

# Reducing the digital divide for marginalized households

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## Abstract

Digital skills are essential for social inclusion, labor market participation, and effective engagement with children in an increasingly digital environment, yet many adults in high-income countries lack even basic competencies. Despite growing public investment - reflected, for example, in European initiatives such as the Digital Decade and the substantial resources allocated under the Next Generation EU framework - causal evidence on how to effectively build digital skills among disadvantaged populations, who typically lie in the left tail of the skill distribution, remains limited. We design and implement a randomized controlled trial evaluating a comprehensive digital inclusion intervention that jointly addresses financial and learning barriers to technology adoption. The study involves 859 low-income families with school-aged children in Italy, randomly assigned to a control group or to one of two treatment arms providing a tablet, free internet access, and digital literacy training of different intensity. One year after the intervention, both treatment arms generate large and persistent gains in digital skills, with no systematic differences across arms, as well as substantial improvements in digital parenting practices and use of online public services. Mediation analysis shows that gains in digital skills, rather than access alone, drive these broader outcomes. Effects on labor market outcomes are limited to expectations, suggesting the presence of binding structural constraints. Overall, our findings demonstrate that relatively modest, scalable interventions can generate meaningful digital inclusion gains.

**JEL Codes:** I24, J24, O33, C93

**Keywords:** Digital divide, Digital literacy, Low-income families, Labor market outcomes, Digital parenting.

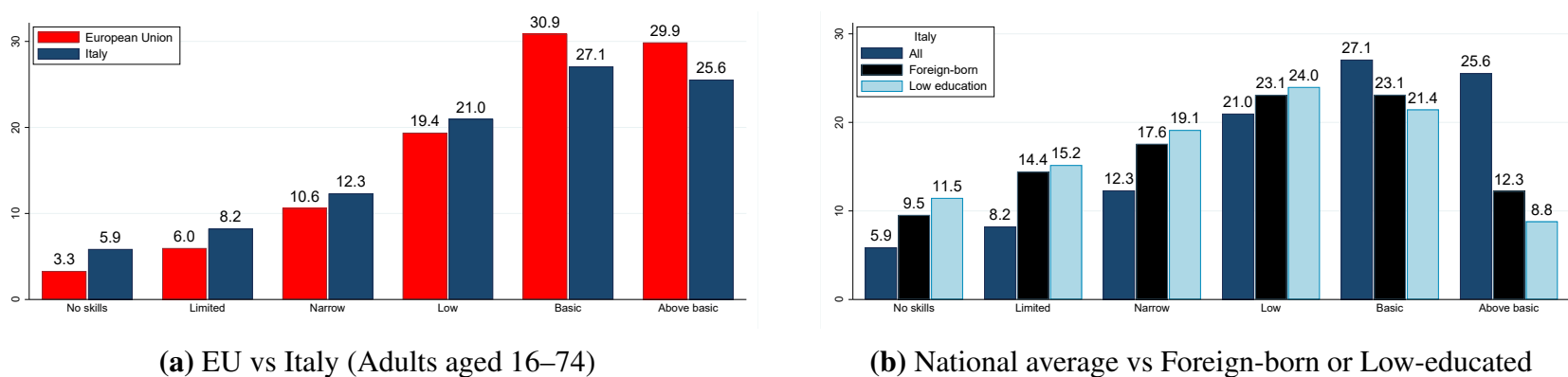
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# 1 Introduction

In the last thirty years, new digital technologies – from the internet in the mid-1990s to artificial intelligence today – have profoundly reshaped the way individuals work, interact, and, more broadly, participate in society. While technologies are constantly evolving (e.g. [Jaumotte et al., 2023](#)), digital skills have become increasingly important in the labor market, reflecting their widespread adoption in most occupations ([OECD, 2026](#)). Consistent with this trend, a growing body of evidence documents substantial returns to digital skills ([Martins-Neto et al., 2026](#); [Falck et al., 2021](#); [Fairlie and Riley Bahr, 2018](#)), with magnitudes broadly comparable to those associated with well-established competencies such as numeracy and literacy ([OECD, 2026](#)). Beyond the labor market, digital skills are also essential for full participation in modern society, for instance, for accessing essential services such as transportation, healthcare, and public benefits, and for supporting children’s online activities. However, the uneven distribution of digital skills across the population, with vulnerable groups lagging behind, is likely to give rise to a new form of inequality. Panel (a) of Figure 1 shows that around 40% of the EU population has digital competences below “Basic”. The same figure indicates that in Italy – the country on which we focus – the corresponding share is higher, at around 47%. Panel (b) disaggregates Italian data by subgroups and shows that digital skills are significantly lower among foreign-born and less-educated individuals.

**Figure 1: Digital Skill Levels: International and Subgroup Comparisons**



Notes: Panel (a) compares the distribution of digital skill levels between Italy and the EU average. Digital skills are measured using the DSI developed by Eurostat ([Eurostat, 2022](#)). Panel (b) adds to the national average the distribution of skills among foreign-born and low-educated individuals in Italy.

Two types of distinct barriers can limit private investment in digital skills: financial constraints (e.g., [OECD, 2025](#)), as well as steep learning costs (e.g., [OECD, 2019b](#)). Not surprisingly, digital upskilling has emerged as a key area of policy interest. For example, the European Commission launched the *Digital Decade* policy programme, setting the ambitious target that by 2030, at least 80% of adults in every EU country should possess at least basic digital skills. Within the Next Generation EU programme, each Member State is required to allocate at least 20% of its national plan to digital objectives. On average, 16% of these funds are earmarked for initiatives related to “Human capital in digitalisation”. However, despite the increased policy attention, the causal evidence on how to effectively invest in digital skills development is very scant.

This paper provides the first randomized controlled trial to evaluate the joint impact of technology access and digital skills training on technology adoption, digital skills and the economic and social outcomes of low-income households in a high-income setting. We carried out the intervention in Turin, Italy, in collaboration

with *Fondazione Ufficio Pio*, under a program titled “DigitAll.”<sup>1</sup> The intervention targeted 859 disadvantaged families with school-age children. The experimental design features stratified randomization at the individual level and includes three arms: a control group and two treatment groups assigned to either a short (9-session) or a long (15-session) digital literacy course, both delivered in small classes and accompanied by a tablet with free internet access and a tutor to support engagement. The program simultaneously addressed financial constraints and learning costs. The two treatment arms allow us to explore the returns to learning support at different levels of intensity. All participants completed a baseline survey prior to randomization, and outcomes were measured approximately one year later via an endline survey. We measure digital skills using the official “Digital Skills Indicator 2.0” (DSI), developed by the European Commission and implemented by Eurostat ([Eurostat, 2022](#)). This index, based on the highly influential Digital Competence Framework (DigComp 2.0), ensures comparability with international standards and enhances the policy relevance of our results. Beyond digital skills, we examine effects on parenting practices, access to digital public services, and labor market engagement.

We find that the intervention produced large and sustained improvements in all immediate outcomes. First, both treatment arms experienced significant increases in technology adoption. Participants reported greater use of digital devices — both for themselves and their children — and the number of devices available in the household rose markedly. Second, the program led to substantial gains in digital skills. Over 70% of participants in the control group scored below the “Basic” digital proficiency threshold at endline. Conversely, 56% of participants in the shorter course (T1) and 64% in the longer course (T2) reached at least basic proficiency, with 26% and 31%, respectively, achieving “Above basic” levels. These gains are particularly notable because they brought treated individuals up to the Italian national average in terms of DSI proficiency, effectively closing a substantial baseline gap.

The intervention also produced meaningful changes in broader economic outcomes: digital parenting and public service use. Treated individuals became more confident in guiding their children’s online activities and reported higher engagement in digital activities beneficial for their children. They also engaged more regularly with digital platforms used for healthcare, taxation, and social welfare services. In terms of labor market engagement, while immediate behaviors such as job search and employment status did not change significantly, treated participants expressed greater optimism about their employment prospects and were more likely to anticipate enrolling in further training.

Our main results require some comments. First, as to differences between T1 and T2, we find that across nearly all domains, the effects of the shorter and longer training courses are statistically indistinguishable. This suggests that (i) once basic barriers are removed — through access to devices and basic structured instruction — participants are able to continue learning independently (learning effect), and/or (ii) the returns to digital training are strongly diminishing (diminishing return effect). We provide suggestive evidence consistent with both interpretations, but we cannot conclusively distinguish between them. In any case, the key takeaway remains reassuring: modest interventions can lead to sustained improvements even without intensive training. Second, simple back-of-the-envelope calculations indicate that our digital inclusion program is cost-effective.

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<sup>1</sup>*Fondazione Ufficio Pio*, founded in 1595 under the *Compagnia di San Paolo*, one of Italy’s leading philanthropic foundations, focuses on social assistance for economically vulnerable individuals in Piedmont, especially Turin. It offers targeted programs to address educational inequality, promoting social inclusion and economic empowerment.

Third, we find no evidence of unintended consequences, such as excessive engagement with social media. Fourth, contrary to what is often believed in policy discussions, T1 and T2 do not increase labor market engagement, likely because treated individuals tend to be less active on average, are employed in occupations with low digital-skill intensity, and/or search for jobs primarily through word-of-mouth rather than through channels requiring digital skills. In addition, our evidence points to the presence of more structural constraints to labor market engagement that go beyond the lack of digital skills.

Finally, to better understand the mechanisms behind these effects, we conduct a detailed mediation analysis, following the framework of [Imai et al. \(2010\)](#), [Heckman and Pinto \(2015\)](#), and [Daniel et al. \(2015\)](#). This approach allows us to disentangle the relative importance of different causal channels — specifically, whether the intervention operates primarily by expanding access to technology, by improving digital skills, or through a sequential process in which access enables skill development. Across multiple domains, we find that both access and skills play important roles, with digital skills emerging as a central mediator of downstream outcomes. Sequential mediation is detectable but modest—on the order of single-digit shares of the total effect. We therefore view the bundle as working primarily by raising skills, with the sequential path supportive rather than dominant.

This paper contributes to the still very limited literature — despite the topic being high on the policy agenda — on how to enhance digital skills and whether such improvements influence digital parenting, social inclusion, and labor market outcomes among adults in high-income countries, by providing experimental evidence on the effects of a bundled intervention. To the best of our knowledge, the only other study examining a similar question is a paper (unpublished) analyzing a randomized trial conducted during the same period as ours: [Almunia et al. \(2025\)](#) present experimental evidence from an intervention aimed at improving the digital skills and employability of disadvantaged adults in Canary Islands, Spain. While both studies examine bundled interventions involving hardware and training, they differ markedly in scope, methodology, and empirical contribution. First, we adopt Eurostat’s DSI as our primary measure of digital skills, enhancing the comparability and policy relevance of our findings at the European level, whereas the other study relies on non-standard, less generalizable measures. Second, the set of outcomes differs: our study expands the analysis beyond employability to include digital parenting and social inclusion. Third, we explicitly examine transmission mechanisms by conducting mediation analysis to quantify the role of digital skills in shaping downstream outcomes. Finally, our study benefits from higher implementation quality, with stronger compliance, substantially lower attrition, and a detailed account of participant selection and engagement — all of which strengthen both the internal and external validity of our findings.

To a lesser extent, our paper also contributes to two additional strands of literature. First, we contribute to the limited literature on the economic and social returns of adult education programs, which so far has mainly focused on the acquisition of basic literacy or numeracy in developing countries (e.g., [Aker et al., 2012](#); [Banerji et al., 2017](#); [Deshpande et al., 2023](#); [Aker et al., 2024](#)). In contrast, we focus on a disadvantaged group in a high-income country who, while literate in the traditional sense, lack digital skills. Importantly, in addition to assessing the impact of the intervention on digital literacy, we study a broader set of outcomes that have the potential to enhance household welfare. Second, some studies examine the effects of technology adoption on various student outcomes (e.g., [Fairlie and London, 2012](#); [Malamud and Pop-Eleches, 2011](#); [Cristia et al.,](#)

2017); we add to this literature by highlighting an alternative channel to reach students, namely through their parents.<sup>2</sup>

The remainder of the paper is structured as follows. Section 2 describes the experimental design, treatment arms, implementation timeline, and presents baseline characteristics of the sample. Section 3 outlines the conceptual framework and details the main hypotheses. Section 4 reports the primary results, including robustness checks and heterogeneous effects. Section 5 explores the mechanisms underlying these effects through a detailed mediation analysis. Section 6 concludes.

## 2 Field Experiment

Our experiment targets low-income families with school-age children in Turin, Italy, to evaluate the impact of technology access and digital skills enhancement on their lives. Through the “DigitAll” program, we provide each qualifying family with a tablet, one year of free internet access, and a digital skills training for one adult. To be eligible, applicants had to meet strict low-income criteria, have at least one school-age child, and complete a baseline questionnaire assessing digital literacy, parental involvement in education, social inclusion, and employment status. During the application process, participants also selected up to two preferred training locations and times. Applicants could complete the baseline survey either independently online or with assistance at designated *Ufficio Pio* centers across Turin; in practice, 576 participants (67%) applied at a center, while 283 applied independently, and among these independent applicants 109 (39%) reported receiving help from a relative or acquaintance. In the following section, we provide a detailed overview of the study design, including the randomization procedure and intervention components, as well as summary statistics of our sample at baseline. Additionally, we present information on program participation, participant satisfaction, and barriers to adoption collected after the training was completed.

### 2.1 Measuring digital skills

We begin by discussing how to properly measure digital literacy. This is not a trivial task, as no widely accepted approach currently exists. We rely on the “Digital Skills Indicator 2.0” (DSI) (Eurostat, 2022), an index based on the European Union Digital Competence Framework (DigComp 2.0), which has been highly influential in shaping digital assessment tools worldwide (Angel-Urdinola et al., 2025). We use the updated version released in 2022 (the first pilot took place in 2014), which has demonstrated very satisfactory psychometric properties (Vuorikari et al., 2022).

The DSI synthesizes digital skills across five domains: (i) *Information and data literacy*, (ii) *Communication and collaboration*, (iii) *Digital content creation*, (iv) *Safety*, and (v) *Problem solving*.<sup>3</sup> Responses to individual questions are grouped into domain-level scores; for each area, skills are classified into three levels: *none*,

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<sup>2</sup>Nattamai Kannan et al. (2021) show that access to unlimited mobile data increases the consumption of educational and other forms of digital content, particularly among disadvantaged households.

<sup>3</sup>Specifically, (i) *Information and data literacy* captures the ability to effectively search for, assess, and manage online information (DSI questions I1 to I4); (ii) *Communication and collaboration* captures the ability to use digital tools to communicate and collaborate (DSI questions C1 to C6); (iii) *Digital content creation* captures skills related to creating, editing, and managing digital content (DSI questions D1 to D7); (iv) *Safety* captures the ability to manage privacy, security, and other risks in the digital environment (DSI questions S1 to S6); (v) *Problem solving* captures the ability to use digital tools to solve problems and optimize task performance (DSI questions P1 to P7).

*basic*, and *above basic*. These results are then aggregated into a six-level overall indicator: *no skills*, *limited*, *narrow*, *low*, *basic*, and *above basic*.<sup>4</sup> Table A18 in the Appendix details all the questions included in the indicator.

The DSI, like most assessment tools, is a *self-reported* measure based on questions that ask individuals whether they perform certain digital activities. While one might argue that an objective assessment of digital knowledge or skills would be preferable, such an approach is hardly feasible because (i) no standardized test currently exists, and (ii) it would be extremely costly to implement. Moreover, relying on the DSI ensures that our results are comparable with established European and Italian benchmarks, thereby enhancing the policy relevance of our experiment.

## 2.2 Design and Treatments

We received 859 valid applications and assigned participants to one control group (C) and two treatment groups (T1 and T2). The experimental design employs block randomization (stratification) at the individual level, ensuring balance across key participant characteristics. Stratification variables were selected for their predictive relevance and our interest in studying heterogeneous effects. They include (i) a digital literacy score (above/below median at the baseline), (ii) high school graduation, (iii) foreign background, (iv) presence of children under 6, and (iv) residence in the northeast of the city. Each variable is dichotomous, forming 30 strata. The digital literacy score at the baseline was derived from the DSI, focusing on items that proved most predictive in our pilot to streamline the baseline questionnaire. More details about this variable are provided below.

Following randomization, participants in T1 and T2 were grouped into classes of 7 to 13 individuals (with a median of 10), based on their preferences and assigned treatment type. There were 25 classes for the shorter training (T1) and 26 classes for the longer training (T2). The allocation to these classes was done through random sorting, prioritizing participants' preferences. If a preferred class was oversubscribed, participants were placed in the next available option to ensure fair and balanced distribution. The control group did not receive any device or training. However, to ensure comparability, control participants were organized into 51 “shadow” clusters, each containing 5 to 9 individuals (with a median of 7), using the same algorithm that matched T1 and T2 participants by time and location preferences. This ensured that structural characteristics were consistent across groups. In total, the experiment comprised 102 clusters, with 337 participants in C, 262 in T1, and 260 in T2.

All treated participants received a tablet and one year of internet access, and attended a weekly two-hour digital literacy course. Each tablet was equipped with a mouse and a keyboard, making it functionally similar to a small laptop but at a lower cost. During the course the instructors emphasized the advantages of using the device in this configuration over a smartphone. The tablet was distributed at the beginning of the fourth session, a decision that served two purposes. First, it encouraged participants to attend at least the initial sessions, even if their main motivation for enrolling in the program was the free device. Second, the first three

<sup>4</sup>An individual is considered to have *no skills* if they have no skills in five or four areas, *limited* skills if they score basic or above basic in two areas and no skills in three, *narrow* skills if they demonstrate basic or above basic in three areas and no skills in two, *low* if they have basic or above basic in four areas and no skill in one, *basic* skills if they score at least basic in all areas, *above basic* if they demonstrate above basic in all five areas., which provides a more granular classification of below basic skills.

classes focused on smartphone use. Based on the prior experience of our partner foundation, although almost all applicants own a smartphone, they tend to use only its most basic features.

The course content differed by treatment arm. T1 consisted of an 18-hour course (9 sessions, 2-hour each) covering basic digital skills such as web browsing, Google tools, and internet safety. T2, on the other hand, was a 30-hour course (15 sessions, 2-hour each), incorporating all T1 content plus additional topics like Google Sheets, e-commerce, guiding children on social media use, and using the internet for job searches. A detailed overview of the course content and curricula for both T1 and T2 is provided in Tables [A1](#) and [A2](#) of Appendix [A](#). Both types of courses were led by a teacher and a tutor. The teacher delivered standardized instructional material, prepared in advance to ensure consistency across all classes. During sessions, they guided participants through practical exercises and monitored their progress. The tutor provided additional support outside class hours, assisting participants who fell behind or missed a session. If a participant was absent for more than one session in a row, the tutor followed up to check on their well-being and provide the missed material. At the end of the course, participants who attended at least 60% of sessions received a diploma. The diploma includes the participant's name, the course name, its scope, and its duration.

A final remark regarding the design is in order. While a 2×2 factorial design that cross-randomizes access and training (tablet-only; training-only; tablet+training; control) would, in principle, permit tests of complementarities, we deliberately opted against this design for three reasons. First, our theory of change—supported by evidence gathered with our partner foundation during design—implied that either component in isolation would be ineffective for this population: training without a device is infeasible for households that cannot purchase a tablet, and a device alone is unlikely to build skills among digitally excluded adults.<sup>5</sup> Consistent with this view, a contemporaneous RCT finds null effects for device-only provision ([Almunia et al., 2025](#)). Second, factorial designs are power-hungry for interactions ([Muralidharan et al., 2025](#)): even under optimistic assumptions, detecting an interaction half the size of a main effect requires roughly eight times the sample needed for the main-effect test. Given finite resources, a three-arm bundled design (two training intensities plus a control) is therefore the more efficient way to answer our policy question. Third, given that participants are poor, mostly immigrant adults with very low baseline proficiency, it was *ex ante* unclear whether a short training would yield durable learning. Varying course length allows us to quantify returns to training intensity and to identify the minimal effective dosage for scale-up, while holding access constant.

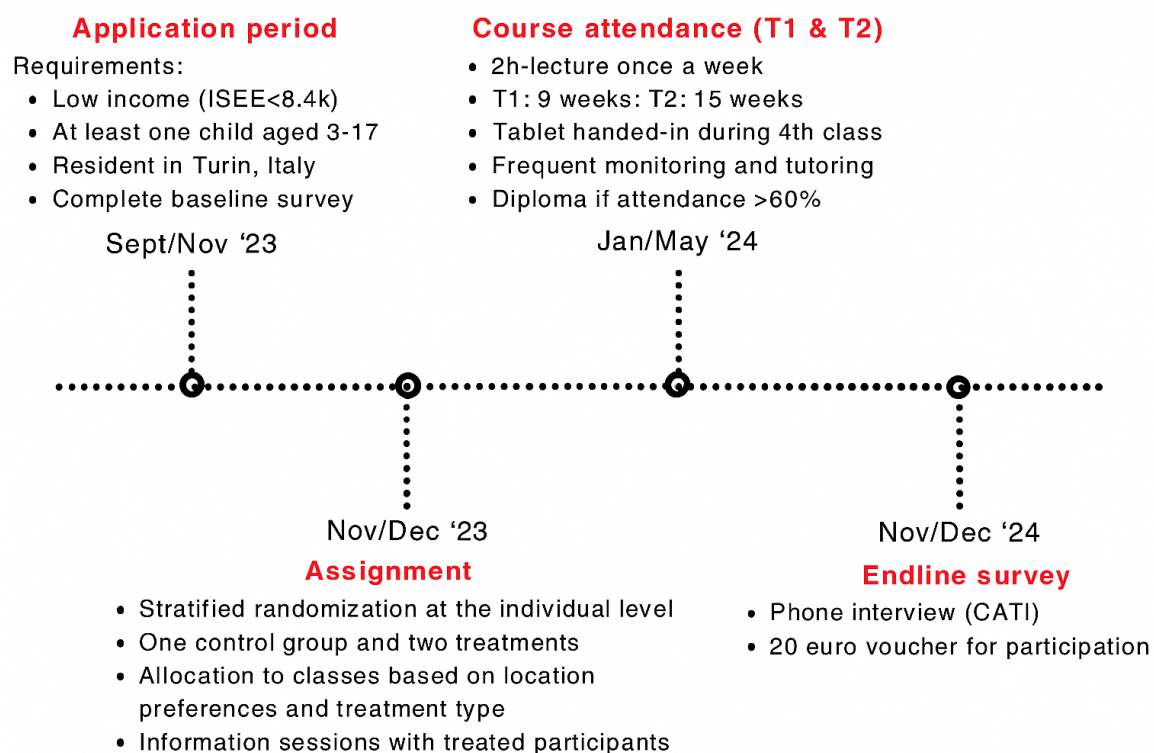
## 2.3 Timeline

The project spanned approximately 12 months. Figure [2](#) provides an overview of the project timeline. Applications were accepted from September to early November 2023.<sup>6</sup> Application outcomes were disclosed in November 2023. Treated individuals were allocated to classes based on location preferences and treatment type and were invited to information sessions in December. Courses commenced in January 2024 and concluded in March (for T1) or May (for T2). Participation was monitored throughout the program, and a midline questionnaire was administered at the end of each course for T1 and T2 participants only. This survey aimed

<sup>5</sup>Based on previous experience, Fondazione Ufficio Pio strongly believed that providing only tablets and internet access would yield very limited effects, as most recipients lacked the skills to use these tools effectively.

<sup>6</sup>Table [A3](#) in Appendix [B.1](#) summarizes the main reasons participants applied to the DigitAll program. The most common motivations included helping their children with school or protecting them online (51%) and improving their own digital skills (50%). Other reasons included accessing rights and assistance (24%), enhancing their work situation (23%), receiving free internet for one year (18%), and enriching family relationships and leisure (13%).

**Figure 2: Timeline of the project (2023-2024)**



to evaluate the quality of the training received, assess participants' engagement with the course material, and measure their compliance with instructions on using the device. The endline survey was conducted from October to December 2024, approximately one year after baseline data collection. All participants were contacted for a phone interview (CATI) and received a 20-euro voucher for their participation.

## 2.4 Pre-Intervention Summary Statistics

Table 1 summarizes the baseline characteristics of the sample.<sup>7</sup> The vast majority of participants are women (92%) and of foreign origin (70%), with only 33% having completed high school. The average age of participants is 39.6 years, ranging from 18 to 70. Households have an average of 4.51 members, with 2.08 children born between 2006 and 2020. Furthermore, 70% of families have at least one child aged 6-10, 80% have a child aged 6-12, and 35% have a teenager aged 13-17. The average ISEE ("Equivalent Economic Situation Indicator") is €3,838, placing this group within the lowest 5% of the ISEE distribution in Italy.<sup>8</sup> Given the high proportion of foreign, low-income, and less-educated women in the sample, it is unsurprising that 51% of participants identify as housepersons. In terms of technology access, nearly all participants own a mobile phone. However, only 21% own a tablet, and only 40% own either a PC or a tablet. Furthermore, just 37% have a dedicated internet connection (Wi-Fi) at home.

Regarding digital literacy at the baseline, due to time constraints, we administered a shortened version of the Eurostat module, selecting 12 questions most predictive of the full index using data from our pilot study.<sup>9</sup>

<sup>7</sup>Extended summary statistics are reported in Tables A6, A7, and A8 of Appendix B.1.

<sup>8</sup>ISEE (*Indicatore della Situazione Economica Equivalente*) is an indicator of the economic situation of households in Italy. It is used to assess eligibility for various social benefits and services and takes into account income, assets, and household composition. For further reference on ISEE distribution, see INPS data: <https://servizi2.inps.it/servizi/osservatoristatistici/api/getAllegato/?idAllegato=1114>.

<sup>9</sup>Specifically, we applied bagging – a machine learning algorithm particularly suitable for categorical dependent variables – which allowed us to both select the best explanatory variables and combine their information to predict the index. The out-of-sample performance of the prediction in the "pilot" dataset was very good: almost 90% of the observations were placed in the correct category. The pilot is the previous edition of the DigitAll program, implemented between 2021 and 2022 in Turin. It targeted low-income families with children aged 6 to 17, residing in public housing and lacking access to high-speed internet connection at home. Figure A1 in Appendix B.1 illustrates how predicted digital skill levels vary by baseline characteristics. It shows that ownership

**Table 1:** Demographics, Technological Endowment, and Digital Skills

|                                                  | (1)<br>Mean | (2)<br>Median | (3)<br>S.D. | (4)<br>Min | (5)<br>Max |
|--------------------------------------------------|-------------|---------------|-------------|------------|------------|
| <b>Individual and household characteristics:</b> |             |               |             |            |            |
| Female                                           | 0.92        | 1.00          | 0.28        | 0          | 1          |
| Foreign background                               | 0.70        | 1.00          | 0.46        | 0          | 1          |
| Age                                              | 39.60       | 39.00         | 7.89        | 18         | 70         |
| High school graduate                             | 0.33        | 0.00          | 0.47        | 0          | 1          |
| Household size                                   | 4.51        | 5.00          | 1.30        | 2          | 10         |
| N children born 2006-2020                        | 2.08        | 2.00          | 0.94        | 1          | 6          |
| Houseperson                                      | 0.51        | 1.00          | 0.50        | 0          | 1          |
| ISEE (€)                                         | 3,838       | 3,916         | 2,421       | 0          | 8,390      |
| <b>Technological endowment:</b>                  |             |               |             |            |            |
| Own phone                                        | 1.00        | 1.00          | 0.05        | 0          | 1          |
| Own tablet                                       | 0.21        | 0.00          | 0.41        | 0          | 1          |
| Own PC or tablet                                 | 0.40        | 0.00          | 0.49        | 0          | 1          |
| Internet used at home                            | 0.62        | 1.00          | 0.49        | 0          | 1          |
| Wi-fi at home                                    | 0.37        | 0.00          | 0.48        | 0          | 1          |
| <b>Digital skills:</b>                           |             |               |             |            |            |
| Index of digital skills (DSI) [1, 6]             | 3.78        | 4.00          | 1.41        | 2          | 6          |
| N digital activities [1, 12]                     | 3.95        | 3.00          | 3.29        | 0          | 12         |
| Classrooms                                       | 102         |               |             |            |            |
| Observations                                     | 859         |               |             |            |            |

*Notes:* The table displays the mean, median, standard deviation, minimum, and maximum values for the variables listed on the left. These variables encompass demographics, household characteristics, socio-economic indicators, technological access, and digital skills level (measured through the DSI index) and by the number of digital activities performed. There is a total of 102 classrooms and 859 participants in our baseline sample.

At baseline, the predicted DSI score averaged 3.78 out of 6, classifying participants between “Narrow” and “Low” digital skill levels. This is significantly lower than the EU average, where 60% of adults reach at least “Basic” proficiency. The average number of digital activities performed was 3.95 out of 12.<sup>10</sup> These results underscore the digital divide faced by this population and the importance of interventions targeting digital inclusion.

Table 2 presents summary statistics on parental involvement in children’s education, social inclusion, and labor market engagement. The top panel reports parental engagement along a 1–5 ordinal scale, where 1 is “Never or almost never” and 5 is “Every day or almost every day.” Verbal interaction is particularly frequent: on average, parents report discussing school with their children almost daily (mean = 4.55), and communicating with teachers more than monthly (mean = 3.40). In contrast, digitally mediated activities are somewhat less frequent. Parents check the school app between weekly and monthly on average (mean = 3.77), though the high standard deviation suggests many do so only sporadically. Similarly, help with homework averages 3.47 (just under weekly), but with substantial variation: a non-trivial share of participants reports minimal

of digital devices, higher education, employment, and internet access are modestly associated with higher digital proficiency, though most participants still fall below the “Basic” threshold across all subgroups.

<sup>10</sup>Table A4 in Appendix B.1 presents self-reported digital activities among participants over the past three months at baseline. The most common activities include sending or receiving emails (74%) and downloading or installing software or apps (53%). Less frequent activities involve using spreadsheets for calculations (11%) and changing browser settings (8%).

involvement — highlighting uneven support for digitally supported learning.

**Table 2:** Children’s Education, Social Inclusion, and Labor Market Engagement

|                                                               | (1)<br>Mean | (2)<br>Median | (3)<br>S.D. | (4)<br>Min | (5)<br>Max |
|---------------------------------------------------------------|-------------|---------------|-------------|------------|------------|
| <b>Parental involvement in children’s education:</b>          |             |               |             |            |            |
| Help with homework                                            | 3.47        | 4.00          | 1.53        | 1          | 5          |
| Check school app                                              | 3.77        | 4.00          | 1.51        | 1          | 5          |
| Talk about school day                                         | 4.55        | 5.00          | 0.87        | 1          | 5          |
| Communicate with teachers                                     | 3.40        | 3.00          | 1.10        | 1          | 5          |
| <b>Anti-poverty measures received (past 12 months):</b>       |             |               |             |            |            |
| At least one welfare measure                                  | 0.53        | 1.00          | 0.50        | 0          | 1          |
| N. measures received                                          | 0.88        | 1.00          | 1.05        | 0          | 5          |
| <b>Employment status and willingness to work:</b>             |             |               |             |            |            |
| Employed                                                      | 0.21        | 0.00          | 0.41        | 0          | 1          |
| Looking for a job (past 4 weeks)                              | 0.46        | 0.00          | 0.50        | 0          | 1          |
| Looking for a job (past 4 weeks) (if not employed)            | 0.50        | 0.00          | 0.50        | 0          | 1          |
| Would like to work (if not employed and not looking)          | 0.33        | 0.00          | 0.47        | 0          | 1          |
| Never looked for a job                                        | 0.16        | 0.00          | 0.37        | 0          | 1          |
| Open to work (if employed, looking or willing to work)        | 0.73        | 1.00          | 0.44        | 0          | 1          |
| <b>Perceptions of labor market outcomes (next 12 months):</b> |             |               |             |            |            |
| Finding a job (if not employed)                               | 40.79       | 40.00         | 30.39       | 0          | 100        |
| Losing current job (if employed)                              | 33.32       | 30.00         | 29.41       | 0          | 100        |
| Training to acquire further qualifications                    | 47.72       | 50.00         | 31.45       | 0          | 100        |
| Classrooms                                                    | 102         |               |             |            |            |
| Observations                                                  | 859         |               |             |            |            |

**Notes:** The table displays the mean, median, standard deviation, minimum, and maximum values for the listed variables. The top panel refers to parental involvement in children’s education, measured on a 1–5 ordinal scale with the following categories: 1 = Never or almost never, 2 = Once or more per year, 3 = Once or more per month, 4 = Once or more per week, 5 = Every day or almost every day. The middle and bottom panels report binary or continuous indicators of access to social support programs, labor market participation, willingness to work, and perceived future outcomes. All variables are measured at baseline.

The remaining sections summarize social vulnerability and labor market engagement. Over half of participants (53%) report receiving at least one anti-poverty measure in the past year, with an average of 0.88 programs accessed per person.<sup>11</sup> Employment remains low at just 21%, but broader labor market engagement appears more promising: 73% are either employed, actively searching, or willing to work. Among the unemployed, 50% have recently looked for a job, and an additional 33% express a desire to work even if not currently searching. Future expectations, however, are modest: non-employed individuals rate their chances of finding work in the next 12 months at just 41%, while employed respondents anticipate a 33% probability of losing their current job. Furthermore, on average, respondents rate their chances of acquiring further qualifications at 48%.

<sup>11</sup>Table A5 in Appendix B.1 provides a breakdown of anti-poverty measures received by participants over the past 12 months at baseline. The most common measures include the social utility bill bonus for electricity, gas, or water (28%), the citizenship income (16%), healthcare ticket exemptions (14%), and unemployment benefits (5%). A small percentage of participants reported receiving rent bonuses, nursery school bonuses, or telephone fee reductions.

## 2.5 Balance and Power Calculations

We ensure balance between each treatment group and the control, as well as among the different treatment groups. Results for a wide range of variables are presented in Tables A9–A11 of Appendix B.2. Balance is assessed using F-statistics across all groups and normalized differences between pairs of groups. All normalized differences are well below 0.25, as recommended by Imbens and Rubin (2015). Furthermore, out of 61 variables, joint significance tests indicate that differences between groups are statistically significant at the 5% level for only three variables and at the 10% level for three additional variables, confirming the overall success of randomization. For statistical power, we conducted power calculations only for the primary outcome “Digital literacy skills”, as it is the only one for which we had data for the specific population from our pilot. Based on the parameters outlined in our pre-analysis plan, our study is powered to detect a minimum detectable effect (MDE) of 0.25 standard deviations (SD), in line with standard benchmarks in the literature. Given that effect sizes from our pilot study ranged between 0.60 and 0.70 SD, our design is well-positioned to detect at least half of the effects observed in the pilot.

## 2.6 Program Participation, Satisfaction, and Barriers to Adoption

To assess program engagement and identify barriers to participation, we conducted a midline survey with T1 and T2 participants only after course completion. The survey was completed by 64% of T1 and 67% of T2. Results of the midline are reported in Appendix C. The survey collected data on attendance, satisfaction, pre-intervention constraints, and early outcomes.

Take-up of the program was high overall: 83% of T1 and 85% of T2 participants attended at least one session (Table A12). In T1, 11% withdrew after being selected, and 6% dropped before the first session. In T2, these rates were 7% and 8%, respectively. Post-tablet dropout was rare (0.4% in T1, 3% in T2). Most participants completed the course and earned a diploma — 81% in T1 and 79% in T2.<sup>12</sup> Attendance remained strong throughout. In T1, rates exceeded 90% for the first four sessions (97% in session 4, when tablets were distributed), then stabilized around 80%. T2 saw a similar pattern.<sup>13</sup> Satisfaction was high across both groups (Table A15). Participants gave mean ratings of 4.7/5 for tablets, internet, and course content, 4.5 for tablet skills, and 4.6 for smartphone skills. Teachers and tutors received 4.8 on average. Most respondents found the course length appropriate (77% in T1, 87% in T2).

Finally, during the midline assessment, we also explored why participants had not previously acquired a tablet or upgraded their internet connection. Table A16 outlines key barriers. Cost was the most frequently cited reason (60%), followed by lack of digital knowledge (24%) and perceived lack of necessity (22%). Similarly, among those without home internet, financial constraints were the primary obstacle (56%), followed by low perceived need (29%) and lack of technical knowledge (18%). These findings underscore the economic and informational barriers to digital inclusion that the intervention sought to address.

<sup>12</sup>Diplomas were awarded to those attending at least 5 (T1) or 9 (T2) sessions. A few who missed one session but reviewed the material were also certified. Furthermore, in Table A13, we explore the correlation between individual or household characteristics and the likelihood of enrolling in the intervention or obtaining a diploma. For instance, high school graduates were slightly more likely to enroll (6%) and earn a diploma (6%) compared to less-educated participants. Having more children increased the probability of enrolling (5%) but did not show a significant difference in obtaining the diploma. Interestingly, employed participants were less likely to enroll and graduate compared to their unemployed counterparts, particularly in T2, where the effect is stronger.

<sup>13</sup>Figure A2 in Appendix C shows full attendance trends. In T1, 40% attended all nine sessions; in T2, attendance was more dispersed. See Table A14 for full session-by-session data.

### 3 Conceptual Framework

To evaluate the impact of our intervention, we articulate a conceptual framework that outlines the mechanisms through which access to digital technology and training can improve the various outcomes of marginalized households. A companion section in Appendix D integrates a concise theory of change with a formal model that rationalizes these hypotheses and illustrates the underlying decision mechanisms. This framework guides our analysis by organizing outcomes into two main categories: immediate results, such as increased device usage and improved digital skills, and broader economic outcomes, including parental involvement, social inclusion, and enhanced labor market engagement. We also compare the relative effectiveness of the two training formats.

We begin with hypotheses related to direct effects of the intervention. **H1** posits that providing access to digital devices and internet connectivity increases participants' adoption and use of technology in their daily lives. This hypothesis rests on the assumption that economic constraints are a key barrier to technology use, and that removing these constraints will enable greater digital participation. While other barriers may limit uptake — including steep learning curves, low perceived relevance, or social norms discouraging technology use — our midline findings suggest these factors are less salient in this context. Hence, if at endline we observe an increase in technology adoption and usage among both treatment groups compared to the control, we interpret this as evidence that access and basic support are sufficient to promote digital uptake.

**H2** focuses on the core component of the program—digital skills training. We hypothesize that participation in training improves participants' digital literacy, as measured by the DSI index. Although learning differences, limited formal education, or low attendance could plausibly weaken impacts, the midline results indicate strong engagement and minimal barriers to participation. Therefore, we expect to find substantial gains in digital skills among both T1 and T2 participants at endline, confirming that accessible training can meaningfully enhance digital proficiency.

We then turn to hypotheses about broader behavioral and economic outcomes. **H3a** hypothesizes that improved technology access and digital skills enable parents to better support their children's learning and online safety, fostering more active and informed digital parenting. **H3b** considers the role of digital inclusion in facilitating access to public services and social support measures — especially those that require navigating digital platforms. Finally, **H3c** posits that enhanced technology access and digital skills improve labor market engagement, as reflected in participants' current job-seeking behavior and expectations about employment or training. If these outcomes improve, it would indicate that digital exclusion was a binding constraint. If not, it may suggest the need for complementary interventions.

Finally, **H4** concerns the relative effectiveness of the two treatment arms. We hypothesize that participants in T2 — who received a longer, more advanced training — will exhibit stronger impacts on digital skills and downstream outcomes, especially in domains requiring higher-level competencies such as content creation, problem-solving, job search strategies, and digital parenting. However, if the effects are comparable across T1 and T2, this would suggest that T1 is sufficient to trigger autonomous learning and/or that the training exhibits diminishing returns, such that the additional training time has no detectable effect. A formal explanation that rationalizes these hypotheses and illustrates the underlying decision mechanisms is provided in Appendix

## 4 Estimation Strategy and Results

To rigorously evaluate the impact of the intervention, we structure this section around three key components. First, we define the primary outcomes to capture both immediate and broader effects of digital inclusion. Second, we outline our estimation strategy, leveraging the experimental design to identify causal effects while accounting for potential biases, including multiple hypothesis testing adjustments to control for false discoveries. Finally, we present the main results. We also explore heterogeneity in impacts, discuss potential confounding factors that may influence our findings, and examine issues of compliance and attendance.

### 4.1 Primary Outcomes

To address our research questions, we classify our primary outcomes into five categories: *technology adoption*, *digital skills*, *digital parenting*, *social inclusion*, and *labor market engagement*. Each category comprises multiple outcomes. In Tables A17–A21 of Appendix E.1, we provide detailed documentation of each primary outcome variable, including exact survey question wording, construction method, coding, and possible answer categories. For certain outcomes, we construct summary indexes that aggregate multiple variables. In these cases, the index is calculated by averaging the z-scores of the underlying variables, adjusting their direction so that higher scores indicate more favorable outcomes.<sup>14</sup> The following sections detail each variable within its respective category.

**Technology adoption.** This category examines participants’ ownership and usage of digital devices in their daily life, including the provided tablet and any other computers or tablets available at home. We do not focus solely on tablets because computers and tablets are often interchangeable. Conversely, we exclude smartphones from this analysis, as the baseline survey showed that nearly all participants already own one. We are interested in both the frequency of device usage by participants and their children. The primary outcomes of interest for this category are four. (i) *Tablet*: this variable takes value 1 if the participant has a tablet available at home, 0 otherwise. (ii) *Device ownership*: this variable sums the total number of devices (tablets and computers) available at home. (iii) *Participant’s device usage*: this variable measures how often a respondent uses a tablet or computer at home, with responses ranging from 0 (never) to 6 (several times a day). Participants without any device at home are assigned a value of 0. (iv) *Children’s device usage*: respondents report how often up to two of their children use a tablet or computer at home. For respondents with more than two children, two are randomly selected, prioritizing those in primary or lower secondary education. Responses range from 0 (never) to 5 (every day). For participants without any device at home, the variable is set to 0. If responses are provided for two children, the final value is the average of the two responses.

**Digital Literacy Skills.** This category evaluates the effectiveness of the training program in enhancing participants’ digital literacy skills. As discussed in Section 2.4, digital skills were initially assessed at base-

<sup>14</sup>The z-scores are computed by subtracting the control group mean and dividing by the control group standard deviation, ensuring that each component of the index has a mean of 0 and a standard deviation of 1 within the control group. The use of summary indexes follows established practices in the literature; see, for example, Kling et al. (2007), Anderson (2008), Heller et al. (2016).

line using a predictive model derived from a subset of the Eurostat DSI index. At endline, we expand this measurement by administering the full battery of Eurostat questions, which comprehensively assesses digital competencies across five domains: information and data literacy, communication and collaboration, digital content creation, safety, and problem-solving (Eurostat, 2022). This allows us to capture a more detailed and precise measure of digital proficiency.

**Digital Parenting.** This category evaluates participants' ability to support their children online and use digital tools to contribute to their personal and academic development. We focus on two domains, constructing an index for each one of them.<sup>15</sup> (i) *Engagement* in digital activities beneficial for children. Respondents are asked how often, for up to two children: (a) they use the school app to monitor the child's performance and attendance; (b) they use digital tools together for recreational activities; (c) they use digital tools together for educational purposes.<sup>16</sup> (ii) *Self-efficacy* as a digital parent. Respondents rate their agreement with statements regarding their ability to guide their children in the digital world. Specifically, they report whether: (a) they know how ensure that their children access age-appropriate contents online; (b) they are able to manage the time that their children spend online; (c) they know how to find online resources to support their children's schooling or other activities.<sup>17</sup>

**Social inclusion.** This category measures whether participants use technology to enhance their access to public services and income support measures, making the process easier and more efficient for themselves and their families. The primary outcomes of interest are three. (i) *Use of digital identity*: this dummy variable takes a value 1 if the respondent has an Italian public digital identity and used it at least once autonomously in the past five months.<sup>18</sup> (ii) *Digital inclusion*: this variable captures whether in the past five months the respondent utilized public digital resources for tasks that would otherwise be more complex or time-consuming to complete in person. Specifically, they are asked if they: (a) logged into the National institute for Social Security (INPS) portal; (b) made a payment using the public administration's dedicated portal (e.g., for taxes or fines); (c) used the regional health portal for medical services (e.g. to book a medical appointment or download a prescription); (d) enrolled their children in a summer camp through a dedicated website. All these activities were covered in the T2 course, with some also introduced in T1. The variable ranges from 0 to 4, with 1 point assigned for each activity done. (iii) *Application to income support measures*: this dummy variable takes value 1 if the participant submitted at least one new application for a public income measure aimed at poverty alleviation in the past five months. These applications are typically submitted online, furthermore internet resources can help users discover less-known support measures and understand eligibility requirements.

**Labor Market Engagement.** This category aims to capture participants' eagerness to secure employment and improve their labor market prospects. The primary outcomes of interest are four. (i) *Openness to work*:

<sup>15</sup>In the PAP, we had specified a third index, factual *knowledge*, intended to capture awareness of basic rules and recommendations regarding children and the digital world. Respondents were asked: (a) the minimum age for creating a social media profile; and (b) the maximum recommended daily screen time for children aged 5–8. However, we dropped this index from the analysis because the questions were not well understood by respondents. Concepts like “minimum” and “maximum” were often misinterpreted, with respondents tending to report what they believed to be the optimal age or duration. Moreover, instructors likely emphasized the need for strict supervision and caution, which may have led treated respondents to systematically underestimate the correct answers. As a result, the responses do not reliably capture actual knowledge.

<sup>16</sup>Items (b) and (c) are loosely inspired by the [LSE Parenting for a digital future survey](#) (items 28.1,2,6 and 33.4).

<sup>17</sup>Huang et al. (2018) show that digital skills are positively correlated with digital parenting self-efficacy. Our items were inspired by their battery of questions, the [2023 Pew Research Center's teens survey](#) (items PAR4 a-c), and the [2021 OFCOM's Children's media literacy survey](#) (item QP48B).

<sup>18</sup>The Public Digital Identity System (SPID) provides access to all digital services of the Italian public administration and selected private companies.

this dummy variable equals 1 if the respondent is either employed, actively seeking employment, or willing to work even if not currently looking. (ii) *Active effort*: this dummy variable takes value 1 if the respondent actively pursued an improvement in their labor market status by preparing or updating their CV, consulting an employment service, or enrolling in a training program. (iii) *Employment prospects*: respondents reported their perceived probability of being employed 12 months from the survey date. (iv) *Training prospects*: respondents reported their perceived probability of attending a training program to improve their skills or qualifications within the next 12 months.

## 4.2 Estimation Strategy

To estimate the causal effects of our intervention on the primary outcomes, we leverage the random assignment design of our experiment. Where available, we include baseline measures of the outcome variables, following an ANCOVA specification. We pre-registered this specification because conditioning on the baseline increases precision whenever outcomes are less than perfectly persistent (McKenzie, 2012). We also control for strata fixed effects based on the variables used in the randomization process. In all specifications, standard errors are clustered at the classroom level to account for intra-classroom correlations. We estimate the following equations, for participant  $i$  enrolled in class  $c$ , using OLS regressions:

$$Y_{ic}^j = \alpha^j + \beta_1^j T1_{ic} + \beta_2^j T2_{ic} + \gamma^j Y_{ic}^{j,0} + \delta_s^j + \varepsilon_{ic}^j,$$

where  $Y_{ic}^j$  denotes the  $j$ -th outcome variable as introduced in the previous section,  $T1_{ic}$  and  $T2_{ic}$  are treatment indicators,  $Y_{ic}^{j,0}$  is a baseline measure of the outcome (when available),  $\delta_s^j$  represents strata  $s$  fixed effects, and  $\varepsilon_{ic}^j$  is the error term. We observe baseline measures of the outcomes for device ownership, DSI indicator, labor market status, expectations regarding employment and training, application to income support measures.

