article, we ask ourselves whether the digital endowments of families with young children at this time have increased compared to the pre-pandemic period and whether the families themselves would be able to withstand the impact of a new period of distancing. Comparing data from our pre- and post-pandemic questionnaires, and from interviews we conducted over the past two years, against data from the Italian National Institute of Statistics, we conclude that the digital endowment of families of primary school children is not significantly more robust than it was for families who faced the pandemic period. This evidence must be kept in mind by policymakers and educators, so that, if a new confinement period occurred, steps might be taken with the utmost urgency to bridge any dangerous digital divides.

KEYWORDS

COVID-19 pandemic, household's digital equipment, distance education, digital divide, educational poverty, families with adolescents and children, virtual learning environments, E-learning political and social aspects

1. INTRODUCTION

The COVID-19 pandemic not only accelerated the adoption of digital technologies for pandemic management and response (OECD 2021, Whitelaw et al. 2020), but also the spread of digital devices in households in several scenarios:

1. Since lockdown and social distancing measures forced many people to work and study from home, there was an urgent need to adapt digital equipment to new necessities by adopting laptops, tablets, microphones, and webcams; many families, who did not have these essential devices to cope with domestic confinement, had to somehow obtain them.
2. Video conferencing tools saw a quick increase in usage for business meetings, distance learning, and social events; as a result, the demand for webcams, large screens, and microphones increased as well.
3. Due to the need to shop in online stores, the demand for smartphones and computers to access e-commerce platforms increased.

Given the hectic times in which it became necessary to adjust the ICT equipment of institutions, businesses and households, several countries invested significant funds in purchasing digital equipment to promote distance learning. The Organisation for Economic Co-operation and Development (OECD 2021) estimated that 'about two-thirds of OECD and partner countries increased their education budget in response to the

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pandemic'. The consequent diffusion of devices and connections took forms that went beyond the classic patterns of technology adoption (Davies 1979; Rogers and Shoemaker 1971; Venkatesh et al. 2003), in some ways generating a spike in the representation curve of adoption trends (European Commission 2021), with effects that went beyond the classic geographic distinction between cities and small towns.

The pandemic also highlighted some dangerous effects of the digital divide (Beaunoyer et al. 2020; Ramsetty and Adams 2020), as the biggest driver of people's propensity and ability to stay at home and, therefore, to self-protect from contagion was the availability of adequate devices and high-speed Internet connections (Chiou and Tucker 2020).

Even in the most developed countries, a non-negligible number of families, did not have equal access to the digital equipment and telematics facilities, that have become indispensable for accessing smart working, e-commerce, telehealth-based care, and distance learning. Studies in a number of countries have found a significant relationship between the socioeconomic status of families and forms of digital divide in the exploitation of distance learning resources, whereby wealthier families had more educational opportunities for their children (Azubuike et al. 2021; Francis and Weller 2022; Martínez-Domínguez and Fierros-González 2022). In order to bridge this gap, which threatened to worsen already precarious situations of educational poverty, institutions and governments in many countries stepped in to provide devices and connections to underserved communities.

The pandemic also significantly boosted the spread of digital devices among children and adolescents, producing an impact on education, socialisation and entertainment for young people. This implied an increase in screen time for children and adolescents, which raised concerns about potential threats to their physical and mental health (Camerini et al. 2022; Pandya and Lodha 2021; Tso et al. 2022; Wong et al. 2021). For their part, parents became more aware of the need for monitoring tools and parental controls to manage their children's digital behaviours.

Based on these data and reflections, one might imagine that the diffusion of technologies among households, at least as far as our country is concerned, has reached a level that enables us to face future occurrences such as the COVID-19 pandemic with confidence in our level of preparedness.

The considerations we present in this paper, however, are not so comforting. Evidence of various kinds, from in-field and desk-based investigations, suggests that the digital endowments of Italian households are not so different from what they were before the contagion broke out in February 2020, despite the pressure that was exerted during the pandemic period to digitally equip families and despite school interventions to help families by providing free loaner devices.

The aim of the paper is thus to suggest an alternative reading to those that consider high levels of domestic technology diffusion as having been acquired, and to propose more in-depth lines of inquiry for the future, that will contribute to supporting informed decision making.

2. HOUSEHOLD ENDOWMENTS STRADDLING THE PANDEMIC

The ideas set forth in this paper arose serendipitously while our working group was engaged in the fifth edition of a survey that started fifteen years ago (Lazzari and Jacono Quarantino 2010) to investigate the ways, places, and times of communication by adolescents and children in physical spaces and on the Internet. In the course of the survey, which was based on a mixed-methods methodology of information collection through focus groups and questionnaire administration, we happened to compare some data with others collected before the COVID-19 pandemic and were surprised by what we found.

We were particularly struck by the data on households' digital equipment. When asked 'Is there (at least) a personal computer (PC) or laptop in your home?', the percentage of children in the fifth grade of primary school (aged 10–11) who provided a positive response was lower than in the pre-pandemic surveys. Such evidence is counterintuitive and contrary to mainstream communication that reads a general increase in the spread of digital tools as a consequence of the COVID-19 pandemic. It is also surprising because it concerns young families, that is a segment of the population that one might expect to be more inclined than others to use digital technology.

We then wanted to delve deeper into the topic by selecting and comparing data from four of our questionnaires, two administered before the pandemic (2018 and 2019) and two after (2022 and 2023). We focused our attention on three questions related to families' digital endowments (see Table 1), circumscribing

the data to those of fifth-grade primary school respondents (although the questionnaire was administered to a total of 2,798 pupils, the number of respondents considered for 2018 is lower because, on that occasion it was also intended for fourth graders, who were excluded from this analysis).