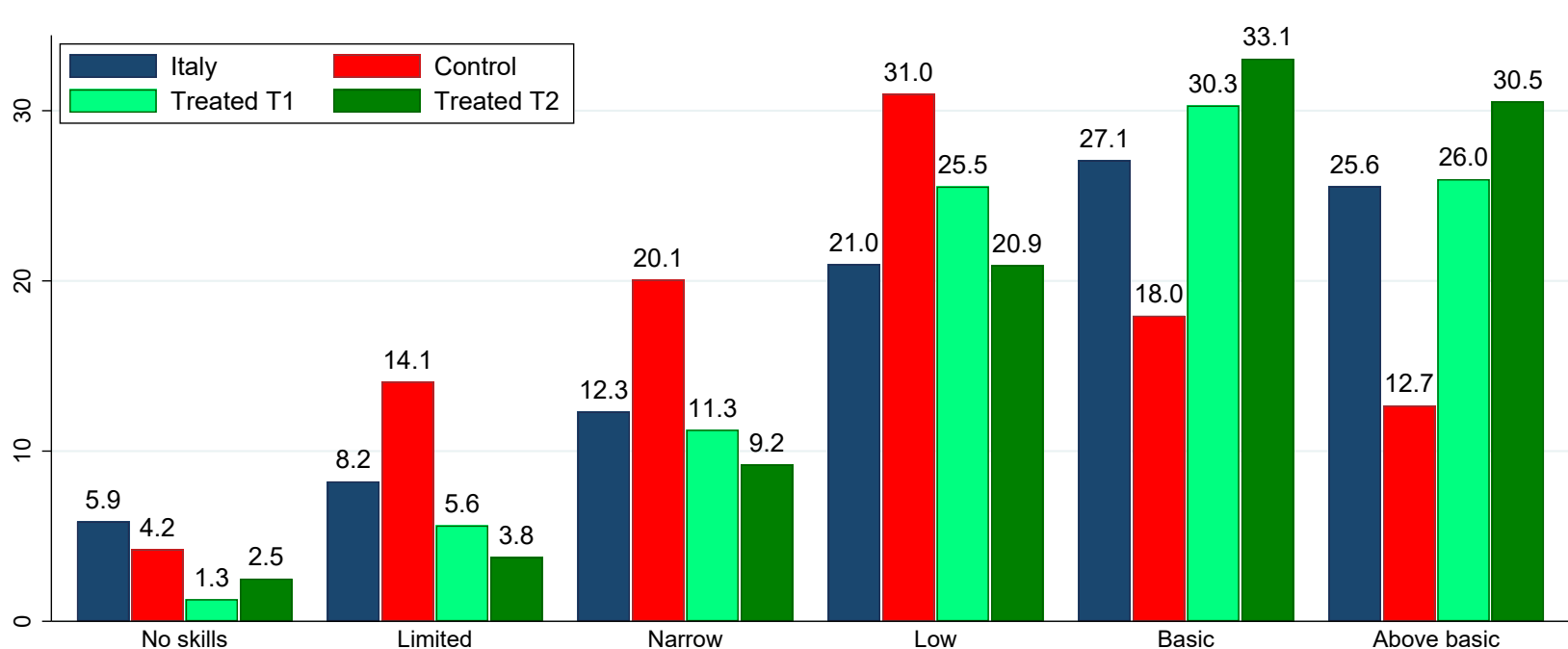
Given the multiple outcomes and statistical tests in our study, we apply adjustments for multiple hypothesis testing (MHT) to control the risk of Type I errors (false positives). To address this, we organize our primary outcomes into five distinct families: (1) *Technology Adoption*, (2) *Digital Literacy*, (3) *Digital Parenting*, (4) *Social Inclusion*, and (5) *Labor Market Engagement*. Within each family, we control the false discovery rate (FDR) using Benjamini et al. (2006) procedure, which balances the detection of true effects while limiting the likelihood of false positives. In our results, we report both unadjusted and adjusted p-values to provide a comprehensive view of statistical significance.

## 4.3 Main Results

We begin by providing descriptive evidence of the substantial impact of the intervention on digital literacy — the primary outcome identified by our implementing partner and the core objective of the DigitAll program. Enhancing digital competencies was, in fact, the necessary first step toward achieving improvements in parenting, public service use, and labor market engagement. Moreover, the DSI index was also the only outcome for which we could conduct ex-ante power calculations, and thus provides the most rigorous test of program effectiveness. Figure 3 shows that the intervention led to substantial improvements in digital skills, closing the gap with the average level in the Italian population. It plots the proportion of participants belonging to each

skill category by treatment arm and compares it with the national distribution from Eurostat (as in Figure 1).

**Figure 3: Digital Literacy: Comparison with the Italian Population**



Notes: The figure compares digital skill levels among treated participants with the national averages reported by Eurostat for the Italian adult population.

Fewer than 31% of participants in the control group reached at least “Basic” proficiency — well below the national average of approximately 53% — and fewer than 13% attained “Above basic” skills, roughly half the national average. Conversely, treated individuals slightly outperform the Italian population: 56% of T1 participants and 64% of T2 participants reached at least “Basic” proficiency, with 26% and 31% respectively attaining “Above basic” skills.

**Technology adoption and digital literacy.** Table 3 presents the regression results of the intervention on technology adoption and digital literacy. Columns (1) to (4) assess the extent to which participants expanded their technological endowments and increased their device usage. Column (1) shows that assignment to either T1 or T2 increased the likelihood of tablet ownership by about 63-65 percentage points. To some extent, these large effects were expected, as treated participants received tablets as part of the program. Nonetheless, this result serves as a useful sanity check that they still owned a functioning tablet several months after the end of the intervention. Moreover, it confirms that participants in the control group did not purchase the device on their own after learning that they were not eligible for a free one: only 26% of households in the control group owned a tablet at endline, a proportion comparable to the figure at baseline. This suggests that financial constraints were in place and that the intervention endowed participants with a tool that they would not have purchased on their own. Similarly, column (2) indicates that T1 increased the number of devices at home by 0.69, while T2 led to an increase of 0.81, more than doubling the control group average of 0.57. Column (3) measures participants’ frequency of device usage on a 0-6 scale. T1 increased usage by 2.62 points, and T2 by 2.71 points. With a control mean of 1.27, these results reflect a shift from occasional to more regular device usage. Column (4) measures children’s device usage on a 0–5 scale. Both T1 and T2 increased usage by approximately 1.88 points, nearly doubling the control group average of 1.45. These results indicate a substantial rise in both parents and children’s digital engagement. Differences between T1 and T2 in Columns (1), (3) and (4) are small and not statistically significant.

**Table 3: Technology Adoption & Digital Skills**

|                   | (1)                           | (2)                           | (3)                           | (4)                           | (5)                           |
|-------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
|                   | Technology adoption           |                               |                               |                               | Digital skills                |
|                   | Tablet<br>[0,1]               | Devices<br>[N]                | Participant<br>[0,6]          | Children<br>[0,5]             | DSI<br>[1,6]                  |
| Assigned T1       | 0.630**<br>(0.034)<br>[0.001] | 0.693**<br>(0.069)<br>[0.001] | 2.624**<br>(0.216)<br>[0.001] | 1.875**<br>(0.172)<br>[0.001] | 0.714**<br>(0.124)<br>[0.001] |
| Assigned T2       | 0.650**<br>(0.033)<br>[0.001] | 0.814**<br>(0.085)<br>[0.001] | 2.714**<br>(0.232)<br>[0.001] | 1.874**<br>(0.168)<br>[0.001] | 0.813**<br>(0.120)<br>[0.001] |
| Strata FE         | ✓                             | ✓                             | ✓                             | ✓                             | ✓                             |
| Lag Dep. Var.     | ✓                             | ✓                             |                               |                               | ✓                             |
| N                 | 754                           | 754                           | 754                           | 754                           | 754                           |
| adjR <sup>2</sup> | 0.447                         | 0.305                         | 0.282                         | 0.247                         | 0.203                         |
| p-val(T2-T1)      | 0.482                         | 0.078                         | 0.712                         | 0.992                         | 0.482                         |
| Mean C            | 0.257                         | 0.574                         | 1.271                         | 1.454                         | 3.824                         |
| Sd C              | 0.438                         | 0.805                         | 2.087                         | 1.942                         | 1.344                         |

Notes: Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*Tablet*, *Devices*, and *DSI*). Standard errors are clustered at the class level. The variable *Tablet* is a binary indicator equal to 1 if the participant reports owning a tablet, and 0 otherwise. *Devices* is the total number of tablets and computers available at home. *Participant* measures the frequency of computer or tablet use by the participant, ranging from 0 (never) to 6 (several times a day). *Children* captures the average frequency with which up to two children use a computer or tablet at home, measured on a scale from 0 (never) to 5 (every day). *DSI* represents the Digital Skills Indicator, a composite index ranging from 1 (no skills) to 6 (above basic skills). The numbers in square brackets are sharpened False Discovery Rate (FDR) q-values computed using [Benjamini et al. \(2006\)](#) method for Multiple Hypothesis Testing (MHT).  
<sup>+</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

Regarding digital skills, Column (5) reports the effects of the intervention on the overall DSI, the same composite index underlying the distribution shown in Figure 3. As described earlier (Section 2.4), this index captures competencies across five domains on a 0–6 scale. T1 improved DSI scores by 0.71 points and T2 by 0.81 points — an 18–21% increase relative to the control group mean of 3.82. These estimates corroborate the descriptive patterns seen in the figure, where treated participants show a clear shift toward higher proficiency levels. The T2 effect is slightly larger, but the difference between T1 and T2 is not statistically significant. To provide a more intuitive sense of what a significant increase in the DSI represents, treated participants (both T1 and T2) are more likely to search the Internet for information about goods or services, use more word processing and spreadsheet software, engage more frequently in basic digital tasks such as copying or moving files across folders, devices, or cloud services, etc. One might argue that the results on the DSI are somewhat “mechanical”: the training program teaches specific digital activities, and beneficiaries simply replicate them. However, this interpretation appears rather implausible for three reasons. First, as shown below, we find positive effects for both treatments even in activities that were not directly taught during the classes. Second, as emphasized by [Aker et al. \(2024\)](#), it is generally much more difficult to teach adults in a way that “sticks” compared to children, due to adults’ lower neural plasticity. Third, our outcome variable captures actual digital behaviors (not knowledge) after the classes have ended, and it is far from obvious that adults would continue performing these activities once the prompting provided by the program disappears.<sup>19,20</sup>

<sup>19</sup>Table A22 in Appendix E.2 provides a breakdown of these results across the individual domains of the DSI. The strongest effects are observed in *Content Creation* and *Safety*, where both T1 and T2 significantly increased the share of participants reaching at least basic proficiency (by 20–28 percentage points) and above-basic proficiency (by 16–24 percentage points). Significant gains are also seen in *Problem-Solving*, particularly at the above-basic level. Improvements in *Information* are more modest, with a significant increase only in the share reaching basic proficiency. Results for *Communication* are not reported, as nearly all participants already had above-basic skills in this domain at baseline.

<sup>20</sup>Table A23 in Appendix E.2 presents an alternative specification of digital literacy outcomes, focusing on two aggregate measures: (i) achieving at least basic proficiency on the overall DSI index and (ii) attaining above-basic proficiency. T1 and T2 significantly increased the likelihood of reaching basic proficiency

Overall, these results support our primary hypotheses H1 and H2. The provision of digital devices and connectivity, coupled with training, successfully increased technology adoption and improved digital literacy. This suggests that barriers related to learning or relevance were effectively mitigated.

**Digital parenting and social inclusion.** Table 4 examines whether the intervention influenced digital parenting and social inclusion. Column (1) measures the frequency of parental engagement in digital activities beneficial for their children (specifically, using digital tools for educational purposes or recreational activities, monitoring the school app). T1 increased engagement by 0.43 standard deviations (SD), and T2 by 0.29 SD. Table A24 in Appendix E.3 provides a breakdown of parental engagement outcome across its components. Notably, the strongest effects are observed in the educational activities domain: the intervention greatly increased the time spent with children using digital tools for educational purposes.<sup>21</sup> Column (2) evaluates parents' confidence in guiding their children's in the digital world. T1 increased self-efficacy by 0.56 SD, and T2 by 0.64 SD. As shown in Table A25 in the Appendix E.4, the intervention had large and significant effects on all components of the self-efficacy index.<sup>22</sup> Overall, these results support hypothesis H3a: digital literacy fostered more active and informed digital parenting. For both engagement and self-efficacy, the difference between T1 and T2 is not significant, indicating that both training durations were similarly effective.

Columns (3) to (5) address social inclusion outcomes. Column (3) assesses “digital identity,” defined as holding and using SPID (Italy's public digital identity). T1 increased the likelihood of SPID use by 15.8 percentage points, and T2 by 22.6 percentage points. Column (4) measures the access to online platforms for social security, health, tax, and child-related services. T1 increased usage by 0.65 points and T2 by 0.76 points.<sup>23</sup> Column (5) measures whether participants submitted at least one application for benefits and income support in the past five months. T1 increased applications by 12.5 percentage points, while T2 had a smaller, non-significant effect of 4.9 percentage points. These results support hypothesis H3b: digital literacy reduced barriers to public service access and income support.

**Labor market engagement.** Table 5 evaluates labor market engagement. Columns (1) and (2) examine current behavior. Column (1) measures “openness to work”; neither T1 nor T2 had significant effects. Column (2) captures effort in job search; both effects are also insignificant. Column (3) measures the perceived probability of employment in the next 12 months (0-100 scale). T1 increased this probability by 6.43 percentage points, and T2 by 6.58 points, both marginally significant. Column (4) captures the perceived probability of training. T1 increased this by 22.1 percentage points and T2 by 14.5 points. These findings partially support hypothesis H3c: training increased future labor market optimism but did not prompt immediate behavior changes, likely reflecting structural constraints. In the following, we discuss this issue in more detail.

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by 25 and 31 percentage points, respectively, and above-basic proficiency by 13 and 16 percentage points, with no significant differences between the two groups. Column (3) reports the total number of digital activities performed independently (out of 34). Both T1 and T2 significantly increased this measure by about 3.5 to 3.8 tasks, relative to a control mean of 12.1.

<sup>21</sup>T1 and T2 improved this outcome by 0.52 SD and 0.37 SD, respectively. Significant gains are also found in the *Recreational activities* domain, with increases of 0.42 SD for T1 and 0.29 SD for T2. Improvements in *School App* usage are positive but not statistically significant.

<sup>22</sup>T1 and T2 significantly improved participants' ability to ensure that their children access age-appropriate content online (*Safety online*) by 0.46 SD and 0.53 SD, respectively, and improved their ability to manage the time their children spend online (*Time spent online*) by 0.47 SD and 0.54 SD. Moreover, T1 and T2 increased participants' ability to support children's schooling or other online activities (*Help online*) by 0.56 SD and 0.63 SD.

<sup>23</sup>Table A26 in Appendix E.5 shows results separately for the four items included in the “Public Tools” outcome. All effects are significant and range from 11 to 20 percentage points.

**Table 4: Digital Parenting & Social Inclusion**

|                   | (1)                           | (2)                           | (3)                           | (4)                           | (5)                           |
|-------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
|                   | Digital Parenting             |                               | Social Inclusion              |                               |                               |
|                   | Engagement<br>[Z-score]       | Self Efficacy<br>[Z-score]    | Digital Identity<br>[0,1]     | Public Tools<br>[0,4]         | New Application<br>[0,1]      |
| Assigned T1       | 0.426**<br>(0.120)<br>[0.001] | 0.563**<br>(0.107)<br>[0.001] | 0.158**<br>(0.049)<br>[0.002] | 0.650**<br>(0.197)<br>[0.002] | 0.124**<br>(0.038)<br>[0.002] |
| Assigned T2       | 0.292**<br>(0.089)<br>[0.002] | 0.644**<br>(0.097)<br>[0.001] | 0.226**<br>(0.040)<br>[0.001] | 0.758**<br>(0.157)<br>[0.001] | 0.054<br>(0.034)<br>[0.012]   |
| Strata FE         | ✓                             | ✓                             | ✓                             | ✓                             | ✓                             |
| Lag Dep. Var.     |                               |                               |                               |                               | ✓                             |
| N                 | 754                           | 754                           | 754                           | 754                           | 754                           |
| adjR <sup>2</sup> | 0.083                         | 0.171                         | 0.151                         | 0.150                         | 0.076                         |
| p-val(T2-T1)      | 0.301                         | 0.480                         | 0.169                         | 0.618                         | 0.088                         |
| Mean C            | 0.000                         | 0.000                         | 0.356                         | 0.891                         | 0.137                         |
| Sd C              | 1.000                         | 1.000                         | 0.480                         | 1.506                         | 0.345                         |

**Notes:** Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*New Application*). Standard errors are clustered at the class level. The variable *Engagement* measures how frequently participants use digital tools with their children for education and entertainment and monitor their school performance via apps. It is standardized to have a mean of 0 and standard deviation of 1 in the control group. *Self-Efficacy* captures participants' confidence in guiding their children's digital behavior, including ensuring age-appropriate content, managing screen time, and finding online educational resources. This variable is standardized similarly to Engagement. *Digital Identity* is a binary indicator equal to 1 if the participant has an Italian public digital identity (SPID) and has used it autonomously in the past five months. *Public Tools* measures the number of public digital services the participant has accessed in the past five months, including social security, tax payments, health services, and child-related services. The variable ranges from 0 to 4. *New Application* is a binary indicator equal to 1 if the participant submitted at least one new application for an income support measure in the past five months. The numbers in square brackets are sharpened False Discovery Rate (FDR) q-values computed using [Benjamini et al. \(2006\)](#) method for Multiple Hypothesis Testing (MHT). <sup>+</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

**Table 5: Labor Market Engagement**

|                   | (1)                          | (2)                          | (3)                                      | (4)                            |
|-------------------|------------------------------|------------------------------|------------------------------------------|--------------------------------|
|                   | Current Behavior             |                              | Future Expectations                      |                                |
|                   | Openness<br>[0,1]            | Effort<br>[0,1]              | Pr. Employment<br>[0,100]                | Pr. Training<br>[0,100]        |
| Assigned T1       | -0.047<br>(0.035)<br>[0.308] | -0.001<br>(0.039)<br>[0.574] | 6.431 <sup>+</sup><br>(3.379)<br>[0.121] | 22.106**<br>(4.775)<br>[0.001] |
| Assigned T2       | -0.011<br>(0.030)<br>[0.348] | -0.043<br>(0.043)<br>[0.177] | 6.575 <sup>+</sup><br>(3.578)<br>[0.187] | 14.514**<br>(4.998)<br>[0.016] |
| Strata FE         | ✓                            | ✓                            | ✓                                        | ✓                              |
| Lag Dep. Var.     | ✓                            |                              | ✓                                        | ✓                              |
| N                 | 754                          | 754                          | 754                                      | 754                            |
| adjR <sup>2</sup> | 0.192                        | 0.030                        | 0.091                                    | 0.086                          |
| p-val(T2-T1)      | 0.309                        | 0.129                        | 0.971                                    | 0.221                          |
| Mean C            | 0.750                        | 0.511                        | 50.771                                   | 31.697                         |
| Sd C              | 0.434                        | 0.501                        | 32.659                                   | 29.868                         |

**Notes:** Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*Openness*, *Pr. Employment*, *Pr. Training*). Standard errors are clustered at the class level. The variable *Openness to Work* is a binary indicator equal to 1 if the participant is employed, actively seeking employment, or willing to work despite not currently looking. *Effort in Job Search* is a binary indicator equal to 1 if the participant engaged in activities to improve their labor market status, including updating their CV, consulting an employment service, or enrolling in a training program. *Perceived Probability of Employment* measures participants' self-reported likelihood (0-100) of being employed in 12 months. *Perceived Probability of Training* captures participants' self-reported likelihood (0-100) of enrolling in a skills development or training program in the next 12 months. The numbers in square brackets are sharpened False Discovery Rate (FDR) q-values computed using [Benjamini et al. \(2006\)](#) method for Multiple Hypothesis Testing (MHT). <sup>+</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

## 4.4 Discussion

**T1 vs T2.** Regarding hypothesis H4, the comparison between T1 and T2 across all three tables provides no consistent evidence that the longer training produced stronger outcomes. While T2 had a slightly larger effect on device ownership, digital skills, and digital identity, these differences are not statistically significant. Across other outcomes, both training formats led to similarly positive results. We also examine whether T2 has a stronger effect than T1 on digital skills for which T2 offers supplementary instruction. To this end, we map each digital activity included in the DSI questionnaire into one of four categories: (1) activities covered by both T1 and T2 (e.g., internet browsing; see Tables A1 and A2); (2) activities covered by both treatment arms but in greater depth in T2 (e.g., word processing); (3) activities covered only in T2 (e.g., digital payments); and (4) activities not covered by either treatment (e.g., online banking services). Using this classification, we construct a digital skills indicator for each category by aggregating responses through simple averages and re-estimate our baseline model on four distinct dependent variables. The results, reported in Table 6, show no statistically significant differences between the two treatment arms across any category, not even in Column (3).

There are two possible non-mutually exclusive explanations for the absence of a differential effect. First, a learning effect may be at play: once financial and cognitive barriers are removed, learning becomes a self-sustaining process. Column (4) supports this interpretation: both T1 and T2 have sizable effects on activities not covered by either treatments. Second, there may be diminishing returns to training. Consistent with this interpretation, attendance in the T2 arm averaged 80% during the first nine lessons (matching the length of T1) but declined to 71% over the remaining six lessons (see Table A14).

**Cost effectiveness.** Is our intervention cost-effective? The total cost of the program amounts to approximately 460,000 euros, including tablets and connections (202,000), *Ufficio Pio*'s labor cost (98,000), and training and other expenses (180,000). Given 522 beneficiaries, the average cost per treated individual is 881 euros, which should be interpreted as an upper bound, as our results indicate that the additional contents provided in the (longer) treatment arm T2 do not generate any additional effect relative to T1. We perform two back-of-the-envelope calculations to put this figure in perspective. First, the per capita cost of DigitAll is considerably lower than the *average* of active labor market policies in Italy - 2,156 euros in 2023, according to the Labour Market Policies Database managed by the European Commission - which have shown limited effectiveness (OECD, 2019a). Second, suppose we use T1 to reduce the share of the Italian population aged 16–74 with no digital skills (5.9%, see Figure 1a) to the EU average (3.3%). Considering that (i) T1 increases the DSI score by 0.714 (see Table 3, Column (5)), (ii) the Italian population in this age range is about 44 million, and assuming homogeneous treatment effects, the implied cost would amount to roughly 14% of the total expenditure on active labor market policies in Italy.<sup>24</sup> Overall, our findings suggest that the program is both effective and cost-efficient, in line with the broader policy objective of reducing the digital divide.

**Side effects.** We discuss potential unintended consequences of our intervention, as a rapidly growing body of evidence has documented substantial adverse effects of increased digital connectivity and social media

<sup>24</sup>The total cost of equalizing the share of individuals with no digital skills to the EU average would be about 1.4 billion euros, computed as  $(5.9\% - 3.3\%) \times 44 \text{ million} \times 881 / 0.714$  euros. For comparison, total expenditure on active labor market policies in Italy amounted to 10.3 billion euros in 2024 (source: Labour Market Policies Database).

use on well-being, both among adults (e.g., Allcott et al., 2020, 2022, 2025) and younger individuals (e.g., Arenas-Arroyo et al., 2025; Donati et al., 2025; Braghieri et al., 2022). In Table 6, Column (5), we replicate our baseline specification using the average of all DSI items except those related to social network use as the dependent variable. In Column (6), the dependent variable is instead the average of the two questions specifically addressing social network use. While the first exercise confirms that both T1 and T2 positively affect digital skills, the second shows that this improvement does not translate into greater use of social media. In Column (7), the dependent variable is a single DSI item capturing how frequently respondents “limit access to [their] profile or content on social networks or cloud services”. We find a positive effect for both T1 and T2. Regarding potential adverse effects on children, results discussed in previous subsection 4.3 are reassuring. On the one hand, treated parents use devices to engage with their children (Table 4, Column (1)), specifically in educational activities (Table A24). On the other hand, they have higher self-efficacy as digital parents (Table 4, Column (2)), specifically, they are more confident in their ability to ensure access to age-appropriate content and manage time spent online (Table A25). Although our evidence regarding children is admittedly limited, as we lack variables capturing their actual online behavior, we believe that our digital inclusion program effectively balances the desired improvements in digital skills with the mitigation of potential side effects related to digital dependence.

**Table 6:** T1 and T2 course intensity and DSI

|                      | (1)                | (2)                | (3)                | (4)                | (5)                | (6)              | (7)                |
|----------------------|--------------------|--------------------|--------------------|--------------------|--------------------|------------------|--------------------|
|                      | T1 & T2            | T2 > T1            | Only T2            | Not T1 nor T2      | DSI no Social      | DSI only Social  | Online safety      |
| Assigned T1          | 0.126**<br>(0.024) | 0.127**<br>(0.039) | 0.075**<br>(0.025) | 0.073**<br>(0.020) | 0.104**<br>(0.021) | 0.021<br>(0.031) | 0.179**<br>(0.048) |
| Assigned T2          | 0.141**<br>(0.021) | 0.152**<br>(0.030) | 0.090**<br>(0.026) | 0.070**<br>(0.017) | 0.114**<br>(0.018) | 0.030<br>(0.035) | 0.211**<br>(0.042) |
| Strata FE            | ✓                  | ✓                  | ✓                  | ✓                  | ✓                  | ✓                | ✓                  |
| N                    | 754                | 754                | 754                | 754                | 754                | 754              | 754                |
| adj(R <sup>2</sup> ) | 0.200              | 0.127              | 0.098              | 0.148              | 0.224              | 0.036            | 0.094              |
| T2-T1                | 0.015              | 0.025              | 0.015              | -0.003             | 0.010              | 0.008            | 0.032              |
| p-val(T2-T1)         | 0.573              | 0.569              | 0.613              | 0.903              | 0.679              | 0.821            | 0.516              |
| Mean C               | 0.483              | 0.285              | 0.461              | 0.178              | 0.331              | 0.648            | 0.299              |
| Sd C                 | 0.235              | 0.318              | 0.286              | 0.117              | 0.171              | 0.409            | 0.459              |

*Notes:* Each regression includes strata fixed effects, standard errors are clustered at the class level. The variable *T1 & T2* is a binary indicator equal to 1 if the activity is covered by both T1 and T2. *T2 > T1* is a binary indicator equal to 1 if the activity is covered by both treatment arms but in greater depth in T2. *Only T2* is a binary indicator equal to 1 if the activity is covered only in T2. *Not T1 nor T2* is a binary indicator equal to 1 if the activity is not covered by either treatment. *DSI no social* is the average of all DSI items except those related to social network use. *DSI only social* is the average of the two questions specifically addressing social network use. *Online safety* is a single DSI item capturing how frequently respondents “limit access to your profile or content on social networks or cloud services”. <sup>+</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

**Labor market outcomes.** Table 5 shows that neither T1 nor T2 has any effect on outcomes related to participants’ actual behavior in the labor market, namely Openess and Effort. How can we interpret this evidence? We provide some non-mutually-exclusive explanations. One possibility is that the characteristics of individuals in our RCT sample (e.g., low-income households, predominantly women and immigrants) imply that the probability to be employed is generally low, perhaps due to cultural or other barriers, regardless of improvements in digital skills. The comparison of the baseline employment and unemployment rates in our sample (20.7% and 65.4%, respectively) with the corresponding figures for the Italian labor market as a whole

(62.4% and 8.3%) supports this interpretation.<sup>25</sup>

Even when employed, individuals in our sample may tend to work in occupations where digital skills play only a minor role (e.g., cleaning services, construction). In such case as well, improvements in digital proficiency would not translate into changes in behavior. Since there are no ready-to-use data to substantiate this conjecture, we proceed as follows. We use data from the European Skills, Competences, Qualifications and Occupations (ESCO) database to link skills to occupations, classified according to the ISCO-08 taxonomy.<sup>26</sup> For each 3-digit occupation, we compute the number of digital skills required, normalized by the total number of skills associated with that occupation. We then draw on microdata from the Italian Labor Force Survey (LFS), using all quarterly waves from 2022 to 2024, and merge it with the occupation-level dataset of digital skill intensity. This allows us to attach to all employed individuals a measure of digital skill-intensity given by the share of digital skills. Next, we use LFS-ESCO data to regress the share of digital skills on a set of individual and household characteristics and use the estimated coefficients to impute digital-skill intensity for individuals in our RCT sample.<sup>27</sup> The resulting average value is 4.0%, well below the corresponding figure for the universe of Italian workers computed on the LFS-ESCO dataset (6.9%). This finding is consistent with the second interpretation above: the lack of an effect of T1/T2 on Openness or Effort may stem from the characteristics of individuals in our RCT sample, who work or may aspire to work in occupations with limited scope for the use of digital skills.

Another possibility is that, for individuals in the RCT sample, hiring occurs primarily through word-of-mouth rather than through channels that require digital skills. As above, to empirically corroborate this conjecture we impute the relevance of this channel in the RCT sample by running ancillary regressions on the LFS sample. Specifically, we use as dependent variable a dummy equal to one if the current job was found through family, friends, or other personal connections as the main job-search channel, while we use the same characteristics used to impute the share of digital skills as predictors.<sup>28</sup> The results indicate that, in our sample, the average predicted probability of relying on personal connection to find a job is 45.3%, much higher than the corresponding Italian average (27.4%).

Thus far, our interpretations are based on comparisons between means. Another additional insight can be obtained by looking at the right tail of the RCT sample: is there an effect of T1/T2 on Openness or Effort at least among individuals who at baseline are active in the labor market, or whose imputed share of digital skills is *above* the national average? For these subsamples, the mechanisms described above should be less relevant. To investigate this possibility, we construct the following indicator variables: one identifying individuals who are employed or actively looking for a job at baseline (60% of the sample), and another identifying those whose imputed share of digital skills is above the Italian average (19% of the sample). We then use these indicators in a heterogeneity analysis.<sup>29</sup> Results, reported in Table A27, indicate that even for these subpopulations we

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<sup>25</sup>The official figures on the Italian labor market are drawn from the Italian Statistical Institute (ISTAT, [www.istat.it](http://www.istat.it)) and refer to the seasonally unadjusted data for October 2023, the month during which most applications were collected.

<sup>26</sup>Data available at <https://esco.ec.europa.eu/en>.

<sup>27</sup>The regressors are: gender, age, age squared, migrant status, eight dummies for educational attainment, household characteristics (dummies for children younger than 6, children aged 6–11, children aged 12–17, total number of children, dummies for single parent, and for households with three adults or more), 20 regional dummies, and one dummy for major cities (more than 100,000 inhabitants). Regression results are available upon request.

<sup>28</sup>As above, regression results are available upon request.

<sup>29</sup>We cannot run the same heterogeneity exercise for individuals who are predicted to use the word-of-mouth channel less frequently than the Italian average, as this condition is met by only 4% of the sample.

do not detect any positive effect of T1/T2 on Openness or Effort.<sup>30</sup> This finding suggests that also structural constraints - other than the lack of digital skills - are likely to limit labor market engagement. Consequently, improving digital skills does not necessarily translate into better labor market outcomes, contrary to what is often believed in policy discussions (e.g., [OECD, 2025](#)). Needless to say, this conclusion applies to our sample of low-income, disadvantaged individuals, which is nevertheless the key target population for policy interventions.<sup>31</sup>

## 4.5 Robustness checks

To assess the reliability of our findings, we conduct a comprehensive set of robustness checks, organized into six main categories, which were specified in the pre-analysis plan. Full results are reported in Appendices [E.7](#) and [E.7.6](#).

First, we assess the potential for attrition bias by comparing baseline characteristics of respondents and non-respondents at endline. As shown in Tables [A28–A30](#), attrition is not systematically correlated with treatment status or baseline covariates, suggesting that it is unlikely to bias our results.<sup>32</sup> Second, we restrict the analysis to specific subsamples. In Tables [A31–A33](#), we focus exclusively on female participants, and in Table [A34–A36](#), we restrict the sample to respondents who were rated by the enumerator as highly engaged with the interview. The results in both cases are consistent with those from the full sample. Third, we examine the sensitivity of results to course location. Tables [A37–A39](#) control for whether participants were assigned to a course different from their stated preference. Tables [A40–A42](#) control for variation across course locations. The results are again robust. Fourth, for two key outcomes that are important to understand spillovers to children—“Device usage” and “Engagement”—which are measured at the child level and averaged at the household level, we also re-estimate the effects using child-level data. Results (Tables [A43](#) and [A44](#)) are fully consistent. Fifth, to improve estimation precision, we apply Post-Double Selection Lasso ([Belloni et al., 2013](#)) to select relevant baseline covariates that are most predictive of each outcome. As reported in Tables [A45–A47](#), the main results remain robust across domains, with the exception that all labor market effects become statistically insignificant, suggesting that these outcomes are more sensitive to model specification.

Finally, to account for potential interviewer effects, we include fixed effects for the five enumerators who conducted the endline survey. Results are reported in Tables [A48–A50](#). Coefficient estimates remain broadly consistent. The only notable exception appears in Table [A50](#), where the estimates for labor market expectations decrease in magnitude and lose statistical significance, indicating that responses related to future employment may have been more influenced by differences in how enumerators conducted the interviews. We also control for participants’ subjective evaluations of their enumerator (e.g., “Extremely engaged and sincere”) in Tables [A51–A53](#). The results are broadly similar.

Overall, across these exercises, the main findings remain generally stable, with only minor variations in magnitude or statistical significance.

<sup>30</sup>Results are similar when restricting the sample to individuals who were employed at baseline, as discussed in the heterogeneity analysis in Section [4.7](#).

<sup>31</sup>We also replicate the analysis using the total number of digital skills, rather than the share of digital skills, and obtain very similar results.

<sup>32</sup>Across all outcomes—demographics, technological endowment, digital skills, parenting, labor market engagement, and social inclusion—differences are small in magnitude, and few are statistically significant. Based on these results, while the pre-analysis plan proposed applying [Lee \(2009\)](#) bounds to address potential attrition bias, the analysis shows that such corrections are unnecessary.

## 4.6 Possible Confounds

We now consider two potential sources of bias that could offer alternative explanations for our results: (i) spillover effects from treated participants to the control group, (ii) non-compliance or heterogeneous take-up of the intervention.<sup>33</sup> Results from robustness checks addressing each concern are presented below and reported in Appendix E.8 and E.9.

**Spillover Effects.** While geographic spillovers to controls are unlikely given participants' dispersion across the city, our main concern is cross-treatment-arm spillover at the training centers—e.g., T1 participants informally learning content from T2 peers as one class exits and the next enters—which could compress differences between T2 and T1. If such spillovers occurred, they would likely bias estimates downward, attenuating the true treatment effects. Although randomization was conducted at the individual level, we took steps to minimize contamination: participants were geographically dispersed across Turin, and scheduling and location choices were designed, as far as feasible, to avoid contiguous classes and to form distinct clusters. Because control participants did not attend training sessions, we cannot directly test for spillovers to the control group. However, we conduct a plausibly related robustness check by excluding participants assigned to course locations where T1 and T2 sessions were held consecutively on the same day (e.g., a T1 class from 9–11 AM followed immediately by a T2 class from 11 AM–1 PM). This restriction minimizes the risk of interaction between treated groups, reducing the potential for information diffusion or behavioral convergence between T1 and T2 participants. Although this check does not involve controls, it serves as an indirect test of whether close physical and temporal proximity among participants generates spillovers. Results are presented in Tables A54–A56. This restriction, which reduces the sample to 73% of its original size, leaves results largely unchanged.<sup>34</sup>

**Non-Compliance and Heterogeneity of Attendance.** A third potential confound arises from imperfect compliance with the assigned treatment. Participants may have failed to fully engage with the intervention—either by not enrolling, missing training sessions, or underusing the provided tablet. If low engagement is systematically related to unobserved characteristics (e.g., motivation, time constraints, or baseline skills), treatment estimates could be biased, especially if more motivated individuals are also more likely to attend and benefit. In practice, however, administrative data show high take-up across both treatment arms, suggesting that selective participation is unlikely to pose a major threat to internal validity.<sup>35</sup>

To explore heterogeneity in treatment intensity, we leverage detailed attendance data to estimate dose-response relationships. Specifically, we model outcomes as a function of hours of attendance and its square, instrumenting both variables using random assignment to the T1 and T2 training arms, with strong first-stage results as expected. This two-stage least squares (2SLS) approach allows us to estimate the causal effect of program

<sup>33</sup>These potential sources of bias were specified in our pre-analysis plan. As discussed in the pre-analysis plan, a usual concern in randomized controlled trial is the Hawthorne effect—that is, participants altering their behavior simply because they knew they were being observed. However, in our setting Hawthorne effect is unlikely to explain treatment-control differences, as all participants—regardless of assignment—were subject to the same data collection protocols and aware they were enrolled in a study. Any behavioral response due to observation should thus affect both groups equally.

<sup>34</sup>One notable change is observed in Table A56, where the estimated effects on perceived employment prospects increase in magnitude and become statistically significant. We do not have a clear explanation for this shift, and it may reflect random variation rather than a systematic pattern.

<sup>35</sup>We also estimate treatment-on-the-treated (TOT) effects using random assignment as an instrument for actual enrollment. As expected, the first-stage results confirm strong instrument relevance, with all tests exceeding conventional thresholds. Results, presented in Tables A57–A59, show that TOT estimates are consistently larger than the ITT effects, reflecting an average take-up rate of about 80%. These findings confirm that meaningful improvements occurred among those who actually enrolled in the program—reinforcing that DigitALL's effectiveness depends on participation, not just assignment or access.

intensity, while accounting for the endogeneity of attendance.<sup>36</sup> As shown in Tables A60–A62, we find that the coefficient on attendance is consistently positive and significant, while the squared term is negative and significant — indicating diminishing returns to program intensity. Across most domains, the estimated optimal exposure ranges between 15 and 22 hours — just below the maximum dosage offered in T1 (18 hours) and well within the cap of T2 (30 hours) — suggesting that the majority of participants were exposed to a sufficiently effective intensity. Together, these patterns support the view that DigitALL’s effectiveness is driven by active learning and meaningful engagement — not merely device receipt or assignment to treatment. Furthermore, the inverted U-shaped relationship between the number of hours completed and various outcomes supports the idea that active, autonomous learning and/or diminishing returns of the training are at work.

## 4.7 Heterogeneous Treatment Effects

To examine whether the effects of the intervention vary across key baseline characteristics, we explore heterogeneous treatment effects along several pre-specified dimensions by interacting the treatment indicators with the relevant baseline variables. The full set of results is reported in Appendix E.10.

First, we examine whether baseline digital proficiency moderates treatment effects (Tables A63–A65).<sup>37</sup> For most outcomes, the interaction terms are not significant, indicating that participants benefit similarly from the intervention regardless of initial skill levels. Second, we assess heterogeneity by baseline technological endowment, analyzing whether treatment effects vary depending on prior ownership of digital devices (Tables A66 – A68) or internet access (Tables A69 – A71).<sup>38</sup> Perhaps not surprisingly, higher technological endowment at baseline is associated with smaller effects on technological adoption outcomes. Nonetheless, the intervention significantly increased device ownership and use even among participants who already had a device or home internet connection at baseline. For digital skills and for most other outcomes differences are not significant, proving that participants with better initial technological resources also benefited from the intervention.

Third, we assess heterogeneity by age, education and migration background (Tables A72–A80).<sup>39</sup> Non-Italian and younger participants appear to benefit more in terms of technology adoption. Similarly, we test whether the presence of a child under six in the household influences treatment impacts (Tables A81–A83), finding that it is associated with significantly larger effects on tablet and device ownership and participant usage. Fourth, we analyze whether employment status at baseline modifies treatment effects (Tables A84–A86).<sup>40</sup> While

<sup>36</sup>Random assignment to T1 and T2 produces variation in hours of attendance that spans the 0–30 range, with moderate overlap between groups in the 10–18 hour range. However, the higher range of attendance (20–30 hours), which disproportionately affects the curvature of the dose-response relationship, is mostly driven by T2. We therefore interpret quadratic estimates cautiously, as they rely heavily on between-arm variation and limited within-arm overlap.

<sup>37</sup>The heterogeneity variable is a binary indicator equal to 1 if the respondent’s baseline digital skills index (predicted) is at least 4. In Table A63 the interaction term for *Tablet* (T1) is significant and negative, while in Table A64 *Self-efficacy* (T2) shows a significant negative interaction.

<sup>38</sup>Device ownership equals 1 if the household owned at least a tablet or a computer at baseline; internet access equals 1 if the household had a dedicated home internet connection at baseline. In tables A66 and A69 interaction terms are negative and significant for *Tablet*, *Participant*, and *Children*. In Table A67 *Self-efficacy* (T1) shows a positive and significant interaction. *New application* shows a negative and significant interaction for T1 in Table A67 and for T2 in Table A70. In Table A68 *Openness* (T2) has a negative and significant interaction.

<sup>39</sup>The age threshold is the sample median (39 years); education is measured as completing at least high school; migration status equals 1 for non-Italian participants. In Table A72, treatment effects on device accumulation and children’s usage are stronger among younger participants (T1). Table A74 shows no significant differences, though coefficients are more often negative for older participants. Table A75–A77 report no significant interactions by education. In Table A78, treatment effects are significantly larger for non-Italians (T1) on *Tablet*, *Devices*, and *Participant*. Table A80 finds that T2 effects on *Effort* and *Pr. employment* are significantly smaller for non-Italians.

<sup>40</sup>The heterogeneity variable equals 1 if the respondent was employed at baseline. Results in Table A86 show a significant negative interaction for *Pr. training* (T2), indicating greater improvements in training prospects among those initially unemployed.

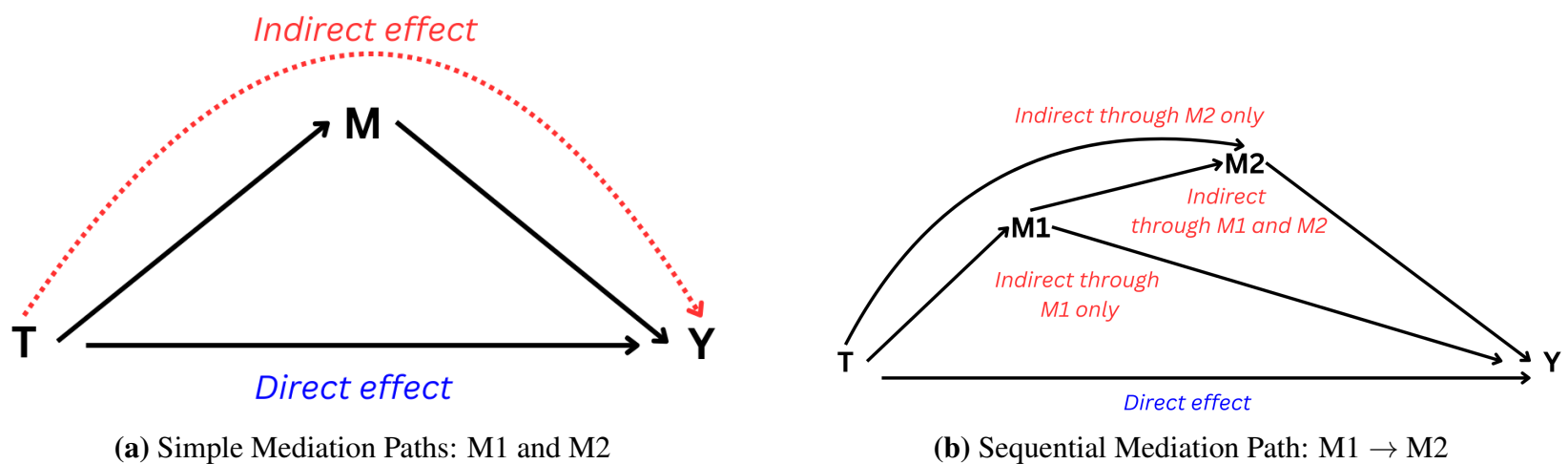
no significant interactions are observed in the other domains, labor market expectations show larger effects among those not employed at baseline. Finally, we explore whether pre-existing engagement in children’s schooling moderates treatment effects (Tables A87–A89), finding no significant differences.<sup>41</sup>

Taken together, these findings indicate that the treatments were broadly effective, with large gains for all participants targeted by the intervention. Moreover, technological adoption increased the most among participants without prior technological endowment, those with a migration background, younger participants and those with young children — a pattern consistent with the intervention easing key constraints among more disadvantaged groups.

## 5 Mediation analysis

To deepen our understanding of how the intervention affects outcomes, we conduct a mediation analysis following the framework of Imai et al. (2010), Heckman and Pinto (2015) and Daniel et al. (2015). This approach allows us to identify and quantify the mechanisms through which access to technology and digital skills training influence behavioral and economic changes. Given that the effects of the short and long training arms are substantively similar across most outcomes, we simplify the analysis by pooling them into a single general treatment indicator  $T$ . Guided by the conceptual framework illustrated in Figure 4, we examine three distinct mediation pathways. All mediation pathways and estimation steps were specified in our pre-analysis plan. Panel 4a depicts two simple mediation models: one in which the treatment affects outcomes through technology adoption alone (M1), and another in which it operates through digital skills (M2). Panel 4b illustrates the sequential model, where the treatment first enhances technology access (M1), which in turn enables the development of digital skills (M2), ultimately influencing broader outcomes. These models provide a roadmap for the empirical analysis that follows.

**Figure 4: Mediation Pathways**



Notes: Panel (a) illustrates the two simple mediation mechanisms: one where treatment influences outcomes via technology adoption (M1), and another where it also operates via digital skills (M2). Panel (b) depicts the sequential mediation logic, in which the treatment first affects technology access (M1), which in turn enables improvements in digital skills (M2), ultimately affecting broader outcomes.

<sup>41</sup>The variable equals 1 if the respondent reported school-related engagement at baseline.

## 5.1 Simple Mediation Paths

Table 7 examines the extent to which technology adoption mediates the effect of the intervention on digital literacy. The mediation analysis decomposes the total treatment effect into direct effects (independent of technology adoption) and indirect effects (operating through increased technology use). The table reports the proportion of the treatment effect on digital literacy outcomes that is mediated through one of two measures of technology adoption: either tablet ownership or the number of devices at home.<sup>42</sup>

**Table 7:** Technology Adoption as a Mediator Between Treatment and Digital Literacy

|                                    | (1)                 | (2)          | (3)         | (4)               |
|------------------------------------|---------------------|--------------|-------------|-------------------|
|                                    | Mediated Effect (%) |              |             |                   |
| <i>Mediator</i> ↓ <i>Outcome</i> → | DSI                 | Total Skills | DSI ≥ Basic | DSI = Above Basic |
| M1a: Tablet                        | 17.0                | 42.0         | 42.8        | 17.6              |
| p-value                            | 0.21                | 0.00         | 0.00        | 0.45              |
| M1b: Devices                       | 7.8                 | 17.6         | 8.4         | 13.6              |
| p-value                            | 0.24                | 0.02         | 0.29        | 0.33              |

*Notes:* Each row shows the percentage of the treatment effect on the listed outcome that is mediated through technology adoption. P-values indicate significance. Mediation effects are estimated via regressions detailed in Appendix E.11, controlling for one treatment assignment (T1 or T2) and strata fixed effects, with standard errors clustered at the class level. We examine different measures of digital skills as outcomes: *DSI* (overall digital skills index), *Total Skills* (total digital skills acquired), *DSI ≥ Basic* (proportion reaching at least basic proficiency), and *DSI = Above Basic* (proportion attaining above-basic proficiency). Similarly, we consider two measures of technology adoption as mediators: *Tablet* (tablet ownership) and *Devices* (total number of tablets and computers at home).

Overall, mediated effects range from modest to substantial depending on the outcome and the mediator. Tablet ownership accounts for a relatively large share of the effect on total skills (42%) and on reaching basic proficiency (43%), while its contribution to improving the overall DSI index is more limited (17%). In contrast, the number of devices at home mediates a smaller share of the effect, with point estimates ranging from 8% to 18% and weaker statistical significance. These patterns suggest that expanding access to technology is a relevant channel for improving digital skills—particularly through tablet provision—but also indicate that non-technological mechanisms, such as structured training, play an important complementary role.

Table 8 investigates to what extent digital literacy mediates the effect of the intervention on broader economic and parenting outcomes. To focus the analysis, we restrict attention to outcomes for which the total treatment effect was significant at the 10% level or better. Mediation effects are reported for one of two measures of digital proficiency: either the overall DSI index or the total number of digital skills acquired.<sup>43</sup> Results show that digital skills explain a substantial portion of the perceived probability of attending a training program within the next 12 months (45–47%), suggesting that higher proficiency encourages further educational engagement. Social inclusion outcomes exhibit the strongest mediation, with 52–63% of the effect on digital identity and 55–70% on public service use operating through digital skills. For digital parenting, 31–43% of the effect on digital engagement and 27–34% on self-efficacy is mediated, underscoring the importance of digital capability in supporting children’s learning. In contrast, mediation for welfare applications is limited

<sup>42</sup>Mediation estimates are calculated following the procedure detailed in Appendix E.11. Specifically, we first estimate the total effect of treatment on digital skills ( $DSI_{ic}$ ), then the effect of treatment on the mediator ( $A_{ic}$ ), and finally the effect of the mediator on the outcome, controlling for treatment and allowing for interactions. In practice, we use the `mediate` command in Stata developed by Hicks and Tingley (2011), which implements the potential outcomes framework for causal mediation analysis. Interaction terms allow for heterogeneous returns to technology adoption across treatment groups.

<sup>43</sup>We estimate these effects using the approach described in Appendix E.11. As before, we first regress each outcome on treatment to obtain total effects, then model digital literacy as a mediator and include it in the outcome regression alongside treatment, allowing for interactions.

(3–13%) and statistically insignificant, indicating that other constraints may play a larger role. Overall, these findings highlight digital literacy as a key mechanism behind the program’s effects in multiple domains.

**Table 8:** Digital Literacy as a Mediator Between Treatment and Economic Outcomes

|                                    | (1)                 | (2)              | (3)          | (4)             | (5)        | (6)           |
|------------------------------------|---------------------|------------------|--------------|-----------------|------------|---------------|
|                                    | Mediated Effect (%) |                  |              |                 |            |               |
| <i>Mediator</i> ↓ <i>Outcome</i> → | Pr. Training        | Digital Identity | Public Tools | New Application | Engagement | Self-Efficacy |
| M1a: DSI                           | 46.6                | 51.3             | 54.9         | 13.8            | 30.6       | 27.3          |
| p-value                            | 0.00                | 0.00             | 0.00         | 0.22            | 0.02       | 0.00          |
| M1b: Total Skills                  | 45.2                | 62.9             | 70.1         | 3.6             | 42.9       | 33.6          |
| p-value                            | 0.00                | 0.00             | 0.00         | 0.77            | 0.00       | 0.00          |

*Notes:* Each row represents the percentage of the treatment effect on the listed outcome that is mediated through digital literacy measures. P-values indicate the significance of mediation effects. Mediation effects are estimated via regressions detailed in Appendix E.11, controlling for one treatment assignment (T1 or T2) and strata fixed effects, with standard errors clustered at the class level. We examine different economic outcomes: *Pr. Training* captures participants’ perceived probability of enrolling in a training program within the next 12 months. *Digital Identity* is a binary indicator equal to 1 if the participant possesses and has used an Italian public digital identity (SPID) in the past five months. *Public Tools* measures the number of online public services accessed, including social security, tax payments, and health services. *New Application* is a binary indicator equal to 1 if the participant submitted at least one application for a public income support measure in the past five months. *Engagement* captures how frequently parents use digital tools with their children for education and entertainment and monitor school performance via apps. *Self-Efficacy* reflects participants’ confidence in guiding their children’s digital behavior, including managing screen time and ensuring age-appropriate content. We consider two different measures of digital skills as mediators: *DSI* represents the overall digital skills index. *Total Skills* captures the total number of digital skills acquired.

## 5.2 Sequential Mediation Path

Table 9 decomposes the treatment effects into direct and indirect components, illustrating how the intervention operates through sequential mediation—first via improved access to technology (M1), then through enhanced digital skills (M2). This framework enables us to distinguish among four channels: (i) a direct component; (ii) indirect effects through technology access only; (iii) indirect effects through digital skills only; and (iv) the sequential path from access to skills to outcomes.<sup>44</sup> The approach provides a structured way to quantify and differentiate these causal mechanisms, aligning with the core logic of the intervention: digital skills can only develop once participants gain access to technology, and skill acquisition subsequently enables broader economic and social behaviors. Compared to simpler mediation analyses, this strategy imposes stronger identifying assumptions but offers greater clarity in mapping multi-stage pathways.

Overall mediation is substantial for most outcomes: among social inclusion measures it reaches 84% for digital identity and 64% for public tools. Among parenting-related outcomes, it is 76% for engagement and 38% for self-efficacy. The probability of acquiring further training exhibits the lowest share at 29%. The sequential mediation analysis, however, reveals considerable heterogeneity across outcomes in the composition of indirect effects. While the skills-only (M2) pathway consistently represents the largest component, the access-only (M1) pathway is particularly pronounced for digital identity and parenting engagement, and less relevant for the remaining outcomes. The sequential  $M1 \rightarrow M2$  component is statistically significant across all outcomes but small—typically 6% – 9% of the total effect. Taken together, the results suggest that access and skills work in tandem, with skills being the primary driver of the intervention’s effects, and the sequential link contributes a modest but meaningful additional share on top of the dominant skills pathway.

<sup>44</sup>Sequential mediation effects are estimated following the methodology described in Appendix E.11. Letting  $T$  denote treatment assignment,  $A_{ic}$  technology adoption (M1),  $DSI_{ic}$  digital skills (M2), and  $Y_{ic}$  the outcome, we estimate four linked regressions: (1) a reduced-form model of  $Y_{ic}$  on  $T$ ; (2) the effect of  $T$  on  $A_{ic}$ ; (3) the effect of  $T$  and  $A_{ic}$  on  $DSI_{ic}$ , allowing for interactions; and (4) the full outcome model with  $T$ ,  $A_{ic}$ ,  $DSI_{ic}$ , and their interactions. The decomposition isolates the indirect effects through M1, M2, and the sequential  $M1 \rightarrow M2$  path.

**Table 9: Sequential Mediation Analysis**

|                                     | (1)                 | (2)              | (3)          | (4)             | (5)        | (6)           |
|-------------------------------------|---------------------|------------------|--------------|-----------------|------------|---------------|
|                                     | Mediated Effect (%) |                  |              |                 |            |               |
| <i>Mediators</i> ↓ <i>Outcome</i> → | Pr. Training        | Digital Identity | Public Tools | New Application | Engagement | Self-Efficacy |
| Indirect Effect                     | 28.8                | 84.2             | 63.8         | 32.9            | 76.2       | 38.0          |
| p-value                             | 0.03                | 0.00             | 0.00         | 0.17            | 0.00       | 0.00          |
| M1 only (Tablet)                    | -15.1               | 34.5             | 16.3         | 17.5            | 33.5       | 6.8           |
| p-value                             | 0.18                | 0.05             | 0.27         | 0.44            | 0.06       | 0.46          |
| M2 only (DSI)                       | 35.9                | 40.7             | 38.9         | 12.6            | 34.9       | 25.5          |
| p-value                             | 0.00                | 0.00             | 0.00         | 0.09            | 0.00       | 0.00          |
| M1 → M2                             | 8.0                 | 9.0              | 8.6          | 2.8             | 7.8        | 5.7           |
| p-value                             | 0.04                | 0.05             | 0.04         | 0.16            | 0.05       | 0.03          |
| Direct Effect                       | 71.2                | 15.8             | 36.2         | 67.1            | 23.8       | 62.0          |
| p-value                             | 0.00                | 0.50             | 0.06         | 0.01            | 0.33       | 0.00          |

*Notes:* The table decomposes the total treatment effect into mediated and direct components for six key outcomes. The total indirect effect is further disaggregated into three paths: (i) *M1 only* (tablet ownership only); (ii) *M2 only* (digital skills—DSI—only); and (iii) *M1 → M2* (sequential path via technology access followed by digital skills). Each row represents the percentage of the treatment effect on each outcome that is mediated through these paths. P-values indicate the statistical significance of each mediation component. Estimates are obtained using regressions described in Appendix E.11, controlling for treatment assignment (T1 or T2), with strata fixed effects and standard errors clustered at the class level. The six outcomes are the same as in Table 8.

## 6 Conclusion

This paper presents the first randomized controlled trial to jointly evaluate the effects of digital device access and digital skills training on the lives of low-income families in a high-income setting. Implemented in Turin, Italy, the DigitAll program provided disadvantaged households with a tablet, free internet access, and digital training of varying intensity. The intervention targeted both economic constraints - by providing equipment and connectivity — and learning barriers — through structured, tutor-led instruction. Our goal was to assess whether addressing both access and knowledge gaps could produce meaningful improvements in digital engagement, parental support, social inclusion, and labor market outlook.

The results demonstrate that basic digital inclusion policies can produce sizable and broad-based gains. One year after the intervention, participants in both training groups exhibited substantial improvements in digital proficiency and technology use. Many shifted from near-total exclusion to proficiency levels approaching the national average. Digital literacy also translated into more frequent and confident use of digital tools to support children’s education and navigate public services. While employment outcomes did not improve in the short run — suggesting that other structural constraints other than the lack of digital skills are likely to limit labor market engagement — treated participants reported greater optimism about future training and employment opportunities. We did not find unintended effects, such as excessive engagement with social media. Simple back-of-the-envelope calculations indicate that our digital inclusion program is cost-effective. Notably, both the short and long courses produced similar impacts. Our model suggests two non-mutually exclusive explanations for the lack of differential effects across the two treatment arms: (i) a learning effect—removing barriers triggers a self-sustaining learning process; and/or (ii) diminishing returns to training. In any case, the policy implication is reassuring: even small interventions can lead to sustained improvements without requiring intensive training.

Our mediation analysis confirms that these improvements occurred through both direct and sequential pathways: access to technology enabled skill acquisition, which in turn fostered behavioral change. Training enhanced parenting self-efficacy and public service use largely through gains in digital proficiency. However, the limited effects on welfare access and employment behavior indicate that digital skills alone may not be sufficient when institutional barriers or broader labor market constraints remain binding. These findings suggest that digital inclusion can be a powerful tool for promoting agency and inclusion, particularly when paired with user-friendly public infrastructure and complementary social policies.

Taken together, our findings provide strong support for using basic digital inclusion measures to reduce digital inequality. More generally, this study underscores the value of combining financial support with human capital investments to reduce persistent forms of exclusion in an increasingly digital world. Future work should explore the long-term returns to such interventions and assess whether digital empowerment can catalyze more structural improvements in well-being.

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# Appendix

- **Appendix A:** The appendix also includes full curricula for both treatment arms.
- **Appendix B.1:** Summarizes the characteristics and motivations of enrolled participants before treatment. Provides aggregate statistics for the full baseline sample across domains of demographics, technology access, digital skills, children's education, and employment.
- **Appendix B.2:** Presents balance statistics across experimental groups to assess whether baseline characteristics were comparable before treatment began.
- **Appendix C:** Covers implementation metrics, attendance patterns, survey completion rates, and participant feedback.
- **Appendix D:** Contains a detailed discussion of our theory of change and conceptual framework.
- **Appendix E.1:** Contains a detailed documentation of each outcome domain.
- **Appendix E.2:** Presents a breakdown of digital literacy skills by domain and proficiency level.
- **Appendix E.3:** Presents a breakdown of engagement by domain.
- **Appendix E.4:** Presents a breakdown of self-efficacy by domain.
- **Appendix E.7:** Presents a battery of robustness checks for the main endline results.
- **Appendix E.7.6:** Reports child-level regressions on device usage and parental engagement in digital activities.
- **Appendix E.8:** Presents robustness check to avoid spillover effects and heterogeneity by baseline technological endowment.
- **Appendix E.9:** Reports the results of 2 stage least square analysis.
- **Appendix E.10:** Reports the results of our heterogeneous treatment effects analysis.
- **Appendix E.11:** Presents the mediation analysis to decompose treatment effects on digital literacy and welfare outcomes through technology adoption and digital literacy.

## A DigitALL: Content and Details

**Table A1: Content Digitall T1**

| BASIC COURSE                                                     | MODE                | CONTENT DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                                              |
|------------------------------------------------------------------|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>LESSON 1: Smartphone and Wi-Fi router connection</b>          | In person           | Definition of what a smartphone is, its operating system and components (screen, battery, SIM...), with particular focus on managing basic settings. Then, the focus shifts to connectivity between the smartphone and mobile Wi-Fi, learning how to handle some simple basic settings.                                                                                                                                          |
| <b>LESSON 2: Internet browsing and Play Store</b>                | In person           | This module explains what the web is and how to browse it (searching with keywords, how to search for words, images, videos, and data), and how to manage browsing history. Then, it covers the app portal, the Play Store, and how to download an app while paying attention to reviews and PEGI ratings. Introduction to the SPID digital identity and how to obtain it.                                                       |
| <b>LESSON 3: Communicating with the school</b>                   | In person           | This lesson focuses on how to communicate effectively with your children's school using the online school register and how to navigate the school website. It covers the main features of the register: how to log in with the school account, how to monitor your child's academic progress, and how to stay updated via the message board.                                                                                     |
| <b>LESSON 4: Tablet and Google Meet</b>                          | In person           | In this lesson, tablets are handed out, followed by a practical session on how to set up and manage basic settings. Then, it focuses on downloading the Google Meet app from the Play Store to learn how to join meetings for online lessons and manage webcam, microphone, and screen sharing.                                                                                                                                  |
| <b>LESSON 5: Meet and medical prescriptions</b>                  | In person           | A detailed review of Google Meet's function buttons to show how to switch between Meet and another application. Then, it covers Gmail: how email works and what makes up an email (recipient, sender, subject, body, signature, attachments, etc.). A practical exercise follows, where participants send a medical prescription request email with an attachment.                                                               |
| <b>LESSON 6: Google Docs</b>                                     | In person           | Introduction to Google Docs and its most important features: writing, text size, alignment, color, font, inserting images, and naming documents. An email is sent with Gmail, attaching the document that has just been written.                                                                                                                                                                                                 |
| <b>LESSON 7: Cloud and CV</b>                                    | Online              | Explanation of what the cloud is ("cloud" of data and services accessible via the internet). A practical example with Google Drive is used to understand its purpose. Then, it explains how to back up the device, WhatsApp, and Google contacts (e.g., how saving contacts in Google makes them available across devices). It continues with an introduction to Europass for creating a CV and gives tips on how to job search. |
| <b>LESSON 8: Security</b>                                        | Online              | This lesson is dedicated to online security: explanation of cookies, their purpose, when it is useful to accept them and when not. It briefly discusses data regulations and privacy management on the device, and how to authorize consent for data processing on the tablet. Finally, useful information is provided for the children's use of the tablets.                                                                    |
| <b>LESSON 9: Conclusion, certificate delivery and assessment</b> | In person (grouped) | The final session is dedicated to reviewing the skills acquired through a questionnaire completed together and handing out certificates of participation.                                                                                                                                                                                                                                                                        |

Notes: The table summarizes the content of the nine-module digital literacy course for T1 participants. Lessons focused on foundational skills in connectivity, communication, document creation, online safety, and use of public services.

**Table A2: Content Digital T2**

| INTERMEDIATE COURSE                                               | MODE                | CONTENT DESCRIPTION                                                                                                                                                                                                                                                                       |
|-------------------------------------------------------------------|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>LESSON 1: Smartphone and Wi-Fi router connection</b>           | In person           | Identical to T1.                                                                                                                                                                                                                                                                          |
| <b>LESSON 2: Internet browsing and Play Store</b>                 | In person           | Identical to T1.                                                                                                                                                                                                                                                                          |
| <b>LESSON 3: Communicating with the school</b>                    | In person           | Identical to T1.                                                                                                                                                                                                                                                                          |
| <b>LESSON 4: Tablet and Google Meet</b>                           | In person           | Identical to T1.                                                                                                                                                                                                                                                                          |
| <b>LESSON 5: Meet and medical pre-prescriptions</b>               | In person           | Identical to T1.                                                                                                                                                                                                                                                                          |
| <b>LESSON 6: Google Docs</b>                                      | In person           | Identical to T1.                                                                                                                                                                                                                                                                          |
| <b>LESSON 7: Advanced Google Docs</b>                             | In person           | Google Docs is explored in more depth through a more complex document-writing exercise: inserting titles, tables, and images.                                                                                                                                                             |
| <b>LESSON 8: Cloud and CV</b>                                     | In person           | Identical to T1.                                                                                                                                                                                                                                                                          |
| <b>LESSON 9: Meeting with the employment center</b>               | Online              | A session with employment service staff to explore digital skills and tools necessary for job searching.                                                                                                                                                                                  |
| <b>LESSON 10: Spreadsheet with Google Sheets</b>                  | In person           | Introduction to tables and basic functions (sum, multiplication) and managing the contents of a cell, including related references.                                                                                                                                                       |
| <b>LESSON 11: Public administration</b>                           | Online              | Introduction to the Public administration. How to make online applications and requests, visit the INPS website, access the digital health record, use PagoPA, and manage digital identity (with some topics introduced in person), such as summer camp applications and social services. |
| <b>LESSON 12: Security</b>                                        | In person           | Identical to Lesson 8 in T1.                                                                                                                                                                                                                                                              |
| <b>LESSON 13: Social networks and safety for our children</b>     | Online              | Social networks from a safety perspective, including an introduction to popular platforms used by children (such as Twitch and TikTok) and online gaming.                                                                                                                                 |
| <b>LESSON 14: Digital payments</b>                                | Online              | E-commerce, credit cards, online payments, online tickets, and online bill payments.                                                                                                                                                                                                      |
| <b>LESSON 15: Conclusion, certificate delivery and assessment</b> | In person (grouped) | The final session is dedicated to reviewing the skills acquired through a questionnaire completed together and handing out certificates of participation.                                                                                                                                 |

Notes: The table summarizes the content of the fifteen-module digital literacy course for T2 participants. It expands on the basic course by adding in-depth modules on document editing, spreadsheets, online public services, job search, digital safety, and online transactions.

## B Baseline Analysis

### B.1 Details

**Table A3:** Reasons to Apply to DigitAll

|                                                         | (1)<br>Mean | (2)<br>S.D. | (3)<br>Min | (4)<br>Max |
|---------------------------------------------------------|-------------|-------------|------------|------------|
| To help my child with school and/or protect them online | 0.51        | 0.50        | 0          | 1          |
| To improve my digital skills                            | 0.50        | 0.50        | 0          | 1          |
| To access my rights and available assistance            | 0.24        | 0.43        | 0          | 1          |
| To enhance my work situation                            | 0.23        | 0.42        | 0          | 1          |
| To have free internet for one year                      | 0.18        | 0.39        | 0          | 1          |
| To enrich family relationships and leisure              | 0.13        | 0.34        | 0          | 1          |
| Number of reasons cited [1, 6]                          | 1.79        | 1.02        | 1          | 6          |
| Classrooms                                              | 102         |             |            |            |
| Observations                                            | 859         |             |            |            |

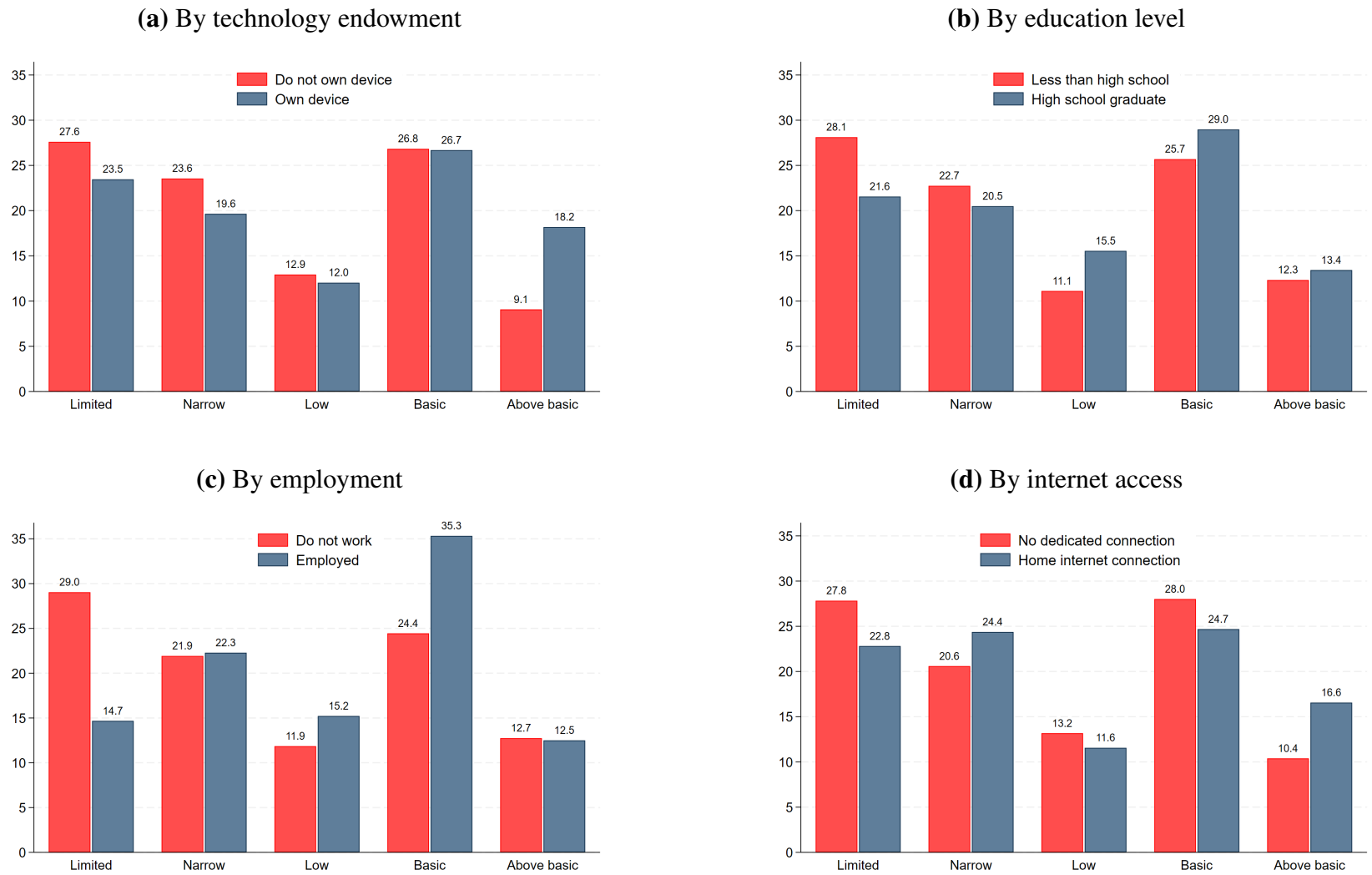
Notes: The Table reports the mean, standard deviation, minimum, and maximum values of some variables used in the paper. There is a total of 102 classrooms and 859 participants in our sample, living in Turin, Italy.

**Table A4:** Self-Reported Digital Activities in the last 3 months

|                                            | (1)<br>Mean | (2)<br>S.D. | (3)<br>Min | (4)<br>Max |
|--------------------------------------------|-------------|-------------|------------|------------|
| Used internet to send/receive emails       | 0.74        | 0.44        | 0          | 1          |
| Downloaded/installed software or apps      | 0.53        | 0.50        | 0          | 1          |
| Changed settings on software/apps/devices  | 0.37        | 0.48        | 0          | 1          |
| Ordered goods/services online              | 0.35        | 0.48        | 0          | 1          |
| Restricted access to location data         | 0.34        | 0.48        | 0          | 1          |
| Used internet to job search                | 0.33        | 0.47        | 0          | 1          |
| Copied/moved files between folders/devices | 0.33        | 0.47        | 0          | 1          |
| Denied use of personal data for ads        | 0.33        | 0.47        | 0          | 1          |
| Used writing software on PC/tablet         | 0.23        | 0.42        | 0          | 1          |
| Edited photos, videos, or audio            | 0.21        | 0.41        | 0          | 1          |
| Used spreadsheets for calculations         | 0.11        | 0.32        | 0          | 1          |
| Changed browser settings (last 12 months)  | 0.08        | 0.27        | 0          | 1          |
| Classrooms                                 | 102         |             |            |            |
| Observations                               | 859         |             |            |            |

Notes: The Table reports the mean, standard deviation, minimum, and maximum values of some variables used in the paper. There is a total of 102 classrooms and 859 participants in our sample, living in Turin, Italy.

**Figure A1: Baseline (predicted) Digital Skill Index (DSI)**



**Notes:** The figure shows the distribution of predicted digital skill levels among applicants. To obtain these predictions, we applied bagging – a machine learning algorithm particularly suitable for categorical dependent variables – which allowed us to both select the best explanatory variables and combine their information to predict the DSI index. The out-of-sample performance of the prediction in the “pilot” dataset was very good: almost 90% of the observations were placed in the correct category. The results highlight that most fall below basic skills, with ownership of digital devices, higher education, employment, and internet access modestly associated with improved, but not advanced, skill levels.

**Table A5: Anti-Poverty Measures Received (Past 12 Months): Drill Down**

|                                                     | (1)<br>Mean | (2)<br>S.D. | (3)<br>Min | (4)<br>Max |
|-----------------------------------------------------|-------------|-------------|------------|------------|
| Social utility bill bonus (electricity, gas, water) | 0.28        | 0.45        | 0          | 1          |
| Citizenship income (RdC)                            | 0.16        | 0.37        | 0          | 1          |
| Healthcare ticket exemption                         | 0.14        | 0.35        | 0          | 1          |
| Shopping card (social card)                         | 0.14        | 0.35        | 0          | 1          |
| Unemployment benefit (NASpI)                        | 0.05        | 0.23        | 0          | 1          |
| Rent bonus                                          | 0.05        | 0.21        | 0          | 1          |
| Nursery school bonus                                | 0.02        | 0.14        | 0          | 1          |
| Disabled child parent bonus                         | 0.01        | 0.10        | 0          | 1          |
| Telephone fee reduction                             | 0.01        | 0.08        | 0          | 1          |
| Other measures                                      | 0.03        | 0.16        | 0          | 1          |
| Classrooms                                          | 102         |             |            |            |
| Observations                                        | 859         |             |            |            |

**Notes:** The Table reports the mean, standard deviation, minimum and maximum values of some variables used in the paper. There is a total of 102 classrooms and 859 participants in our sample, living in Turin, Italy.

**Table A6:** Demographics, Technological Endowment, and Digital Skills

|                                                  | (1)<br>Mean | (2)<br>Median | (3)<br>S.D. | (4)<br>Min | (5)<br>Max |
|--------------------------------------------------|-------------|---------------|-------------|------------|------------|
| <b>Individual and household characteristics:</b> |             |               |             |            |            |
| Female                                           | 0.92        | 1.00          | 0.28        | 0          | 1          |
| Foreign background                               | 0.70        | 1.00          | 0.46        | 0          | 1          |
| Age                                              | 39.60       | 39.00         | 7.89        | 18         | 70         |
| High school graduate                             | 0.33        | 0.00          | 0.47        | 0          | 1          |
| Houseold size                                    | 4.51        | 5.00          | 1.30        | 2          | 10         |
| N adults (18+)                                   | 2.17        | 2.00          | 0.84        | 1          | 6          |
| N children (0-17)                                | 2.34        | 2.00          | 0.97        | 1          | 6          |
| N children born 2006-2020                        | 2.08        | 2.00          | 0.94        | 1          | 6          |
| Houseperson                                      | 0.51        | 1.00          | 0.50        | 0          | 1          |
| ISEE (€)                                         | 3,838       | 3,916         | 2,421       | 0          | 8,390      |
| <b>Technological endowment:</b>                  |             |               |             |            |            |
| Own phone                                        | 1.00        | 1.00          | 0.05        | 0          | 1          |
| N phone                                          | 2.30        | 2.00          | 0.97        | 0          | 11         |
| Own tablet                                       | 0.21        | 0.00          | 0.41        | 0          | 1          |
| N tablet                                         | 0.22        | 0.00          | 0.45        | 0          | 2          |
| Own PC                                           | 0.28        | 0.00          | 0.45        | 0          | 1          |
| N PC                                             | 0.32        | 0.00          | 0.61        | 0          | 5          |
| Own PC or tablet                                 | 0.40        | 0.00          | 0.49        | 0          | 1          |
| Internet used at home                            | 0.62        | 1.00          | 0.49        | 0          | 1          |
| Wi-fi at home                                    | 0.37        | 0.00          | 0.48        | 0          | 1          |
| <b>Digital skills:</b>                           |             |               |             |            |            |
| Index of digital skills (DSI) [1, 6]             | 3.78        | 4.00          | 1.41        | 2          | 6          |
| N digital activities [1, 12]                     | 3.95        | 3.00          | 3.29        | 0          | 12         |
| Classrooms                                       | 102         |               |             |            |            |
| Observations                                     | 859         |               |             |            |            |

Notes: The table displays the mean, median, standard deviation, minimum, and maximum values for the variables listed on the left. These variables encompass demographics, household characteristics, socio-economic indicators, technological access, and digital skills level (measured through the DSI index) and by the number of digital activities performed. There is a total of 102 classrooms and 859 participants in our baseline sample.

**Table A7: Parental Involvement in Children's Education**

|                                                   | (1)<br>Number | (2)<br>Percentage | (3)<br>Cumulative (%) |
|---------------------------------------------------|---------------|-------------------|-----------------------|
| <b>Help with homework:</b>                        |               |                   |                       |
| Never                                             | 176           | 23.37             | 23.37                 |
| Yearly                                            | 22            | 2.92              | 26.29                 |
| Monthly                                           | 67            | 8.90              | 35.19                 |
| Weekly                                            | 246           | 32.67             | 67.86                 |
| Daily                                             | 242           | 32.14             | 100.00                |
| Total                                             | 753           | 100.00            |                       |
| <b>Check school app ("Registro elettronico"):</b> |               |                   |                       |
| Never                                             | 140           | 18.59             | 18.59                 |
| Yearly                                            | 19            | 2.52              | 21.12                 |
| Monthly                                           | 69            | 9.16              | 30.28                 |
| Weekly                                            | 172           | 22.84             | 53.12                 |
| Daily                                             | 353           | 46.88             | 100.00                |
| Total                                             | 753           | 100.00            |                       |
| <b>Talk about school day:</b>                     |               |                   |                       |
| Never                                             | 20            | 2.35              | 2.35                  |
| Yearly                                            | 15            | 1.76              | 4.12                  |
| Monthly                                           | 50            | 5.88              | 10.00                 |
| Weekly                                            | 157           | 18.47             | 28.47                 |
| Daily                                             | 608           | 71.53             | 100.00                |
| Total                                             | 850           | 100.00            |                       |
| <b>Communicate with teachers:</b>                 |               |                   |                       |
| Never                                             | 46            | 5.41              | 5.41                  |
| Yearly                                            | 113           | 13.29             | 18.71                 |
| Monthly                                           | 303           | 35.65             | 54.35                 |
| Weekly                                            | 228           | 26.82             | 81.18                 |
| Daily                                             | 160           | 18.82             | 100.00                |
| Total                                             | 850           | 100.00            |                       |
| Classrooms                                        | 102           |                   |                       |
| Observations                                      | 859           |                   |                       |

**Notes:** The table reports frequencies of parental engagement in various educational activities, categorized by frequency of involvement: Never, Yearly, Monthly, Weekly, and Daily. Questions "Help with homework" and "Check school app" are asked to all applicants with children enrolled in compulsory education (from primary school on). Questions "Talk about school day" and "Communicate with teachers" are asked to all applicants with children in school (from preschool on). Percentages reflect the proportion of parents participating at each frequency level, illustrating overall engagement patterns in different aspects of their children's schooling. Items are originally categorized in Italian as "Mai o quasi mai," "Una o più volte all'anno," "Una o più volte al mese," "Una o più volte alla settimana," and "Tutti i giorni o quasi." There is a total of 102 classrooms and 859 participants in our baseline sample.

**Table A8: Social Inclusion and Labor Market Engagement**

|                                                               | (1)<br>Mean | (2)<br>Median | (3)<br>S.D. | (4)<br>Min | (5)<br>Max |
|---------------------------------------------------------------|-------------|---------------|-------------|------------|------------|
| <b>Anti-poverty measures received (past 12 months):</b>       |             |               |             |            |            |
| At least one welfare measure                                  | 0.53        | 1.00          | 0.50        | 0          | 1          |
| N. measures received                                          | 0.88        | 1.00          | 1.05        | 0          | 5          |
| <b>Employment status and willingness to work:</b>             |             |               |             |            |            |
| Employed                                                      | 0.21        | 0.00          | 0.41        | 0          | 1          |
| Looking for a job (past 4 weeks)                              | 0.46        | 0.00          | 0.50        | 0          | 1          |
| Looking for a job (past 4 weeks) (if not employed)            | 0.50        | 0.00          | 0.50        | 0          | 1          |
| Would like to work (if not employed and not looking)          | 0.33        | 0.00          | 0.47        | 0          | 1          |
| Never looked for a job                                        | 0.16        | 0.00          | 0.37        | 0          | 1          |
| Open to work (if employed, looking or willing to work)        | 0.73        | 1.00          | 0.44        | 0          | 1          |
| <b>Perceptions of labor market outcomes (next 12 months):</b> |             |               |             |            |            |
| Finding a job (if not employed)                               | 40.79       | 40.00         | 30.39       | 0          | 100        |
| Loosing current job (if employed)                             | 33.32       | 30.00         | 29.41       | 0          | 100        |
| Training to acquire further qualifications                    | 47.72       | 50.00         | 31.45       | 0          | 100        |
| <b>Main job search methods adopted (if ever searched):</b>    |             |               |             |            |            |
| Friends, relatives, acquaintances                             | 0.55        | 1.00          | 0.50        | 0          | 1          |
| Private employment agency                                     | 0.29        | 0.00          | 0.46        | 0          | 1          |
| Job advertisements                                            | 0.23        | 0.00          | 0.42        | 0          | 1          |
| Public employment service                                     | 0.22        | 0.00          | 0.41        | 0          | 1          |
| I contacted the employer directly                             | 0.07        | 0.00          | 0.26        | 0          | 1          |
| Training course, internship, or previous work experience      | 0.07        | 0.00          | 0.26        | 0          | 1          |
| The employer contacted me directly                            | 0.03        | 0.00          | 0.17        | 0          | 1          |
| Other method                                                  | 0.07        | 0.00          | 0.26        | 0          | 1          |
| Classrooms                                                    | 102         |               |             |            |            |
| Observations                                                  | 859         |               |             |            |            |

Notes: The table displays the mean, median, standard deviation, minimum, and maximum values for the variables listed on the left. These variables reflect participants' labor market engagement, job search methods, and dependence on anti-poverty measures. There is a total of 102 classrooms and 859 participants in our baseline sample.

## B.2 Balancing Tables

**Table A9:** Demographics, Technological Endowment, and Digital Skills

|                                                  | (1)<br>C        | (2)<br>T1       | (3)<br>T2       | (4)<br>F-stat | (1)-(2)<br>Normalized Difference | (1)-(3) | (2)-(3) |
|--------------------------------------------------|-----------------|-----------------|-----------------|---------------|----------------------------------|---------|---------|
| <b>Individual and household characteristics:</b> |                 |                 |                 |               |                                  |         |         |
| Female                                           | 0.92<br>(0.02)  | 0.92<br>(0.02)  | 0.92<br>(0.02)  | 0.02<br>0.98  | 0.01                             | 0.01    | 0.00    |
| Age                                              | 39.66<br>(0.47) | 39.91<br>(0.54) | 39.22<br>(0.63) | 0.47<br>0.63  | -0.01                            | 0.02    | 0.03    |
| High school graduate                             | 0.32<br>(0.02)  | 0.33<br>(0.03)  | 0.34<br>(0.04)  | 0.11<br>0.89  | -0.01                            | -0.01   | -0.00   |
| Employed                                         | 0.21<br>(0.03)  | 0.23<br>(0.04)  | 0.20<br>(0.04)  | 0.19<br>0.82  | -0.02                            | 0.00    | 0.02    |
| Unemployed                                       | 0.27<br>(0.03)  | 0.25<br>(0.03)  | 0.25<br>(0.02)  | 0.18<br>0.84  | 0.01                             | 0.02    | 0.00    |
| Houseperson                                      | 0.51<br>(0.03)  | 0.49<br>(0.05)  | 0.52<br>(0.05)  | 0.09<br>0.92  | 0.01                             | -0.01   | -0.01   |
| Household size                                   | 4.50<br>(0.07)  | 4.45<br>(0.09)  | 4.59<br>(0.10)  | 0.72<br>0.49  | 0.01                             | -0.02   | -0.03   |
| N adults (18+)                                   | 2.15<br>(0.05)  | 2.14<br>(0.04)  | 2.22<br>(0.06)  | 1.02<br>0.37  | 0.00                             | -0.03   | -0.03   |
| N children (0-17)                                | 2.35<br>(0.06)  | 2.32<br>(0.08)  | 2.36<br>(0.07)  | 0.14<br>0.87  | 0.01                             | -0.00   | -0.01   |
| N children born 2006-2020                        | 2.08<br>(0.06)  | 2.08<br>(0.07)  | 2.08<br>(0.07)  | 0.01<br>0.99  | -0.00                            | 0.00    | 0.00    |
| ISEE (€)                                         | 3,825<br>(135)  | 3,718<br>(126)  | 3,974<br>(135)  | 1.23<br>0.30  | 0.01                             | -0.02   | -0.03   |
| <b>Technological endowment:</b>                  |                 |                 |                 |               |                                  |         |         |
| Own phone                                        | 1.00<br>(0.00)  | 0.99<br>(0.01)  | 1.00<br>(0.00)  | 1.09<br>0.34  | 0.04                             | .       | -0.04   |
| N phone                                          | 2.30<br>(0.05)  | 2.26<br>(0.07)  | 2.29<br>(0.06)  | 0.19<br>0.83  | 0.02                             | 0.01    | -0.01   |
| Own tablet                                       | 0.21<br>(0.03)  | 0.21<br>(0.02)  | 0.21<br>(0.03)  | 0.01<br>0.99  | -0.00                            | -0.00   | -0.00   |
| N tablet                                         | 0.22<br>(0.03)  | 0.23<br>(0.02)  | 0.22<br>(0.03)  | 0.09<br>0.91  | -0.01                            | 0.00    | 0.01    |
| Own PC                                           | 0.26<br>(0.03)  | 0.31<br>(0.03)  | 0.28<br>(0.03)  | 1.18<br>0.32  | -0.04                            | -0.01   | 0.02    |
| N PC                                             | 0.28<br>(0.03)  | 0.37<br>(0.04)  | 0.34<br>(0.05)  | 2.23<br>0.12  | -0.05*                           | -0.03   | 0.02    |
| Own PC or tablet                                 | 0.38<br>(0.03)  | 0.41<br>(0.03)  | 0.42<br>(0.04)  | 0.37<br>0.69  | -0.02                            | -0.02   | -0.01   |
| Internet used at home                            | 0.61<br>(0.03)  | 0.62<br>(0.04)  | 0.63<br>(0.03)  | 0.21<br>0.81  | -0.01                            | -0.01   | -0.00   |
| Wi-Fi at home                                    | 0.37<br>(0.03)  | 0.39<br>(0.03)  | 0.37<br>(0.03)  | 0.14<br>0.87  | -0.01                            | -0.00   | 0.01    |
| <b>Digital skills:</b>                           |                 |                 |                 |               |                                  |         |         |
| Index of digital skills (DSI) [1, 6]             | 3.78<br>(0.09)  | 3.76<br>(0.11)  | 3.81<br>(0.10)  | 0.08<br>0.92  | 0.01                             | -0.01   | -0.01   |
| N digital activities [1, 12]                     | 3.97<br>(0.18)  | 3.87<br>(0.28)  | 4.00<br>(0.21)  | 0.01<br>0.99  | 0.01                             | -0.00   | -0.01   |
| Classrooms                                       | 337             | 262             | 260             |               |                                  |         |         |
| Observations                                     | 51              | 25              | 26              |               |                                  |         |         |

Notes: The table presents balance statistics for key variables across three groups: C, T1, and T2. It reports mean values and clustered standard errors (at the classroom level) for each group. Column (4) displays the results of an F-test across all groups, along with the associated p-values for joint significance. Normalized differences are shown for the group comparisons in columns (1)-(2), (1)-(3), and (2)-(3). Observations are at the participant level, and each specification includes strata fixed effects. Significance levels are marked: <sup>+</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

**Table A10: Parental Involvement in Children's Education**

|                                                   | (1)<br>C       | (2)<br>T1      | (3)<br>T2      | (4)<br>F-stat  | (1)-(2)<br>Normalized Difference | (1)-(3) | (2)-(3) |
|---------------------------------------------------|----------------|----------------|----------------|----------------|----------------------------------|---------|---------|
| <b>Help with homework:</b>                        |                |                |                |                |                                  |         |         |
| Never                                             | 0.22<br>(0.02) | 0.17<br>(0.04) | 0.21<br>(0.03) | 1.05<br>0.36   | 0.04                             | 0.01    | -0.03   |
| Yearly                                            | 0.02<br>(0.01) | 0.03<br>(0.01) | 0.02<br>(0.01) | 0.53<br>0.59   | -0.02                            | 0.01    | 0.03    |
| Monthly                                           | 0.10<br>(0.02) | 0.07<br>(0.02) | 0.06<br>(0.01) | 1.99<br>0.15   | 0.05*                            | 0.05*   | 0.00    |
| Weekly                                            | 0.27<br>(0.03) | 0.28<br>(0.03) | 0.31<br>(0.03) | 0.38<br>0.69   | -0.01                            | -0.03   | -0.02   |
| Daily                                             | 0.23<br>(0.03) | 0.34<br>(0.04) | 0.29<br>(0.03) | 4.71*<br>0.01  | -0.08**                          | -0.04   | 0.04    |
| <b>Talk about school:</b>                         |                |                |                |                |                                  |         |         |
| Never                                             | 0.02<br>(0.01) | 0.03<br>(0.02) | 0.01<br>(0.01) | 1.10<br>0.34   | -0.02                            | 0.03    | 0.05    |
| Yearly                                            | 0.03<br>(0.01) | 0.00<br>(0.00) | 0.02<br>(0.01) | 3.84**<br>0.03 | 0.07*                            | 0.02    | -0.05   |
| Monthly                                           | 0.08<br>(0.02) | 0.04<br>(0.01) | 0.05<br>(0.02) | 1.79<br>0.18   | 0.07+                            | 0.05    | -0.01   |
| Weekly                                            | 0.18<br>(0.02) | 0.18<br>(0.03) | 0.19<br>(0.03) | 0.07<br>0.94   | 0.00                             | -0.01   | -0.01   |
| Daily                                             | 0.67<br>(0.03) | 0.73<br>(0.04) | 0.73<br>(0.04) | 1.81<br>0.17   | -0.05+                           | -0.05   | 0.00    |
| <b>Check school app ("Registro elettronico"):</b> |                |                |                |                |                                  |         |         |
| Never                                             | 0.17<br>(0.02) | 0.17<br>(0.03) | 0.15<br>(0.03) | 0.35<br>0.71   | -0.00                            | 0.02    | 0.02    |
| Yearly                                            | 0.03<br>(0.01) | 0.02<br>(0.01) | 0.02<br>(0.01) | 0.34<br>0.71   | 0.02                             | 0.02    | -0.00   |
| Monthly                                           | 0.06<br>(0.01) | 0.08<br>(0.02) | 0.10<br>(0.02) | 1.18<br>0.32   | -0.02                            | -0.05   | -0.03   |
| Weekly                                            | 0.21<br>(0.02) | 0.19<br>(0.02) | 0.20<br>(0.03) | 0.34<br>0.72   | 0.02                             | 0.00    | -0.01   |
| Daily                                             | 0.39<br>(0.03) | 0.44<br>(0.04) | 0.42<br>(0.04) | 2.00<br>0.15   | -0.04+                           | -0.02   | 0.02    |
| <b>Communicate with teachers:</b>                 |                |                |                |                |                                  |         |         |
| Never                                             | 0.06<br>(0.02) | 0.05<br>(0.01) | 0.05<br>(0.02) | 0.38<br>0.68   | 0.02                             | 0.03    | 0.01    |
| Yearly                                            | 0.14<br>(0.02) | 0.13<br>(0.02) | 0.13<br>(0.02) | 0.13<br>0.88   | 0.01                             | 0.01    | -0.00   |
| Monthly                                           | 0.36<br>(0.03) | 0.34<br>(0.04) | 0.36<br>(0.03) | 0.19<br>0.82   | 0.02                             | 0.00    | -0.01   |
| Weekly                                            | 0.27<br>(0.03) | 0.27<br>(0.03) | 0.25<br>(0.02) | 0.43<br>0.65   | 0.00                             | 0.02    | 0.02    |
| Daily                                             | 0.15<br>(0.02) | 0.21<br>(0.04) | 0.21<br>(0.03) | 2.60+<br>0.09  | -0.05                            | -0.05+  | -0.00   |
| Classrooms                                        | 337            | 262            | 260            |                |                                  |         |         |
| Observations                                      | 51             | 25             | 26             |                |                                  |         |         |

Notes: The table presents balance statistics for key variables across three groups: C, T1, and T2. It reports mean values and clustered standard errors (at the classroom level) for each group. Column (4) displays the results of an F-test across all groups, along with the associated p-values for joint significance. Normalized differences are shown for the group comparisons in columns (1)-(2), (1)-(3), and (2)-(3). Observations are at the participant level, and each specification includes strata fixed effects. Significance levels are marked: +  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

**Table A11: Social Inclusion and Labor Market Engagement**

|                                                               | (1)<br>C        | (2)<br>T1       | (3)<br>T2       | (4)<br>F-stat             | (1)-(2)<br>Normalized Difference | (1)-(3)            | (2)-(3)            |
|---------------------------------------------------------------|-----------------|-----------------|-----------------|---------------------------|----------------------------------|--------------------|--------------------|
| <b>Anti-poverty measures received (past 12 months):</b>       |                 |                 |                 |                           |                                  |                    |                    |
| At least one welfare measure                                  | 0.51<br>(0.03)  | 0.51<br>(0.04)  | 0.58<br>(0.04)  | 1.70<br>0.19              | -0.00                            | -0.05 <sup>+</sup> | -0.05              |
| N. measures received                                          | 0.87<br>(0.07)  | 0.77<br>(0.08)  | 0.99<br>(0.08)  | 2.33<br>0.11              | 0.04                             | -0.04              | -0.07*             |
| <b>Employment status and willingness to work:</b>             |                 |                 |                 |                           |                                  |                    |                    |
| Employed                                                      | 0.21<br>(0.03)  | 0.23<br>(0.04)  | 0.20<br>(0.04)  | 0.19<br>0.82              | -0.02                            | 0.00               | 0.02               |
| Looking for a job (past 4 weeks)                              | 0.45<br>(0.02)  | 0.45<br>(0.03)  | 0.47<br>(0.04)  | 0.14<br>0.87              | -0.00                            | -0.01              | -0.01              |
| Looking for a job (if not employed)                           | 0.49<br>(0.03)  | 0.51<br>(0.04)  | 0.50<br>(0.04)  | 0.38<br>0.68              | -0.02                            | -0.01              | 0.01               |
| Would like to work (if not employed and not looking)          | 0.35<br>(0.05)  | 0.33<br>(0.05)  | 0.30<br>(0.06)  | 0.40<br>0.68              | 0.03                             | 0.06               | 0.03               |
| Never looked for a job                                        | 0.15<br>(0.02)  | 0.16<br>(0.03)  | 0.16<br>(0.03)  | 0.13<br>0.88              | 0.01                             | 0.00               | -0.01              |
| Open to work (if employed, looking, or willing to work)       | 0.74<br>(0.03)  | 0.74<br>(0.03)  | 0.72<br>(0.04)  | 0.15<br>0.87              | -0.01                            | 0.01               | 0.02               |
| <b>Perceptions of labor market outcomes (next 12 months):</b> |                 |                 |                 |                           |                                  |                    |                    |
| Finding a job (if not employed)                               | 39.48<br>(1.98) | 45.52<br>(3.00) | 37.87<br>(2.35) | 4.02*<br>0.02             | -0.08*                           | 0.02               | 0.09*              |
| Losing current job (if employed)                              | 29.86<br>(3.88) | 36.72<br>(3.50) | 33.96<br>(4.27) | 0.79<br>0.46              | -0.14                            | -0.09              | 0.06               |
| Training to acquire further qualifications                    | 48.10<br>(1.67) | 46.60<br>(2.50) | 48.35<br>(2.23) | 0.18<br>0.83              | 0.02                             | -0.00              | -0.02              |
| <b>Main job search methods adopted (if ever searched):</b>    |                 |                 |                 |                           |                                  |                    |                    |
| Friends, relatives, acquaintances                             | 0.53<br>(0.03)  | 0.56<br>(0.03)  | 0.56<br>(0.03)  | 0.30<br>0.74              | -0.02                            | -0.02              | 0.00               |
| Private employment agency                                     | 0.29<br>(0.03)  | 0.26<br>(0.03)  | 0.33<br>(0.04)  | 1.32<br>0.28              | 0.03                             | -0.03              | -0.05 <sup>+</sup> |
| Public employment service                                     | 0.19<br>(0.03)  | 0.24<br>(0.03)  | 0.24<br>(0.03)  | 1.82<br>0.17              | -0.05                            | -0.05              | 0.00               |
| Job advertisements                                            | 0.25<br>(0.03)  | 0.18<br>(0.03)  | 0.26<br>(0.04)  | 2.63 <sup>+</sup><br>0.08 | 0.06                             | -0.01              | -0.06 <sup>+</sup> |
| I contacted the employer directly                             | 0.08<br>(0.02)  | 0.08<br>(0.03)  | 0.06<br>(0.02)  | 0.35<br>0.70              | 0.00                             | 0.03               | 0.02               |
| Training course, internship, or previous experience           | 0.06<br>(0.02)  | 0.09<br>(0.03)  | 0.07<br>(0.02)  | 0.37<br>0.69              | -0.04                            | -0.02              | 0.02               |
| The employer contacted me directly                            | 0.04<br>(0.01)  | 0.04<br>(0.01)  | 0.03<br>(0.01)  | 0.48<br>0.62              | -0.03                            | -0.02              | 0.01               |
| Other method                                                  | 0.08<br>(0.01)  | 0.09<br>(0.02)  | 0.05<br>(0.01)  | 1.63<br>0.21              | -0.02                            | 0.04               | 0.05 <sup>+</sup>  |
| Classrooms                                                    | 337             | 262             | 260             |                           |                                  |                    |                    |
| Observations                                                  | 51              | 25              | 26              |                           |                                  |                    |                    |

Notes: The table presents balance statistics for key variables across three groups: C, T1, and T2. It reports mean values and clustered standard errors (at the classroom level) for each group. Column (4) displays the results of an F-test across all groups, along with the associated p-values for joint significance. Normalized differences are shown for the group comparisons in columns (1)-(2), (1)-(3), and (2)-(3). Observations are at the participant level, and each specification includes strata fixed effects. Significance levels are marked: <sup>+</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

## C Midline Analysis

**Table A12:** Take-up of the assigned treatment and dropout

|                          | Treatment 1  |        | Treatment 2  |        | Total        |        |
|--------------------------|--------------|--------|--------------|--------|--------------|--------|
|                          | Participants | %      | Participants | %      | Participants | %      |
| Dropout immediately      | 29           | 11.07  | 19           | 7.31   | 48           | 9.20   |
| Dropout before session 1 | 16           | 6.11   | 21           | 8.08   | 37           | 7.09   |
| Dropout after tablet     | 1            | 0.38   | 8            | 3.08   | 9            | 1.72   |
| Finish w/o diploma       | 3            | 1.15   | 7            | 2.69   | 10           | 1.92   |
| Diploma                  | 213          | 81.30  | 205          | 78.85  | 418          | 80.08  |
| Total                    | 262          | 100.00 | 260          | 100.00 | 522          | 100.00 |

**Notes:** The table details the number and percentage of participants who dropped out immediately after being notified the assignment, those who dropped out before the first session, and those who dropped out after receiving the tablet. The table also shows the number of participants who completed the course without earning a diploma and the majority who successfully earned the diploma by attending the required number of sessions.