The three questions were:

1. Do you have your own phone?
2. Do you have your own tablet?
3. Is there (at least) a personal computer (PC) or laptop in your home?

Table 1. Possession of digital devices among households (respondents aged 10-11 years)

Respondents	Year	Do you have your own phone? (%)	Do you have your own tablet? (%)	Family PC equipment (%)
1803	**2018**	48.9	59.1	92.0
3639	**2019**	49.2	59.8	91.9
3881	**2022**	49.4	56.9	91.9
3388	**2023**	49.7	53.1	90.2

As shown in Table 1, the figure for the domestic equipment just before the pandemic and immediately after is unchanged, and stands at 91.9%. In the latest survey the percentage even decreased. The percentage of tablets owned by respondents also gradually decreases, but in this case, we know that the specificity of the question could hide situations of sharing among siblings. Only the value related to smartphone ownership is very slightly increasing, but it seems to be asymptotically approaching a saturation value of around 50% (with an average value of the date of entry into possession of the first phone of around eight and a half years, linked to the First Communion event).

Since the data seemed to go against the grain of common belief, we looked for comparisons with other investigations, thus conducting some desk research. In particular, we triangulated our evidences with a large amount of data collected by the Italian National Institute of Statistics (Istituto Nazionale di Statistica (ISTAT) 2023): even these data actually confirm the countertrend that we have identified. We have selected two indicators from the data that seem particularly interesting for our purposes and are in agreement with our finding.

As summarised in Table 2, the percentage of people in Italy (aged three years or older) who use a computer daily reached its peak during the pandemic, and now has fallen back just as sharply; and the number of people who do not use computers, which was compressed during the pandemic, has returned almost to pre-pandemic values.

Table 2. Frequency of personal computer use in Italy among people aged 3 years and older

Year	Use PC daily (%)	Do not use PC (%)
2019	31.0	43.8
2020	32.7	43.2
2021	37.0	40.2
2022	32.9	42.2

(Source: Italian National Institute of Statistics, https://www.istat.it/it/cultura-comunicazione-viaggi?dati)

Finally, we focused our attention on data from an interview campaign that we administered to 378 parents of primary school children; 256 interviews took place between March and May 2022, half in-person and half on online platforms, while 122 were conducted in spring 2023, 77 in person and 45 online (average age 42 years; 81% female). The theme of the investigation was the use of technological devices by children, with a focus on time spent with the family and strategies adopted in educational management.

The data reported by the interviewees were treated with quantitative methods and descriptive intent, while the answers to the open-ended questions were analysed with the support of a qualitative research software (Weft QDA).

Even from the interviews, it seems possible to infer that the lockdown period did not affect early endowment either quantitatively or qualitatively. We can plausibly state that for the sample we intercepted, the phenomenon of early endowment was already in place before the pandemic and that, due to the pandemic containment, there has not been a real push to digital for those who were not yet properly equipped.

3. DISCUSSION

The data set out in the previous chapter, which come from field surveys of large samples of primary school pupils and a considerable sample of parents, as well as from the archives of the Italian National Institute of Statistics, converge to show that, despite the scenarios outlined in Chapter 1, the digital endowments of families of children currently attending the fifth grade of primary school, do not appear to have significantly increased as a result of measures to deal with the COVID-19 pandemic.

We would like to note that those children, who are in the fifth grade in the current school year, were already at school during the pandemic, although in the 2019-2020 school year—the one plagued by the lockdown—they were only in the first grade; it is therefore possible that not everyone had obtained the necessary tools, or even that some families had received them on free loan from the school and returned them at the end of the distance learning period.

This means that a non-negligible segment of families (as in Table 1, Column V) could have inadequate digital equipment to cope with a new lockdown period so as to undermine any new recourse to distance learning. Should this finding worry the educational world? What might happen if another pandemic wave calls for social distancing and online teaching again in the future?

Although the data just reviewed give us a panorama of households (in our Region) not dissimilar to that which preceded COVID-19, the answer to the question must recognise that the school world is surely far better equipped today in terms of devices and networks, software, and, most importantly, skills acquired by teachers and managers than during the 2020 lockdown.

This means that the response to a new pandemic event could be prompter and more effective and that the data we have examined should be used to devise early intervention protocols in favour of that segment of families who, probably for reasons linked to their socio-economic backgrounds, would go into lockdown lacking adequate tools to deal with it.

We are aware that the conclusions drawn are based on data collected in a rather limited area of our country. It should be noted, however, that they are consistent with the trends of the Italian National Institute of Statistics; in addition, if the hypothesis is correct that socio-economic conditions have an influence on the data we collected, then it is to be expected that in the rest of Italy the percentages of households with inadequate endowments are higher, given that our district lies in one of the more developed and richest areas in Western Europe.

Therefore, we believe that policymakers, educators and school principals who want to be ready to cope with a possible new domestic confinement period and the subsequent switch to emergency remote teaching and distance learning must pay close attention to the problem and not be misled by figures that, taken alone, might seem particularly high.

To work towards providing more solid evidence, two lines of future development of our research can be envisaged:

- First, despite the difficulties that can be imagined, we intend to investigate some socio-economic characteristics of the households considered (such as education, employment status, income and migratory background), and possibly other characteristics, for example related to the personality types of the parents, that might differentiate less digitally-inclined families from the rest;
- Second, we are planning to broaden the geographic base of the sample, to incorporate areas, and therefore families that are more disadvantaged from a socio-economic point of view (if this causal link emerges from the previous step).

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