**Table A13:** Takeup on Individual and Household Characteristics

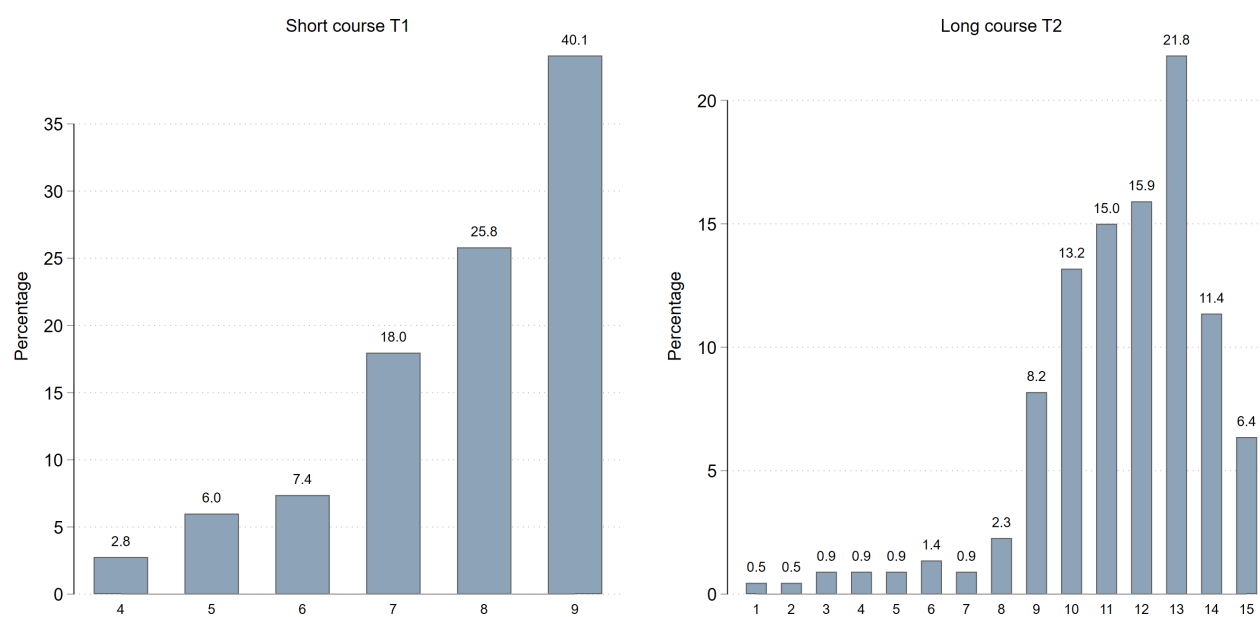
|                         | Enrollment                   |                             |                              | Diploma                      |                             |                              |
|-------------------------|------------------------------|-----------------------------|------------------------------|------------------------------|-----------------------------|------------------------------|
|                         | All                          | T1                          | T2                           | All                          | T1                          | T2                           |
| Female                  | 0.07<br>(0.07)               | 0.14<br>(0.10)              | -0.06<br>(0.11)              | 0.12<br>(0.08)               | 0.19 <sup>+</sup><br>(0.11) | -0.03<br>(0.12)              |
| Foreign background      | 0.03<br>(0.04)               | 0.08<br>(0.06)              | -0.04<br>(0.05)              | 0.00<br>(0.04)               | 0.09<br>(0.06)              | -0.11 <sup>+</sup><br>(0.06) |
| Age                     | 0.00<br>(0.00)               | 0.00<br>(0.00)              | -0.00<br>(0.00)              | 0.00<br>(0.00)               | 0.01<br>(0.00)              | -0.00<br>(0.00)              |
| High school graduate    | 0.06 <sup>+</sup><br>(0.03)  | 0.11*<br>(0.04)             | 0.01<br>(0.05)               | 0.06 <sup>+</sup><br>(0.04)  | 0.12*<br>(0.05)             | 0.01<br>(0.05)               |
| N adults (18+)          | -0.01<br>(0.02)              | 0.00<br>(0.03)              | -0.02<br>(0.03)              | -0.02<br>(0.02)              | 0.00<br>(0.03)              | -0.03<br>(0.03)              |
| N children (0-17)       | 0.05*<br>(0.02)              | 0.06*<br>(0.02)             | 0.03<br>(0.02)               | 0.03<br>(0.02)               | 0.05 <sup>+</sup><br>(0.02) | -0.00<br>(0.03)              |
| ISEE (€)                | 0.01 <sup>+</sup><br>(0.01)  | 0.02 <sup>+</sup><br>(0.01) | 0.01<br>(0.01)               | 0.01<br>(0.01)               | 0.02 <sup>+</sup><br>(0.01) | 0.01<br>(0.01)               |
| Unemployed              | -0.01<br>(0.04)              | -0.01<br>(0.06)             | -0.02<br>(0.05)              | 0.01<br>(0.04)               | -0.03<br>(0.06)             | 0.02<br>(0.06)               |
| Employed                | -0.12 <sup>+</sup><br>(0.05) | -0.09<br>(0.07)             | -0.18 <sup>+</sup><br>(0.08) | -0.12 <sup>+</sup><br>(0.05) | -0.07<br>(0.07)             | -0.21 <sup>+</sup><br>(0.08) |
| Own PC or tablet        | 0.00<br>(0.03)               | -0.03<br>(0.05)             | 0.04<br>(0.05)               | 0.02<br>(0.04)               | -0.06<br>(0.05)             | 0.10*<br>(0.05)              |
| Wi-Fi at home           | -0.06<br>(0.04)              | -0.00<br>(0.05)             | -0.12 <sup>+</sup><br>(0.05) | -0.06<br>(0.04)              | 0.03<br>(0.05)              | -0.16*<br>(0.06)             |
| Mean Dep. Var.          | 0.84                         | 0.83                        | 0.85                         | 0.80                         | 0.81                        | 0.79                         |
| Adjusted R <sup>2</sup> | 0.04                         | 0.05                        | 0.03                         | 0.03                         | 0.05                        | 0.06                         |
| Observations            | 522                          | 262                         | 260                          | 522                          | 262                         | 260                          |

**Notes:** OLS regressions of “Enrollment” (yes or no) and “Diploma” (yes or no) on the variables reported on the left hand side. The table provides information about the relationship between various individual or household characteristics and the likelihood of enrolling in the program or obtaining a diploma. <sup>+</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

**Table A14:** Attendance among applicants who enrolled

|                   | T1              |              | T2              |              |
|-------------------|-----------------|--------------|-----------------|--------------|
|                   | Mean Attendance | Participants | Mean Attendance | Participants |
| Attend session 1  | 0.92            | 199          | 0.85            | 186          |
| Attend session 2  | 0.92            | 200          | 0.87            | 192          |
| Attend session 3  | 0.86            | 186          | 0.87            | 191          |
| Attend session 4  | 0.97            | 211          | 0.86            | 190          |
| Attend session 5  | 0.90            | 195          | 0.89            | 195          |
| Attend session 6  | 0.81            | 175          | 0.74            | 162          |
| Attend session 7  | 0.81            | 175          | 0.72            | 158          |
| Attend session 8  | 0.76            | 164          | 0.74            | 163          |
| Attend session 9  | 0.85            | 184          | 0.66            | 144          |
| Attend session 10 | .               | .            | 0.66            | 145          |
| Attend session 11 | .               | .            | 0.67            | 147          |
| Attend session 12 | .               | .            | 0.64            | 141          |
| Attend session 13 | .               | .            | 0.72            | 158          |
| Attend session 14 | .               | .            | 0.78            | 171          |
| Attend session 15 | .               | .            | 0.80            | 175          |
| Observations      | 217             |              | 220             |              |

Notes: The table reports attendance rates and the number of participants for T1 and T2.

**Figure A2:** Number of Sessions Attended

Notes: The figure shows the percentage of sessions attended by participants in T1 and T2. The maximum number of sessions T1 can attend is 9. The maximum number of sessions T2 can attend is 15.

**Table A15: Feedback on the Program**

|                                                       | T1   |        |      | T2   |        |      |
|-------------------------------------------------------|------|--------|------|------|--------|------|
|                                                       | Mean | Median | SD   | Mean | Median | SD   |
| <b>Satisfaction with each component [1, 5] :</b>      |      |        |      |      |        |      |
| Appreciation for tablet                               | 4.74 | 5      | 0.72 | 4.68 | 5      | 0.73 |
| Appreciation for internet connection                  | 4.67 | 5      | 0.82 | 4.64 | 5      | 0.83 |
| Appreciation for course                               | 4.70 | 5      | 0.70 | 4.76 | 5      | 0.60 |
| Would recommend to a friend [1, 10]                   | 9.03 | 10     | 1.92 | 9.38 | 10     | 1.27 |
| <b>How much do you agree [1, 5]</b>                   |      |        |      |      |        |      |
| Thanks to the course, I learned how to use the tablet | 4.49 | 5      | 0.79 | 4.58 | 5      | 0.73 |
| The course has improved the way I use my smartphone   | 4.55 | 5      | 0.69 | 4.62 | 5      | 0.62 |
| The teacher explained in a clear way                  | 4.81 | 5      | 0.60 | 4.87 | 5      | 0.40 |
| The tutor helped me follow the course well            | 4.79 | 5      | 0.56 | 4.79 | 5      | 0.58 |
| I made friends with classmates                        | 4.05 | 4      | 1.14 | 4.47 | 5      | 0.90 |
| The classrooms were comfortable                       | 4.62 | 5      | 0.75 | 4.66 | 5      | 0.54 |
| Observations                                          | 172  |        |      | 176  |        |      |

Notes: The table displays the mean, and standard deviation for the variables listed on the left, for both T1 and T2 treatment groups.

**Table A16: Reasons to avoid purchase**

|                                             | Mean | Median | SD   | Sum |
|---------------------------------------------|------|--------|------|-----|
| <b>Tablet:</b>                              |      |        |      |     |
| It was too expensive                        | 0.60 | 1      | 0.49 | 143 |
| I did not know how to use it                | 0.24 | 0      | 0.43 | 57  |
| I did not need it                           | 0.22 | 0      | 0.42 | 53  |
| I did not know what it was                  | 0.05 | 0      | 0.22 | 12  |
| We had one, but it was broken               | 0.03 | 0      | 0.18 | 8   |
| My partner did not agree with the purchase  | 0.02 | 0      | 0.13 | 4   |
| Observations                                | 238  |        |      |     |
| <b>Better internet connection:</b>          |      |        |      |     |
| It was too expensive                        | 0.56 | 1      | 0.50 | 76  |
| Until recently, I did not need it that much | 0.29 | 0      | 0.46 | 40  |
| I did not know how to do it                 | 0.18 | 0      | 0.38 | 24  |
| My partner did not agree with the purchase  | 0.04 | 0      | 0.19 | 5   |
| Observations                                | 136  |        |      |     |

Notes: The table displays the mean, median, and standard deviation for the variables listed on the left, for both T1 and T2 treatment groups.

## D Conceptual Framework: Details

This section integrates a concise theory of change with a formal model that rationalizes the main hypotheses and guides the empirical analysis. We first lay out the mechanisms that link the intervention to outcomes, and then formalize them in a simple choice model. In this model, a representative adult makes three interdependent choices: (i) whether to use a digital device, (ii) how much to digitize routine tasks, and (iii) how much time to invest in self-directed digital practice after attending classroom sessions. These decisions are shaped by the exogenous allocation of classroom hours  $H$  and generate testable predictions for hypotheses H1 through H4.

### D.1 Theory of Change

The DigitAll intervention that we evaluate bundles three inputs: (i) access to a tablet with one year of internet ( $A$ ), (ii) structured instruction with course hours ( $H$ ), and (iii) standardized content, and tutoring/support that sustains attendance and follow-up. These inputs act on two mechanisms (mediators) that, in turn, map into downstream outcomes:

1. **Technology adoption** ( $D$ ): this is the availability and usage of a technological device (not a phone) at home and the number of routine tasks performed with it. Access ( $A$ ) removes fixed and effort costs of digitization, raising  $D$ .
2. **Digital skills** ( $S$ ): this is the proficiency measured by the Eurostat DSI. Instruction ( $H$ ) raises  $S$  directly through guided practice; tutoring increases the effective exposure to instruction and the likelihood of post-course self-practice.

These mediators feed into three outcome families which are detailed in the main text:

- **Digital parenting** ( $P$ ): engagement with children’s learning online and parental self-efficacy.
- **Social inclusion** ( $I$ ): use of digital identity and public digital services.
- **Labor market engagement** ( $J$ ): current job-search effort and expectations about employment/training.

This causal architecture implies three empirically testable pathways that motivate our mediation analysis:

1. **Access  $\rightarrow$  Outcome (“access-only”,  $M1$ ):**  $A \Rightarrow D \Rightarrow (P, I, J)$ . This path should be most visible where the binding constraint is the ability to log in or transact digitally (e.g., such as the use of digital identity and portals).
2. **Instruction  $\rightarrow$  Outcome (“skills-only”,  $M2$ ):**  $H \Rightarrow S \Rightarrow (P, I, J)$ . Skills enable purposeful, safer, and more productive use of digital tools; this mechanism is expected to dominate for parenting practices and broader navigation task.
3. **Sequential Access  $\rightarrow$  Skills  $\rightarrow$  Outcome ( $M1 \rightarrow M2$ ):**  $A \Rightarrow D \Rightarrow S \Rightarrow (P, I, J)$ . Access facilitates learning by removing frictions to practice on a real device at home; instruction then converts practice into skill gains that translate into downstream outcomes.

The map above underpins hypotheses H1–H4 which are formally derived below from an optimization problem. In Section 5 of the main text, we operationalize these paths with two mediators—adoption ( $D$ , proxied by tablet ownership/number of devices and use frequencies) and skills ( $S$ , proxied by the DSI)—and quantify indirect effects for  $M1$ ,  $M2$ , and the sequential component  $M1 \rightarrow M2$  under standard sequential ignorability given randomized treatment and pre-specified covariates.

## D.2 Formal Setup

Denote  $A$  the combination of device and internet access,  $H$  the number of instruction hours, while  $D$  (adoption) and  $S$  (skills) are the mediators in the theory of change. The adult derives utility from material consumption  $C$ , pure leisure time  $L_0$ , and digital skills  $S$ , as well as from the convenience of performing daily tasks online ( $D$ ). A utility penalty is imposed on digitization efforts in the absence of a tablet:

$$U = U(C, L_0, S) + g(D) - \kappa(1 - A)D, \quad (\text{A1})$$

where  $D \in [0, 1]$  denotes the share of everyday tasks digitized,  $g(D)$  is increasing and strictly concave ( $g' > 0, g'' < 0$ ), and  $A$  is a binary indicator equal to 1 if the household receives a tablet through the DigitALL intervention. If  $A = 0$ , digital participation is costly; the penalty  $\kappa D$  disappears when  $A = 1$ .

Digital proficiency, measured via the DSI index, evolves as:

$$S = S_0 + s(H) + \lambda \ell(L), \quad (\text{A2})$$

where  $S_0$  is the baseline skill level,  $s(H)$  is the skill gain from training hours  $H$  (increasing and concave),  $\ell(L)$  is the gain from post-course self-practice (increasing and concave), and  $\lambda = \mathbb{1}\{s(H) \geq \underline{S}\}$  indicates whether the individual reached a minimum proficiency threshold required for self-directed learning to be effective.

Time is allocated across leisure, classroom training, and post-course self-practice:

$$1 = \bar{N} + H + L + L_0, \quad (\text{A3})$$

where  $\bar{N}$  is the fixed time spent on work and other non-allocable tasks. Consumption is determined by income net of the tablet fee (which only applies to controls):

$$C = w\bar{N} - F(1 - A), \quad F > 0. \quad (\text{A4})$$

## D.3 Hypothesis testing

The adult chooses digitization intensity  $D \in [0, 1]$  and practice time  $L \geq 0$  to maximize utility, subject to the constraints above:

$$\max_{D, L} U(C, 1 - \bar{N} - H - L, S) + g(D) - \kappa(1 - A)D, \quad (\text{A5})$$

with  $S$  given by Equation (A2). Device adoption  $A$  is exogenously assigned by the experiment.

**H1: Technology Adoption.** Holding  $L$  fixed, the adult chooses  $D$  to equate the marginal benefit of moving one more routine task on-line,  $g'(D)$ , with the marginal effort cost  $\kappa(1 - A)$ :

$$\frac{\partial U}{\partial D} = g'(D) - \kappa(1 - A) = 0 \quad \Rightarrow \quad D^* = \begin{cases} (g')^{-1}(\kappa) \in (0, 1) & \text{if } A = 0 \text{ and } \kappa < g'(0), \\ 0 & \text{if } A = 0 \text{ and } \kappa \geq g'(0), \\ 1 & \text{if } A = 1. \end{cases}^{45}$$

Intuitively, for  $A = 0$ , digital usage is interior as long as the effort penalty  $\kappa$  is not too large; otherwise the optimum is the lower corner 0. For  $A = 1$ , the effort term vanishes, so utility rises monotonically in  $D$  and the unique maximiser is the upper boundary 1. Thus Hypothesis H1 predicts a strict treatment–control gap in the share of tasks performed on-line.

**H2: Digital Literacy.** The adult chooses  $L$  to balance the marginal benefit of skill acquisition against the marginal cost in foregone leisure:

$$\frac{\partial U}{\partial L} = -U_{L_0} + U_S \lambda \ell'(L) = 0 \quad \Rightarrow \quad L^* = \begin{cases} 0, & \lambda = 0, \\ \ell'^{-1}\left(\frac{U_{L_0}}{U_S}\right), & \lambda = 1. \end{cases}$$

The result tells us that, if  $\lambda = 0$  (formal training below threshold), self-practice has no payoff:  $L^* = 0$ . If instead  $\lambda = 1$ , self-practice increases  $S$ , so the adult invests up to the point where marginal benefit equals the marginal cost in leisure.<sup>46</sup> This implies only those who cross the skills threshold will engage in meaningful practice outside the class.

**Skill Levels by Treatment Group.** Plugging  $D^*$  and  $L^*$  into (A2) yields:

$$\begin{aligned} S^C &= S_0, \\ S^{T1} &= S_0 + s(\bar{H}) + \lambda^{T1} \ell(L^*(\bar{H})), \\ S^{T2} &= S_0 + s(\bar{H} + \Delta H) + \lambda^{T2} \ell(L^*(\bar{H} + \Delta H)). \end{aligned}$$

Both treatments are expected to increase digital proficiency relative to the control.

**H3: Downstream Outcomes.** We model downstream behavior with reduced-form production functions:

$$\begin{aligned} P &= h_P(S, D) && \text{(Digital parenting),} \\ I &= h_I(S, D) && \text{(Social inclusion),} \\ J &= h_J(S, D) && \text{(Labor market engagement).} \end{aligned}$$

These functions satisfy  $\partial h_k / \partial S > 0$ ,  $\partial h_k / \partial D > 0$  for  $k \in \{P, I, J\}$ , with diminishing returns. The hypotheses are:

<sup>46</sup>The marginal skill gain  $\ell'(\cdot)$  is strictly decreasing, hence invertible. Setting marginal gain equal to the marginal leisure cost  $U_L/U_S$  and applying the inverse isolates the unique  $L$  that equates the two, exactly the optimal practice time.

- **H3a:** More skilled parents better support their children online:  $\partial P/\partial S > 0$ .
- **H3b:** Greater digital participation improves service access:  $\partial I/\partial D > 0$ .
- **H3c:** Skills and usage raise aspirations and job-seeking capacity:  $\partial J/\partial S, \partial J/\partial D > 0$ .

If these outcomes do not improve, binding constraints beyond digital inclusion may be at play.

## D.4 More on H4: short vs. long training

The incremental effect of T2 relative to T1 is:

$$\Delta S = s(\bar{H} + \Delta H) - s(\bar{H}) + \Delta \ell = \text{Extra class learning} + (\text{Possible}) \text{ extra practice effect},$$

where  $\Delta \ell$  captures differences in self-practice due to the threshold condition. Two scenarios explain why T2 may not outperform T1:

**H4a** *Diminishing returns:*  $s'(\bar{H}) \approx 0$ . The marginal benefit of added hours is negligible.

**H4b** *Learning-by-doing:* T1 participants, having less classroom time, invest more in self-practice, leading to comparable outcomes.

Either mechanism could explain why the skill gap between T2 and T1 may be small.

# E Endline Analysis

## E.1 Primary Outcomes: details

Table A17: Technology Adoption

| Survey Question                                                                                    | Answer Options                                                                                                                                                 |
|----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Device Ownership                                                                                   |                                                                                                                                                                |
| Do you have a tablet?                                                                              | No / Yes                                                                                                                                                       |
| How many smartphones, tablets, and PCs does your family use?                                       | Actual number                                                                                                                                                  |
| Participant’s Device Usage                                                                         |                                                                                                                                                                |
| How often do you use the computer and/or tablet you have at home?                                  | Never (0)<br>Less than once a month (1)<br>Once or more a month (2)<br>Once a week (3)<br>Several times a week (4)<br>Every day (5)<br>Several times a day (6) |
| Children’s Device Usage                                                                            |                                                                                                                                                                |
| How often does [Name], who is [Number] years old, use the computer and/or tablet you have at home? | Never (0)<br>Less than once a month (1)<br>Once or more a month (2)<br>Once a week (3)<br>Several times a week (4)<br>Every day (5)                            |

Notes: The table summarizes the questions used to construct the technology adoption outcomes reported in the main analysis. Children’s device usage was recorded for up to two children per household, with a focus on those in primary and lower secondary school.

**Table A18: Digital Literacy Skills (DSI)**

| Survey Question                                                                                                    | Answer Options                                                                                  |
|--------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| <b>In the past 3 months, have you used Internet for the following communication activities?</b>                    |                                                                                                 |
| Send or receive emails                                                                                             | No / Yes                                                                                        |
| Make voice or video calls over the internet                                                                        | No / Yes                                                                                        |
| Use instant messaging services                                                                                     | No / Yes                                                                                        |
| Participate in social networks                                                                                     | No / Yes                                                                                        |
| Express opinions on social or political issues through websites or social media                                    | No / Yes                                                                                        |
| Participate in online consultations or voting on social (civic) or political issues                                | No / Yes                                                                                        |
| <b>In the past 3 months, have you used the Internet (via smartphone, computer, etc.) to:</b>                       |                                                                                                 |
| Read newspapers, magazines                                                                                         | No / Yes                                                                                        |
| Search for health-related information                                                                              | No / Yes                                                                                        |
| Look for a job or send a job application                                                                           | No / Yes                                                                                        |
| Use banking services                                                                                               | No / Yes                                                                                        |
| Sell goods or services through websites or apps                                                                    | No / Yes                                                                                        |
| Search for information about goods or services                                                                     | No / Yes                                                                                        |
| <b>Have you ever bought goods/services for personal use on websites or through apps?</b>                           | Yes, in last 3 months<br>Yes, from 3 months to 1 year ago<br>Yes, more than a year ago<br>Never |
| <b>In the last 3 months, have you performed online training for educational, professional or personal reasons?</b> |                                                                                                 |
| Take an online course                                                                                              | No / Yes                                                                                        |
| Use online educational material, excluding full courses (video tutorials, webinars)                                | No / Yes                                                                                        |
| <b>In the last 3 months, have you carried out the following actions?</b>                                           |                                                                                                 |
| Copy or move files between folders, devices or on cloud services                                                   | No / Yes                                                                                        |
| Download or install software or apps                                                                               | No / Yes                                                                                        |
| Modify software, app, or device settings (e.g., brightness, colors, font size)                                     | No / Yes                                                                                        |
| <b>In the last 3 months, have you performed the following actions?</b>                                             |                                                                                                 |
| Use word processing software                                                                                       | No / Yes                                                                                        |
| Create files that contain different elements, such as text, images, tables                                         | No / Yes                                                                                        |
| Use software to edit photos, videos, or audio                                                                      | No / Yes                                                                                        |
| Use spreadsheets for calculations                                                                                  | No / Yes                                                                                        |
| Use advanced spreadsheet functions to analyze and modify data                                                      | No / Yes                                                                                        |
| Write a program using a programming language (coding)                                                              | No / Yes                                                                                        |
| <b>Have you come across false or doubtful info online in the last 3 months?</b>                                    | No / Yes                                                                                        |
| <b>Have you verified the authenticity of the information?</b>                                                      | No / Yes                                                                                        |
| <b>How did you verify the authenticity of such information?</b>                                                    |                                                                                                 |
| Verifying the sources or consulting other online content (e.g., news sites, Wikipedia)                             | No / Yes                                                                                        |
| Participating in online discussions on the topic                                                                   | No / Yes                                                                                        |
| Discussing offline with others or using non-internet sources                                                       | No / Yes                                                                                        |
| <b>Why didn't you verify the authenticity of the information you believed to be false or doubtful?</b>             | Already aware of its unreliability<br>Other reasons                                             |
| <b>In the last 3 months, which of the following actions have you taken to manage access to your personal data?</b> |                                                                                                 |
| Read privacy policies before providing personal data                                                               | No / Yes                                                                                        |
| Limit or deny access to your geographic location                                                                   | No / Yes                                                                                        |
| Limit access to your profile or content on social networks or cloud services                                       | No / Yes                                                                                        |
| Deny the use of personal data for advertising purposes                                                             | No / Yes                                                                                        |
| Verify the security of websites before providing personal data                                                     | No / Yes                                                                                        |
| <b>Have you ever changed your browser settings to limit or prevent cookies?</b>                                    | No / Yes                                                                                        |

Notes: This table reports the questions used to construct the Digital Skills Indicator (DSI), following the structure of the Eurostat digital skills module. Answers are coded as binary unless otherwise specified.

**Table A19: Digital Parenting**

| Survey Question                                                                                                                                                       | Answer Options                 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| <b>Engagement</b>                                                                                                                                                     |                                |
| <b>Think about [Name] who is [Number] years old. How often...</b>                                                                                                     |                                |
| Do you check their electronic register (or the kindergarten app)?                                                                                                     | Never (0)                      |
|                                                                                                                                                                       | Less than once a month (1)     |
|                                                                                                                                                                       | Once or more a month (2)       |
|                                                                                                                                                                       | Once a week (3)                |
|                                                                                                                                                                       | Several times a week (4)       |
|                                                                                                                                                                       | Every day (5)                  |
| Do you use a computer, tablet, or smartphone together to play games, watch movies/videos, or do other recreational activities?                                        | Not applicable (99)            |
|                                                                                                                                                                       | Never (0)                      |
|                                                                                                                                                                       | Less than once a month (1)     |
|                                                                                                                                                                       | Once or more a month (2)       |
|                                                                                                                                                                       | Once a week (3)                |
|                                                                                                                                                                       | Several times a week (4)       |
| Do you use a computer, tablet, or smartphone together to learn new things (for school or for personal interest)?                                                      | Every day (5)                  |
|                                                                                                                                                                       | Not applicable (99)            |
|                                                                                                                                                                       | Never (0)                      |
|                                                                                                                                                                       | Less than once a month (1)     |
|                                                                                                                                                                       | Once or more a month (2)       |
|                                                                                                                                                                       | Once a week (3)                |
|                                                                                                                                                                       | Several times a week (4)       |
|                                                                                                                                                                       | Every day (5)                  |
|                                                                                                                                                                       | Not applicable (99)            |
|                                                                                                                                                                       |                                |
|                                                                                                                                                                       |                                |
|                                                                                                                                                                       |                                |
| <b>Self-Efficacy</b>                                                                                                                                                  |                                |
| <b>Accompanying your children in the digital world is often a difficult task. Think about all your children. How much do you agree with the following statements?</b> |                                |
| I supervise my children online to ensure they access age-appropriate content (e.g., using parental controls).                                                         | Strongly disagree (1)          |
|                                                                                                                                                                       | Disagree (2)                   |
|                                                                                                                                                                       | Neither agree nor disagree (3) |
|                                                                                                                                                                       | Agree (4)                      |
|                                                                                                                                                                       | Strongly agree (5)             |
| I am able to manage the time my children spend online and limit it if necessary.                                                                                      | Strongly disagree (1)          |
|                                                                                                                                                                       | Disagree (2)                   |
|                                                                                                                                                                       | Neither agree nor disagree (3) |
|                                                                                                                                                                       | Agree (4)                      |
|                                                                                                                                                                       | Strongly agree (5)             |
| I know how to search the internet for useful information to help my children with school or other activities.                                                         | Strongly disagree (1)          |
|                                                                                                                                                                       | Disagree (2)                   |
|                                                                                                                                                                       | Neither agree nor disagree (3) |
|                                                                                                                                                                       | Agree (4)                      |
|                                                                                                                                                                       | Strongly agree (5)             |

Notes: The table summarizes the survey questions used to construct digital parenting outcomes. *Engagement* captures digital interaction with children. *Self-Efficacy* measures confidence in guiding children online.

**Table A20: Social Inclusion**

| Survey Question                                                                                                                                           | Answer Options                                                                                                                                                                                                                                                                                                                                                                 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Use of Digital Identity</b>                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                |
| Do you have the SPID (digital identity for accessing public administration services)?                                                                     | No / Yes                                                                                                                                                                                                                                                                                                                                                                       |
| Have you used it in the last 5 months, starting from June 2024?                                                                                           | No<br>Yes, with help (family member, friend, CAF)<br>Yes, by myself                                                                                                                                                                                                                                                                                                            |
| <b>Digital Inclusion (Use of Online Public Services)</b>                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                |
| <b>In the last 5 months (since June 2024), have you done any of these things online, either by yourself or with someone else's help?</b>                  |                                                                                                                                                                                                                                                                                                                                                                                |
| Visit the INPS website (e.g., to download a certificate)                                                                                                  | No<br>Yes, with help<br>Yes, by myself                                                                                                                                                                                                                                                                                                                                         |
| Make a payment on pagoPA (e.g., tax or fine)                                                                                                              | No<br>Yes, with help<br>Yes, by myself                                                                                                                                                                                                                                                                                                                                         |
| Use the "Salute Piemonte" portal (e.g., to book medical appointments)                                                                                     | No<br>Yes, with help<br>Yes, by myself                                                                                                                                                                                                                                                                                                                                         |
| Enroll children in a summer camp online (e.g., "Estate Ragazzi" of Turin)                                                                                 | No<br>Yes, with help<br>Yes, by myself                                                                                                                                                                                                                                                                                                                                         |
| <b>Application to Income Support Measures</b>                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                |
| In the last 5 months (since June 2024), have you applied for any public economic support measure? Please answer yes even if you have not yet received it. | Unemployment benefit (NASpI)<br>Inclusion allowance (Adi)<br>Purchase card (social card)<br>Social bill bonuses (electricity, gas, water)<br>Nursery school bonus<br>Bonus for parents of disabled children<br>Bonus rent<br>Reduction of telephone bills<br>Health ticket exemption<br>Other measures<br>I don't know / I don't remember<br>I haven't applied for any measure |

Notes: The table summarizes the survey items used to measure social inclusion outcomes. These include digital identity possession and use, access to online public services (e.g., INPS, healthcare, payments, and summer programs), and applications for economic support measures. Responses distinguish between independent use and use with assistance.

**Table A21: Labor Market Engagement**

| Survey Question                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Answer Options                                                                                                                                                                                                    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Openness to Work</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                   |
| Currently, what is your main occupation?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Employed – Part-time<br>Employed – Full-time<br>Not Employed – Homemaker<br>Not Employed – Unemployed, Inactive, Recipient of Active Policies<br>Not Employed – Student<br>Retired – Old-age<br>Retired – Invalid |
| Have you looked for work in the last 4 weeks?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | No / Yes                                                                                                                                                                                                          |
| Would you like to work even if you are not looking for a job?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | No / Yes                                                                                                                                                                                                          |
| <b>Active Effort</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                   |
| In the last 5 months, since June 2024, have you written or updated your CV?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | No / Yes                                                                                                                                                                                                          |
| In the last 5 months, since June 2024, have you been to a job agency (APL) or employment center (CPI)?                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | No / Yes                                                                                                                                                                                                          |
| <b>Employment Prospects</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                   |
| Think about your life over the next 12 months and the changes in your employment situation that could occur. How likely do you think it is that you will have paid work in one year? Please respond with a number from 0 to 100 to indicate how likely you think it is that you will have a job in one year. Remember that values close to 0 mean that you do not expect to have a job, while values close to 100 mean that you expect to have a job. Values close to 50 mean that you could either have one or not, and you are very uncertain between the two possibilities. | 0 (not at all likely) to 100 (certain)                                                                                                                                                                            |
| <b>Training Prospects</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                   |
| Keep thinking about your life over the next 12 months. How likely do you think it is that you will attend one or more courses or seminars in the next year to gain further training or a new qualification? Please respond with a number from 0 to 100 to indicate how likely you think it is.                                                                                                                                                                                                                                                                                 | 0 (not at all likely) to 100 (certain)                                                                                                                                                                            |

Notes: The table summarizes the survey questions used to construct the labor market engagement outcomes. *Openness to Work* combines employment status and willingness to work. *Active Effort* includes actions taken to improve job prospects.

## E.2 Breakdown of digital literacy

**Table A22: Digital Literacy Skills by Domains**

|                   | (1)               | (2)                  | (3)                | (4)                  | (5)                | (6)                  | (7)                | (8)                  |
|-------------------|-------------------|----------------------|--------------------|----------------------|--------------------|----------------------|--------------------|----------------------|
|                   | Information       |                      | Content Creation   |                      | Safety             |                      | Problem Solving    |                      |
|                   | ≥Basic<br>[0,1]   | Above Basic<br>[0,1] | ≥Basic<br>[0,1]    | Above Basic<br>[0,1] | ≥Basic<br>[0,1]    | Above Basic<br>[0,1] | ≥Basic<br>[0,1]    | Above Basic<br>[0,1] |
| Assigned T1       | 0.054*<br>(0.023) | -0.006<br>(0.031)    | 0.206**<br>(0.046) | 0.166**<br>(0.046)   | 0.265**<br>(0.047) | 0.201**<br>(0.049)   | 0.069*<br>(0.028)  | 0.189**<br>(0.055)   |
| Assigned T2       | 0.053*<br>(0.025) | 0.053+<br>(0.031)    | 0.248**<br>(0.047) | 0.191**<br>(0.041)   | 0.283**<br>(0.044) | 0.199**<br>(0.043)   | 0.071**<br>(0.026) | 0.239**<br>(0.044)   |
| Strata FE         | ✓                 | ✓                    | ✓                  | ✓                    | ✓                  | ✓                    | ✓                  | ✓                    |
| N                 | 754               | 754                  | 754                | 754                  | 754                | 754                  | 754                | 754                  |
| adjR <sup>2</sup> | 0.010             | 0.035                | 0.134              | 0.098                | 0.110              | 0.101                | 0.081              | 0.119                |
| T2-T1             | -0.001            | 0.059                | 0.042              | 0.025                | 0.018              | -0.002               | 0.002              | 0.050                |
| p-val(T2-T1)      | 0.975             | 0.081                | 0.430              | 0.639                | 0.695              | 0.975                | 0.933              | 0.342                |
| Mean C            | 0.894             | 0.845                | 0.437              | 0.169                | 0.525              | 0.384                | 0.842              | 0.500                |
| Sd C              | 0.308             | 0.362                | 0.497              | 0.375                | 0.500              | 0.487                | 0.366              | 0.501                |

**Notes:** Each regression includes strata fixed effects. Standard errors are clustered at the class level. The table breaks down the impact of the intervention across four key domains of digital literacy: “Information Management,” “Content Creation,” “Safety,” and “Problem-Solving.” Results for *Communication* are not reported, as nearly all participants have above-basic skills in this domain (and already had it at baseline). Each domain is evaluated based on whether participants reached at least basic proficiency ( $\geq$  Basic) or advanced proficiency (Above Basic), following the classification of the Digital Skills Indicator (DSI). The *Information* domain captures the ability to search for, assess, and manage online information. *Content Creation* measures participants’ capacity to produce, edit, and manage digital content. *Safety* reflects their ability to protect personal data, manage cybersecurity risks, and navigate privacy settings. *Problem-Solving* assesses their ability to use digital tools efficiently to complete tasks and troubleshoot issues. +  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

**Table A23: Digital Literacy Skills: Alternative Outcomes**

|                   | (1)                       | (2)                        | (3)                  |
|-------------------|---------------------------|----------------------------|----------------------|
|                   | Skills Index              |                            | Activities Performed |
|                   | DSI $\geq$ Basic<br>[0,1] | DSI = Above Basic<br>[0,1] | Count<br>[N]         |
| Assigned T1       | 0.253**<br>(0.045)        | 0.130**<br>(0.042)         | 3.449**<br>(0.697)   |
| Assigned T2       | 0.311**<br>(0.044)        | 0.163**<br>(0.039)         | 3.770**<br>(0.614)   |
| Strata FE         | ✓                         | ✓                          | ✓                    |
| N                 | 754                       | 754                        | 754                  |
| adjR <sup>2</sup> | 0.152                     | 0.107                      | 0.220                |
| T2-T1             | 0.059                     | 0.034                      | 0.321                |
| p-val(T2-T1)      | 0.220                     | 0.492                      | 0.683                |
| Mean C            | 0.306                     | 0.127                      | 12.085               |
| Sd C              | 0.462                     | 0.333                      | 5.846                |

**Notes:** Each regression includes strata fixed effects. Standard errors are clustered at the class level. The variable *DSI  $\geq$  Basic* is a binary indicator equal to 1 if the participant achieved at least basic proficiency on the Digital Skills Indicator (DSI), and 0 otherwise. *DSI = Above Basic* is a binary indicator equal to 1 if the participant attained above-basic proficiency on the DSI. *Activities Performed* represents the number of digital tasks the participant reported completing independently, with a possible range of 0 to 20. This measure captures practical engagement with digital tools, complementing the proficiency-based indicators. +  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

### E.3 Breakdown of engagement

**Table A24: Engagement by Items**

|                   | (1)                 | (2)                              | (3)                             |
|-------------------|---------------------|----------------------------------|---------------------------------|
|                   | School app<br>[0,5] | Recreational activities<br>[0,5] | Educational activities<br>[0,5] |
| Assigned T1       | 0.242<br>(0.167)    | 0.556**<br>(0.177)               | 0.779**<br>(0.179)              |
| Assigned T2       | 0.170<br>(0.144)    | 0.379**<br>(0.134)               | 0.545**<br>(0.143)              |
| Strata FE         | ✓                   | ✓                                | ✓                               |
| N                 | 745                 | 754                              | 753                             |
| adjR <sup>2</sup> | 0.082               | 0.038                            | 0.082                           |
| T2-T1             | -0.073              | -0.177                           | -0.233                          |
| p-val(T2-T1)      | 0.642               | 0.370                            | 0.238                           |
| Mean C            | 3.694               | 2.734                            | 2.498                           |
| Sd C              | 1.939               | 1.323                            | 1.486                           |

Notes: Each regression includes strata fixed effects. Standard errors are clustered at the class level. Each variable measures the frequency of a behavior from 0-Never to 5-Every day. *School app* indicates the frequency of school app usage. *Recreational activities* indicates the frequency of joint usage of digital tools for recreational activities. *Educational activities* indicates the frequency of joint usage of digital tools for educational activities. +  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

### E.4 Breakdown of self-efficacy

**Table A25: Self-efficacy by Items**

|                   | (1)                    | (2)                        | (3)                  |
|-------------------|------------------------|----------------------------|----------------------|
|                   | Safety online<br>[1,5] | Time spent online<br>[1,5] | Help online<br>[1,5] |
| Assigned T1       | 0.594**<br>(0.141)     | 0.480**<br>(0.102)         | 0.709**<br>(0.129)   |
| Assigned T2       | 0.690**<br>(0.136)     | 0.556**<br>(0.090)         | 0.793**<br>(0.119)   |
| Strata FE         | ✓                      | ✓                          | ✓                    |
| N                 | 754                    | 754                        | 754                  |
| adjR <sup>2</sup> | 0.127                  | 0.101                      | 0.168                |
| T2-T1             | 0.095                  | 0.076                      | 0.084                |
| p-val(T2-T1)      | 0.534                  | 0.472                      | 0.541                |
| Mean C            | 3.577                  | 3.979                      | 3.511                |
| Sd C              | 1.290                  | 1.026                      | 1.268                |

Notes: Each regression includes strata fixed effects. Standard errors are clustered at the class level. Each variable measures agreements with a statement from 1-Strongly disagree to 5-Strongly agree. *Safety online* indicates if the parent knows how to ensure that their children access age-appropriate contents online. *Time spent online* indicates if the parent is able to manage the time that their children spend online. *Help online* indicates if the parent knows how to find online resources to support children schooling or other activities. +  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

## E.5 Breakdown of Public Tools

**Table A26:** Public Tools by Items

|                      | (1)                   | (2)                | (3)                            | (4)                         |
|----------------------|-----------------------|--------------------|--------------------------------|-----------------------------|
|                      | INPS website<br>[0,1] | PagoPA<br>[0,1]    | Digital health record<br>[0,1] | Summer camp online<br>[0,1] |
| Assigned T1          | 0.160**<br>(0.048)    | 0.183**<br>(0.052) | 0.108 <sup>+</sup><br>(0.055)  | 0.199**<br>(0.054)          |
| Assigned T2          | 0.187**<br>(0.042)    | 0.202**<br>(0.042) | 0.176**<br>(0.043)             | 0.193**<br>(0.043)          |
| Strata FE            | ✓                     | ✓                  | ✓                              | ✓                           |
| N                    | 754                   | 754                | 754                            | 754                         |
| adj(R <sup>2</sup> ) | 0.116                 | 0.141              | 0.127                          | 0.129                       |
| T2-T1                | 0.027                 | 0.019              | 0.068                          | -0.006                      |
| p-val(T2-T1)         | 0.603                 | 0.738              | 0.240                          | 0.920                       |
| Mean C               | 0.264                 | 0.194              | 0.257                          | 0.176                       |
| Sd C                 | 0.442                 | 0.396              | 0.438                          | 0.382                       |

Notes: Each regression includes strata fixed effects. Standard errors are clustered at the class level. Each variable is a dummy that takes value 1 if the respondent performed the task without help in the previous five months. *INPS website* indicates that the respondent visited the INPS website. *PagoPA* indicates that the parents made a payment with PagoPa, the public administration platform. *Digital health record* indicates that the respondent used the online health record the “Salute Piemonte” portal to book an appointment or download a document (e.g., medical prescription, test results...). *Summer camp online* indicates that the respondent enrolled their children in a summer camp through a website. <sup>+</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

## E.6 Discussion: Labor Market Outcomes

**Table A27:** Labor Market Engagement: Openness and Effort

|                                  | LFS Share          |                   | Participation at baseline |                    |
|----------------------------------|--------------------|-------------------|---------------------------|--------------------|
|                                  | (1)                | (2)               | (3)                       | (4)                |
|                                  | Openness<br>[0,1]  | Effort<br>[0,1]   | Openness<br>[0,1]         | Effort<br>[0,1]    |
| Assigned T1                      | -0.029<br>(0.047)  | 0.013<br>(0.044)  | -0.008<br>(0.069)         | -0.008<br>(0.069)  |
| Assigned T2                      | -0.003<br>(0.040)  | -0.061<br>(0.046) | 0.049<br>(0.069)          | -0.068<br>(0.061)  |
| High predicted                   | 0.217**<br>(0.065) | 0.034<br>(0.090)  |                           |                    |
| Assigned T1 × High predicted     | -0.099<br>(0.078)  | -0.074<br>(0.092) |                           |                    |
| Assigned T2 × High predicted     | -0.080<br>(0.072)  | -0.031<br>(0.104) |                           |                    |
| Active at baseline               |                    |                   | 0.445**<br>(0.051)        | 0.245**<br>(0.059) |
| Assigned T1 × Active at baseline |                    |                   | -0.082<br>(0.078)         | -0.002<br>(0.092)  |
| Assigned T2 × Active at baseline |                    |                   | -0.117<br>(0.073)         | 0.002<br>(0.086)   |
| Strata FE                        | ✓                  | ✓                 | ✓                         | ✓                  |
| N                                | 754                | 754               | 754                       | 754                |
| adjR <sup>2</sup>                | 0.032              | 0.027             | 0.192                     | 0.080              |
| T2-T1                            | 0.026              | -0.074            | 0.192                     | 0.080              |
| p-val(T2-T1)                     | 0.551              | 0.106             | 0.419                     | 0.359              |
| T1 + Interaction                 | -0.128             | -0.061            | -0.090                    | -0.010             |
| p-val(T1 + Interaction)          | 0.059              | 0.453             | 0.020                     | 0.843              |
| T2 +Interaction                  | -0.083             | -0.092            | -0.068                    | -0.066             |
| p-val(T2 + Interaction)          | 0.198              | 0.342             | 0.013                     | 0.253              |
| Mean C                           | 0.750              | 0.511             | 0.750                     | 0.511              |
| Sd C                             | 0.434              | 0.501             | 0.434                     | 0.501              |

*Notes:* Each regression includes strata fixed effects. Standard errors are clustered at the class level. The variable *High predicted* is a dummy equal to 1 if the individual has a predicted share of digital skills in their potential occupation above the Italian average. The variable *Active at baseline* is a dummy equal to 1 if the individual was employed or had looked for a job in the previous 4 weeks at baseline. The variable *Openness to Work* is a binary indicator equal to 1 if the participant is employed, actively seeking employment, or willing to work despite not currently looking. The variable *Effort in Job Search* is a binary indicator equal to 1 if the participant engaged in activities to improve their labor market status, including updating their CV, consulting an employment service, or enrolling in a training program. <sup>+</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

## **E.7 Robustness checks**

### **E.7.1 Balancing Tables at Endline**

**Table A28:** Demographics, Technological Endowment, and Digital Skills - Endline

|                                                  | (1)<br>Dropout         | (2)<br>No-Dropout     | (3)<br>F-stat               | (1)-(2)<br>Normalized Difference |
|--------------------------------------------------|------------------------|-----------------------|-----------------------------|----------------------------------|
| <b>Individual and household characteristics:</b> |                        |                       |                             |                                  |
| Female                                           | 0.867<br>(0.035)       | 0.924<br>(0.008)      | 2.238<br>0.141              | -0.071                           |
| Age                                              | 39.667<br>(0.963)      | 39.594<br>(0.348)     | 0.210<br>0.648              | 0.003                            |
| High school graduate                             | 0.352<br>(0.047)       | 0.326<br>(0.018)      | 0.194<br>0.661              | 0.019                            |
| Employed                                         | 0.238<br>(0.050)       | 0.211<br>(0.026)      | 0.061<br>0.806              | 0.023                            |
| Unemployed                                       | 0.276<br>(0.047)       | 0.255<br>(0.014)      | 0.055<br>0.816              | 0.017                            |
| Houseperson                                      | 0.476<br>(0.049)       | 0.509<br>(0.028)      | 0.043<br>0.837              | -0.022                           |
| Houseold size                                    | 4.562<br>(0.135)       | 4.503<br>(0.057)      | 0.494<br>0.486              | 0.015                            |
| N adults (18+)                                   | 2.429<br>(0.104)       | 2.428<br>(0.040)      | 0.017<br>0.896              | 0.000                            |
| N children (0-17)                                | 2.324<br>(0.097)       | 2.346<br>(0.047)      | 0.037<br>0.848              | -0.008                           |
| N children born 2006-2020                        | 2.133<br>(0.096)       | 2.074<br>(0.042)      | 0.642<br>0.427              | 0.021                            |
| ISEE (€)                                         | 3,733.552<br>(217.668) | 3,852.090<br>(93.250) | 0.230<br>0.634              | -0.017                           |
| <b>Technological endowment:</b>                  |                        |                       |                             |                                  |
| Own phone                                        | 1.000<br>(0.000)       | 0.997<br>(0.002)      | 1.860<br>0.179              | 0.019                            |
| N phone                                          | 2.476<br>(0.112)       | 2.257<br>(0.035)      | 3.283 <sup>+</sup><br>0.076 | 0.081 <sup>+</sup>               |
| Own tablet                                       | 0.219<br>(0.043)       | 0.208<br>(0.016)      | 0.019<br>0.891              | 0.009                            |
| N tablet                                         | 0.229<br>(0.046)       | 0.224<br>(0.018)      | 0.135<br>0.715              | 0.003                            |
| Own PC                                           | 0.419<br>(0.047)       | 0.260<br>(0.020)      | 5.940*<br>0.018             | 0.121*                           |
| N PC                                             | 0.457<br>(0.055)       | 0.304<br>(0.025)      | 4.655*<br>0.036             | 0.085*                           |
| Own PC or tablet                                 | 0.524<br>(0.053)       | 0.381<br>(0.021)      | 3.623 <sup>+</sup><br>0.063 | 0.100 <sup>+</sup>               |
| Internet used at home                            | 0.686<br>(0.042)       | 0.607<br>(0.019)      | 2.348<br>0.132              | 0.055                            |
| Wi-Fi at home                                    | 0.467<br>(0.043)       | 0.359<br>(0.018)      | 5.401*<br>0.024             | 0.075*                           |
| <b>Digital skills:</b>                           |                        |                       |                             |                                  |
| Index of digital skills [1,6]                    | 4.019<br>(0.164)       | 3.749<br>(0.062)      | 2.533<br>0.118              | 0.065                            |
| N digital activities [0,12]                      | 4.410<br>(0.411)       | 3.882<br>(0.125)      | 0.589<br>0.446              | 0.054                            |
| Classrooms                                       | 47                     | 51                    |                             |                                  |
| Observations                                     | 105                    | 754                   |                             |                                  |

**Notes:** The table presents balance statistics for key variables across two groups: Dropout and No-dropout. It reports mean values and clustered standard errors (at the classroom level) for each group. Column (3) displays the results of an F-test across all groups, along with the associated p-values for joint significance. The normalized difference is shown for the group comparisons in column (1)-(2). Observations are at the participant level, and each specification includes strata fixed effects. Significance levels are marked: <sup>+</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

**Table A29: Parental Involvement in Children's Education - Endline**

|                                                   | (1)<br>Dropout   | (2)<br>No-Dropout | (3)<br>F-stat  | (1)-(2)<br>Normalized Difference |
|---------------------------------------------------|------------------|-------------------|----------------|----------------------------------|
| <b>Help with homework:</b>                        |                  |                   |                |                                  |
| Never                                             | 0.162<br>(0.040) | 0.211<br>(0.020)  | 0.661<br>0.420 | -0.041                           |
| Yearly                                            | 0.038<br>(0.023) | 0.024<br>(0.005)  | 0.452<br>0.504 | 0.030                            |
| Monthly                                           | 0.086<br>(0.026) | 0.077<br>(0.010)  | 0.047<br>0.829 | 0.011                            |
| Weekly                                            | 0.286<br>(0.045) | 0.286<br>(0.018)  | 0.000<br>0.994 | -0.001                           |
| Daily                                             | 0.314<br>(0.043) | 0.277<br>(0.022)  | 0.099<br>0.754 | 0.028                            |
| <b>Talk about school:</b>                         |                  |                   |                |                                  |
| Never                                             | 0.048<br>(0.024) | 0.020<br>(0.006)  | 1.734<br>0.194 | 0.062                            |
| Yearly                                            | 0.029<br>(0.015) | 0.016<br>(0.004)  | 1.194<br>0.280 | 0.033                            |
| Monthly                                           | 0.048<br>(0.021) | 0.060<br>(0.008)  | 0.186<br>0.668 | -0.018                           |
| Weekly                                            | 0.181<br>(0.040) | 0.183<br>(0.018)  | 0.025<br>0.874 | -0.002                           |
| Daily                                             | 0.676<br>(0.052) | 0.712<br>(0.022)  | 1.352<br>0.250 | -0.027                           |
| <b>Check school app ("Registro elettronico"):</b> |                  |                   |                |                                  |
| Never                                             | 0.114<br>(0.043) | 0.170<br>(0.018)  | 0.958<br>0.332 | -0.051                           |
| Yearly                                            | 0.019<br>(0.014) | 0.023<br>(0.007)  | 0.027<br>0.870 | -0.008                           |
| Monthly                                           | 0.076<br>(0.024) | 0.081<br>(0.012)  | 0.000<br>0.984 | -0.006                           |
| Weekly                                            | 0.276<br>(0.048) | 0.190<br>(0.016)  | 2.660<br>0.109 | 0.073                            |
| Daily                                             | 0.400<br>(0.047) | 0.412<br>(0.023)  | 0.790<br>0.378 | -0.009                           |
| <b>Communicate with teachers:</b>                 |                  |                   |                |                                  |
| Never                                             | 0.029<br>(0.020) | 0.057<br>(0.011)  | 1.430<br>0.237 | -0.043                           |
| Yearly                                            | 0.133<br>(0.033) | 0.131<br>(0.011)  | 0.000<br>0.992 | 0.002                            |
| Monthly                                           | 0.419<br>(0.049) | 0.344<br>(0.017)  | 1.671<br>0.202 | 0.054                            |
| Weekly                                            | 0.257<br>(0.048) | 0.267<br>(0.015)  | 0.005<br>0.942 | -0.007                           |
| Daily                                             | 0.143<br>(0.031) | 0.192<br>(0.020)  | 1.823<br>0.183 | -0.043                           |
| Classrooms                                        | 47               | 51                |                |                                  |
| Observations                                      | 105              | 754               |                |                                  |

Notes: The table presents balance statistics for key variables across three groups: Dropout and No-Dropout. It reports mean values and clustered standard errors (at the classroom level) for each group. Column (3) displays the results of an F-test across all groups, along with the associated p-values for joint significance. The normalized difference is shown for the group comparisons in columns (1)-(2). Observations are at the participant level, and each specification includes strata fixed effects. Significance levels are marked: <sup>+</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

**Table A30: Labor Market Engagement and Social Inclusion - Endline**

|                                                               | (1)<br>Dropout    | (2)<br>No-Dropout | (3)<br>F-stat               | (1)-(2)<br>Normalized Difference |
|---------------------------------------------------------------|-------------------|-------------------|-----------------------------|----------------------------------|
| <b>Employment status and willingness to work:</b>             |                   |                   |                             |                                  |
| Employed                                                      | 0.238<br>(0.050)  | 0.211<br>(0.026)  | 0.061<br>0.806              | 0.023                            |
| Looking for a job (past 4 week)                               | 0.514<br>(0.050)  | 0.450<br>(0.020)  | 0.985<br>0.326              | 0.044                            |
| Looking for a job (past 4 week) (if not employed)             | 0.525<br>(0.062)  | 0.492<br>(0.023)  | 0.188<br>0.666              | 0.025                            |
| Would like to work (not employed and not looking)             | 0.263<br>(0.083)  | 0.334<br>(0.028)  | 0.248<br>0.621              | -0.078                           |
| Never looked for a job                                        | 0.171<br>(0.038)  | 0.159<br>(0.017)  | 0.110<br>0.742              | 0.011                            |
| <b>Perceptions of labor market outcomes (next 12 months):</b> |                   |                   |                             |                                  |
| Finding a job (not employed)                                  | 36.625<br>(3.706) | 41.345<br>(1.771) | 0.674<br>0.416              | -0.059                           |
| Loosing current job (employed)                                | 38.800<br>(6.144) | 32.453<br>(2.282) | 0.810<br>0.373              | 0.136                            |
| Training to acquire further qualifications                    | 46.286<br>(3.303) | 47.918<br>(1.485) | 0.629<br>0.431              | -0.018                           |
| <b>Main job search methods adopted (if ever searched):</b>    |                   |                   |                             |                                  |
| Friends, relatives, acquaintances                             | 0.448<br>(0.060)  | 0.562<br>(0.021)  | 1.884<br>0.176              | -0.084                           |
| Private employment agency                                     | 0.230<br>(0.038)  | 0.303<br>(0.018)  | 3.321 <sup>+</sup><br>0.074 | -0.059 <sup>+</sup>              |
| Public employment service                                     | 0.218<br>(0.048)  | 0.219<br>(0.018)  | 0.010<br>0.922              | -0.001                           |
| Job advertisements                                            | 0.218<br>(0.046)  | 0.235<br>(0.021)  | 1.250<br>0.269              | -0.014                           |
| I contacted the employer directly                             | 0.103<br>(0.043)  | 0.068<br>(0.014)  | 0.613<br>0.437              | 0.051                            |
| Training course, internship, or previous experience           | 0.080<br>(0.032)  | 0.071<br>(0.011)  | 0.063<br>0.803              | 0.013                            |
| The employer contacted me directly                            | 0.023<br>(0.015)  | 0.030<br>(0.006)  | 0.223<br>0.639              | -0.015                           |
| Other method                                                  | 0.092<br>(0.034)  | 0.069<br>(0.010)  | 0.100<br>0.753              | 0.032                            |
| <b>Anti-poverty measures received (past 12 months):</b>       |                   |                   |                             |                                  |
| At least one welfare measure                                  | 0.390<br>(0.053)  | 0.549<br>(0.024)  | 14.394**<br>0.000           | -0.108**                         |
| N. measures received                                          | 0.657<br>(0.125)  | 0.908<br>(0.054)  | 6.095*<br>0.017             | -0.082*                          |
| Classrooms                                                    | 47                | 51                |                             |                                  |
| Observations                                                  | 105               | 754               |                             |                                  |

Notes: The table presents balance statistics for key variables across three groups: Dropout and No-Dropout. It reports mean values and clustered standard errors (at the classroom level) for each group. Column (3) displays the results of an F-test across all groups, along with the associated p-values for joint significance. The normalized difference is shown for the group comparisons in columns (1)-(2). Observations are at the participant level, and each specification includes strata fixed effects. For “Finding a job (not employed)” and “Looking for a job (past 4 week) (if not employed)” there are 38 classrooms in Dropout, 80 Observations in Dropout and 595 observations in No-Dropout. For “Loosing current job (employed)” there are 19 classrooms in Dropout, 45 classrooms in No-Dropout, 25 Observations in Dropout and 159 observations in No-Dropout. For “Main job search methods adopted (if ever searched)” there are 43 classrooms in Dropout, 87 Observations in Dropout and 634 observations in No-Dropout. For “Would like to work (not employed and not looking)” there are there are 38 classrooms in Dropout, 38 Observations in Dropout and 293 observations in No-Dropout. The variable *Open to work* contains only values for individuals who did not drop out, and therefore cannot be included in this balancing test. Significance levels are marked: <sup>+</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

## E.7.2 Only women sample

**Table A31: Technology Adoption & Digital Skills**

|                   | (1)                 | (2)                | (3)                  | (4)                | (5)                |
|-------------------|---------------------|--------------------|----------------------|--------------------|--------------------|
|                   | Technology adoption |                    |                      |                    | Digital skills     |
|                   | Tablet<br>[0,1]     | Devices<br>[N]     | Participant<br>[0,6] | Children<br>[0,5]  | DSI<br>[1,6]       |
| Assigned T1       | 0.621**<br>(0.036)  | 0.647**<br>(0.064) | 2.611**<br>(0.216)   | 1.854**<br>(0.175) | 0.737**<br>(0.125) |
| Assigned T2       | 0.637**<br>(0.034)  | 0.758**<br>(0.083) | 2.715**<br>(0.219)   | 1.804**<br>(0.172) | 0.856**<br>(0.124) |
| Strata FE         | ✓                   | ✓                  | ✓                    | ✓                  | ✓                  |
| Lag Dep. Var.     | ✓                   | ✓                  |                      |                    | ✓                  |
| N                 | 697                 | 697                | 697                  | 697                | 697                |
| adjR <sup>2</sup> | 0.440               | 0.309              | 0.285                | 0.233              | 0.202              |
| T2-T1             | 0.016               | 0.112              | 0.104                | -0.050             | 0.119              |
| p-val(T2-T1)      | 0.604               | 0.167              | 0.646                | 0.756              | 0.414              |
| Mean C            | 0.270               | 0.593              | 1.304                | 1.487              | 3.795              |
| Sd C              | 0.445               | 0.818              | 2.106                | 1.953              | 1.338              |

**Notes:** Robustness check in which the sample size is reduced to include only women. Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*Tablet*, *Devices*, and *DSI*). Standard errors are clustered at the class level. The variable *Tablet* is a binary indicator equal to 1 if the participant reports owning a tablet, and 0 otherwise. *Devices* is the total number of tablets and computers available at home. *Participant* measures the frequency of computer or tablet use by the participant, ranging from 0 (never) to 6 (several times a day). *Children* captures the average frequency with which up to two children use a computer or tablet at home, measured on a scale from 0 (never) to 5 (every day). *DSI* represents the Digital Skills Indicator, a composite index ranging from 1 (no skills) to 6 (above basic skills). <sup>+</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

**Table A32: Digital Parenting & Social Inclusion**

|                   | (1)                     | (2)                        | (3)                       | (4)                   | (5)                      |
|-------------------|-------------------------|----------------------------|---------------------------|-----------------------|--------------------------|
|                   | Digital Parenting       |                            | Social Inclusion          |                       |                          |
|                   | Engagement<br>[Z-score] | Self Efficacy<br>[Z-score] | Digital Identity<br>[0,1] | Public Tools<br>[0,4] | New Application<br>[0,1] |
| Assigned T1       | 0.433**<br>(0.120)      | 0.555**<br>(0.107)         | 0.161**<br>(0.050)        | 0.682**<br>(0.195)    | 0.140**<br>(0.042)       |
| Assigned T2       | 0.232*<br>(0.094)       | 0.632**<br>(0.095)         | 0.236**<br>(0.040)        | 0.831**<br>(0.169)    | 0.045<br>(0.033)         |
| Strata FE         | ✓                       | ✓                          | ✓                         | ✓                     | ✓                        |
| Lag Dep. Var.     |                         |                            |                           |                       | ✓                        |
| N                 | 697                     | 697                        | 697                       | 697                   | 697                      |
| adjR <sup>2</sup> | 0.091                   | 0.177                      | 0.159                     | 0.168                 | 0.083                    |
| T2-T1             | -0.201                  | 0.077                      | 0.075                     | 0.149                 | -0.095                   |
| p-val(T2-T1)      | 0.114                   | 0.500                      | 0.137                     | 0.499                 | 0.049                    |
| Mean C            | 0.018                   | 0.003                      | 0.346                     | 0.852                 | 0.129                    |
| Sd C              | 0.996                   | 0.988                      | 0.477                     | 1.482                 | 0.336                    |

**Notes:** Robustness check in which the sample size is reduced to include only women. Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*New Application*). Standard errors are clustered at the class level. The variable *Engagement* measures how frequently participants use digital tools with their children for education and entertainment and monitor their school performance via apps. It is standardized to have a mean of 0 and standard deviation of 1 in the control group. *Self-Efficacy* captures participants' confidence in guiding their children's digital behavior, including ensuring age-appropriate content, managing screen time, and finding online educational resources. This variable is standardized similarly to Engagement. *Digital Identity* is a binary indicator equal to 1 if the participant has an Italian public digital identity (SPID) and has used it autonomously in the past five months. *Public Tools* measures the number of public digital services the participant has accessed in the past five months, including social security, tax payments, health services, and child-related services. The variable ranges from 0 to 4. *New Application* is a binary indicator equal to 1 if the participant submitted at least one new application for an income support measure in the past five months. <sup>+</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

**Table A33: Labor Market Engagement**

|                   | (1)               | (2)                            | (3)                           | (4)                     |
|-------------------|-------------------|--------------------------------|-------------------------------|-------------------------|
|                   | Current Behavior  |                                | Future Expectations           |                         |
|                   | Openness<br>[0,1] | Effort<br>[0,1]                | Pr. Employment<br>[0,100]     | Pr. Training<br>[0,100] |
| Assigned T1       | -0.035<br>(0.037) | -0.006<br>(0.042)              | 7.654*<br>(3.505)             | 22.852**<br>(4.905)     |
| Assigned T2       | -0.009<br>(0.032) | -0.079 <sup>+</sup><br>(0.045) | 7.009 <sup>+</sup><br>(3.833) | 14.826**<br>(5.046)     |
| Strata FE         | ✓                 | ✓                              | ✓                             | ✓                       |
| Lag Dep. Var.     | ✓                 |                                | ✓                             | ✓                       |
| N                 | 697               | 697                            | 697                           | 697                     |
| adjR <sup>2</sup> | 0.192             | 0.022                          | 0.093                         | 0.085                   |
| T2-T1             | 0.026             | -0.074                         | -0.645                        | -8.026                  |
| p-val(T2-T1)      | 0.470             | 0.113                          | 0.877                         | 0.203                   |
| Mean C            | 0.738             | 0.521                          | 48.973                        | 31.331                  |
| Sd C              | 0.441             | 0.501                          | 32.091                        | 30.002                  |

Notes: Robustness check in which the sample size is reduced to include only women. Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*Openness*, *Pr. Employment*, *Pr. Training*). Standard errors are clustered at the class level. The variable *Openness* is a binary indicator equal to 1 if the participant is employed, actively seeking employment, or willing to work despite not currently looking. *Effort* is a binary indicator equal to 1 if the participant engaged in activities to improve their labor market status, including updating their CV, consulting an employment service, or enrolling in a training program. *Perceived Probability of Employment* measures participants' self-reported likelihood (0-100) of being employed in 12 months. *Perceived Probability of Training* captures participants' self-reported likelihood (0-100) of enrolling in a skills development or training program in the next 12 months. <sup>+</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

### E.7.3 Only highly engaged interviewed

**Table A34: Technology Adoption & Digital Skills**

|                   | (1)                 | (2)                | (3)                  | (4)                | (5)                |
|-------------------|---------------------|--------------------|----------------------|--------------------|--------------------|
|                   | Technology adoption |                    |                      |                    | Digital skills     |
|                   | Tablet<br>[0,1]     | Devices<br>[N]     | Participant<br>[0,6] | Children<br>[0,5]  | DSI<br>[1,6]       |
| Assigned T1       | 0.625**<br>(0.035)  | 0.626**<br>(0.062) | 2.581**<br>(0.212)   | 1.856**<br>(0.169) | 0.773**<br>(0.125) |
| Assigned T2       | 0.652**<br>(0.034)  | 0.819**<br>(0.079) | 2.789**<br>(0.236)   | 1.893**<br>(0.165) | 0.836**<br>(0.129) |
| Strata FE         | ✓                   | ✓                  | ✓                    | ✓                  | ✓                  |
| Lag Dep. Var.     | ✓                   | ✓                  |                      |                    | ✓                  |
| N                 | 693                 | 693                | 693                  | 693                | 693                |
| adjR <sup>2</sup> | 0.443               | 0.324              | 0.298                | 0.256              | 0.202              |
| T2-T1             | 0.027               | 0.193              | 0.208                | 0.037              | 0.063              |
| p-val(T2-T1)      | 0.368               | 0.015              | 0.402                | 0.812              | 0.673              |
| Mean C            | 0.257               | 0.585              | 1.272                | 1.464              | 3.815              |
| Sd C              | 0.438               | 0.817              | 2.098                | 1.952              | 1.354              |

**Notes:** Robustness check in which the sample size is reduced by including only those respondents who, at the end of the interview, were rated as either “Extremely engaged and sincere” or “Very engaged and sincere”. Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*Tablet*, *Devices*, and *DSI*). Standard errors are clustered at the class level. The variable *Tablet* is a binary indicator equal to 1 if the participant reports owning a tablet, and 0 otherwise. *Devices* is the total number of tablets and computers available at home. *Participant* measures the frequency of computer or tablet use by the participant, ranging from 0 (never) to 6 (several times a day). *Children* captures the average frequency with which up to two children use a computer or tablet at home, measured on a scale from 0 (never) to 5 (every day). *DSI* represents the Digital Skills Indicator, a composite index ranging from 1 (no skills) to 6 (above basic skills). <sup>+</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

**Table A35: Digital Parenting & Social Inclusion**

|                   | (1)                     | (2)                        | (3)                       | (4)                   | (5)                      |
|-------------------|-------------------------|----------------------------|---------------------------|-----------------------|--------------------------|
|                   | Digital Parenting       |                            | Social Inclusion          |                       |                          |
|                   | Engagement<br>[Z-score] | Self Efficacy<br>[Z-score] | Digital Identity<br>[0,1] | Public Tools<br>[0,4] | New Application<br>[0,1] |
| Assigned T1       | 0.415**<br>(0.117)      | 0.575**<br>(0.110)         | 0.169**<br>(0.054)        | 0.671**<br>(0.212)    | 0.118**<br>(0.039)       |
| Assigned T2       | 0.314**<br>(0.095)      | 0.632**<br>(0.102)         | 0.235**<br>(0.044)        | 0.754**<br>(0.168)    | 0.051<br>(0.036)         |
| Strata FE         | ✓                       | ✓                          | ✓                         | ✓                     | ✓                        |
| Lag Dep. Var.     |                         |                            |                           |                       | ✓                        |
| N                 | 693                     | 693                        | 693                       | 693                   | 693                      |
| adjR <sup>2</sup> | 0.096                   | 0.164                      | 0.160                     | 0.158                 | 0.078                    |
| T2-T1             | -0.101                  | 0.057                      | 0.066                     | 0.083                 | -0.066                   |
| p-val(T2-T1)      | 0.430                   | 0.623                      | 0.233                     | 0.718                 | 0.155                    |
| Mean C            | -0.015                  | 0.012                      | 0.362                     | 0.928                 | 0.140                    |
| Sd C              | 1.014                   | 1.027                      | 0.482                     | 1.530                 | 0.347                    |

**Notes:** Robustness check in which the sample size is reduced by including only those respondents who, at the end of the interview, were rated as either “Extremely engaged and sincere” or “Very engaged and sincere”. Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*New Application*). Standard errors are clustered at the class level. The variable *Engagement* measures how frequently participants use digital tools with their children for education and entertainment and monitor their school performance via apps. It is standardized to have a mean of 0 and standard deviation of 1 in the control group. *Self-Efficacy* captures participants’ confidence in guiding their children’s digital behavior, including ensuring age-appropriate content, managing screen time, and finding online educational resources. This variable is standardized similarly to Engagement. *Digital Identity* is a binary indicator equal to 1 if the participant has an Italian public digital identity (SPID) and has used it autonomously in the past five months. *Public Tools* measures the number of public digital services the participant has accessed in the past five months, including social security, tax payments, health services, and child-related services. The variable ranges from 0 to 4. *New Application* is a binary indicator equal to 1 if the participant submitted at least one new application for an income support measure in the past five months. <sup>+</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

**Table A36: Labor Market Engagement**

|                   | (1)               | (2)               | (3)                       | (4)                     |
|-------------------|-------------------|-------------------|---------------------------|-------------------------|
|                   | Current Behavior  |                   | Future Expectations       |                         |
|                   | Openness<br>[0,1] | Effort<br>[0,1]   | Pr. Employment<br>[0,100] | Pr. Training<br>[0,100] |
| Assigned T1       | -0.044<br>(0.036) | -0.008<br>(0.041) | 8.146*<br>(3.545)         | 24.064**<br>(4.797)     |
| Assigned T2       | -0.003<br>(0.031) | -0.051<br>(0.045) | 7.861*<br>(3.633)         | 15.572**<br>(5.140)     |
| Strata FE         | ✓                 | ✓                 | ✓                         | ✓                       |
| Lag Dep. Var.     | ✓                 |                   | ✓                         | ✓                       |
| N                 | 693               | 693               | 693                       | 693                     |
| adjR <sup>2</sup> | 0.208             | 0.036             | 0.106                     | 0.092                   |
| T2-T1             | 0.042             | -0.043            | -0.285                    | -8.492                  |
| p-val(T2-T1)      | 0.259             | 0.347             | 0.944                     | 0.183                   |
| Mean C            | 0.747             | 0.506             | 50.147                    | 31.064                  |
| Sd C              | 0.435             | 0.501             | 33.053                    | 30.463                  |

Notes: Robustness check in which the sample size is reduced by including only those respondents who, at the end of the interview, were rated as either “Extremely engaged and sincere” or “Very engaged and sincere”. Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*Openness*, *Pr. Employment*, *Pr. Training*). Standard errors are clustered at the class level. The variable *Openness* is a binary indicator equal to 1 if the participant is employed, actively seeking employment, or willing to work despite not currently looking. *Effort* is a binary indicator equal to 1 if the participant engaged in activities to improve their labor market status, including updating their CV, consulting an employment service, or enrolling in a training program. *Perceived Probability of Employment* measures participants’ self-reported likelihood (0-100) of being employed in 12 months. *Perceived Probability of Training* captures participants’ self-reported likelihood (0-100) of enrolling in a skills development or training program in the next 12 months. <sup>+</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

## E.7.4 Not assigned to preferred class

**Table A37: Technology Adoption & Digital Skills**

|                   | (1)                 | (2)                | (3)                  | (4)                | (5)                |
|-------------------|---------------------|--------------------|----------------------|--------------------|--------------------|
|                   | Technology adoption |                    |                      |                    | Digital skills     |
|                   | Tablet<br>[0,1]     | Devices<br>[N]     | Participant<br>[0,6] | Children<br>[0,5]  | DSI<br>[1,6]       |
| Assigned T1       | 0.628**<br>(0.034)  | 0.660**<br>(0.068) | 2.643**<br>(0.216)   | 1.887**<br>(0.172) | 0.715**<br>(0.122) |
| Assigned T2       | 0.648**<br>(0.033)  | 0.800**<br>(0.077) | 2.742**<br>(0.233)   | 1.891**<br>(0.168) | 0.816**<br>(0.121) |
| Strata FE         | ✓                   | ✓                  | ✓                    | ✓                  | ✓                  |
| Lag Dep. Var.     | ✓                   | ✓                  |                      |                    | ✓                  |
| Preferred Class   | ✓                   | ✓                  | ✓                    | ✓                  | ✓                  |
| N                 | 754                 | 754                | 754                  | 754                | 754                |
| adjR <sup>2</sup> | 0.447               | 0.304              | 0.283                | 0.247              | 0.201              |
| T2-T1             | 0.019               | 0.140              | 0.099                | 0.004              | 0.100              |
| p-val(T2-T1)      | 0.499               | 0.075              | 0.681                | 0.977              | 0.478              |
| Mean C            | 0.257               | 0.574              | 1.271                | 1.454              | 3.824              |
| Sd C              | 0.438               | 0.805              | 2.087                | 1.942              | 1.344              |

Notes: Robustness check including two controls that identify whether the respondent was assigned to a class different from their first preference for attending the basic digital skills course. Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*Tablet*, *Devices*, and *DSI*). Standard errors are clustered at the class level. The variable *Tablet* is a binary indicator equal to 1 if the participant reports owning a tablet, and 0 otherwise. *Devices* is the total number of tablets and computers available at home. *Participant* measures the frequency of computer or tablet use by the participant, ranging from 0 (never) to 6 (several times a day). *Children* captures the average frequency with which up to two children use a computer or tablet at home, measured on a scale from 0 (never) to 5 (every day). *DSI* represents the Digital Skills Indicator, a composite index ranging from 1 (no skills) to 6 (above basic skills). +  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

**Table A38: Digital Parenting & Social Inclusion**

|                   | (1)                     | (2)                        | (3)                       | (4)                   | (5)                      |
|-------------------|-------------------------|----------------------------|---------------------------|-----------------------|--------------------------|
|                   | Digital Parenting       |                            | Social Inclusion          |                       |                          |
|                   | Engagement<br>[Z-score] | Self Efficacy<br>[Z-score] | Digital Identity<br>[0,1] | Public Tools<br>[0,4] | New Application<br>[0,1] |
| Assigned T1       | 0.408**<br>(0.117)      | 0.552**<br>(0.103)         | 0.156**<br>(0.049)        | 0.645**<br>(0.195)    | 0.126**<br>(0.038)       |
| Assigned T2       | 0.283**<br>(0.088)      | 0.629**<br>(0.097)         | 0.223**<br>(0.039)        | 0.751**<br>(0.158)    | 0.051<br>(0.033)         |
| Strata FE         | ✓                       | ✓                          | ✓                         | ✓                     | ✓                        |
| Lag Dep. Var.     |                         |                            |                           |                       | ✓                        |
| Preferred Class   | ✓                       | ✓                          | ✓                         | ✓                     | ✓                        |
| N                 | 754                     | 754                        | 754                       | 754                   | 754                      |
| adjR <sup>2</sup> | 0.093                   | 0.181                      | 0.153                     | 0.150                 | 0.074                    |
| T2-T1             | -0.125                  | 0.076                      | 0.067                     | 0.106                 | -0.075                   |
| p-val(T2-T1)      | 0.318                   | 0.498                      | 0.165                     | 0.622                 | 0.094                    |
| Mean C            | 0.000                   | 0.000                      | 0.356                     | 0.891                 | 0.137                    |
| Sd C              | 1.000                   | 1.000                      | 0.480                     | 1.506                 | 0.345                    |

Notes: Robustness check including two controls that identify whether the respondent was assigned to a class different from their first preference for attending the basic digital skills course. Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*New Application*). Standard errors are clustered at the class level. The variable *Engagement* measures how frequently participants use digital tools with their children for education and entertainment and monitor their school performance via apps. It is standardized to have a mean of 0 and standard deviation of 1 in the control group. *Self-Efficacy* captures participants' confidence in guiding their children's digital behavior, including ensuring age-appropriate content, managing screen time, and finding online educational resources. This variable is standardized similarly to Engagement. *Digital Identity* is a binary indicator equal to 1 if the participant has an Italian public digital identity (SPID) and has used it autonomously in the past five months. *Public Tools* measures the number of public digital services the participant has accessed in the past five months, including social security, tax payments, health services, and child-related services. The variable ranges from 0 to 4. *New Application* is a binary indicator equal to 1 if the participant submitted at least one new application for an income support measure in the past five months. +  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

**Table A39: Labor Market Engagement**

|                   | (1)               | (2)               | (3)                       | (4)                     |
|-------------------|-------------------|-------------------|---------------------------|-------------------------|
|                   | Current Behavior  |                   | Future Expectations       |                         |
|                   | Openness<br>[0,1] | Effort<br>[0,1]   | Pr. Employment<br>[0,100] | Pr. Training<br>[0,100] |
| Assigned T1       | -0.044<br>(0.035) | 0.002<br>(0.040)  | 6.821*<br>(3.406)         | 22.176**<br>(4.701)     |
| Assigned T2       | -0.006<br>(0.030) | -0.062<br>(0.042) | 7.067*<br>(3.551)         | 14.655**<br>(4.960)     |
| Strata FE         | ✓                 | ✓                 | ✓                         | ✓                       |
| Lag Dep. Var.     | ✓                 |                   | ✓                         | ✓                       |
| Preferred Class   | ✓                 | ✓                 | ✓                         | ✓                       |
| N                 | 754               | 754               | 754                       | 754                     |
| adjR <sup>2</sup> | 0.193             | 0.030             | 0.098                     | 0.090                   |
| T2-T1             | 0.037             | -0.064            | 0.246                     | -7.521                  |
| p-val(T2-T1)      | 0.281             | 0.137             | 0.949                     | 0.221                   |
| Mean C            | 0.750             | 0.511             | 50.771                    | 31.697                  |
| Sd C              | 0.434             | 0.501             | 32.659                    | 29.868                  |

Notes: Robustness check including two controls that identify whether the respondent was assigned to a class different from their first preference for attending the basic digital skills course. Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*Openness*, *Pr. Employment*, *Pr. Training*). Standard errors are clustered at the class level. The variable *Openness* is a binary indicator equal to 1 if the participant is employed, actively seeking employment, or willing to work despite not currently looking. *Effort* is a binary indicator equal to 1 if the participant engaged in activities to improve their labor market status, including updating their CV, consulting an employment service, or enrolling in a training program. *Perceived Probability of Employment* measures participants' self-reported likelihood (0-100) of being employed in 12 months. *Perceived Probability of Training* captures participants' self-reported likelihood (0-100) of enrolling in a skills development or training program in the next 12 months. +  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

## E.7.5 Class location dummies

**Table A40: Technology Adoption & Digital Skills**

|                   | (1)                 | (2)                | (3)                  | (4)                | (5)                |
|-------------------|---------------------|--------------------|----------------------|--------------------|--------------------|
|                   | Technology adoption |                    |                      |                    | Digital skills     |
|                   | Tablet<br>[0,1]     | Devices<br>[N]     | Participant<br>[0,6] | Children<br>[0,5]  | DSI<br>[1,6]       |
| Assigned T1       | 0.627**<br>(0.032)  | 0.651**<br>(0.057) | 2.642**<br>(0.203)   | 1.870**<br>(0.164) | 0.682**<br>(0.109) |
| Assigned T2       | 0.649**<br>(0.031)  | 0.786**<br>(0.069) | 2.694**<br>(0.218)   | 1.869**<br>(0.158) | 0.816**<br>(0.109) |
| Strata FE         | ✓                   | ✓                  | ✓                    | ✓                  | ✓                  |
| Lag Dep. Var.     | ✓                   | ✓                  |                      |                    | ✓                  |
| Class Location FE | ✓                   | ✓                  | ✓                    | ✓                  | ✓                  |
| N                 | 754                 | 754                | 754                  | 754                | 754                |
| adjR <sup>2</sup> | 0.455               | 0.316              | 0.287                | 0.245              | 0.208              |
| T2-T1             | 0.022               | 0.135              | 0.053                | -0.001             | 0.133              |
| p-val(T2-T1)      | 0.436               | 0.057              | 0.802                | 0.995              | 0.247              |
| Mean C            | 0.257               | 0.574              | 1.271                | 1.454              | 3.824              |
| Sd C              | 0.438               | 0.805              | 2.087                | 1.942              | 1.344              |

**Notes:** Robustness check including class location fixed effects. Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*Tablet*, *Devices*, and *DSI*). Standard errors are clustered at the class level. The variable *Tablet* is a binary indicator equal to 1 if the participant reports owning a tablet, and 0 otherwise. *Devices* is the total number of tablets and computers available at home. *Participant* measures the frequency of computer or tablet use by the participant, ranging from 0 (never) to 6 (several times a day). *Children* captures the average frequency with which up to two children use a computer or tablet at home, measured on a scale from 0 (never) to 5 (every day). *DSI* represents the Digital Skills Indicator, a composite index ranging from 1 (no skills) to 6 (above basic skills). <sup>+</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

**Table A41: Digital Parenting & Social Inclusion**

|                   | (1)                     | (2)                        | (3)                       | (4)                   | (5)                           |
|-------------------|-------------------------|----------------------------|---------------------------|-----------------------|-------------------------------|
|                   | Digital Parenting       |                            | Social Inclusion          |                       |                               |
|                   | Engagement<br>[Z-score] | Self Efficacy<br>[Z-score] | Digital Identity<br>[0,1] | Public Tools<br>[0,4] | New Application<br>[0,1]      |
| Assigned T1       | 0.397**<br>(0.094)      | 0.537**<br>(0.084)         | 0.153**<br>(0.041)        | 0.655**<br>(0.154)    | 0.129**<br>(0.035)            |
| Assigned T2       | 0.274**<br>(0.072)      | 0.633**<br>(0.088)         | 0.227**<br>(0.036)        | 0.761**<br>(0.138)    | 0.050 <sup>+</sup><br>(0.029) |
| Strata FE         | ✓                       | ✓                          | ✓                         | ✓                     | ✓                             |
| Lag Dep. Var.     |                         |                            |                           |                       | ✓                             |
| Class Location FE | ✓                       | ✓                          | ✓                         | ✓                     | ✓                             |
| N                 | 754                     | 754                        | 754                       | 754                   | 754                           |
| adjR <sup>2</sup> | 0.138                   | 0.209                      | 0.166                     | 0.190                 | 0.089                         |
| T2-T1             | -0.123                  | 0.097                      | 0.074                     | 0.106                 | -0.079                        |
| p-val(T2-T1)      | 0.144                   | 0.268                      | 0.066                     | 0.475                 | 0.028                         |
| Mean C            | 0.000                   | 0.000                      | 0.356                     | 0.891                 | 0.137                         |
| Sd C              | 1.000                   | 1.000                      | 0.480                     | 1.506                 | 0.345                         |

**Notes:** Robustness check including class location fixed effects. Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*New Application*). Standard errors are clustered at the class level. The variable *Engagement* measures how frequently participants use digital tools with their children for education and entertainment and monitor their school performance via apps. It is standardized to have a mean of 0 and standard deviation of 1 in the control group. *Self-Efficacy* captures participants' confidence in guiding their children's digital behavior, including ensuring age-appropriate content, managing screen time, and finding online educational resources. This variable is standardized similarly to Engagement. *Digital Identity* is a binary indicator equal to 1 if the participant has an Italian public digital identity (SPID) and has used it autonomously in the past five months. *Public Tools* measures the number of public digital services the participant has accessed in the past five months, including social security, tax payments, health services, and child-related services. The variable ranges from 0 to 4. *New Application* is a binary indicator equal to 1 if the participant submitted at least one new application for an income support measure in the past five months. <sup>+</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

**Table A42: Labor Market Engagement**

|                   | (1)                            | (2)                            | (3)                           | (4)                     |
|-------------------|--------------------------------|--------------------------------|-------------------------------|-------------------------|
|                   | Current Behavior               |                                | Future Expectations           |                         |
|                   | Openness<br>[0,1]              | Effort<br>[0,1]                | Pr. Employment<br>[0,100]     | Pr. Training<br>[0,100] |
| Assigned T1       | -0.054 <sup>+</sup><br>(0.032) | 0.004<br>(0.038)               | 6.168 <sup>+</sup><br>(3.238) | 20.600**<br>(3.625)     |
| Assigned T2       | -0.013<br>(0.029)              | -0.072 <sup>+</sup><br>(0.040) | 5.879 <sup>+</sup><br>(3.080) | 15.244**<br>(3.857)     |
| Strata FE         | ✓                              | ✓                              | ✓                             | ✓                       |
| Lag Dep. Var.     | ✓                              |                                | ✓                             | ✓                       |
| Class Location FE | ✓                              | ✓                              | ✓                             | ✓                       |
| N                 | 754                            | 754                            | 754                           | 754                     |
| adjR <sup>2</sup> | 0.190                          | 0.027                          | 0.105                         | 0.197                   |
| T2-T1             | 0.042                          | -0.076                         | -0.290                        | -5.356                  |
| p-val(T2-T1)      | 0.213                          | 0.069                          | 0.930                         | 0.144                   |
| Mean C            | 0.750                          | 0.511                          | 50.771                        | 31.697                  |
| Sd C              | 0.434                          | 0.501                          | 32.659                        | 29.868                  |

Notes: Robustness check including class location fixed effects. Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*Openness*, *Pr. Employment*, *Pr. Training*). Standard errors are clustered at the class level. The variable *Openness* is a binary indicator equal to 1 if the participant is employed, actively seeking employment, or willing to work despite not currently looking. *Effort* is a binary indicator equal to 1 if the participant engaged in activities to improve their labor market status, including updating their CV, consulting an employment service, or enrolling in a training program. *Perceived Probability of Employment* measures participants' self-reported likelihood (0-100) of being employed in 12 months. *Perceived Probability of Training* captures participants' self-reported likelihood (0-100) of enrolling in a skills development or training program in the next 12 months. <sup>+</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

### E.7.6 Regressions at child level

**Table A43:** Children's Device Usage & Engagement in Digital Activities With Children

|                   | (1)                | (2)                      | (3)                | (4)                            |
|-------------------|--------------------|--------------------------|--------------------|--------------------------------|
|                   | Device usage       |                          | Engagement         |                                |
|                   | Baseline<br>[0-5]  | Child covariate<br>[0-5] | Baseline<br>[N]    | Child covariate<br>[N]         |
| Assigned T1       | 1.922**<br>(0.165) | 1.920**<br>(0.161)       | 0.403**<br>(0.112) | 0.455**<br>(0.107)             |
| Assigned T2       | 1.856**<br>(0.164) | 1.877**<br>(0.153)       | 0.289**<br>(0.085) | 0.327**<br>(0.081)             |
| Preschool         |                    | -1.463**<br>(0.174)      |                    | -0.979**<br>(0.106)            |
| Middle school     |                    | 0.467**<br>(0.132)       |                    | -0.103 <sup>+</sup><br>(0.054) |
| High school       |                    | 0.811**<br>(0.168)       |                    | -0.672**<br>(0.081)            |
| Female            |                    | 0.038<br>(0.107)         |                    | 0.022<br>(0.054)               |
| N                 | 1313               | 1313                     | 1313               | 1313                           |
| adjR <sup>2</sup> | 0.236              | 0.316                    | 0.074              | 0.207                          |
| T2-T1             | -0.066             | -0.042                   | -0.113             | -0.128                         |
| p-val(T2-T1)      | 0.651              | 0.762                    | 0.351              | 0.290                          |
| Mean C            | 1.439              | 1.439                    | -0.000             | -0.000                         |
| Sd C              | 2.003              | 2.003                    | 1.000              | 1.000                          |

Notes: The dataset is at the child level, up to two children per household. Standard errors are clustered at the class level. The variable *Device usage* is a categorical variable that takes the value 0 if the child never uses electronic devices, and the value 5 if the child uses them every day. *Engagement* is an index that measures how engaged children are with their parents in digital activities that are beneficial for them. The *Child Covariate* column adds to the baseline regression a set of dummies for the type of school the child attends, based on the variable *child school* (i.e., *Preschool*, *Middle School*, and *High School*), with *Primary School* used as the reference category. <sup>+</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

**Table A44: Engagement With Children's Components**

|                   | (1)               | (2)                      | (3)                      | (4)                      | (5)                     | (6)                      |
|-------------------|-------------------|--------------------------|--------------------------|--------------------------|-------------------------|--------------------------|
|                   | School app usage  |                          | Digital tools recreation |                          | Digital tools education |                          |
|                   | Baseline<br>[0-5] | Child covariate<br>[0-5] | Baseline<br>[0-5]        | Child covariate<br>[0-5] | Baseline<br>[0-5]       | Child covariate<br>[0-5] |
| Assigned T1       | 0.256<br>(0.158)  | 0.384*<br>(0.147)        | 0.580**<br>(0.177)       | 0.645**<br>(0.170)       | 0.756**<br>(0.177)      | 0.840**<br>(0.169)       |
| Assigned T2       | 0.167<br>(0.141)  | 0.311*<br>(0.121)        | 0.410**<br>(0.138)       | 0.447**<br>(0.134)       | 0.580**<br>(0.140)      | 0.631**<br>(0.134)       |
| Preschool         |                   | -3.008**<br>(0.221)      |                          | -0.578**<br>(0.140)      |                         | -1.273**<br>(0.165)      |
| Middle school     |                   | 0.069<br>(0.099)         |                          | -0.237*<br>(0.092)       |                         | -0.184*<br>(0.085)       |
| High school       |                   | -0.398**<br>(0.108)      |                          | -1.067**<br>(0.132)      |                         | -1.171**<br>(0.143)      |
| Female            |                   | 0.005<br>(0.089)         |                          | 0.048<br>(0.087)         |                         | 0.040<br>(0.088)         |
| N                 | 1287              | 1287                     | 1313                     | 1313                     | 1310                    | 1310                     |
| adjR <sup>2</sup> | 0.069             | 0.336                    | 0.045                    | 0.102                    | 0.075                   | 0.175                    |
| T2-T1             | -0.088            | -0.073                   | -0.170                   | -0.198                   | -0.175                  | -0.208                   |
| p-val(T2-T1)      | 0.547             | 0.619                    | 0.393                    | 0.309                    | 0.375                   | 0.287                    |
| Mean C            | 3.742             | 3.742                    | 2.720                    | 2.720                    | 2.521                   | 2.521                    |
| Sd C              | 2.027             | 2.027                    | 1.388                    | 1.388                    | 1.575                   | 1.575                    |

**Notes:** The dataset is at the child level, up to two children per household. Standard errors are clustered at the class level. The variable *School app usage* is a categorical variable that takes the value 0 if the child's parent never uses the school app to monitor performance and attendance, and the value 5 if they use them every day. *Digital tools recreations* is a categorical variable that takes the value 0 if the child's parent never uses digital tools for recreation activities with their child, and the value 5 if they use them every day. *Digital tools education* is a categorical variable that takes the value 0 if the child's parent never uses digital tools for education activities with their child, and the value 5 if they use them every day. The *Child Covariate* column adds to the baseline regression a set of dummies for the type of school the child attends, based on the variable *child school* (i.e., *Preschool*, *Middle School*, and *High School*), with *Primary School* used as the reference category. <sup>+</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

### E.7.7 Post-Double Selection Lasso

**Table A45: Technology Adoption & Digital Skills**

|                   | (1)                 | (2)                | (3)                  | (4)                | (5)                |
|-------------------|---------------------|--------------------|----------------------|--------------------|--------------------|
|                   | Technology adoption |                    |                      |                    | Digital skills     |
|                   | Tablet<br>[0,1]     | Devices<br>[N]     | Participant<br>[0,6] | Children<br>[0,5]  | DSI<br>[1,6]       |
| Assigned T1       | 0.659 **<br>(0.034) | 0.737**<br>(0.065) | 2.622**<br>(0.212)   | 1.976**<br>(0.166) | 0.495**<br>(0.134) |
| Assigned T2       | 0.679**<br>(0.036)  | 0.860**<br>(0.089) | 2.702**<br>(0.226)   | 1.996**<br>(0.170) | 0.592**<br>(0.121) |
| Strata FE         | ✓                   | ✓                  | ✓                    | ✓                  | ✓                  |
| Lag Dep. Var.     | ✓                   | ✓                  |                      |                    | ✓                  |
| Class Location FE | ✓                   | ✓                  | ✓                    | ✓                  | ✓                  |

Notes: Robustness check employing the post-double selection Lasso method for control variable selection. Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*Tablet*, *Devices*, and *DSI*). Standard errors are clustered at the class level. The variable *Tablet* is a binary indicator equal to 1 if the participant reports owning a tablet, and 0 otherwise. *Devices* is the total number of tablets and computers available at home. *Participant* measures the frequency of computer or tablet use by the participant, ranging from 0 (never) to 6 (several times a day). *Children* captures the average frequency with which up to two children use a computer or tablet at home, measured on a scale from 0 (never) to 5 (every day). *DSI* represents the Digital Skills Indicator, a composite index ranging from 1 (no skills) to 6 (above basic skills). <sup>+</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

**Table A46: Digital Parenting & Social Inclusion**

|                   | (1)                     | (2)                        | (3)                       | (4)                   | (5)                      |
|-------------------|-------------------------|----------------------------|---------------------------|-----------------------|--------------------------|
|                   | Digital Parenting       |                            | Social Inclusion          |                       |                          |
|                   | Engagement<br>[Z-score] | Self Efficacy<br>[Z-score] | Digital Identity<br>[0,1] | Public Tools<br>[0,4] | New Application<br>[0,1] |
| Assigned T1       | 0.441**<br>(0.084)      | 0.322**<br>(0.081)         | 0.063<br>(0.049)          | 0.352*<br>(0.167)     | 0.109**<br>(0.035)       |
| Assigned T2       | 0.267**<br>(0.073)      | 0.376**<br>(0.091)         | 0.127**<br>(0.045)        | 0.352**<br>(0.122)    | 0.049<br>(0.031)         |
| Strata FE         | ✓                       | ✓                          | ✓                         | ✓                     | ✓                        |
| Lag Dep. Var.     |                         |                            |                           |                       | ✓                        |
| Class Location FE | ✓                       | ✓                          | ✓                         | ✓                     | ✓                        |

Notes: Robustness check employing the post-double selection Lasso method for control variable selection. Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*New Application*). Standard errors are clustered at the class level. The variable *Engagement* measures how frequently participants use digital tools with their children for education and entertainment and monitor their school performance via apps. It is standardized to have a mean of 0 and standard deviation of 1 in the control group. *Self-Efficacy* captures participants' confidence in guiding their children's digital behavior, including ensuring age-appropriate content, managing screen time, and finding online educational resources. This variable is standardized similarly to Engagement. *Digital Identity* is a binary indicator equal to 1 if the participant has an Italian public digital identity (SPID) and has used it autonomously in the past five months. *Public Tools* measures the number of public digital services the participant has accessed in the past five months, including social security, tax payments, health services, and child-related services. The variable ranges from 0 to 4. *New Application* is a binary indicator equal to 1 if the participant submitted at least one new application for an income support measure in the past five months. <sup>+</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

**Table A47: Labor Market Engagement**

|                   | (1)               | (2)                            | (3)                       | (4)                     |
|-------------------|-------------------|--------------------------------|---------------------------|-------------------------|
|                   | Current Behavior  |                                | Future Expectations       |                         |
|                   | Openness<br>[0,1] | Effort<br>[0,1]                | Pr. Employment<br>[0,100] | Pr. Training<br>[0,100] |
| Assigned T1       | -0.044<br>(0.036) | 0.001<br>(0.037)               | -1.862<br>(2.864)         | 3.791<br>(3.354)        |
| Assigned T2       | -0.012<br>(0.032) | -0.070 <sup>+</sup><br>(0.041) | -2.634<br>(2.947)         | -0.066<br>(3.184)       |
| Strata FE         | ✓                 | ✓                              | ✓                         | ✓                       |
| Lag Dep. Var.     | ✓                 |                                | ✓                         | ✓                       |
| Class Location FE | ✓                 | ✓                              | ✓                         | ✓                       |

Notes: Robustness check employing the post-double selection Lasso method for control variable selection. Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*Openness*, *Pr. Employment*, *Pr. Training*). Standard errors are clustered at the class level. The variable *Openness* is a binary indicator equal to 1 if the participant is employed, actively seeking employment, or willing to work despite not currently looking. *Effort* is a binary indicator equal to 1 if the participant engaged in activities to improve their labor market status, including updating their CV, consulting an employment service, or enrolling in a training program. *Perceived Probability of Employment* measures participants' self-reported likelihood (0-100) of being employed in 12 months. *Perceived Probability of Training* captures participants' self-reported likelihood (0-100) of enrolling in a skills development or training program in the next 12 months. <sup>+</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

## E.7.8 Interviewer dummies

**Table A48: Technology Adoption & Digital Skills**

|                   | (1)                 | (2)                | (3)                  | (4)                | (5)                |
|-------------------|---------------------|--------------------|----------------------|--------------------|--------------------|
|                   | Technology adoption |                    |                      |                    | Digital skills     |
|                   | Tablet<br>[0,1]     | Devices<br>[N]     | Participant<br>[0,6] | Children<br>[0,5]  | DSI<br>[1,6]       |
| Assigned T1       | 0.677**<br>(0.034)  | 0.696**<br>(0.071) | 2.809**<br>(0.214)   | 2.023**<br>(0.160) | 0.570**<br>(0.137) |
| Assigned T2       | 0.688**<br>(0.033)  | 0.816**<br>(0.084) | 2.852**<br>(0.215)   | 1.974**<br>(0.156) | 0.723**<br>(0.125) |
| Strata FE         | ✓                   | ✓                  | ✓                    | ✓                  | ✓                  |
| Lag Dep. Var.     | ✓                   | ✓                  |                      |                    | ✓                  |
| Interviewer FE    | ✓                   | ✓                  | ✓                    | ✓                  | ✓                  |
| N                 | 753                 | 753                | 753                  | 753                | 753                |
| adjR <sup>2</sup> | 0.453               | 0.306              | 0.329                | 0.270              | 0.263              |
| T2-T1             | 0.011               | 0.120              | 0.043                | -0.050             | 0.153              |
| p-val(T2-T1)      | 0.673               | 0.101              | 0.842                | 0.713              | 0.239              |
| Mean C            | 0.258               | 0.576              | 1.276                | 1.459              | 3.823              |
| Sd C              | 0.438               | 0.806              | 2.089                | 1.944              | 1.346              |

**Notes:** Robustness check including interviewer fixed effects. Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*Tablet*, *Devices*, and *DSI*). Standard errors are clustered at the class level. The variable *Tablet* is a binary indicator equal to 1 if the participant reports owning a tablet, and 0 otherwise. *Devices* is the total number of tablets and computers available at home. *Participant* measures the frequency of computer or tablet use by the participant, ranging from 0 (never) to 6 (several times a day). *Children* captures the average frequency with which up to two children use a computer or tablet at home, measured on a scale from 0 (never) to 5 (every day). *DSI* represents the Digital Skills Indicator, a composite index ranging from 1 (no skills) to 6 (above basic skills). <sup>+</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

**Table A49: Digital Parenting & Social Inclusion**

|                   | (1)                     | (2)                        | (3)                       | (4)                   | (5)                           |
|-------------------|-------------------------|----------------------------|---------------------------|-----------------------|-------------------------------|
|                   | Digital Parenting       |                            | Social Inclusion          |                       |                               |
|                   | Engagement<br>[Z-score] | Self Efficacy<br>[Z-score] | Digital Identity<br>[0,1] | Public Tools<br>[0,4] | New Application<br>[0,1]      |
| Assigned T1       | 0.561**<br>(0.092)      | 0.312**<br>(0.085)         | 0.064<br>(0.059)          | 0.362*<br>(0.181)     | 0.132**<br>(0.040)            |
| Assigned T2       | 0.378**<br>(0.087)      | 0.373**<br>(0.096)         | 0.124*<br>(0.050)         | 0.404**<br>(0.142)    | 0.067 <sup>+</sup><br>(0.038) |
| Strata FE         | ✓                       | ✓                          | ✓                         | ✓                     | ✓                             |
| Lag Dep. Var.     |                         |                            |                           |                       | ✓                             |
| Interviewer FE    | ✓                       | ✓                          | ✓                         | ✓                     | ✓                             |
| N                 | 753                     | 753                        | 753                       | 753                   | 753                           |
| adjR <sup>2</sup> | 0.196                   | 0.273                      | 0.182                     | 0.264                 | 0.098                         |
| T2-T1             | -0.183                  | 0.061                      | 0.060                     | 0.043                 | -0.064                        |
| p-val(T2-T1)      | 0.062                   | 0.363                      | 0.162                     | 0.763                 | 0.108                         |
| Mean C            | -0.002                  | 0.002                      | 0.357                     | 0.894                 | 0.138                         |
| Sd C              | 1.001                   | 1.001                      | 0.480                     | 1.507                 | 0.345                         |

**Notes:** Robustness check including interviewer fixed effects. Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*New Application*). Standard errors are clustered at the class level. The variable *Engagement* measures how frequently participants use digital tools with their children for education and entertainment and monitor their school performance via apps. It is standardized to have a mean of 0 and standard deviation of 1 in the control group. *Self-Efficacy* captures participants' confidence in guiding their children's digital behavior, including ensuring age-appropriate content, managing screen time, and finding online educational resources. This variable is standardized similarly to Engagement. *Digital Identity* is a binary indicator equal to 1 if the participant has an Italian public digital identity (SPID) and has used it autonomously in the past five months. *Public Tools* measures the number of public digital services the participant has accessed in the past five months, including social security, tax payments, health services, and child-related services. The variable ranges from 0 to 4. *New Application* is a binary indicator equal to 1 if the participant submitted at least one new application for an income support measure in the past five months. <sup>+</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

**Table A50: Labor Market Engagement**

|                   | (1)               | (2)               | (3)                       | (4)                     |
|-------------------|-------------------|-------------------|---------------------------|-------------------------|
|                   | Current Behavior  |                   | Future Expectations       |                         |
|                   | Openness<br>[0,1] | Effort<br>[0,1]   | Pr. Employment<br>[0,100] | Pr. Training<br>[0,100] |
| Assigned T1       | -0.026<br>(0.037) | 0.004<br>(0.043)  | -0.454<br>(3.474)         | 3.488<br>(3.454)        |
| Assigned T2       | 0.008<br>(0.036)  | -0.062<br>(0.047) | 0.294<br>(3.706)          | 0.357<br>(3.269)        |
| Strata FE         | ✓                 | ✓                 | ✓                         | ✓                       |
| Lag Dep. Var.     | ✓                 |                   | ✓                         | ✓                       |
| Interviewer FE    | ✓                 | ✓                 | ✓                         | ✓                       |
| N                 | 753               | 753               | 753                       | 753                     |
| adjR <sup>2</sup> | 0.210             | 0.045             | 0.149                     | 0.433                   |
| T2-T1             | 0.034             | -0.066            | 0.748                     | -3.131                  |
| p-val(T2-T1)      | 0.329             | 0.115             | 0.821                     | 0.336                   |
| Mean C            | 0.749             | 0.509             | 50.813                    | 31.802                  |
| Sd C              | 0.434             | 0.501             | 32.709                    | 29.869                  |

Notes: Robustness check including interviewer fixed effects. Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*Openness*, *Pr. Employment*, *Pr. Training*). Standard errors are clustered at the class level. The variable *Openness* is a binary indicator equal to 1 if the participant is employed, actively seeking employment, or willing to work despite not currently looking. *Effort* is a binary indicator equal to 1 if the participant engaged in activities to improve their labor market status, including updating their CV, consulting an employment service, or enrolling in a training program. *Perceived Probability of Employment* measures participants' self-reported likelihood (0-100) of being employed in 12 months. *Perceived Probability of Training* captures participants' self-reported likelihood (0-100) of enrolling in a skills development or training program in the next 12 months. +  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

## E.7.9 Interviewer Score

**Table A51:** Technology Adoption & Digital Skills

|                      | (1)                 | (2)                | (3)                  | (4)                | (5)                |
|----------------------|---------------------|--------------------|----------------------|--------------------|--------------------|
|                      | Technology adoption |                    |                      |                    | Digital skills     |
|                      | Tablet<br>[0,1]     | Devices<br>[N]     | Participant<br>[0,6] | Children<br>[0,5]  | DSI<br>[1,6]       |
| Assigned T1          | 0.633**<br>(0.036)  | 0.655**<br>(0.070) | 2.721**<br>(0.211)   | 1.965**<br>(0.166) | 0.648**<br>(0.130) |
| Assigned T2          | 0.652**<br>(0.034)  | 0.793**<br>(0.081) | 2.812**<br>(0.217)   | 1.964**<br>(0.159) | 0.765**<br>(0.122) |
| Strata FE            | ✓                   | ✓                  | ✓                    | ✓                  | ✓                  |
| Lag Dep. Var.        | ✓                   | ✓                  |                      |                    | ✓                  |
| Interviewer Score FE | ✓                   | ✓                  | ✓                    | ✓                  | ✓                  |
| N                    | 754                 | 754                | 754                  | 754                | 754                |
| adjR <sup>2</sup>    | 0.446               | 0.302              | 0.284                | 0.249              | 0.209              |
| T2-T1                | 0.020               | 0.137              | 0.091                | -0.001             | 0.117              |
| p-val(T2-T1)         | 0.494               | 0.077              | 0.698                | 0.993              | 0.410              |
| Mean C               | 0.257               | 0.574              | 1.271                | 1.454              | 3.824              |
| Sd C                 | 0.438               | 0.805              | 2.087                | 1.942              | 1.344              |

**Notes:** Robustness check including controls that account for the score assigned to respondents by interviewers at the end of the interview. These are dummy variables created based on the four categories “Extremely engaged and sincere,” “Moderately engaged and sincere,” “Very engaged and sincere” and “Slightly engaged and sincere.” Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*Tablet*, *Devices*, and *DSI*). Standard errors are clustered at the class level. The variable *Tablet* is a binary indicator equal to 1 if the participant reports owning a tablet, and 0 otherwise. *Devices* is the total number of tablets and computers available at home. *Participant* measures the frequency of computer or tablet use by the participant, ranging from 0 (never) to 6 (several times a day). *Children* captures the average frequency with which up to two children use a computer or tablet at home, measured on a scale from 0 (never) to 5 (every day). *DSI* represents the Digital Skills Indicator, a composite index ranging from 1 (no skills) to 6 (above basic skills). <sup>+</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

**Table A52: Digital Parenting & Social Inclusion**

|                      | (1)                     | (2)                        | (3)                       | (4)                   | (5)                      |
|----------------------|-------------------------|----------------------------|---------------------------|-----------------------|--------------------------|
|                      | Digital Parenting       |                            | Social Inclusion          |                       |                          |
|                      | Engagement<br>[Z-score] | Self Efficacy<br>[Z-score] | Digital Identity<br>[0,1] | Public Tools<br>[0,4] | New Application<br>[0,1] |
| Assigned T1          | 0.493**<br>(0.110)      | 0.479**<br>(0.104)         | 0.130*<br>(0.052)         | 0.502*<br>(0.204)     | 0.116**<br>(0.038)       |
| Assigned T2          | 0.369**<br>(0.085)      | 0.562**<br>(0.099)         | 0.200**<br>(0.042)        | 0.621**<br>(0.158)    | 0.042<br>(0.033)         |
| Strata FE            | ✓                       | ✓                          | ✓                         | ✓                     | ✓                        |
| Lag Dep. Var.        |                         |                            |                           |                       | ✓                        |
| Interviewer Score FE | ✓                       | ✓                          | ✓                         | ✓                     | ✓                        |
| N                    | 754                     | 754                        | 754                       | 754                   | 754                      |
| adjR <sup>2</sup>    | 0.118                   | 0.188                      | 0.160                     | 0.169                 | 0.074                    |
| T2-T1                | -0.123                  | 0.083                      | 0.071                     | 0.120                 | -0.074                   |
| p-val(T2-T1)         | 0.284                   | 0.448                      | 0.161                     | 0.584                 | 0.092                    |
| Mean C               | 0.000                   | 0.000                      | 0.356                     | 0.891                 | 0.137                    |
| Sd C                 | 1.000                   | 1.000                      | 0.480                     | 1.506                 | 0.345                    |

Notes: Robustness check including controls that account for the score assigned to respondents by interviewers at the end of the interview. These are dummy variables created based on the four categories “Extremely engaged and sincere,” “Moderately engaged and sincere,” “Very engaged and sincere” and “Slightly engaged and sincere.” Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*New Application*). Standard errors are clustered at the class level. The variable *Engagement* measures how frequently participants use digital tools with their children for education and entertainment and monitor their school performance via apps. It is standardized to have a mean of 0 and standard deviation of 1 in the control group. *Self-Efficacy* captures participants’ confidence in guiding their children’s digital behavior, including ensuring age-appropriate content, managing screen time, and finding online educational resources. This variable is standardized similarly to Engagement. *Digital Identity* is a binary indicator equal to 1 if the participant has an Italian public digital identity (SPID) and has used it autonomously in the past five months. *Public Tools* measures the number of public digital services the participant has accessed in the past five months, including social security, tax payments, health services, and child-related services. The variable ranges from 0 to 4. *New Application* is a binary indicator equal to 1 if the participant submitted at least one new application for an income support measure in the past five months. <sup>+</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

**Table A53: Labor Market Engagement**

|                      | (1)               | (2)                            | (3)                           | (4)                     |
|----------------------|-------------------|--------------------------------|-------------------------------|-------------------------|
|                      | Current Behavior  |                                | Future Expectations           |                         |
|                      | Openness<br>[0,1] | Effort<br>[0,1]                | Pr. Employment<br>[0,100]     | Pr. Training<br>[0,100] |
| Assigned T1          | -0.034<br>(0.036) | -0.013<br>(0.041)              | 6.101 <sup>+</sup><br>(3.615) | 18.212**<br>(4.707)     |
| Assigned T2          | 0.003<br>(0.032)  | -0.075 <sup>+</sup><br>(0.044) | 6.581 <sup>+</sup><br>(3.723) | 11.070*<br>(4.751)      |
| Strata FE            | ✓                 | ✓                              | ✓                             | ✓                       |
| Lag Dep. Var.        | ✓                 |                                | ✓                             | ✓                       |
| Interviewer Score FE | ✓                 | ✓                              | ✓                             | ✓                       |
| N                    | 754               | 754                            | 754                           | 754                     |
| adjR <sup>2</sup>    | 0.193             | 0.029                          | 0.092                         | 0.113                   |
| T2-T1                | 0.037             | -0.061                         | 0.480                         | -7.142                  |
| p-val(T2-T1)         | 0.293             | 0.150                          | 0.904                         | 0.232                   |
| Mean C               | 0.750             | 0.511                          | 50.771                        | 31.697                  |
| Sd C                 | 0.434             | 0.501                          | 32.659                        | 29.868                  |

Notes: Robustness check including controls that account for the score assigned to respondents by interviewers at the end of the interview. These are dummy variables created based on the four categories “Extremely engaged and sincere,” “Moderately engaged and sincere,” “Very engaged and sincere” and “Slightly engaged and sincere.” Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*Openness*, *Pr. Employment*, *Pr. Training*). Standard errors are clustered at the class level. The variable *Openness* is a binary indicator equal to 1 if the participant is employed, actively seeking employment, or willing to work despite not currently looking. *Effort* is a binary indicator equal to 1 if the participant engaged in activities to improve their labor market status, including updating their CV, consulting an employment service, or enrolling in a training program. *Perceived Probability of Employment* measures participants’ self-reported likelihood (0-100) of being employed in 12 months. *Perceived Probability of Training* captures participants’ self-reported likelihood (0-100) of enrolling in a skills development or training program in the next 12 months. <sup>+</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

## E.8 Spillover

### E.8.1 No consecutive classes

**Table A54:** Technology Adoption & Digital Skills

|                   | (1)                 | (2)                | (3)                  | (4)                | (5)                |
|-------------------|---------------------|--------------------|----------------------|--------------------|--------------------|
|                   | Technology adoption |                    |                      |                    | Digital skills     |
|                   | Tablet<br>[0,1]     | Devices<br>[N]     | Participant<br>[0,6] | Children<br>[0,5]  | DSI<br>[1,6]       |
| Assigned T1       | 0.623**<br>(0.043)  | 0.642**<br>(0.067) | 2.670**<br>(0.297)   | 1.800**<br>(0.220) | 0.847**<br>(0.139) |
| Assigned T2       | 0.631**<br>(0.040)  | 0.817**<br>(0.105) | 2.689**<br>(0.274)   | 1.906**<br>(0.180) | 0.903**<br>(0.136) |
| Strata FE         | ✓                   | ✓                  | ✓                    | ✓                  | ✓                  |
| Lag Dep. Var.     | ✓                   | ✓                  |                      |                    | ✓                  |
| N                 | 548                 | 548                | 548                  | 548                | 548                |
| adjR <sup>2</sup> | 0.416               | 0.333              | 0.292                | 0.250              | 0.247              |
| T2-T1             | 0.008               | 0.175              | 0.019                | 0.106              | 0.056              |
| p-val(T2-T1)      | 0.866               | 0.111              | 0.956                | 0.633              | 0.732              |
| Mean C            | 0.257               | 0.574              | 1.271                | 1.454              | 3.824              |
| Sd C              | 0.438               | 0.805              | 2.087                | 1.942              | 1.344              |

Notes: Robustness check that excludes households assigned to locations where T1 and T2 courses were held consecutively on the same day (e.g., at a given center, a T1 class runs from 9–11 AM followed immediately by a T2 class from 11 AM–1 PM). This restriction minimizes the risk of cross-group interaction or spillovers due to close scheduling. Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*Tablet*, *Devices*, and *DSI*). Standard errors are clustered at the class level. The variable *Tablet* is a binary indicator equal to 1 if the participant reports owning a tablet, and 0 otherwise. *Devices* is the total number of tablets and computers available at home. *Participant* measures the frequency of computer or tablet use by the participant, ranging from 0 (never) to 6 (several times a day). *Children* captures the average frequency with which up to two children use a computer or tablet at home, measured on a scale from 0 (never) to 5 (every day). *DSI* represents the Digital Skills Indicator, a composite index ranging from 1 (no skills) to 6 (above basic skills). <sup>+</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

**Table A55: Digital Parenting & Social Inclusion**

|                   | (1)                           | (2)                        | (3)                       | (4)                   | (5)                           |
|-------------------|-------------------------------|----------------------------|---------------------------|-----------------------|-------------------------------|
|                   | Digital Parenting             |                            | Social Inclusion          |                       |                               |
|                   | Engagement<br>[Z-score]       | Self Efficacy<br>[Z-score] | Digital Identity<br>[0,1] | Public Tools<br>[0,4] | New Application<br>[0,1]      |
| Assigned T1       | 0.342 <sup>+</sup><br>(0.174) | 0.601**<br>(0.144)         | 0.234**<br>(0.060)        | 0.852**<br>(0.255)    | 0.145*<br>(0.058)             |
| Assigned T2       | 0.245*<br>(0.105)             | 0.617**<br>(0.118)         | 0.280**<br>(0.043)        | 0.790**<br>(0.194)    | 0.074 <sup>+</sup><br>(0.040) |
| Strata FE         | ✓                             | ✓                          | ✓                         | ✓                     | ✓                             |
| Lag Dep. Var.     |                               |                            |                           |                       | ✓                             |
| N                 | 548                           | 548                        | 548                       | 548                   | 548                           |
| adjR <sup>2</sup> | 0.091                         | 0.174                      | 0.198                     | 0.186                 | 0.094                         |
| T2-T1             | -0.097                        | 0.016                      | 0.046                     | -0.062                | -0.071                        |
| p-val(T2-T1)      | 0.603                         | 0.923                      | 0.446                     | 0.833                 | 0.282                         |
| Mean C            | 0.000                         | 0.000                      | 0.356                     | 0.891                 | 0.137                         |
| Sd C              | 1.000                         | 1.000                      | 0.480                     | 1.506                 | 0.345                         |

Notes: Robustness check that excludes households assigned to locations where T1 and T2 courses were held consecutively on the same day (e.g., at a given center, a T1 class runs from 9–11 AM followed immediately by a T2 class from 11 AM–1 PM). This restriction minimizes the risk of cross-group interaction or spillovers due to close scheduling. Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*New Application*). Standard errors are clustered at the class level. The variable *Engagement* measures how frequently participants use digital tools with their children for education and entertainment and monitor their school performance via apps. It is standardized to have a mean of 0 and standard deviation of 1 in the control group. *Self-Efficacy* captures participants' confidence in guiding their children's digital behavior, including ensuring age-appropriate content, managing screen time, and finding online educational resources. This variable is standardized similarly to Engagement. *Digital Identity* is a binary indicator equal to 1 if the participant has an Italian public digital identity (SPID) and has used it autonomously in the past five months. *Public Tools* measures the number of public digital services the participant has accessed in the past five months, including social security, tax payments, health services, and child-related services. The variable ranges from 0 to 4. *New Application* is a binary indicator equal to 1 if the participant submitted at least one new application for an income support measure in the past five months. <sup>+</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

**Table A56: Labor Market Engagement**

|                   | (1)               | (2)               | (3)                       | (4)                     |
|-------------------|-------------------|-------------------|---------------------------|-------------------------|
|                   | Current Behavior  |                   | Future Expectations       |                         |
|                   | Openness<br>[0,1] | Effort<br>[0,1]   | Pr. Employment<br>[0,100] | Pr. Training<br>[0,100] |
| Assigned T1       | -0.035<br>(0.043) | 0.031<br>(0.045)  | 13.819**<br>(3.727)       | 31.607**<br>(4.610)     |
| Assigned T2       | -0.006<br>(0.035) | -0.032<br>(0.049) | 10.516*<br>(4.682)        | 17.453**<br>(6.349)     |
| Strata FE         | ✓                 | ✓                 | ✓                         | ✓                       |
| Lag Dep. Var.     | ✓                 |                   | ✓                         | ✓                       |
| N                 | 548               | 548               | 548                       | 548                     |
| adjR <sup>2</sup> | 0.176             | 0.040             | 0.145                     | 0.144                   |
| T2-T1             | 0.029             | -0.063            | -3.302                    | -14.154                 |
| p-val(T2-T1)      | 0.529             | 0.238             | 0.518                     | 0.054                   |
| Mean C            | 0.750             | 0.511             | 50.771                    | 31.697                  |
| Sd C              | 0.434             | 0.501             | 32.659                    | 29.868                  |

Notes: Robustness check that excludes households assigned to locations where T1 and T2 courses were held consecutively on the same day (e.g., at a given center, a T1 class runs from 9–11 AM followed immediately by a T2 class from 11 AM–1 PM). This restriction minimizes the risk of cross-group interaction or spillovers due to close scheduling. Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*Openness*, *Pr. Employment*, *Pr. Training*). Standard errors are clustered at the class level. The variable *Openness* is a binary indicator equal to 1 if the participant is employed, actively seeking employment, or willing to work despite not currently looking. *Effort* is a binary indicator equal to 1 if the participant engaged in activities to improve their labor market status, including updating their CV, consulting an employment service, or enrolling in a training program. *Perceived Probability of Employment* measures participants' self-reported likelihood (0-100) of being employed in 12 months. *Perceived Probability of Training* captures participants' self-reported likelihood (0-100) of enrolling in a skills development or training program in the next 12 months. <sup>+</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

## E.9 2SLS regressions

### E.9.1 Enrollment

**Table A57:** Technology Adoption & Digital Skills

|                               | (1)                 | (2)                | (3)                  | (4)                | (5)                |
|-------------------------------|---------------------|--------------------|----------------------|--------------------|--------------------|
|                               | Technology adoption |                    |                      |                    | Digital skills     |
|                               | Tablet<br>[0,1]     | Devices<br>[N]     | Participant<br>[0,6] | Children<br>[0,5]  | DSI<br>[1,6]       |
| Treated T1                    | 0.737**<br>(0.037)  | 0.765**<br>(0.079) | 3.069**<br>(0.233)   | 2.193**<br>(0.184) | 0.835**<br>(0.149) |
| Treated T2                    | 0.743**<br>(0.034)  | 0.906**<br>(0.080) | 3.103**<br>(0.232)   | 2.142**<br>(0.178) | 0.930**<br>(0.134) |
| Strata FE                     | ✓                   | ✓                  | ✓                    | ✓                  | ✓                  |
| Lag Dep. Var.                 | ✓                   | ✓                  |                      |                    | ✓                  |
| N                             | 754                 | 754                | 754                  | 754                | 754                |
| adjR <sup>2</sup>             | 0.536               | 0.320              | 0.365                | 0.301              | 0.177              |
| Treated T2 -Treated T1        | 0.007               | 0.141              | 0.035                | -0.051             | 0.095              |
| p-val(Treated T2 -Treated T1) | 0.798               | 0.098              | 0.882                | 0.736              | 0.568              |
| Mean C                        | 0.257               | 0.574              | 1.271                | 1.454              | 3.824              |
| Sd C                          | 0.438               | 0.805              | 2.087                | 1.942              | 1.344              |

Notes: Instrumental variable regression on actual take-up (Treated T1 and Treated T2, defined as participants who attended at least one lesson) of treatments T1 and T2, instrumented with treatment assignment. Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*Tablet*, *Devices*, and *DSI*). Standard errors are clustered at the class level. The variable *Tablet* is a categorical variable. *Devices* is the total number of tablets and computers available at home. *Participant* measures the frequency of computer or tablet use by the participant, ranging from 0 (never) to 6 (several times a day). *Children* captures the average frequency with which up to two children use a computer or tablet at home, measured on a scale from 0 (never) to 5 (every day). *DSI* represents the Digital Skills Indicator, a composite index ranging from 1 (no skills) to 6 (above basic skills). <sup>+</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

**Table A58: Digital Parenting & Social Inclusion**

|                               | (1)                     | (2)                        | (3)                       | (4)                   | (5)                      |
|-------------------------------|-------------------------|----------------------------|---------------------------|-----------------------|--------------------------|
|                               | Digital Parenting       |                            | Social Inclusion          |                       |                          |
|                               | Engagement<br>[Z-score] | Self Efficacy<br>[Z-score] | Digital Identity<br>[0,1] | Public Tools<br>[0,4] | New Application<br>[0,1] |
| Treated T1                    | 0.471**<br>(0.135)      | 0.658**<br>(0.128)         | 0.185**<br>(0.058)        | 0.760**<br>(0.231)    | 0.146**<br>(0.043)       |
| Treated T2                    | 0.315**<br>(0.096)      | 0.736**<br>(0.112)         | 0.259**<br>(0.045)        | 0.866**<br>(0.175)    | 0.055<br>(0.036)         |
| Strata FE                     | ✓                       | ✓                          | ✓                         | ✓                     | ✓                        |
| Lag Dep. Var.                 |                         |                            |                           |                       | ✓                        |
| N                             | 754                     | 754                        | 754                       | 754                   | 754                      |
| adjR <sup>2</sup>             | 0.091                   | 0.126                      | 0.141                     | 0.129                 | 0.084                    |
| Treated T2 -Treated T1        | -0.156                  | 0.078                      | 0.073                     | 0.107                 | -0.090                   |
| p-val(Treated T2 -Treated T1) | 0.264                   | 0.571                      | 0.201                     | 0.670                 | 0.066                    |
| Mean C                        | 0.000                   | 0.000                      | 0.356                     | 0.891                 | 0.137                    |
| Sd C                          | 1.000                   | 1.000                      | 0.480                     | 1.506                 | 0.345                    |

Notes: Instrumental variable regression on actual take-up (Treated T1 and Treated T2, defined as participants who attended at least one lesson) of treatments T1 and T2, instrumented with treatment assignment. Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*New Application*). Standard errors are clustered at the class level. The variable *Engagement* measures how frequently participants use digital tools with their children for education and entertainment and monitor their school performance via apps. It is standardized to have a mean of 0 and standard deviation of 1 in the control group. *Self-Efficacy* captures participants' confidence in guiding their children's digital behavior, including ensuring age-appropriate content, managing screen time, and finding online educational resources. This variable is standardized similarly to Engagement. *Digital Identity* is a binary indicator equal to 1 if the participant has an Italian public digital identity (SPID) and has used it autonomously in the past five months. *Public Tools* measures the number of public digital services the participant has accessed in the past five months, including social security, tax payments, health services, and child-related services. The variable ranges from 0 to 4. *New Application* is a binary indicator equal to 1 if the participant submitted at least one new application for an income support measure in the past five months. +  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

**Table A59: Labor Market Engagement**

|                               | (1)               | (2)               | (3)                           | (4)                     |
|-------------------------------|-------------------|-------------------|-------------------------------|-------------------------|
|                               | Current Behavior  |                   | Future Expectations           |                         |
|                               | Openness<br>[0,1] | Effort<br>[0,1]   | Pr. Employment<br>[0,100]     | Pr. Training<br>[0,100] |
| Treated T1                    | -0.055<br>(0.040) | -0.002<br>(0.044) | 7.514 <sup>+</sup><br>(3.925) | 25.846**<br>(5.621)     |
| Treated T2                    | -0.013<br>(0.033) | -0.076<br>(0.047) | 7.528 <sup>+</sup><br>(4.009) | 16.608**<br>(5.664)     |
| Strata FE                     | ✓                 | ✓                 | ✓                             | ✓                       |
| Lag Dep. Var.                 | ✓                 |                   | ✓                             | ✓                       |
| N                             | 754               | 754               | 754                           | 754                     |
| adjR <sup>2</sup>             | 0.192             | 0.029             | 0.085                         | 0.050                   |
| Treated T2 -Treated T1        | 0.042             | -0.075            | 0.013                         | -9.238                  |
| p-val(Treated T2 -Treated T1) | 0.284             | 0.119             | 0.998                         | 0.196                   |
| Mean C                        | 0.750             | 0.511             | 50.771                        | 31.697                  |
| Sd C                          | 0.434             | 0.501             | 32.659                        | 29.868                  |

Notes: Instrumental variable regression on actual take-up (Treated T1 and Treated T2, defined as participants who attended at least one lesson) of treatments T1 and T2, instrumented with treatment assignment. Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*Openness*, *Pr. Employment*, *Pr. Training*). Standard errors are clustered at the class level. The variable *Openness* is a binary indicator equal to 1 if the participant is employed, actively seeking employment, or willing to work despite not currently looking. *Effort* is a binary indicator equal to 1 if the participant engaged in activities to improve their labor market status, including updating their CV, consulting an employment service, or enrolling in a training program. *Perceived Probability of Employment* measures participants' self-reported likelihood (0-100) of being employed in 12 months. *Perceived Probability of Training* captures participants' self-reported likelihood (0-100) of enrolling in a skills development or training program in the next 12 months. <sup>+</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

## E.9.2 Attendance

**Table A60:** Technology Adoption & Digital Skills

|                                | (1)                 | (2)                | (3)                  | (4)                 | (5)                |
|--------------------------------|---------------------|--------------------|----------------------|---------------------|--------------------|
|                                | Technology adoption |                    |                      |                     | Digital skills     |
|                                | Tablet<br>[0,1]     | Devices<br>[N]     | Participant<br>[0,6] | Children<br>[0,5]   | DSI<br>[1,6]       |
| N hours completed              | 0.077**<br>(0.005)  | 0.068**<br>(0.014) | 0.320**<br>(0.039)   | 0.236**<br>(0.028)  | 0.080**<br>(0.027) |
| N hours completed <sup>2</sup> | -0.002**<br>(0.000) | -0.001*<br>(0.001) | -0.008**<br>(0.002)  | -0.006**<br>(0.001) | -0.002<br>(0.001)  |
| Strata FE                      | ✓                   | ✓                  | ✓                    | ✓                   | ✓                  |
| Lag Dep. Var.                  | ✓                   | ✓                  |                      |                     | ✓                  |
| N                              | 754                 | 754                | 754                  | 754                 | 754                |
| adjR <sup>2</sup>              | 0.528               | 0.310              | 0.359                | 0.290               | 0.172              |
| Mean C                         | 0.257               | 0.574              | 1.271                | 1.454               | 3.824              |
| Sd C                           | 0.438               | 0.805              | 2.087                | 1.942               | 1.344              |

Notes: Instrumental variable regression on number of hours completed and its square, both instrumented with treatment assignment (T1 and T2). Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*Tablet*, *Devices*, and *DSI*). Standard errors are clustered at the class level. The variable *Tablet* is a categorical variable. *Devices* is the total number of tablets and computers available at home. *Participant* measures the frequency of computer or tablet use by the participant, ranging from 0 (never) to 6 (several times a day). *Children* captures the average frequency with which up to two children use a computer or tablet at home, measured on a scale from 0 (never) to 5 (every day). *DSI* represents the Digital Skills Indicator, a composite index ranging from 1 (no skills) to 6 (above basic skills). +  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

**Table A61: Digital Parenting & Social Inclusion**

|                                | (1)                     | (2)                        | (3)                       | (4)                   | (5)                      |
|--------------------------------|-------------------------|----------------------------|---------------------------|-----------------------|--------------------------|
|                                | Digital Parenting       |                            | Social Inclusion          |                       |                          |
|                                | Engagement<br>[Z-score] | Self Efficacy<br>[Z-score] | Digital Identity<br>[0,1] | Public Tools<br>[0,4] | New Application<br>[0,1] |
| N hours completed              | 0.063*<br>(0.025)       | 0.062**<br>(0.023)         | 0.013<br>(0.010)          | 0.071<br>(0.043)      | 0.023**<br>(0.008)       |
| N hours completed <sup>2</sup> | -0.002*<br>(0.001)      | -0.001<br>(0.001)          | -0.000<br>(0.000)         | -0.001<br>(0.002)     | -0.001*<br>(0.000)       |
| Strata FE                      | ✓                       | ✓                          | ✓                         | ✓                     | ✓                        |
| Lag Dep. Var.                  |                         |                            |                           |                       | ✓                        |
| N                              | 754                     | 754                        | 754                       | 754                   | 754                      |
| adjR <sup>2</sup>              | 0.093                   | 0.121                      | 0.132                     | 0.126                 | 0.082                    |
| Mean C                         | 0.000                   | 0.000                      | 0.356                     | 0.891                 | 0.137                    |
| Sd C                           | 1.000                   | 1.000                      | 0.480                     | 1.506                 | 0.345                    |

Notes: Instrumental variable regression on number of hours completed and its square, both instrumented with treatment assignment (T1 and T2). Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*New Application*). Standard errors are clustered at the class level. The variable *Engagement* measures how frequently participants use digital tools with their children for education and entertainment and monitor their school performance via apps. It is standardized to have a mean of 0 and standard deviation of 1 in the control group. *Self-Efficacy* captures participants' confidence in guiding their children's digital behavior, including ensuring age-appropriate content, managing screen time, and finding online educational resources. This variable is standardized similarly to Engagement. *Digital Identity* is a binary indicator equal to 1 if the participant has an Italian public digital identity (SPID) and has used it autonomously in the past five months. *Public Tools* measures the number of public digital services the participant has accessed in the past five months, including social security, tax payments, health services, and child-related services. The variable ranges from 0 to 4. *New Application* is a binary indicator equal to 1 if the participant submitted at least one new application for an income support measure in the past five months. <sup>+</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

**Table A62: Labor Market Engagement**

|                                | (1)               | (2)               | (3)                       | (4)                     |
|--------------------------------|-------------------|-------------------|---------------------------|-------------------------|
|                                | Current Behavior  |                   | Future Expectations       |                         |
|                                | Openness<br>[0,1] | Effort<br>[0,1]   | Pr. Employment<br>[0,100] | Pr. Training<br>[0,100] |
| N hours completed              | -0.010<br>(0.007) | 0.006<br>(0.008)  | 0.791<br>(0.713)          | 3.544**<br>(1.106)      |
| N hours completed <sup>2</sup> | 0.000<br>(0.000)  | -0.000<br>(0.000) | -0.019<br>(0.031)         | -0.117*<br>(0.050)      |
| Strata FE                      | ✓                 | ✓                 | ✓                         | ✓                       |
| Lag Dep. Var.                  | ✓                 |                   | ✓                         | ✓                       |
| N                              | 754               | 754               | 754                       | 754                     |
| adjR <sup>2</sup>              | 0.191             | 0.025             | 0.087                     | 0.039                   |
| Mean C                         | 0.750             | 0.511             | 50.771                    | 31.697                  |
| Sd C                           | 0.434             | 0.501             | 32.659                    | 29.868                  |

Notes: Instrumental variable regression on number of hours completed and its square, both instrumented with treatment assignment (T1 and T2). Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*Openness*, *Pr. Employment*, *Pr. Training*). Standard errors are clustered at the class level. The variable *Openness* is a binary indicator equal to 1 if the participant is employed, actively seeking employment, or willing to work despite not currently looking. *Effort* is a binary indicator equal to 1 if the participant engaged in activities to improve their labor market status, including updating their CV, consulting an employment service, or enrolling in a training program. *Perceived Probability of Employment* measures participants' self-reported likelihood (0-100) of being employed in 12 months. *Perceived Probability of Training* captures participants' self-reported likelihood (0-100) of enrolling in a skills development or training program in the next 12 months. <sup>+</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

## E.10 Treatment Effect Heterogeneity

### E.10.1 Heterogeneity by digital literacy

**Table A63:** Technology Adoption & Digital Skills

|                            | (1)                 | (2)                | (3)                  | (4)                | (5)                |
|----------------------------|---------------------|--------------------|----------------------|--------------------|--------------------|
|                            | Technology adoption |                    |                      |                    | Digital skills     |
|                            | Tablet<br>[0,1]     | Devices<br>[N]     | Participant<br>[0,6] | Children<br>[0,5]  | DSI<br>[1,6]       |
| Assigned T1                | 0.701**<br>(0.047)  | 0.710**<br>(0.087) | 2.861**<br>(0.302)   | 2.033**<br>(0.225) | 0.754**<br>(0.169) |
| Assigned T2                | 0.668**<br>(0.046)  | 0.798**<br>(0.090) | 2.744**<br>(0.268)   | 1.866**<br>(0.226) | 0.921**<br>(0.170) |
| Assigned T1 × Baseline DSI | -0.144*<br>(0.061)  | -0.035<br>(0.120)  | -0.475<br>(0.380)    | -0.317<br>(0.291)  | -0.070<br>(0.208)  |
| Assigned T2 × Baseline DSI | -0.035<br>(0.056)   | 0.030<br>(0.130)   | -0.061<br>(0.318)    | 0.011<br>(0.269)   | -0.196<br>(0.203)  |
| Strata FE                  | ✓                   | ✓                  | ✓                    | ✓                  | ✓                  |
| Lag Dep. Var.              | ✓                   | ✓                  |                      |                    | ✓                  |
| N                          | 754                 | 754                | 754                  | 754                | 754                |
| adjR <sup>2</sup>          | 0.439               | 0.240              | 0.282                | 0.246              | 0.193              |
| T2-T1                      | -0.034              | 0.088              | -0.117               | -0.167             | 0.166              |
| p-val(T2-T1)               | 0.343               | 0.298              | 0.702                | 0.427              | 0.371              |
| T1 + Interaction           | 0.557               | 0.675              | 2.386                | 1.716              | 0.684              |
| p-val(T1 + Interaction)    | 0.000               | 0.000              | 0.000                | 0.000              | 0.000              |
| T2 +Interaction            | 0.632               | 0.828              | 2.683                | 1.878              | 0.725              |
| p-val(T2 + Interaction)    | 0.000               | 0.000              | 0.000                | 0.000              | 0.000              |
| Mean C                     | 0.257               | 0.574              | 1.271                | 1.454              | 3.824              |
| Sd C                       | 0.438               | 0.805              | 2.087                | 1.942              | 1.344              |

Notes: The heterogeneity analysis explores the effects of digital skills based on treatment groups. The interaction terms, “Assigned T1 × Baseline DSI” and “Assigned T2 × Baseline DSI”, show how the treatment effect varies depending on the level of digital skills. The variable “Baseline DSI” is a dummy taking the value 1 if the index of digital skills (DSI) is greater than or equal to 4 (this is an index that indicates the respondent’s level of digitalization at baseline). The coefficient of “Baseline DSI” is not displayed in the tables, as it is collinear with the strata fixed effects. Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*Tablet*, *Devices*, and *DSI*). Standard errors are clustered at the class level. The variable *Tablet* is a categorical variable. *Devices* is the total number of tablets and computers available at home. *Participant* measures the frequency of computer or tablet use by the participant, ranging from 0 (never) to 6 (several times a day). *Children* captures the average frequency with which up to two children use a computer or tablet at home, measured on a scale from 0 (never) to 5 (every day). *DSI* represents the Digital Skills Indicator, a composite index ranging from 1 (no skills) to 6 (above basic skills). <sup>+</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

**Table A64: Digital Parenting & Social Inclusion**

|                            | (1)                     | (2)                            | (3)                       | (4)                   | (5)                      |
|----------------------------|-------------------------|--------------------------------|---------------------------|-----------------------|--------------------------|
|                            | Digital Parenting       |                                | Social Inclusion          |                       |                          |
|                            | Engagement<br>[Z-score] | Self Efficacy<br>[Z-score]     | Digital Identity<br>[0,1] | Public Tools<br>[0,4] | New Application<br>[0,1] |
| Assigned T1                | 0.454**<br>(0.160)      | 0.609**<br>(0.142)             | 0.124*<br>(0.057)         | 0.480*<br>(0.195)     | 0.160**<br>(0.058)       |
| Assigned T2                | 0.350*<br>(0.145)       | 0.800**<br>(0.147)             | 0.252**<br>(0.065)        | 0.829**<br>(0.204)    | 0.072<br>(0.054)         |
| Assigned T1 × Baseline DSI | -0.055<br>(0.161)       | -0.089<br>(0.148)              | 0.069<br>(0.064)          | 0.343<br>(0.283)      | -0.071<br>(0.084)        |
| Assigned T2 × Baseline DSI | -0.110<br>(0.182)       | -0.298 <sup>+</sup><br>(0.155) | -0.048<br>(0.087)         | -0.132<br>(0.268)     | -0.034<br>(0.072)        |
| Strata FE                  | ✓                       | ✓                              | ✓                         | ✓                     | ✓                        |
| Lag Dep. Var.              |                         |                                |                           |                       | ✓                        |
| N                          | 754                     | 754                            | 754                       | 754                   | 754                      |
| adjR <sup>2</sup>          | 0.081                   | 0.173                          | 0.151                     | 0.151                 | 0.068                    |
| T2-T1                      | -0.104                  | 0.191                          | 0.127                     | 0.349                 | -0.088                   |
| p-val(T2-T1)               | 0.563                   | 0.254                          | 0.065                     | 0.175                 | 0.195                    |
| T1 + Interaction           | 0.399                   | 0.521                          | 0.193                     | 0.823                 | 0.089                    |
| p-val(T1 + Interaction)    | 0.002                   | 0.000                          | 0.002                     | 0.004                 | 0.110                    |
| T2 +Interaction            | 0.240                   | 0.502                          | 0.204                     | 0.696                 | 0.038                    |
| p-val(T2 + Interaction)    | 0.029                   | 0.000                          | 0.000                     | 0.001                 | 0.400                    |
| Mean C                     | 0.000                   | 0.000                          | 0.356                     | 0.891                 | 0.137                    |
| Sd C                       | 1.000                   | 1.000                          | 0.480                     | 1.506                 | 0.345                    |

Notes: The heterogeneity analysis explores the effects of digital skills based on treatment groups. The interaction terms, “Assigned T1 × Baseline DSI” and “Assigned T2 × Baseline DSI”, show how the treatment effect varies depending on the level of digital skills. The variable “Baseline DSI” is a dummy taking the value 1 if the index of digital skills (DSI) is greater than or equal to 4 (this is an index that indicates the respondent’s level of digitalization at baseline). The coefficient of “Baseline DSI” is not displayed in the tables, as it is collinear with the strata fixed effects. Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*New Application*). Standard errors are clustered at the class level. The variable *Engagement* measures how frequently participants use digital tools with their children for education and entertainment and monitor their school performance via apps. It is standardized to have a mean of 0 and standard deviation of 1 in the control group. *Self-Efficacy* captures participants’ confidence in guiding their children’s digital behavior, including ensuring age-appropriate content, managing screen time, and finding online educational resources. This variable is standardized similarly to Engagement. *Digital Identity* is a binary indicator equal to 1 if the participant has an Italian public digital identity (SPID) and has used it autonomously in the past five months. *Public Tools* measures the number of public digital services the participant has accessed in the past five months, including social security, tax payments, health services, and child-related services. The variable ranges from 0 to 4. *New Application* is a binary indicator equal to 1 if the participant submitted at least one new application for an income support measure in the past five months. <sup>+</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

**Table A65: Labor Market Engagement**

|                            | (1)               | (2)                            | (3)                       | (4)                     |
|----------------------------|-------------------|--------------------------------|---------------------------|-------------------------|
|                            | Current Behavior  |                                | Future Expectations       |                         |
|                            | Openness<br>[0,1] | Effort<br>[0,1]                | Pr. Employment<br>[0,100] | Pr. Training<br>[0,100] |
| Assigned T1                | -0.018<br>(0.063) | 0.008<br>(0.062)               | 11.614*<br>(5.348)        | 20.933**<br>(4.431)     |
| Assigned T2                | 0.008<br>(0.063)  | -0.114 <sup>+</sup><br>(0.063) | 5.408<br>(5.382)          | 15.034**<br>(5.039)     |
| Assigned T1 × Baseline DSI | -0.053<br>(0.077) | -0.020<br>(0.081)              | -9.070<br>(7.175)         | 2.352<br>(5.474)        |
| Assigned T2 × Baseline DSI | -0.051<br>(0.086) | 0.089<br>(0.088)               | -0.162<br>(6.611)         | -0.913<br>(6.128)       |
| Strata FE                  | ✓                 | ✓                              | ✓                         | ✓                       |
| Lag Dep. Var.              | ✓                 |                                | ✓                         | ✓                       |
| N                          | 754               | 754                            | 754                       | 754                     |
| adjR <sup>2</sup>          | 0.022             | 0.030                          | 0.035                     | 0.085                   |
| T2-T1                      | 0.026             | -0.121                         | -6.205                    | -5.898                  |
| p-val(T2-T1)               | 0.685             | 0.041                          | 0.312                     | 0.316                   |
| T1 + Interaction           | -0.070            | -0.012                         | 2.543                     | 23.285                  |
| p-val(T1 + Interaction)    | 0.155             | 0.812                          | 0.606                     | 0.000                   |
| T2 +Interaction            | -0.043            | -0.024                         | 5.246                     | 14.121                  |
| p-val(T2 + Interaction)    | 0.378             | 0.680                          | 0.260                     | 0.033                   |
| Mean C                     | 0.750             | 0.511                          | 50.771                    | 31.697                  |
| Sd C                       | 0.434             | 0.501                          | 32.659                    | 29.868                  |

Notes: The heterogeneity analysis explores the effects of digital skills based on treatment groups. The interaction terms, “Assigned T1 × Baseline DSI” and “Assigned T2 × Baseline DSI”, show how the treatment effect varies depending on the level of digital skills. The variable “Baseline DSI” is a dummy taking the value 1 if the index of digital skills (DSI) is greater than or equal to 4 (this is an index that indicates the respondent’s level of digitalization at baseline). The coefficient of “Baseline DSI” is not displayed in the tables, as it is collinear with the strata fixed effects. Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*Openness*, *Pr. Employment*, *Pr. Training*). Standard errors are clustered at the class level. The variable *Openness* is a binary indicator equal to 1 if the participant is employed, actively seeking employment, or willing to work despite not currently looking. *Effort* is a binary indicator equal to 1 if the participant engaged in activities to improve their labor market status, including updating their CV, consulting an employment service, or enrolling in a training program. *Perceived Probability of Employment* measures participants’ self-reported likelihood (0-100) of being employed in 12 months. *Perceived Probability of Training* captures participants’ self-reported likelihood (0-100) of enrolling in a skills development or training program in the next 12 months. <sup>+</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

## E.10.2 Heterogeneity by technological endowment at baseline (owning a device)

**Table A66:** Technology Adoption & Digital Skills

|                               | (1)                 | (2)                | (3)                  | (4)                 | (5)                |
|-------------------------------|---------------------|--------------------|----------------------|---------------------|--------------------|
|                               | Technology adoption |                    |                      |                     | Digital skills     |
|                               | Tablet<br>[0,1]     | Devices<br>[N]     | Participant<br>[0,6] | Children<br>[0,5]   | DSI<br>[1,6]       |
| Assigned T1                   | 0.693**<br>(0.043)  | 0.750**<br>(0.070) | 3.038**<br>(0.239)   | 2.317**<br>(0.190)  | 0.603**<br>(0.157) |
| Assigned T2                   | 0.694**<br>(0.045)  | 0.759**<br>(0.065) | 3.090**<br>(0.261)   | 2.265**<br>(0.215)  | 0.933**<br>(0.162) |
| Baseline Device               | 0.201**<br>(0.063)  | 0.651**<br>(0.113) | 1.278**<br>(0.299)   | 1.510**<br>(0.263)  | 0.213<br>(0.165)   |
| Assigned T1 × Baseline Device | -0.182*<br>(0.074)  | -0.211<br>(0.157)  | -1.186**<br>(0.385)  | -1.280**<br>(0.352) | 0.268<br>(0.224)   |
| Assigned T2 × Baseline Device | -0.135+<br>(0.071)  | 0.059<br>(0.153)   | -1.093**<br>(0.390)  | -1.158**<br>(0.360) | -0.307<br>(0.234)  |
| Strata FE                     | ✓                   | ✓                  | ✓                    | ✓                   | ✓                  |
| Lag Dep. Var.                 | ✓                   | ✓                  |                      |                     | ✓                  |
| N                             | 754                 | 754                | 754                  | 754                 | 754                |
| adjR <sup>2</sup>             | 0.450               | 0.347              | 0.302                | 0.292               | 0.203              |
| T2-T1                         | 0.001               | 0.008              | 0.052                | -0.052              | 0.329              |
| p-val(T2-T1)                  | 0.972               | 0.894              | 0.851                | 0.796               | 0.088              |
| T1 + Interaction              | 0.511               | 0.539              | 1.852                | 1.036               | 0.871              |
| p-val(T1 + Interaction)       | 0.000               | 0.000              | 0.000                | 0.001               | 0.000              |
| T2 +Interaction               | 0.559               | 0.818              | 1.998                | 1.107               | 0.626              |
| p-val(T2 + Interaction)       | 0.000               | 0.000              | 0.000                | 0.000               | 0.001              |
| Mean C                        | 0.257               | 0.574              | 1.271                | 1.454               | 3.824              |
| Sd C                          | 0.438               | 0.805              | 2.087                | 1.942               | 1.344              |

**Notes:** The heterogeneity analysis explores the effects of owning at least a device (tablet or PC) at baseline based on treatment groups. The interaction terms, “Assigned T1 × Baseline Device” and “Assigned T2 × Baseline Device”, show how the treatment effect varies depending on the technological endowment. The variable “Baseline Device” takes value 1 if the respondent own at least a device (tablet or PC) at baseline. Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*Tablet*, *Devices*, and *DSI*). Standard errors are clustered at the class level. The variable *Tablet* is a categorical variable. *Devices* is the total number of tablets and computers available at home. *Participant* measures the frequency of computer or tablet use by the participant, ranging from 0 (never) to 6 (several times a day). *Children* captures the average frequency with which up to two children use a computer or tablet at home, measured on a scale from 0 (never) to 5 (every day). *DSI* represents the Digital Skills Indicator, a composite index ranging from 1 (no skills) to 6 (above basic skills). +  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

**Table A67:** Digital Parenting & Social Inclusion

|                               | (1)                     | (2)                        | (3)                       | (4)                   | (5)                      |
|-------------------------------|-------------------------|----------------------------|---------------------------|-----------------------|--------------------------|
|                               | Digital Parenting       |                            | Social Inclusion          |                       |                          |
|                               | Engagement<br>[Z-score] | Self Efficacy<br>[Z-score] | Digital Identity<br>[0,1] | Public Tools<br>[0,4] | New Application<br>[0,1] |
| Assigned T1                   | 0.365*                  | 0.460**                    | 0.130*                    | 0.538*                | 0.180**                  |
|                               | (0.141)                 | (0.124)                    | (0.060)                   | (0.223)               | (0.045)                  |
| Assigned T2                   | 0.336**                 | 0.712**                    | 0.258**                   | 0.773**               | 0.086*                   |
|                               | (0.107)                 | (0.119)                    | (0.047)                   | (0.189)               | (0.043)                  |
| Baseline Device               | -0.086                  | -0.038                     | 0.010                     | -0.116                | 0.072 <sup>+</sup>       |
|                               | (0.103)                 | (0.123)                    | (0.056)                   | (0.159)               | (0.041)                  |
| Assigned T1 × Baseline Device | 0.161                   | 0.264 <sup>+</sup>         | 0.071                     | 0.296                 | -0.150**                 |
|                               | (0.154)                 | (0.159)                    | (0.080)                   | (0.260)               | (0.056)                  |
| Assigned T2 × Baseline Device | -0.096                  | -0.162                     | -0.079                    | -0.022                | -0.089                   |
|                               | (0.164)                 | (0.155)                    | (0.075)                   | (0.241)               | (0.066)                  |
| Strata FE                     | ✓                       | ✓                          | ✓                         | ✓                     | ✓                        |
| Lag Dep. Var.                 |                         |                            |                           |                       | ✓                        |
| N                             | 754                     | 754                        | 754                       | 754                   | 754                      |
| adjR <sup>2</sup>             | 0.083                   | 0.175                      | 0.151                     | 0.148                 | 0.071                    |
| T2-T1                         | -0.030                  | 0.252                      | 0.128                     | 0.235                 | -0.094                   |
| p-val(T2-T1)                  | 0.842                   | 0.054                      | 0.042                     | 0.367                 | 0.071                    |
| T1 + Interaction              | 0.527                   | 0.724                      | 0.201                     | 0.834                 | 0.030                    |
| p-val(T1 + Interaction)       | 0.000                   | 0.000                      | 0.003                     | 0.001                 | 0.540                    |
| T2 +Interaction               | 0.239                   | 0.550                      | 0.179                     | 0.751                 | -0.003                   |
| p-val(T2 + Interaction)       | 0.086                   | 0.000                      | 0.007                     | 0.001                 | 0.960                    |
| Mean C                        | 0.000                   | 0.000                      | 0.356                     | 0.891                 | 0.137                    |
| Sd C                          | 1.000                   | 1.000                      | 0.480                     | 1.506                 | 0.345                    |

**Notes:** The heterogeneity analysis explores the effects of owning at least a device (tablet or PC) at baseline based on treatment groups. The interaction terms, “Assigned T1 × Baseline Device” and “Assigned T2 × Baseline Device”, show how the treatment effect varies depending on the technological endowment. The variable “Baseline Device” takes value 1 if the respondent own at least a device (tablet or PC) at baseline. Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*New Application*). Standard errors are clustered at the class level. The variable *Engagement* measures how frequently participants use digital tools with their children for education and entertainment and monitor their school performance via apps. It is standardized to have a mean of 0 and standard deviation of 1 in the control group. *Self-Efficacy* captures participants’ confidence in guiding their children’s digital behavior, including ensuring age-appropriate content, managing screen time, and finding online educational resources. This variable is standardized similarly to Engagement. *Digital Identity* is a binary indicator equal to 1 if the participant has an Italian public digital identity (SPID) and has used it autonomously in the past five months. *Public Tools* measures the number of public digital services the participant has accessed in the past five months, including social security, tax payments, health services, and child-related services. The variable ranges from 0 to 4. *New Application* is a binary indicator equal to 1 if the participant submitted at least one new application for an income support measure in the past five months. <sup>+</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

**Table A68: Labor Market Engagement**

|                               | (1)                           | (2)               | (3)                           | (4)                     |
|-------------------------------|-------------------------------|-------------------|-------------------------------|-------------------------|
|                               | Current Behavior              |                   | Future Expectations           |                         |
|                               | Openness<br>[0,1]             | Effort<br>[0,1]   | Pr. Employment<br>[0,100]     | Pr. Training<br>[0,100] |
| Assigned T1                   | -0.015<br>(0.054)             | -0.034<br>(0.058) | 5.202<br>(4.646)              | 20.568**<br>(5.772)     |
| Assigned T2                   | 0.038<br>(0.047)              | -0.032<br>(0.056) | 8.122 <sup>+</sup><br>(4.143) | 18.425**<br>(5.740)     |
| Baseline Device               | 0.086 <sup>+</sup><br>(0.044) | -0.047<br>(0.069) | -0.021<br>(3.691)             | 3.729<br>(3.692)        |
| Assigned T1 × Baseline Device | -0.084<br>(0.073)             | 0.087<br>(0.097)  | 4.769<br>(6.262)              | 3.441<br>(6.038)        |
| Assigned T2 × Baseline Device | -0.152*<br>(0.067)            | -0.081<br>(0.095) | -6.824<br>(6.702)             | -10.064<br>(7.142)      |
| Strata FE                     | ✓                             | ✓                 | ✓                             | ✓                       |
| Lag Dep. Var.                 | ✓                             |                   | ✓                             | ✓                       |
| N                             | 754                           | 754               | 754                           | 754                     |
| adjR <sup>2</sup>             | 0.025                         | 0.033             | 0.035                         | 0.090                   |
| T2-T1                         | 0.053                         | 0.002             | 2.920                         | -2.143                  |
| p-val(T2-T1)                  | 0.318                         | 0.969             | 0.560                         | 0.775                   |
| T1 + Interaction              | -0.099                        | 0.053             | 9.970                         | 24.009                  |
| p-val(T1 + Interaction)       | 0.068                         | 0.423             | 0.042                         | 0.000                   |
| T2 +Interaction               | -0.114                        | -0.113            | 1.298                         | 8.361                   |
| p-val(T2 + Interaction)       | 0.025                         | 0.129             | 0.831                         | 0.203                   |
| Mean C                        | 0.750                         | 0.511             | 50.771                        | 31.697                  |
| Sd C                          | 0.434                         | 0.501             | 32.659                        | 29.868                  |

**Notes:** The heterogeneity analysis explores the effects of owning at least a device (tablet or PC) at baseline based on treatment groups. The interaction terms, “Assigned T1 × Baseline Device” and “Assigned T2 × Baseline Device”, show how the treatment effect varies depending on the technological endowment. The variable “Baseline Device” takes value 1 if the respondent own at least a device (tablet or PC) at baseline. Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*Openness*, *Pr. Employment*, *Pr. Training*). Standard errors are clustered at the class level. The variable *Openness* is a binary indicator equal to 1 if the participant is employed, actively seeking employment, or willing to work despite not currently looking. *Effort* is a binary indicator equal to 1 if the participant engaged in activities to improve their labor market status, including updating their CV, consulting an employment service, or enrolling in a training program. *Perceived Probability of Employment* measures participants’ self-reported likelihood (0-100) of being employed in 12 months. *Perceived Probability of Training* captures participants’ self-reported likelihood (0-100) of enrolling in a skills development or training program in the next 12 months. <sup>+</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

### E.10.3 Heterogeneity by technological endowment at baseline (home internet connection)

**Table A69:** Technology Adoption & Digital Skills

|                                        | (1)                 | (2)                            | (3)                  | (4)                 | (5)                |
|----------------------------------------|---------------------|--------------------------------|----------------------|---------------------|--------------------|
|                                        | Technology adoption |                                |                      |                     | Digital skills     |
|                                        | Tablet<br>[0,1]     | Devices<br>[N]                 | Participant<br>[0,6] | Children<br>[0,5]   | DSI<br>[1,6]       |
| Assigned T1                            | 0.678**<br>(0.040)  | 0.780**<br>(0.078)             | 2.801**<br>(0.214)   | 2.292**<br>(0.185)  | 0.724**<br>(0.152) |
| Assigned T2                            | 0.710**<br>(0.040)  | 0.806**<br>(0.071)             | 3.080**<br>(0.265)   | 2.198**<br>(0.193)  | 0.832**<br>(0.146) |
| Home internet connection               | 0.139**<br>(0.052)  | 0.393**<br>(0.094)             | 0.609**<br>(0.228)   | 0.894**<br>(0.234)  | 0.137<br>(0.180)   |
| Assigned T1 × Home internet connection | -0.141*<br>(0.068)  | -0.253 <sup>+</sup><br>(0.130) | -0.519<br>(0.374)    | -1.183**<br>(0.328) | -0.022<br>(0.238)  |
| Assigned T2 × Home internet connection | -0.171*<br>(0.073)  | 0.011<br>(0.173)               | -1.031**<br>(0.375)  | -0.930**<br>(0.325) | -0.039<br>(0.228)  |
| Strata FE                              | ✓                   | ✓                              | ✓                    | ✓                   | ✓                  |
| Lag Dep. Var.                          | ✓                   | ✓                              |                      |                     | ✓                  |
| N                                      | 754                 | 754                            | 754                  | 754                 | 754                |
| adjR <sup>2</sup>                      | 0.441               | 0.273                          | 0.287                | 0.262               | 0.193              |
| T2-T1                                  | 0.032               | 0.027                          | 0.279                | -0.094              | 0.108              |
| p-val(T2-T1)                           | 0.345               | 0.731                          | 0.283                | 0.623               | 0.482              |
| T1 + Interaction                       | 0.537               | 0.527                          | 2.282                | 1.109               | 0.702              |
| p-val(T1 + Interaction)                | 0.000               | 0.000                          | 0.000                | 0.000               | 0.000              |
| T2 +Interaction                        | 0.539               | 0.817                          | 2.049                | 1.268               | 0.792              |
| p-val(T2 + Interaction)                | 0.000               | 0.000                          | 0.000                | 0.000               | 0.000              |
| Mean C                                 | 0.257               | 0.574                          | 1.271                | 1.454               | 3.824              |
| Sd C                                   | 0.438               | 0.805                          | 2.087                | 1.942               | 1.344              |

**Notes:** The heterogeneity analysis explores the effects of having a internet connection at home at baseline based on treatment groups. The interaction terms, “Assigned T1 × Home internet connection” and “Assigned T2 × Home internet connection”, show how the treatment effect varies depending on the presence of home internet connection. The variable “Home internet connection” equals 1 if the household had a dedicated home internet connection at baseline. Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*Tablet*, *Devices*, and *DSI*). Standard errors are clustered at the class level. The variable *Tablet* is a categorical variable. *Devices* is the total number of tablets and computers available at home. *Participant* measures the frequency of computer or tablet use by the participant, ranging from 0 (never) to 6 (several times a day). *Children* captures the average frequency with which up to two children use a computer or tablet at home, measured on a scale from 0 (never) to 5 (every day). *DSI* represents the Digital Skills Indicator, a composite index ranging from 1 (no skills) to 6 (above basic skills). <sup>+</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

**Table A70: Digital Parenting & Social Inclusion**

|                                        | (1)                     | (2)                        | (3)                       | (4)                   | (5)                      |
|----------------------------------------|-------------------------|----------------------------|---------------------------|-----------------------|--------------------------|
|                                        | Digital Parenting       |                            | Social Inclusion          |                       |                          |
|                                        | Engagement<br>[Z-score] | Self Efficacy<br>[Z-score] | Digital Identity<br>[0,1] | Public Tools<br>[0,4] | New Application<br>[0,1] |
| Assigned T1                            | 0.442**<br>(0.111)      | 0.516**<br>(0.127)         | 0.139*<br>(0.054)         | 0.580**<br>(0.210)    | 0.131**<br>(0.046)       |
| Assigned T2                            | 0.277*<br>(0.107)       | 0.647**<br>(0.132)         | 0.256**<br>(0.043)        | 0.763**<br>(0.183)    | 0.093*<br>(0.043)        |
| Home internet connection               | -0.036<br>(0.106)       | -0.044<br>(0.143)          | 0.016<br>(0.057)          | 0.065<br>(0.185)      | 0.050<br>(0.031)         |
| Assigned T1 × Home internet connection | -0.043<br>(0.158)       | 0.129<br>(0.158)           | 0.052<br>(0.087)          | 0.188<br>(0.298)      | -0.023<br>(0.072)        |
| Assigned T2 × Home internet connection | 0.044<br>(0.151)        | -0.005<br>(0.170)          | -0.084<br>(0.077)         | -0.015<br>(0.257)     | -0.108*<br>(0.050)       |
| Strata FE                              | ✓                       | ✓                          | ✓                         | ✓                     | ✓                        |
| Lag Dep. Var.                          |                         |                            |                           |                       | ✓                        |
| N                                      | 754                     | 754                        | 754                       | 754                   | 754                      |
| adjR <sup>2</sup>                      | 0.080                   | 0.168                      | 0.150                     | 0.148                 | 0.068                    |
| T2-T1                                  | -0.165                  | 0.130                      | 0.118                     | 0.184                 | -0.039                   |
| p-val(T2-T1)                           | 0.183                   | 0.314                      | 0.030                     | 0.457                 | 0.479                    |
| T1 + Interaction                       | 0.399                   | 0.646                      | 0.190                     | 0.768                 | 0.108                    |
| p-val(T1 + Interaction)                | 0.032                   | 0.000                      | 0.018                     | 0.009                 | 0.070                    |
| T2 +Interaction                        | 0.320                   | 0.642                      | 0.173                     | 0.749                 | -0.015                   |
| p-val(T2 + Interaction)                | 0.014                   | 0.000                      | 0.015                     | 0.001                 | 0.689                    |
| Mean C                                 | 0.000                   | 0.000                      | 0.356                     | 0.891                 | 0.137                    |
| Sd C                                   | 1.000                   | 1.000                      | 0.480                     | 1.506                 | 0.345                    |

**Notes:** The heterogeneity analysis explores the effects of having a internet connection at home at baseline based on treatment groups. The interaction terms, “Assigned T1 × Home internet connection” and “Assigned T2 × Home internet connection”, show how the treatment effect varies depending on the presence of home internet connection. The variable “Home internet connection” equals 1 if the household had a dedicated home internet connection at baseline. Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*New Application*). Standard errors are clustered at the class level. The variable *Engagement* measures how frequently participants use digital tools with their children for education and entertainment and monitor their school performance via apps. It is standardized to have a mean of 0 and standard deviation of 1 in the control group. *Self-Efficacy* captures participants’ confidence in guiding their children’s digital behavior, including ensuring age-appropriate content, managing screen time, and finding online educational resources. This variable is standardized similarly to Engagement. *Digital Identity* is a binary indicator equal to 1 if the participant has an Italian public digital identity (SPID) and has used it autonomously in the past five months. *Public Tools* measures the number of public digital services the participant has accessed in the past five months, including social security, tax payments, health services, and child-related services. The variable ranges from 0 to 4. *New Application* is a binary indicator equal to 1 if the participant submitted at least one new application for an income support measure in the past five months. <sup>+</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

**Table A71: Labor Market Engagement**

|                                        | (1)               | (2)               | (3)                       | (4)                     |
|----------------------------------------|-------------------|-------------------|---------------------------|-------------------------|
|                                        | Current Behavior  |                   | Future Expectations       |                         |
|                                        | Openness<br>[0,1] | Effort<br>[0,1]   | Pr. Employment<br>[0,100] | Pr. Training<br>[0,100] |
| Assigned T1                            | -0.032<br>(0.054) | -0.004<br>(0.056) | 7.816<br>(4.772)          | 18.875**<br>(5.756)     |
| Assigned T2                            | -0.019<br>(0.048) | -0.022<br>(0.060) | 6.453<br>(4.761)          | 18.118**<br>(5.971)     |
| Home internet connection               | 0.052<br>(0.046)  | 0.082<br>(0.061)  | 0.733<br>(3.446)          | 3.218<br>(3.812)        |
| Assigned T1 × Home internet connection | -0.036<br>(0.081) | 0.003<br>(0.101)  | -2.025<br>(5.887)         | 8.513<br>(7.290)        |
| Assigned T2 × Home internet connection | -0.000<br>(0.074) | -0.125<br>(0.101) | -3.059<br>(6.835)         | -9.898<br>(7.830)       |
| Strata FE                              | ✓                 | ✓                 | ✓                         | ✓                       |
| Lag Dep. Var.                          | ✓                 |                   | ✓                         | ✓                       |
| N                                      | 754               | 754               | 754                       | 754                     |
| adjR <sup>2</sup>                      | 0.022             | 0.031             | 0.031                     | 0.094                   |
| T2-T1                                  | 0.013             | -0.018            | -1.363                    | -0.757                  |
| p-val(T2-T1)                           | 0.823             | 0.780             | 0.800                     | 0.919                   |
| T1 + Interaction                       | -0.068            | -0.001            | 5.792                     | 27.388                  |
| p-val(T1 + Interaction)                | 0.274             | 0.987             | 0.188                     | 0.000                   |
| T2 +Interaction                        | -0.019            | -0.147            | 3.394                     | 8.220                   |
| p-val(T2 + Interaction)                | 0.722             | 0.043             | 0.529                     | 0.217                   |
| Mean C                                 | 0.750             | 0.511             | 50.771                    | 31.697                  |
| Sd C                                   | 0.434             | 0.501             | 32.659                    | 29.868                  |

Notes: The heterogeneity analysis explores the effects of having a internet connection at home at baseline based on treatment groups. The interaction terms, “Assigned T1 × Home internet connection” and “Assigned T2 × Home internet connection”, show how the treatment effect varies depending on the presence of home internet connection. The variable “Home internet connection” equals 1 if the household had a dedicated home internet connection at baseline. Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*Openness*, *Pr. Employment*, *Pr. Training*). Standard errors are clustered at the class level. The variable *Openness* is a binary indicator equal to 1 if the participant is employed, actively seeking employment, or willing to work despite not currently looking. *Effort* is a binary indicator equal to 1 if the participant engaged in activities to improve their labor market status, including updating their CV, consulting an employment service, or enrolling in a training program. *Perceived Probability of Employment* measures participants’ self-reported likelihood (0-100) of being employed in 12 months. *Perceived Probability of Training* captures participants’ self-reported likelihood (0-100) of enrolling in a skills development or training program in the next 12 months. <sup>+</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

## E.10.4 Heterogeneity by Age

**Table A72: Technology Adoption & Digital Skills**

|                         | (1)                 | (2)                | (3)                  | (4)                 | (5)                            |
|-------------------------|---------------------|--------------------|----------------------|---------------------|--------------------------------|
|                         | Technology adoption |                    |                      |                     | Digital skills                 |
|                         | Tablet<br>[0,1]     | Devices<br>[N]     | Participant<br>[0,6] | Children<br>[0,5]   | DSI<br>[1,6]                   |
| Assigned T1             | 0.646**<br>(0.052)  | 0.851**<br>(0.087) | 2.700**<br>(0.283)   | 2.253**<br>(0.213)  | 0.613**<br>(0.164)             |
| Assigned T2             | 0.630**<br>(0.052)  | 0.813**<br>(0.101) | 2.999**<br>(0.278)   | 1.793**<br>(0.238)  | 0.694**<br>(0.137)             |
| Age                     | 0.015<br>(0.053)    | 0.263**<br>(0.084) | 0.765**<br>(0.289)   | 0.727**<br>(0.200)  | -0.223 <sup>+</sup><br>(0.129) |
| Assigned T1 × Age       | -0.032<br>(0.064)   | -0.320*<br>(0.141) | -0.221<br>(0.376)    | -0.769**<br>(0.283) | 0.221<br>(0.196)               |
| Assigned T2 × Age       | 0.044<br>(0.065)    | 0.008<br>(0.119)   | -0.596<br>(0.380)    | 0.195<br>(0.296)    | 0.264<br>(0.196)               |
| Strata FE               | ✓                   | ✓                  | ✓                    | ✓                   | ✓                              |
| Lag Dep. Var.           | ✓                   | ✓                  |                      |                     | ✓                              |
| N                       | 754                 | 754                | 754                  | 754                 | 754                            |
| adjR <sup>2</sup>       | 0.435               | 0.253              | 0.290                | 0.268               | 0.194                          |
| T2-T1                   | -0.016              | -0.038             | 0.299                | -0.460              | 0.081                          |
| p-val(T2-T1)            | 0.739               | 0.710              | 0.338                | 0.056               | 0.649                          |
| T1 + Interaction        | 0.614               | 0.532              | 2.479                | 1.484               | 0.834                          |
| p-val(T1 + Interaction) | 0.000               | 0.000              | 0.000                | 0.000               | 0.000                          |
| T2 +Interaction         | 0.674               | 0.822              | 2.403                | 1.988               | 0.958                          |
| p-val(T2 + Interaction) | 0.000               | 0.000              | 0.000                | 0.000               | 0.000                          |
| Mean C                  | 0.257               | 0.574              | 1.271                | 1.454               | 3.824                          |
| Sd C                    | 0.438               | 0.805              | 2.087                | 1.942               | 1.344                          |

**Notes:** The heterogeneity analysis explores the effects of age based on treatment groups. The variable “Age” is a dummy taking the value 1 if the respondent was older than 39 at baseline. The age of 39 was chosen because it is the median of the age variable. The interaction terms, Assigned T1 × Age and Assigned T2 × Age, show how the treatment effect varies depending on the age. Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*Tablet*, *Devices*, and *DSI*). Standard errors are clustered at the class level. The variable *Tablet* is a categorical variable. *Devices* is the total number of tablets and computers available at home. *Participant* measures the frequency of computer or tablet use by the participant, ranging from 0 (never) to 6 (several times a day). *Children* captures the average frequency with which up to two children use a computer or tablet at home, measured on a scale from 0 (never) to 5 (every day). *DSI* represents the Digital Skills Indicator, a composite index ranging from 1 (no skills) to 6 (above basic skills). <sup>+</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

**Table A73: Digital Parenting & Social Inclusion**

|                         | (1)                     | (2)                        | (3)                       | (4)                   | (5)                      |
|-------------------------|-------------------------|----------------------------|---------------------------|-----------------------|--------------------------|
|                         | Digital Parenting       |                            | Social Inclusion          |                       |                          |
|                         | Engagement<br>[Z-score] | Self Efficacy<br>[Z-score] | Digital Identity<br>[0,1] | Public Tools<br>[0,4] | New Application<br>[0,1] |
| Assigned T1             | 0.436**<br>(0.121)      | 0.616**<br>(0.120)         | 0.190**<br>(0.061)        | 0.733**<br>(0.229)    | 0.100*<br>(0.043)        |
| Assigned T2             | 0.190<br>(0.128)        | 0.597**<br>(0.111)         | 0.232**<br>(0.055)        | 0.765**<br>(0.191)    | 0.019<br>(0.039)         |
| Age                     | -0.168<br>(0.119)       | -0.107<br>(0.114)          | 0.025<br>(0.059)          | -0.174<br>(0.165)     | 0.049<br>(0.041)         |
| Assigned T1 × Age       | 0.000<br>(0.155)        | -0.087<br>(0.164)          | -0.061<br>(0.087)         | -0.140<br>(0.282)     | 0.042<br>(0.061)         |
| Assigned T2 × Age       | 0.218<br>(0.167)        | 0.098<br>(0.149)           | -0.011<br>(0.083)         | -0.020<br>(0.263)     | 0.078<br>(0.068)         |
| Strata FE               | ✓                       | ✓                          | ✓                         | ✓                     | ✓                        |
| Lag Dep. Var.           |                         |                            |                           |                       | ✓                        |
| N                       | 754                     | 754                        | 754                       | 754                   | 754                      |
| adjR <sup>2</sup>       | 0.084                   | 0.171                      | 0.148                     | 0.150                 | 0.076                    |
| T2-T1                   | -0.246                  | -0.018                     | 0.042                     | 0.032                 | -0.081                   |
| p-val(T2-T1)            | 0.082                   | 0.890                      | 0.499                     | 0.900                 | 0.080                    |
| T1 + Interaction        | 0.436                   | 0.529                      | 0.129                     | 0.593                 | 0.142                    |
| p-val(T1 + Interaction) | 0.008                   | 0.000                      | 0.068                     | 0.022                 | 0.008                    |
| T2 +Interaction         | 0.408                   | 0.696                      | 0.221                     | 0.745                 | 0.097                    |
| p-val(T2 + Interaction) | 0.001                   | 0.000                      | 0.000                     | 0.001                 | 0.087                    |
| Mean C                  | 0.000                   | 0.000                      | 0.356                     | 0.891                 | 0.137                    |
| Sd C                    | 1.000                   | 1.000                      | 0.480                     | 1.506                 | 0.345                    |

**Notes:**The heterogeneity analysis explores the effects of age based on treatment groups. The variable “Age” is a dummy taking the value 1 if the respondent was older than 39 at baseline. The age of 39 was chosen because it is the median of the age variable. The interaction terms, Assigned T1 × Age and Assigned T2 × Age, show how the treatment effect varies depending on the age. Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*New Application*). Standard errors are clustered at the class level. The variable *Engagement* measures how frequently participants use digital tools with their children for education and entertainment and monitor their school performance via apps. It is standardized to have a mean of 0 and standard deviation of 1 in the control group. *Self-Efficacy* captures participants’ confidence in guiding their children’s digital behavior, including ensuring age-appropriate content, managing screen time, and finding online educational resources. This variable is standardized similarly to Engagement. *Digital Identity* is a binary indicator equal to 1 if the participant has an Italian public digital identity (SPID) and has used it autonomously in the past five months. *Public Tools* measures the number of public digital services the participant has accessed in the past five months, including social security, tax payments, health services, and child-related services. The variable ranges from 0 to 4. *New Application* is a binary indicator equal to 1 if the participant submitted at least one new application for an income support measure in the past five months. <sup>+</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

**Table A74: Labor Market Engagement**

|                         | (1)                | (2)               | (3)                       | (4)                     |
|-------------------------|--------------------|-------------------|---------------------------|-------------------------|
|                         | Current Behavior   |                   | Future Expectations       |                         |
|                         | Openness<br>[0,1]  | Effort<br>[0,1]   | Pr. Employment<br>[0,100] | Pr. Training<br>[0,100] |
| Assigned T1             | -0.017<br>(0.065)  | -0.033<br>(0.062) | 10.861*<br>(5.121)        | 25.042**<br>(5.769)     |
| Assigned T2             | 0.043<br>(0.060)   | -0.087<br>(0.057) | 6.686<br>(5.073)          | 15.850*<br>(6.473)      |
| Age                     | 0.204**<br>(0.060) | 0.102<br>(0.072)  | 12.541**<br>(4.380)       | 2.828<br>(3.680)        |
| Assigned T1 × Age       | -0.071<br>(0.077)  | 0.050<br>(0.087)  | -8.204<br>(5.689)         | -5.802<br>(5.941)       |
| Assigned T2 × Age       | -0.128<br>(0.082)  | 0.046<br>(0.097)  | -2.524<br>(6.202)         | -2.747<br>(6.180)       |
| Strata FE               | ✓                  | ✓                 | ✓                         | ✓                       |
| Lag Dep. Var.           | ✓                  |                   | ✓                         | ✓                       |
| N                       | 754                | 754               | 754                       | 754                     |
| adjR <sup>2</sup>       | 0.043              | 0.041             | 0.045                     | 0.085                   |
| T2-T1                   | 0.060              | -0.054            | -4.175                    | -9.192                  |
| p-val(T2-T1)            | 0.361              | 0.386             | 0.477                     | 0.232                   |
| T1 + Interaction        | -0.089             | 0.017             | 2.657                     | 19.240                  |
| p-val(T1 + Interaction) | 0.051              | 0.751             | 0.519                     | 0.001                   |
| T2 +Interaction         | -0.085             | -0.041            | 4.162                     | 13.103                  |
| p-val(T2 + Interaction) | 0.077              | 0.564             | 0.371                     | 0.012                   |
| Mean C                  | 0.750              | 0.511             | 50.771                    | 31.697                  |
| Sd C                    | 0.434              | 0.501             | 32.659                    | 29.868                  |

Notes: The heterogeneity analysis explores the effects of age based on treatment groups. The variable “Age” is a dummy taking the value 1 if the respondent was older than 39 at baseline. The age of 39 was chosen because it is the median of the age variable. The interaction terms, Assigned T1 × Age and Assigned T2 × Age, show how the treatment effect varies depending on the age. Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*Openness*, *Pr. Employment*, *Pr. Training*). Standard errors are clustered at the class level. The variable *Openness* is a binary indicator equal to 1 if the participant is employed, actively seeking employment, or willing to work despite not currently looking. *Effort* is a binary indicator equal to 1 if the participant engaged in activities to improve their labor market status, including updating their CV, consulting an employment service, or enrolling in a training program. *Perceived Probability of Employment* measures participants’ self-reported likelihood (0-100) of being employed in 12 months. *Perceived Probability of Training* captures participants’ self-reported likelihood (0-100) of enrolling in a skills development or training program in the next 12 months.

+  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

### E.10.5 Heterogeneity by Education

**Table A75: Technology Adoption & Digital Skills**

|                         | (1)                 | (2)                | (3)                  | (4)                | (5)                |
|-------------------------|---------------------|--------------------|----------------------|--------------------|--------------------|
|                         | Technology adoption |                    |                      |                    | Digital skills     |
|                         | Tablet<br>[0,1]     | Devices<br>[N]     | Participant<br>[0,6] | Children<br>[0,5]  | DSI<br>[1,6]       |
| Assigned T1             | 0.601**<br>(0.047)  | 0.675**<br>(0.084) | 2.670**<br>(0.271)   | 1.942**<br>(0.222) | 0.749**<br>(0.142) |
| Assigned T2             | 0.654**<br>(0.043)  | 0.794**<br>(0.098) | 2.607**<br>(0.261)   | 1.990**<br>(0.215) | 0.781**<br>(0.173) |
| Assigned T1 × Education | 0.073<br>(0.064)    | 0.045<br>(0.131)   | -0.115<br>(0.365)    | -0.177<br>(0.292)  | -0.079<br>(0.184)  |
| Assigned T2 × Education | -0.009<br>(0.065)   | 0.052<br>(0.125)   | 0.266<br>(0.323)     | -0.296<br>(0.291)  | 0.090<br>(0.234)   |
| Strata FE               | ✓                   | ✓                  | ✓                    | ✓                  | ✓                  |
| Lag Dep. Var.           | ✓                   | ✓                  |                      |                    | ✓                  |
| N                       | 754                 | 754                | 754                  | 754                | 754                |
| adjR <sup>2</sup>       | 0.436               | 0.240              | 0.281                | 0.246              | 0.193              |
| T2-T1                   | 0.053               | 0.118              | -0.063               | 0.048              | 0.033              |
| p-val(T2-T1)            | 0.180               | 0.209              | 0.832                | 0.811              | 0.857              |
| T1 + Interaction        | 0.674               | 0.721              | 2.555                | 1.765              | 0.670              |
| p-val(T1 + Interaction) | 0.000               | 0.000              | 0.000                | 0.000              | 0.000              |
| T2 +Interaction         | 0.645               | 0.845              | 2.872                | 1.694              | 0.872              |
| p-val(T2 + Interaction) | 0.000               | 0.000              | 0.000                | 0.000              | 0.000              |
| Mean C                  | 0.257               | 0.574              | 1.271                | 1.454              | 3.824              |
| Sd C                    | 0.438               | 0.805              | 2.087                | 1.942              | 1.344              |

Notes: The heterogeneity analysis explores the effects of education based on treatment groups. The interaction terms, “Assigned T1 × Education” and “Assigned T1 × Education,” show how the treatment effect varies depending on the education level. The variable “Education” takes the value 1 if the respondent has at least completed a high school diploma. The coefficient for this variable is not shown in the following tables, as it is collinear with the fixed effects (*strata*). Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*Tablet*, *Devices*, and *DSI*). Standard errors are clustered at the class level. The variable *Tablet* is a categorical variable. *Devices* is the total number of tablets and computers available at home. *Participant* measures the frequency of computer or tablet use by the participant, ranging from 0 (never) to 6 (several times a day). *Children* captures the average frequency with which up to two children use a computer or tablet at home, measured on a scale from 0 (never) to 5 (every day). *DSI* represents the Digital Skills Indicator, a composite index ranging from 1 (no skills) to 6 (above basic skills). +  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

**Table A76: Digital Parenting & Social Inclusion**

|                         | (1)                     | (2)                        | (3)                       | (4)                   | (5)                      |
|-------------------------|-------------------------|----------------------------|---------------------------|-----------------------|--------------------------|
|                         | Digital Parenting       |                            | Social Inclusion          |                       |                          |
|                         | Engagement<br>[Z-score] | Self Efficacy<br>[Z-score] | Digital Identity<br>[0,1] | Public Tools<br>[0,4] | New Application<br>[0,1] |
| Assigned T1             | 0.409*                  | 0.547**                    | 0.129*                    | 0.524*                | 0.131**                  |
|                         | (0.160)                 | (0.130)                    | (0.061)                   | (0.216)               | (0.049)                  |
| Assigned T2             | 0.332**                 | 0.637**                    | 0.215**                   | 0.646**               | 0.078 <sup>+</sup>       |
|                         | (0.105)                 | (0.135)                    | (0.053)                   | (0.205)               | (0.046)                  |
| Assigned T1 × Education | 0.041                   | 0.042                      | 0.077                     | 0.329                 | -0.018                   |
|                         | (0.193)                 | (0.142)                    | (0.085)                   | (0.292)               | (0.074)                  |
| Assigned T2 × Education | -0.098                  | 0.018                      | 0.030                     | 0.289                 | -0.059                   |
|                         | (0.169)                 | (0.147)                    | (0.083)                   | (0.274)               | (0.066)                  |
| Strata FE               | ✓                       | ✓                          | ✓                         | ✓                     | ✓                        |
| Lag Dep. Var.           |                         |                            |                           |                       | ✓                        |
| N                       | 754                     | 754                        | 754                       | 754                   | 754                      |
| adjR <sup>2</sup>       | 0.081                   | 0.169                      | 0.149                     | 0.149                 | 0.067                    |
| T2-T1                   | -0.077                  | 0.090                      | 0.086                     | 0.121                 | -0.053                   |
| p-val(T2-T1)            | 0.629                   | 0.553                      | 0.171                     | 0.638                 | 0.355                    |
| T1 + Interaction        | 0.451                   | 0.589                      | 0.206                     | 0.853                 | 0.113                    |
| p-val(T1 + Interaction) | 0.002                   | 0.000                      | 0.004                     | 0.003                 | 0.051                    |
| T2 +Interaction         | 0.234                   | 0.655                      | 0.245                     | 0.935                 | 0.019                    |
| p-val(T2 + Interaction) | 0.106                   | 0.000                      | 0.000                     | 0.000                 | 0.695                    |
| Mean C                  | 0.000                   | 0.000                      | 0.356                     | 0.891                 | 0.137                    |
| Sd C                    | 1.000                   | 1.000                      | 0.480                     | 1.506                 | 0.345                    |

**Notes:** The heterogeneity analysis explores the effects of education based on treatment groups. The interaction terms, “Assigned T1 × Education” and “Assigned T1 × Education,” show how the treatment effect varies depending on the education level. The variable “Education” takes the value 1 if the respondent has at least completed a high school diploma. The coefficient for this variable is not shown in the following tables, as it is collinear with the fixed effects (*strata*). Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*New Application*). Standard errors are clustered at the class level. The variable *Engagement* measures how frequently participants use digital tools with their children for education and entertainment and monitor their school performance via apps. It is standardized to have a mean of 0 and standard deviation of 1 in the control group. *Self-Efficacy* captures participants’ confidence in guiding their children’s digital behavior, including ensuring age-appropriate content, managing screen time, and finding online educational resources. This variable is standardized similarly to Engagement. *Digital Identity* is a binary indicator equal to 1 if the participant has an Italian public digital identity (SPID) and has used it autonomously in the past five months. *Public Tools* measures the number of public digital services the participant has accessed in the past five months, including social security, tax payments, health services, and child-related services. The variable ranges from 0 to 4. *New Application* is a binary indicator equal to 1 if the participant submitted at least one new application for an income support measure in the past five months. <sup>+</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

**Table A77: Labor Market Engagement**

|                         | (1)               | (2)               | (3)                           | (4)                     |
|-------------------------|-------------------|-------------------|-------------------------------|-------------------------|
|                         | Current Behavior  |                   | Future Expectations           |                         |
|                         | Openness<br>[0,1] | Effort<br>[0,1]   | Pr. Employment<br>[0,100]     | Pr. Training<br>[0,100] |
| Assigned T1             | -0.045<br>(0.051) | 0.011<br>(0.056)  | 7.883 <sup>+</sup><br>(4.363) | 21.774**<br>(5.039)     |
| Assigned T2             | 0.009<br>(0.042)  | -0.055<br>(0.052) | 4.224<br>(4.370)              | 13.576*<br>(5.629)      |
| Assigned T1 × Education | 0.000<br>(0.078)  | -0.032<br>(0.097) | -2.004<br>(6.043)             | 0.865<br>(6.252)        |
| Assigned T2 × Education | -0.070<br>(0.077) | -0.030<br>(0.082) | 2.794<br>(7.290)              | 2.448<br>(6.647)        |
| Strata FE               | ✓                 | ✓                 | ✓                             | ✓                       |
| Lag Dep. Var.           | ✓                 |                   | ✓                             | ✓                       |
| N                       | 754               | 754               | 754                           | 754                     |
| adjR <sup>2</sup>       | 0.022             | 0.028             | 0.033                         | 0.085                   |
| T2-T1                   | 0.054             | -0.066            | -3.659                        | -8.199                  |
| p-val(T2-T1)            | 0.217             | 0.214             | 0.419                         | 0.223                   |
| T1 + Interaction        | -0.044            | -0.021            | 5.879                         | 22.639                  |
| p-val(T1 + Interaction) | 0.479             | 0.753             | 0.255                         | 0.001                   |
| T2 +Interaction         | -0.061            | -0.085            | 7.019                         | 16.023                  |
| p-val(T2 + Interaction) | 0.338             | 0.203             | 0.262                         | 0.015                   |
| Mean C                  | 0.750             | 0.511             | 50.771                        | 31.697                  |
| Sd C                    | 0.434             | 0.501             | 32.659                        | 29.868                  |

Notes: The heterogeneity analysis explores the effects of education based on treatment groups. The interaction terms, “Assigned T1 × Education” and “Assigned T1 × Education,” show how the treatment effect varies depending on the education level. The variable “Education” takes the value 1 if the respondent has at least completed a high school diploma. The coefficient for this variable is not shown in the following tables, as it is collinear with the fixed effects (*strata*). Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*Openness*, *Pr. Employment*, *Pr. Training*). Standard errors are clustered at the class level. The variable *Openness* is a binary indicator equal to 1 if the participant is employed, actively seeking employment, or willing to work despite not currently looking. *Effort* is a binary indicator equal to 1 if the participant engaged in activities to improve their labor market status, including updating their CV, consulting an employment service, or enrolling in a training program. *Perceived Probability of Employment* measures participants’ self-reported likelihood (0-100) of being employed in 12 months. *Perceived Probability of Training* captures participants’ self-reported likelihood (0-100) of enrolling in a skills development or training program in the next 12 months. <sup>+</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

## E.10.6 Heterogeneity by Foreign background

**Table A78: Technology Adoption & Digital Skills**

|                         | (1)                 | (2)                | (3)                  | (4)                | (5)                |
|-------------------------|---------------------|--------------------|----------------------|--------------------|--------------------|
|                         | Technology adoption |                    |                      |                    | Digital skills     |
|                         | Tablet<br>[0,1]     | Devices<br>[N]     | Participant<br>[0,6] | Children<br>[0,5]  | DSI<br>[1,6]       |
| Assigned T1             | 0.545**<br>(0.063)  | 0.478**<br>(0.149) | 2.022**<br>(0.428)   | 1.499**<br>(0.326) | 0.720**<br>(0.150) |
| Assigned T2             | 0.642**<br>(0.057)  | 0.845**<br>(0.176) | 2.270**<br>(0.362)   | 1.720**<br>(0.293) | 0.711**<br>(0.169) |
| Assigned T1 × Foreign   | 0.118+<br>(0.070)   | 0.298+<br>(0.161)  | 0.837+<br>(0.451)    | 0.523<br>(0.332)   | -0.003<br>(0.222)  |
| Assigned T2 × Foreign   | 0.010<br>(0.071)    | -0.048<br>(0.181)  | 0.627<br>(0.393)     | 0.214<br>(0.332)   | 0.154<br>(0.231)   |
| Strata FE               | ✓                   | ✓                  | ✓                    | ✓                  | ✓                  |
| Lag Dep. Var.           | ✓                   | ✓                  |                      |                    | ✓                  |
| N                       | 754                 | 754                | 754                  | 754                | 754                |
| adjR <sup>2</sup>       | 0.437               | 0.246              | 0.285                | 0.247              | 0.193              |
| T2-T1                   | 0.097               | 0.367              | 0.248                | 0.221              | -0.009             |
| p-val(T2-T1)            | 0.039               | 0.011              | 0.570                | 0.366              | 0.951              |
| T1 + Interaction        | 0.662               | 0.776              | 2.859                | 2.022              | 0.717              |
| p-val(T1 + Interaction) | 0.000               | 0.000              | 0.000                | 0.000              | 0.000              |
| T2 +Interaction         | 0.652               | 0.797              | 2.897                | 1.934              | 0.865              |
| p-val(T2 + Interaction) | 0.000               | 0.000              | 0.000                | 0.000              | 0.000              |
| Mean C                  | 0.257               | 0.574              | 1.271                | 1.454              | 3.824              |
| Sd C                    | 0.438               | 0.805              | 2.087                | 1.942              | 1.344              |

**Notes:** The heterogeneity analysis explores the impact of being a non-Italian respondent across treatment groups. The interaction terms, “Assigned T1 × Foreign” and “Assigned T2 × Foreign”, show how the treatment effect varies depending on the foreign background. The variable takes the value 1 if the respondent is not Italian. The coefficient for this variable is not shown in the following tables, as it is collinear with the fixed effects (*strata*). Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*Tablet*, *Devices*, and *DSI*). Standard errors are clustered at the class level. The variable *Tablet* is a categorical variable. *Devices* is the total number of tablets and computers available at home. *Participant* measures the frequency of computer or tablet use by the participant, ranging from 0 (never) to 6 (several times a day). *Children* captures the average frequency with which up to two children use a computer or tablet at home, measured on a scale from 0 (never) to 5 (every day). *DSI* represents the Digital Skills Indicator, a composite index ranging from 1 (no skills) to 6 (above basic skills). +  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

**Table A79: Digital Parenting & Social Inclusion**

|                         | (1)                     | (2)                        | (3)                       | (4)                   | (5)                      |
|-------------------------|-------------------------|----------------------------|---------------------------|-----------------------|--------------------------|
|                         | Digital Parenting       |                            | Social Inclusion          |                       |                          |
|                         | Engagement<br>[Z-score] | Self Efficacy<br>[Z-score] | Digital Identity<br>[0,1] | Public Tools<br>[0,4] | New Application<br>[0,1] |
| Assigned T1             | 0.341*                  | 0.430**                    | 0.189**                   | 0.661*                | 0.186*                   |
|                         | (0.154)                 | (0.146)                    | (0.072)                   | (0.304)               | (0.086)                  |
| Assigned T2             | 0.113                   | 0.462**                    | 0.254**                   | 0.887**               | 0.034                    |
|                         | (0.137)                 | (0.146)                    | (0.074)                   | (0.300)               | (0.075)                  |
| Assigned T1 × Foreign   | 0.118                   | 0.186                      | -0.042                    | -0.016                | -0.086                   |
|                         | (0.174)                 | (0.172)                    | (0.091)                   | (0.337)               | (0.089)                  |
| Assigned T2 × Foreign   | 0.255                   | 0.258                      | -0.039                    | -0.185                | 0.030                    |
|                         | (0.157)                 | (0.163)                    | (0.096)                   | (0.364)               | (0.078)                  |
| Strata FE               | ✓                       | ✓                          | ✓                         | ✓                     | ✓                        |
| Lag Dep. Var.           |                         |                            |                           |                       | ✓                        |
| N                       | 754                     | 754                        | 754                       | 754                   | 754                      |
| adjR <sup>2</sup>       | 0.083                   | 0.172                      | 0.149                     | 0.148                 | 0.069                    |
| T2-T1                   | -0.227                  | 0.033                      | 0.065                     | 0.226                 | -0.151                   |
| p-val(T2-T1)            | 0.183                   | 0.836                      | 0.402                     | 0.505                 | 0.103                    |
| T1 + Interaction        | 0.459                   | 0.615                      | 0.146                     | 0.645                 | 0.100                    |
| p-val(T1 + Interaction) | 0.001                   | 0.000                      | 0.018                     | 0.005                 | 0.006                    |
| T2 +Interaction         | 0.369                   | 0.721                      | 0.215                     | 0.702                 | 0.064                    |
| p-val(T2 + Interaction) | 0.000                   | 0.000                      | 0.000                     | 0.000                 | 0.054                    |
| Mean C                  | 0.000                   | 0.000                      | 0.356                     | 0.891                 | 0.137                    |
| Sd C                    | 1.000                   | 1.000                      | 0.480                     | 1.506                 | 0.345                    |

**Notes:** The heterogeneity analysis explores the impact of being a non-Italian respondent across treatment groups. The interaction terms, “Assigned T1 × Foreign” and “Assigned T2 × Foreign”, show how the treatment effect varies depending on the foreign background. The variable takes the value 1 if the respondent is not Italian. The coefficient for this variable is not shown in the following tables, as it is collinear with the fixed effects (*strata*). Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*New Application*). Standard errors are clustered at the class level. The variable *Engagement* measures how frequently participants use digital tools with their children for education and entertainment and monitor their school performance via apps. It is standardized to have a mean of 0 and standard deviation of 1 in the control group. *Self-Efficacy* captures participants’ confidence in guiding their children’s digital behavior, including ensuring age-appropriate content, managing screen time, and finding online educational resources. This variable is standardized similarly to Engagement. *Digital Identity* is a binary indicator equal to 1 if the participant has an Italian public digital identity (SPID) and has used it autonomously in the past five months. *Public Tools* measures the number of public digital services the participant has accessed in the past five months, including social security, tax payments, health services, and child-related services. The variable ranges from 0 to 4. *New Application* is a binary indicator equal to 1 if the participant submitted at least one new application for an income support measure in the past five months. <sup>+</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

**Table A80: Labor Market Engagement**

|                         | (1)                | (2)                | (3)                       | (4)                     |
|-------------------------|--------------------|--------------------|---------------------------|-------------------------|
|                         | Current Behavior   |                    | Future Expectations       |                         |
|                         | Openness<br>[0,1]  | Effort<br>[0,1]    | Pr. Employment<br>[0,100] | Pr. Training<br>[0,100] |
| Assigned T1             | -0.125*<br>(0.062) | 0.116<br>(0.078)   | 8.912<br>(5.509)          | 27.686**<br>(5.885)     |
| Assigned T2             | 0.041<br>(0.056)   | 0.063<br>(0.077)   | 13.692*<br>(6.108)        | 21.127**<br>(6.414)     |
| Assigned T1 × Foreign   | 0.112<br>(0.075)   | -0.163<br>(0.099)  | -2.544<br>(6.339)         | -7.781<br>(5.795)       |
| Assigned T2 × Foreign   | -0.087<br>(0.075)  | -0.184*<br>(0.091) | -11.919+<br>(6.575)       | -9.345<br>(6.443)       |
| Strata FE               | ✓                  | ✓                  | ✓                         | ✓                       |
| Lag Dep. Var.           | ✓                  |                    | ✓                         | ✓                       |
| N                       | 754                | 754                | 754                       | 754                     |
| adjR <sup>2</sup>       | 0.028              | 0.034              | 0.036                     | 0.088                   |
| T2-T1                   | 0.166              | -0.053             | 4.780                     | -6.559                  |
| p-val(T2-T1)            | 0.015              | 0.501              | 0.470                     | 0.345                   |
| T1 + Interaction        | -0.013             | -0.047             | 6.368                     | 19.905                  |
| p-val(T1 + Interaction) | 0.793              | 0.338              | 0.137                     | 0.000                   |
| T2 +Interaction         | -0.046             | -0.121             | 1.773                     | 11.782                  |
| p-val(T2 + Interaction) | 0.319              | 0.016              | 0.664                     | 0.036                   |
| Mean C                  | 0.750              | 0.511              | 50.771                    | 31.697                  |
| Sd C                    | 0.434              | 0.501              | 32.659                    | 29.868                  |

Notes: The heterogeneity analysis explores the impact of being a non-Italian respondent across treatment groups. The interaction terms, “Assigned T1 × Foreign” and “Assigned T2 × Foreign”, show how the treatment effect varies depending on the foreign background. The variable takes the value 1 if the respondent is not Italian. The coefficient for this variable is not shown in the following tables, as it is collinear with the fixed effects (*strata*). Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*Openness*, *Pr. Employment*, *Pr. Training*). Standard errors are clustered at the class level. The variable *Openness* is a binary indicator equal to 1 if the participant is employed, actively seeking employment, or willing to work despite not currently looking. *Effort* is a binary indicator equal to 1 if the participant engaged in activities to improve their labor market status, including updating their CV, consulting an employment service, or enrolling in a training program. *Perceived Probability of Employment* measures participants’ self-reported likelihood (0-100) of being employed in 12 months. *Perceived Probability of Training* captures participants’ self-reported likelihood (0-100) of enrolling in a skills development or training program in the next 12 months. +  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

### E.10.7 Heterogeneity by young children

**Table A81:** Technology Adoption & Digital Skills

|                              | (1)                 | (2)                | (3)                            | (4)                | (5)                |
|------------------------------|---------------------|--------------------|--------------------------------|--------------------|--------------------|
|                              | Technology adoption |                    |                                |                    | Digital skills     |
|                              | Tablet<br>[0,1]     | Devices<br>[N]     | Participant<br>[0,6]           | Children<br>[0,5]  | DSI<br>[1,6]       |
| Assigned T1                  | 0.503**<br>(0.051)  | 0.517**<br>(0.120) | 2.213**<br>(0.318)             | 1.516**<br>(0.267) | 0.758**<br>(0.167) |
| Assigned T2                  | 0.554**<br>(0.054)  | 0.736**<br>(0.134) | 2.144**<br>(0.349)             | 1.744**<br>(0.234) | 0.871**<br>(0.189) |
| Young Children               | -0.167<br>(0.108)   | -0.223<br>(0.292)  | -1.555 <sup>+</sup><br>(0.859) | -1.512*<br>(0.642) | 0.397<br>(0.271)   |
| Assigned T1 × Young Children | 0.229**<br>(0.065)  | 0.321*<br>(0.142)  | 0.730*<br>(0.363)              | 0.653*<br>(0.323)  | -0.070<br>(0.240)  |
| Assigned T2 × Young Children | 0.170*<br>(0.065)   | 0.136<br>(0.151)   | 1.020**<br>(0.356)             | 0.217<br>(0.284)   | -0.093<br>(0.234)  |
| Strata FE                    | ✓                   | ✓                  | ✓                              | ✓                  | ✓                  |
| Lag Dep. Var.                | ✓                   | ✓                  |                                |                    | ✓                  |
| N                            | 754                 | 754                | 754                            | 754                | 754                |
| adjR <sup>2</sup>            | 0.445               | 0.245              | 0.289                          | 0.252              | 0.192              |
| T2-T1                        | 0.051               | 0.219              | -0.069                         | 0.228              | 0.113              |
| p-val(T2-T1)                 | 0.246               | 0.083              | 0.835                          | 0.300              | 0.557              |
| T1 + Interaction             | 0.732               | 0.839              | 2.943                          | 2.169              | 0.688              |
| p-val(T1 + Interaction)      | 0.000               | 0.000              | 0.000                          | 0.000              | 0.000              |
| T2 +Interaction              | 0.724               | 0.872              | 3.164                          | 1.961              | 0.779              |
| p-val(T2 + Interaction)      | 0.000               | 0.000              | 0.000                          | 0.000              | 0.000              |
| Mean C                       | 0.257               | 0.574              | 1.271                          | 1.454              | 3.824              |
| Sd C                         | 0.438               | 0.805              | 2.087                          | 1.942              | 1.344              |

**Notes:** The heterogeneity analysis investigates the effects of having a child under the age of 6 at baseline, based on treatment groups. The interaction terms, “Assigned T1 × Young Children” and “Assigned T2 × Young Children”, show how the treatment effect vary depending on the presence of a young child. The variable “Young Children” takes the value 1 if, at baseline, there is at least one child in the household younger than six years old. Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*Tablet*, *Devices*, and *DSI*). Standard errors are clustered at the class level. The variable *Tablet* is a categorical variable. *Devices* is the total number of tablets and computers available at home. *Participant* measures the frequency of computer or tablet use by the participant, ranging from 0 (never) to 6 (several times a day). *Children* captures the average frequency with which up to two children use a computer or tablet at home, measured on a scale from 0 (never) to 5 (every day). *DSI* represents the Digital Skills Indicator, a composite index ranging from 1 (no skills) to 6 (above basic skills). <sup>+</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

**Table A82: Digital Parenting & Social Inclusion**

|                              | (1)                     | (2)                        | (3)                       | (4)                   | (5)                      |
|------------------------------|-------------------------|----------------------------|---------------------------|-----------------------|--------------------------|
|                              | Digital Parenting       |                            | Social Inclusion          |                       |                          |
|                              | Engagement<br>[Z-score] | Self Efficacy<br>[Z-score] | Digital Identity<br>[0,1] | Public Tools<br>[0,4] | New Application<br>[0,1] |
| Assigned T1                  | 0.361*                  | 0.577**                    | 0.098                     | 0.442 <sup>+</sup>    | 0.147**                  |
|                              | (0.168)                 | (0.149)                    | (0.066)                   | (0.238)               | (0.051)                  |
| Assigned T2                  | 0.176                   | 0.689**                    | 0.202**                   | 0.765**               | 0.088                    |
|                              | (0.114)                 | (0.130)                    | (0.056)                   | (0.205)               | (0.059)                  |
| Young Children               | -0.255                  | 0.516**                    | 0.072                     | 0.542                 | -0.320*                  |
|                              | (0.257)                 | (0.191)                    | (0.201)                   | (0.690)               | (0.153)                  |
| Assigned T1 × Young Children | 0.113                   | -0.021                     | 0.111                     | 0.390                 | -0.043                   |
|                              | (0.167)                 | (0.176)                    | (0.091)                   | (0.301)               | (0.066)                  |
| Assigned T2 × Young Children | 0.210                   | -0.079                     | 0.042                     | -0.016                | -0.063                   |
|                              | (0.154)                 | (0.157)                    | (0.083)                   | (0.281)               | (0.071)                  |
| Strata FE                    | ✓                       | ✓                          | ✓                         | ✓                     | ✓                        |
| Lag Dep. Var.                |                         |                            |                           |                       | ✓                        |
| N                            | 754                     | 754                        | 754                       | 754                   | 754                      |
| adjR <sup>2</sup>            | 0.081                   | 0.170                      | 0.150                     | 0.150                 | 0.074                    |
| T2-T1                        | -0.186                  | 0.112                      | 0.104                     | 0.323                 | -0.059                   |
| p-val(T2-T1)                 | 0.285                   | 0.414                      | 0.114                     | 0.193                 | 0.351                    |
| T1 + Interaction             | 0.474                   | 0.556                      | 0.209                     | 0.832                 | 0.104                    |
| p-val(T1 + Interaction)      | 0.000                   | 0.000                      | 0.002                     | 0.002                 | 0.034                    |
| T2 +Interaction              | 0.385                   | 0.610                      | 0.244                     | 0.750                 | 0.025                    |
| p-val(T2 + Interaction)      | 0.002                   | 0.000                      | 0.000                     | 0.001                 | 0.523                    |
| Mean C                       | 0.000                   | 0.000                      | 0.356                     | 0.891                 | 0.137                    |
| Sd C                         | 1.000                   | 1.000                      | 0.480                     | 1.506                 | 0.345                    |

Notes: The heterogeneity analysis investigates the effects of having a child under the age of 6 at baseline, based on treatment groups. The interaction terms, “Assigned T1 × Young Children” and “Assigned T2 × Young Children”, show how the treatment effect vary depending on the presence of a young child. The variable “Young Children” takes the value 1 if, at baseline, there is at least one child in the household younger than six years old. Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*New Application*). Standard errors are clustered at the class level. The variable *Engagement* measures how frequently participants use digital tools with their children for education and entertainment and monitor their school performance via apps. It is standardized to have a mean of 0 and standard deviation of 1 in the control group. *Self-Efficacy* captures participants’ confidence in guiding their children’s digital behavior, including ensuring age-appropriate content, managing screen time, and finding online educational resources. This variable is standardized similarly to Engagement. *Digital Identity* is a binary indicator equal to 1 if the participant has an Italian public digital identity (SPID) and has used it autonomously in the past five months. *Public Tools* measures the number of public digital services the participant has accessed in the past five months, including social security, tax payments, health services, and child-related services. The variable ranges from 0 to 4. *New Application* is a binary indicator equal to 1 if the participant submitted at least one new application for an income support measure in the past five months. <sup>+</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

**Table A83: Labor Market Engagement**

|                              | (1)               | (2)               | (3)                       | (4)                     |
|------------------------------|-------------------|-------------------|---------------------------|-------------------------|
|                              | Current Behavior  |                   | Future Expectations       |                         |
|                              | Openness<br>[0,1] | Effort<br>[0,1]   | Pr. Employment<br>[0,100] | Pr. Training<br>[0,100] |
| Assigned T1                  | -0.085<br>(0.057) | -0.057<br>(0.062) | 6.441<br>(4.648)          | 23.209**<br>(5.006)     |
| Assigned T2                  | -0.047<br>(0.051) | -0.117<br>(0.073) | 6.660<br>(5.326)          | 11.620*<br>(5.685)      |
| Young Children               | -0.151<br>(0.191) | -0.278<br>(0.190) | 11.322<br>(15.184)        | 25.559*<br>(10.917)     |
| Assigned T1 × Young Children | 0.074<br>(0.073)  | 0.099<br>(0.090)  | 1.349<br>(5.995)          | -2.043<br>(5.302)       |
| Assigned T2 × Young Children | 0.050<br>(0.078)  | 0.088<br>(0.093)  | -2.314<br>(6.434)         | 5.524<br>(5.467)        |
| Strata FE                    | ✓                 | ✓                 | ✓                         | ✓                       |
| Lag Dep. Var.                | ✓                 |                   | ✓                         | ✓                       |
| N                            | 754               | 754               | 754                       | 754                     |
| adjR <sup>2</sup>            | 0.022             | 0.030             | 0.032                     | 0.090                   |
| T2-T1                        | 0.038             | -0.060            | 0.219                     | -11.589                 |
| p-val(T2-T1)                 | 0.518             | 0.381             | 0.966                     | 0.074                   |
| T1 + Interaction             | -0.011            | 0.042             | 7.790                     | 21.166                  |
| p-val(T1 + Interaction)      | 0.835             | 0.460             | 0.106                     | 0.000                   |
| T2 +Interaction              | 0.003             | -0.028            | 4.346                     | 17.143                  |
| p-val(T2 + Interaction)      | 0.957             | 0.602             | 0.345                     | 0.003                   |
| Mean C                       | 0.750             | 0.511             | 50.771                    | 31.697                  |
| Sd C                         | 0.434             | 0.501             | 32.659                    | 29.868                  |

Notes: The heterogeneity analysis investigates the effects of having a child under the age of 6 at baseline, based on treatment groups. The interaction terms, “Assigned T1 × Young Children” and “Assigned T2 × Young Children”, show how the treatment effect vary depending on the presence of a young child. The variable “Young Children” takes the value 1 if, at baseline, there is at least one child in the household younger than six years old. Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*Openness*, *Pr. Employment*, *Pr. Training*). Standard errors are clustered at the class level. The variable *Openness* is a binary indicator equal to 1 if the participant is employed, actively seeking employment, or willing to work despite not currently looking. *Effort* is a binary indicator equal to 1 if the participant engaged in activities to improve their labor market status, including updating their CV, consulting an employment service, or enrolling in a training program. *Perceived Probability of Employment* measures participants’ self-reported likelihood (0-100) of being employed in 12 months. *Perceived Probability of Training* captures participants’ self-reported likelihood (0-100) of enrolling in a skills development or training program in the next 12 months. <sup>+</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

## E.10.8 Heterogeneity by Employment

**Table A84:** Technology Adoption & Digital Skills

|                         | (1)                 | (2)                | (3)                  | (4)                | (5)                |
|-------------------------|---------------------|--------------------|----------------------|--------------------|--------------------|
|                         | Technology adoption |                    |                      |                    | Digital skills     |
|                         | Tablet<br>[0,1]     | Devices<br>[N]     | Participant<br>[0,6] | Children<br>[0,5]  | DSI<br>[1,6]       |
| Assigned T1             | 0.633**<br>(0.040)  | 0.684**<br>(0.076) | 2.748**<br>(0.226)   | 1.962**<br>(0.181) | 0.627**<br>(0.146) |
| Assigned T2             | 0.650**<br>(0.037)  | 0.797**<br>(0.090) | 2.864**<br>(0.229)   | 1.985**<br>(0.188) | 0.845**<br>(0.128) |
| Employed                | -0.039<br>(0.059)   | 0.027<br>(0.105)   | 0.257<br>(0.362)     | 0.268<br>(0.335)   | -0.060<br>(0.160)  |
| Assigned T1 × Employed  | -0.015<br>(0.081)   | -0.127<br>(0.152)  | -0.575<br>(0.565)    | -0.404<br>(0.449)  | 0.382<br>(0.250)   |
| Assigned T2 × Employed  | -0.005<br>(0.071)   | -0.016<br>(0.160)  | -0.756<br>(0.487)    | -0.549<br>(0.442)  | -0.179<br>(0.259)  |
| Strata FE               | ✓                   | ✓                  | ✓                    | ✓                  | ✓                  |
| Lag Dep. Var.           | ✓                   | ✓                  |                      |                    | ✓                  |
| N                       | 754                 | 754                | 754                  | 754                | 754                |
| adjR <sup>2</sup>       | 0.447               | 0.302              | 0.283                | 0.246              | 0.204              |
| T2-T1                   | 0.016               | 0.113              | 0.115                | 0.023              | 0.218              |
| p-val(T2-T1)            | 0.607               | 0.231              | 0.634                | 0.896              | 0.168              |
| T1 + Interaction        | 0.618               | 0.557              | 2.174                | 1.558              | 1.010              |
| p-val(T1 + Interaction) | 0.000               | 0.000              | 0.000                | 0.000              | 0.000              |
| T2 +Interaction         | 0.645               | 0.781              | 2.107                | 1.435              | 0.667              |
| p-val(T2 + Interaction) | 0.000               | 0.000              | 0.000                | 0.000              | 0.007              |
| Mean C                  | 0.257               | 0.574              | 1.271                | 1.454              | 3.824              |
| Sd C                    | 0.438               | 0.805              | 2.087                | 1.942              | 1.344              |

**Notes:** The heterogeneity analysis explores the effects of being employed at baseline based on treatment groups. The interaction terms, “Assigned T1 × Employed” and “Assigned T2 × Employed”, show how the treatment effect varies depending on employment status. The variable “Employed” takes value 1 if the respondent is employed at baseline. Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*Tablet*, *Devices*, and *DSI*). Standard errors are clustered at the class level. The variable *Tablet* is a categorical variable. *Devices* is the total number of tablets and computers available at home. *Participant* measures the frequency of computer or tablet use by the participant, ranging from 0 (never) to 6 (several times a day). *Children* captures the average frequency with which up to two children use a computer or tablet at home, measured on a scale from 0 (never) to 5 (every day). *DSI* represents the Digital Skills Indicator, a composite index ranging from 1 (no skills) to 6 (above basic skills). <sup>+</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

**Table A85: Digital Parenting & Social Inclusion**

|                         | (1)                     | (2)                        | (3)                       | (4)                   | (5)                      |
|-------------------------|-------------------------|----------------------------|---------------------------|-----------------------|--------------------------|
|                         | Digital Parenting       |                            | Social Inclusion          |                       |                          |
|                         | Engagement<br>[Z-score] | Self Efficacy<br>[Z-score] | Digital Identity<br>[0,1] | Public Tools<br>[0,4] | New Application<br>[0,1] |
| Assigned T1             | 0.415**<br>(0.133)      | 0.565**<br>(0.125)         | 0.182**<br>(0.055)        | 0.747**<br>(0.214)    | 0.121**<br>(0.045)       |
| Assigned T2             | 0.306**<br>(0.100)      | 0.655**<br>(0.107)         | 0.240**<br>(0.045)        | 0.743**<br>(0.172)    | 0.041<br>(0.037)         |
| Employed                | -0.043<br>(0.110)       | 0.042<br>(0.136)           | 0.139*<br>(0.054)         | 0.288<br>(0.226)      | -0.049<br>(0.043)        |
| Assigned T1 × Employed  | -0.057<br>(0.185)       | -0.012<br>(0.209)          | -0.107<br>(0.117)         | -0.434<br>(0.463)     | 0.016<br>(0.104)         |
| Assigned T2 × Employed  | -0.167<br>(0.183)       | -0.050<br>(0.163)          | -0.048<br>(0.075)         | 0.124<br>(0.389)      | 0.035<br>(0.086)         |
| Strata FE               | ✓                       | ✓                          | ✓                         | ✓                     | ✓                        |
| Lag Dep. Var.           |                         |                            |                           |                       | ✓                        |
| N                       | 754                     | 754                        | 754                       | 754                   | 754                      |
| adjR <sup>2</sup>       | 0.093                   | 0.168                      | 0.154                     | 0.151                 | 0.074                    |
| T2-T1                   | -0.110                  | 0.089                      | 0.058                     | -0.003                | -0.081                   |
| p-val(T2-T1)            | 0.426                   | 0.494                      | 0.291                     | 0.988                 | 0.129                    |
| T1 + Interaction        | 0.359                   | 0.553                      | 0.074                     | 0.313                 | 0.137                    |
| p-val(T1 + Interaction) | 0.033                   | 0.002                      | 0.479                     | 0.465                 | 0.131                    |
| T2 +Interaction         | 0.138                   | 0.605                      | 0.191                     | 0.867                 | 0.076                    |
| p-val(T2 + Interaction) | 0.365                   | 0.000                      | 0.004                     | 0.018                 | 0.318                    |
| Mean C                  | 0.000                   | 0.000                      | 0.356                     | 0.891                 | 0.137                    |
| Sd C                    | 1.000                   | 1.000                      | 0.480                     | 1.506                 | 0.345                    |

**Notes:** The heterogeneity analysis explores the effects of being employed at baseline based on treatment groups. The interaction terms, “Assigned T1 × Employed” and “Assigned T2 × Employed”, show how the treatment effect varies depending on employment status. The variable “Employed” takes value 1 if the respondent is employed at baseline. Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*New Application*). Standard errors are clustered at the class level. The variable *Engagement* measures how frequently participants use digital tools with their children for education and entertainment and monitor their school performance via apps. It is standardized to have a mean of 0 and standard deviation of 1 in the control group. *Self-Efficacy* captures participants’ confidence in guiding their children’s digital behavior, including ensuring age-appropriate content, managing screen time, and finding online educational resources. This variable is standardized similarly to Engagement. *Digital Identity* is a binary indicator equal to 1 if the participant has an Italian public digital identity (SPID) and has used it autonomously in the past five months. *Public Tools* measures the number of public digital services the participant has accessed in the past five months, including social security, tax payments, health services, and child-related services. The variable ranges from 0 to 4. *New Application* is a binary indicator equal to 1 if the participant submitted at least one new application for an income support measure in the past five months. <sup>+</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

**Table A86: Labor Market Engagement**

|                         | (1)                | (2)               | (3)                           | (4)                     |
|-------------------------|--------------------|-------------------|-------------------------------|-------------------------|
|                         | Current Behavior   |                   | Future Expectations           |                         |
|                         | Openness<br>[0,1]  | Effort<br>[0,1]   | Pr. Employment<br>[0,100]     | Pr. Training<br>[0,100] |
| Assigned T1             | -0.047<br>(0.042)  | -0.015<br>(0.049) | 6.941 <sup>+</sup><br>(3.809) | 21.971**<br>(5.811)     |
| Assigned T2             | -0.002<br>(0.036)  | -0.070<br>(0.048) | 7.957*<br>(3.796)             | 18.511**<br>(5.080)     |
| Employed                | 0.127**<br>(0.040) | -0.088<br>(0.061) | 24.644**<br>(4.373)           | 4.844<br>(4.702)        |
| Assigned T1 × Employed  | -0.005<br>(0.074)  | 0.060<br>(0.104)  | -1.814<br>(7.261)             | 0.056<br>(7.720)        |
| Assigned T2 × Employed  | -0.032<br>(0.060)  | 0.005<br>(0.101)  | -5.308<br>(6.724)             | -20.556*<br>(8.099)     |
| Strata FE               | ✓                  | ✓                 | ✓                             | ✓                       |
| Lag Dep. Var.           | ✓                  |                   | ✓                             | ✓                       |
| N                       | 754                | 754               | 754                           | 754                     |
| adjR <sup>2</sup>       | 0.199              | 0.030             | 0.145                         | 0.094                   |
| T2-T1                   | 0.045              | -0.056            | 1.017                         | -3.461                  |
| p-val(T2-T1)            | 0.282              | 0.257             | 0.817                         | 0.623                   |
| T1 + Interaction        | -0.051             | 0.046             | 5.127                         | 22.027                  |
| p-val(T1 + Interaction) | 0.377              | 0.581             | 0.393                         | 0.000                   |
| T2 + Interaction        | -0.034             | -0.065            | 2.649                         | -2.045                  |
| p-val(T2 + Interaction) | 0.447              | 0.481             | 0.653                         | 0.806                   |
| Mean C                  | 0.750              | 0.511             | 50.771                        | 31.697                  |
| Sd C                    | 0.434              | 0.501             | 32.659                        | 29.868                  |

Notes: The heterogeneity analysis explores the effects of being employed at baseline based on treatment groups. The interaction terms, “Assigned T1 × Employed” and “Assigned T2 × Employed”, show how the treatment effect varies depending on employment status. The variable “Employed” takes value 1 if the respondent is employed at baseline. Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*Openness*, *Pr. Employment*, *Pr. Training*). Standard errors are clustered at the class level. The variable *Openness* is a binary indicator equal to 1 if the participant is employed, actively seeking employment, or willing to work despite not currently looking. *Effort* is a binary indicator equal to 1 if the participant engaged in activities to improve their labor market status, including updating their CV, consulting an employment service, or enrolling in a training program. *Perceived Probability of Employment* measures participants’ self-reported likelihood (0-100) of being employed in 12 months. *Perceived Probability of Training* captures participants’ self-reported likelihood (0-100) of enrolling in a skills development or training program in the next 12 months. <sup>+</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

### E.10.9 Heterogeneity by parental involvement at baseline

**Table A87: Technology Adoption & Digital Skills**

|                                 | (1)                 | (2)                | (3)                  | (4)                | (5)                |
|---------------------------------|---------------------|--------------------|----------------------|--------------------|--------------------|
|                                 | Technology adoption |                    |                      | Digital skills     |                    |
|                                 | Tablet<br>[0,1]     | Devices<br>[N]     | Participant<br>[0,6] | Children<br>[0,5]  | DSI<br>[1,6]       |
| Assigned T1                     | 0.680**<br>(0.051)  | 0.645**<br>(0.114) | 2.694**<br>(0.322)   | 1.779**<br>(0.235) | 0.752**<br>(0.173) |
| Assigned T2                     | 0.695**<br>(0.051)  | 0.906**<br>(0.114) | 2.577**<br>(0.343)   | 1.977**<br>(0.274) | 0.836**<br>(0.207) |
| School Engagement               | 0.091+<br>(0.048)   | 0.006<br>(0.103)   | 0.165<br>(0.317)     | -0.132<br>(0.254)  | 0.390*<br>(0.157)  |
| Assigned T1 × School Engagement | -0.087<br>(0.065)   | 0.077<br>(0.147)   | -0.121<br>(0.406)    | 0.162<br>(0.318)   | -0.073<br>(0.188)  |
| Assigned T2 × School Engagement | -0.077<br>(0.060)   | -0.150<br>(0.139)  | 0.219<br>(0.406)     | -0.164<br>(0.340)  | -0.040<br>(0.244)  |
| Strata FE                       | ✓                   | ✓                  | ✓                    | ✓                  | ✓                  |
| Lag Dep. Var.                   | ✓                   | ✓                  |                      |                    | ✓                  |
| N                               | 754                 | 754                | 754                  | 754                | 754                |
| adjR <sup>2</sup>               | 0.437               | 0.242              | 0.281                | 0.246              | 0.207              |
| T2-T1                           | 0.015               | 0.261              | -0.117               | 0.198              | 0.084              |
| p-val(T2-T1)                    | 0.763               | 0.030              | 0.726                | 0.378              | 0.688              |
| T1 + Interaction                | 0.593               | 0.722              | 2.573                | 1.941              | 0.679              |
| p-val(T1 + Interaction)         | 0.000               | 0.000              | 0.000                | 0.000              | 0.000              |
| T2 +Interaction                 | 0.618               | 0.756              | 2.795                | 1.813              | 0.795              |
| p-val(T2 + Interaction)         | 0.000               | 0.000              | 0.000                | 0.000              | 0.000              |
| Mean C                          | 0.257               | 0.574              | 1.271                | 1.454              | 3.824              |
| Sd C                            | 0.438               | 0.805              | 2.087                | 1.942              | 1.344              |

**Notes:** The heterogeneity analysis explores the effects of parental engagement with their children in school-related activities at baseline based on treatment groups. The interaction terms, “Assigned T1 × School Engagement” and “Assigned T2 × School Engagement”, show how the treatment effect varies depending on the parental involvement. The variable “School Engagement” takes value 1 if the respondent engages with their children in school-related activities at baseline. Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*Tablet*, *Devices*, and *DSI*). Standard errors are clustered at the class level. The variable *Tablet* is a categorical variable. *Devices* is the total number of tablets and computers available at home. *Participant* measures the frequency of computer or tablet use by the participant, ranging from 0 (never) to 6 (several times a day). *Children* captures the average frequency with which up to two children use a computer or tablet at home, measured on a scale from 0 (never) to 5 (every day). *DSI* represents the Digital Skills Indicator, a composite index ranging from 1 (no skills) to 6 (above basic skills). +  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

**Table A88: Digital Parenting & Social Inclusion**

|                                 | (1)                     | (2)                        | (3)                       | (4)                   | (5)                      |
|---------------------------------|-------------------------|----------------------------|---------------------------|-----------------------|--------------------------|
|                                 | Digital Parenting       |                            | Social Inclusion          |                       |                          |
|                                 | Engagement<br>[Z-score] | Self Efficacy<br>[Z-score] | Digital Identity<br>[0,1] | Public Tools<br>[0,4] | New Application<br>[0,1] |
| Assigned T1                     | 0.430*                  | 0.529**                    | 0.183**                   | 0.599**               | 0.109*                   |
|                                 | (0.167)                 | (0.142)                    | (0.061)                   | (0.228)               | (0.054)                  |
| Assigned T2                     | 0.319 <sup>+</sup>      | 0.604**                    | 0.228**                   | 0.603*                | 0.070                    |
|                                 | (0.165)                 | (0.151)                    | (0.065)                   | (0.247)               | (0.055)                  |
| School Engagement               | 0.170                   | 0.217 <sup>+</sup>         | 0.157*                    | 0.355                 | -0.002                   |
|                                 | (0.125)                 | (0.129)                    | (0.064)                   | (0.215)               | (0.039)                  |
| Assigned T1 × School Engagement | -0.015                  | 0.045                      | -0.047                    | 0.066                 | 0.024                    |
|                                 | (0.178)                 | (0.164)                    | (0.079)                   | (0.274)               | (0.067)                  |
| Assigned T2 × School Engagement | -0.049                  | 0.059                      | -0.008                    | 0.241                 | -0.026                   |
|                                 | (0.199)                 | (0.162)                    | (0.084)                   | (0.361)               | (0.070)                  |
| Strata FE                       | ✓                       | ✓                          | ✓                         | ✓                     | ✓                        |
| Lag Dep. Var.                   |                         |                            |                           |                       | ✓                        |
| N                               | 754                     | 754                        | 754                       | 754                   | 754                      |
| adjR <sup>2</sup>               | 0.085                   | 0.183                      | 0.165                     | 0.162                 | 0.066                    |
| T2-T1                           | -0.111                  | 0.074                      | 0.045                     | 0.004                 | -0.039                   |
| p-val(T2-T1)                    | 0.587                   | 0.606                      | 0.504                     | 0.989                 | 0.556                    |
| T1 + Interaction                | 0.415                   | 0.574                      | 0.136                     | 0.665                 | 0.133                    |
| p-val(T1 + Interaction)         | 0.002                   | 0.000                      | 0.028                     | 0.006                 | 0.006                    |
| T2 +Interaction                 | 0.270                   | 0.663                      | 0.220                     | 0.844                 | 0.044                    |
| p-val(T2 + Interaction)         | 0.011                   | 0.000                      | 0.000                     | 0.000                 | 0.308                    |
| Mean C                          | 0.000                   | 0.000                      | 0.356                     | 0.891                 | 0.137                    |
| Sd C                            | 1.000                   | 1.000                      | 0.480                     | 1.506                 | 0.345                    |

**Notes:** The heterogeneity analysis explores the effects of parental engagement with their children in school-related activities at baseline based on treatment groups. The interaction terms, “Assigned T1 × School Engagement” and “Assigned T1 × School Engagement”, show how the treatment effect varies depending on the parental involvement. The variable “School Engagement” takes value 1 if the respondent engages with their children in school-related activities at baseline. Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*New Application*). Standard errors are clustered at the class level. The variable *Engagement* measures how frequently participants use digital tools with their children for education and entertainment and monitor their school performance via apps. It is standardized to have a mean of 0 and standard deviation of 1 in the control group. *Self-Efficacy* captures participants’ confidence in guiding their children’s digital behavior, including ensuring age-appropriate content, managing screen time, and finding online educational resources. This variable is standardized similarly to Engagement. *Digital Identity* is a binary indicator equal to 1 if the participant has an Italian public digital identity (SPID) and has used it autonomously in the past five months. *Public Tools* measures the number of public digital services the participant has accessed in the past five months, including social security, tax payments, health services, and child-related services. The variable ranges from 0 to 4. *New Application* is a binary indicator equal to 1 if the participant submitted at least one new application for an income support measure in the past five months. <sup>+</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

**Table A89: Labor Market Engagement**

|                                 | (1)               | (2)               | (3)                       | (4)                     |
|---------------------------------|-------------------|-------------------|---------------------------|-------------------------|
|                                 | Current Behavior  |                   | Future Expectations       |                         |
|                                 | Openness<br>[0,1] | Effort<br>[0,1]   | Pr. Employment<br>[0,100] | Pr. Training<br>[0,100] |
| Assigned T1                     | -0.057<br>(0.072) | -0.086<br>(0.071) | 4.444<br>(4.777)          | 21.252**<br>(4.684)     |
| Assigned T2                     | 0.049<br>(0.060)  | -0.011<br>(0.073) | 6.831<br>(5.496)          | 16.933**<br>(6.436)     |
| School Engagement               | 0.072<br>(0.054)  | 0.041<br>(0.066)  | 2.612<br>(4.320)          | -0.841<br>(3.971)       |
| Assigned T1 × School Engagement | 0.018<br>(0.084)  | 0.136<br>(0.092)  | 4.200<br>(5.714)          | 1.416<br>(6.646)        |
| Assigned T2 × School Engagement | -0.112<br>(0.076) | -0.092<br>(0.102) | -2.462<br>(7.007)         | -3.861<br>(7.854)       |
| Strata FE                       | ✓                 | ✓                 | ✓                         | ✓                       |
| Lag Dep. Var.                   | ✓                 |                   | ✓                         | ✓                       |
| N                               | 754               | 754               | 754                       | 754                     |
| adjR <sup>2</sup>               | 0.026             | 0.037             | 0.033                     | 0.085                   |
| T2-T1                           | 0.106             | 0.075             | 2.387                     | -4.319                  |
| p-val(T2-T1)                    | 0.121             | 0.338             | 0.634                     | 0.504                   |
| T1 + Interaction                | -0.039            | 0.050             | 8.644                     | 22.667                  |
| p-val(T1 + Interaction)         | 0.404             | 0.312             | 0.049                     | 0.001                   |
| T2 +Interaction                 | -0.063            | -0.103            | 4.369                     | 13.072                  |
| p-val(T2 + Interaction)         | 0.162             | 0.091             | 0.366                     | 0.038                   |
| Mean C                          | 0.750             | 0.511             | 50.771                    | 31.697                  |
| Sd C                            | 0.434             | 0.501             | 32.659                    | 29.868                  |

Notes: The heterogeneity analysis explores the effects of parental engagement with their children in school-related activities at baseline based on treatment groups. The interaction terms, “Assigned T1 × School Engagement” and “Assigned T1 × School Engagement”, show how the treatment effect varies depending on the parental involvement. The variable “School Engagement” takes value 1 if the respondent engages with their children in school-related activities at baseline. Each regression includes strata fixed effects and, where available, the lag of the dependent variable (*Openness*, *Pr. Employment*, *Pr. Training*). Standard errors are clustered at the class level. The variable *Openness* is a binary indicator equal to 1 if the participant is employed, actively seeking employment, or willing to work despite not currently looking. *Effort* is a binary indicator equal to 1 if the participant engaged in activities to improve their labor market status, including updating their CV, consulting an employment service, or enrolling in a training program. *Perceived Probability of Employment* measures participants’ self-reported likelihood (0-100) of being employed in 12 months. *Perceived Probability of Training* captures participants’ self-reported likelihood (0-100) of enrolling in a skills development or training program in the next 12 months. +  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

## E.11 Mediation Analysis: Details

This appendix provides further detail on the mediation analysis described in the main text. Given that the effects of the short (T1) and long (T2) training arms are substantively similar across most outcomes, we simplify the analysis by pooling them into a single general treatment indicator,  $T_{ic}$ . All models include strata fixed effects and cluster standard errors at the class level.

We investigate three main pathways: (1) technology adoption as a mediator between treatment and digital literacy; (2) digital literacy as a mediator between treatment and broader welfare outcomes; and (3) sequential mediation where treatment affects welfare outcomes via technology adoption and then digital literacy. For each case, we decompose the total treatment effect into direct and indirect components, following the framework of [Imai et al. \(2010\)](#), [Heckman and Pinto \(2015\)](#) and [Daniel et al. \(2015\)](#).

**Technology adoption as a mediator between treatment and digital literacy.** We begin by examining whether the effect of the treatment on digital literacy is mediated by technology adoption. Let  $A_{ic}$  denote technology adoption, measured either by tablet ownership or the number of digital devices in the household. The outcome of interest is  $DSI_{ic}$ , a composite index of digital skills.

We first estimate the total effect of treatment on digital literacy:

$$DSI_{ic} = \alpha + \beta T_{ic} + \gamma DSI_{ic}^0 + \delta_s + \epsilon_{ic}$$

Next, we estimate the effect of treatment on the mediator:

$$A_{ic} = \alpha_A + \beta_A T_{ic} + \delta_{sA} + \epsilon_{ic}^A$$

Finally, we include the mediator in the outcome equation to estimate the direct effect of the treatment:

$$DSI_{ic} = \alpha_D + \beta_D T_{ic} + \theta_A A_{ic} + \theta_{TA}(T_{ic} \times A_{ic}) + \gamma_D DSI_{ic}^0 + \delta_{sD} + \epsilon_{ic}^D$$

This specification allows us to separate the effect of treatment that operates through technology adoption (the indirect effect) from the remaining direct effect. Interaction terms allow for differential returns to adoption by treatment status.

**Digital literacy as a mediator between treatment and broader welfare outcomes.** We next assess whether the effects of the treatment on various welfare outcomes—denoted  $Y_{ic}$ —are mediated by improvements in digital literacy. The structure of the analysis mirrors the previous case.

The total effect of treatment on a welfare outcome is estimated as:

$$Y_{ic} = \alpha + \beta T_{ic} + \delta_s + \epsilon_{ic}$$

Then we model the effect of treatment on the mediator:

$$DSI_{ic} = \alpha_D + \beta_D T_{ic} + \gamma_D DSI_{ic}^0 + \delta_{sD} + \epsilon_{ic}^D$$

Finally, the mediator is included in the outcome equation:

$$Y_{ic} = \alpha_Y + \beta_Y T_{ic} + \theta_D DSI_{ic} + \theta_{TD}(T_{ic} \times DSI_{ic}) + \delta_{sY} + \epsilon_{ic}^Y$$

This model isolates the indirect effect of treatment on welfare outcomes through digital literacy, with interaction terms capturing heterogeneity in the effects of skills by treatment group.

**Sequential mediation.** We conclude by estimating a sequential mediation model to identify and quantify the distinct causal pathways through which the treatment ( $T$ ) affects key economic outcomes ( $Y$ ) via two linked mediators: technology adoption ( $M1 = A_{ic}$ ) and digital skills ( $M2 = DSI_{ic}$ ). This structure reflects the intuition that digital skills can only be developed once participants have access to technology. The goal is to decompose the total treatment effect into the following four components:

$$\text{Total Effect} = \text{Direct} + \text{Ind. M1 only} + \text{Ind. M2 only} + \text{Ind. M1 and M2}$$

where the direct effect captures the portion of the treatment effect that is not mediated by either  $M1$  or  $M2$ , the indirect effect through  $M1$  only reflects the pathway  $T \rightarrow A \rightarrow Y$ , bypassing digital skills, the indirect effect through  $M2$  only reflects the pathway  $T \rightarrow DSI \rightarrow Y$ , bypassing technology access, and the sequential indirect effect through  $M1$  and  $M2$  corresponds to  $T \rightarrow A \rightarrow DSI \rightarrow Y$ .

We begin by estimating the total (intent-to-treat) effect of the treatment on the outcome:

$$Y_{ic} = \alpha + \beta T_{ic} + \delta_s + \epsilon_{ic}$$

We then model the first-stage mediator (technology adoption):

$$A_{ic} = \alpha_A + \beta_A T_{ic} + \delta_{sA} + \epsilon_{ic}^A$$

Next, we estimate the second-stage mediator (digital skills) as a function of both treatment and technology access:

$$DSI_{ic} = \alpha_D + \beta_D T_{ic} + \theta_A A_{ic} + \delta_{sD} + \epsilon_{ic}^D$$

Finally, the outcome equation includes both mediators:

$$Y_{ic} = \alpha_Y + \beta_Y T_{ic} + \theta_D DSI_{ic} + \theta_A A_{ic} + \delta_{sY} + \epsilon_{ic}^Y$$

This specification allows us to disentangle the direct and indirect components of the total treatment effect.