Italian Sociological Review
ISSN 2239-8589
DOI: 10.13136/isr.v14i10S.726 2024, 14(10S), pp. 697 – 719

The Uses of Digital Technologies in Schools. A Bourdieusian Analysis of Upper-Secondary School Teachers and Students in Rome*

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Abstract

Drawing on Bourdieu's (1979, 1984) habitus theory, this paper analyses the complex relationship between the use of digital technologies in schools and the reproduction of educational inequalities, through research based on two online surveys administered to students and teachers of 20 upper-secondary schools in Rome.

Among the main findings of the research is the "complicity" between the habitus and cultural capital of individual agents and the way in which the educational field reproduces organisational principles of social division of labour. In particular, alongside the persistent lack of familiarity with digital technologies seen in women, even among teachers, the results of the surveys pointed towards the tendency of students from middle-class backgrounds and schools to employ a more critical use of digital technologies in class, compared to those of the working-class. However, it is important to note that a number of teachers in vocational institutions, some of whom from a working-class background, are inclined towards a more selective and equally critical use of technologies. The presence of this minority of teachers could partly mitigate the reproduction of educational inequalities due to social origin.

Keywords: habitus, educational field, digital technologies.

* For evaluation purposes, it is specified that the paragraphs have been written by: Fiorenzo Parziale (paras. 1 and 5), Michela Cavagnuolo (paras. 3 and 4) and Alfredo Matrella (para. 2).

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Received: 03 October 2023
Accepted: 23 November 2023
Published: 26 July 2024

1. The use of digital technologies at school in the Bourdieusian perspective

In this article we present a selection of the results of research carried out involving teachers and students in twenty upper-secondary schools in Rome.

Compared to the broader research project, the aim of our analysis here is twofold: first, to classify the uses of digital technologies in schools; and second, to analyse the link between this classification and certain mechanisms than can reproduce educational inequalities due to social origin and gender, especially regarding "educational attainment" (Reay, 2018; Heisig et al., 2020).

This type of analysis can be begun by considering the population of students and in particular the intersection between traditional social, including educational, inequalities, and the use of digital technologies (Lupton, 2014; Couldry, 2015).

Digital inequalities are in fact known to concern mainly the way in which technologies are used, although a worrying inequality of access to computers and the Internet persists, as was observed recently during the pandemic (Blaskó et al., 2022).

Overall, it can be observed that young people with high cultural capital seem to use the Internet and ICT in a way that strengthens their knowledge and social networks (DiMaggio et al., 2004; Hargittai & Hinnant, 2008). On the contrary, especially following the diffusion of smartphones (Turkle, 2012), young people from working-class backgrounds are inclined towards an over-consumption of digital technologies. In these cases, young people tend to use technologies for playing games rather than as an educational tool. This trend is detrimental to disadvantaged students, as it further weakens their already poor ability to pay attention during lessons (Gui, 2019). Thus, a vicious circle is created between poor attention, low performance and further demotivation with regard to the propensity of students from certain disadvantaged backgrounds to continue their studies at university level.

The reason behind this is often rooted in the fact that young people tend to place greater importance on 'digital skills medium competence' rather than on 'digital skills content competence' (Van Deursen & Van Dijk, 2014).

Adults seem to be more sensitive to the latter, but also in this case, social background has been shown to have an important influence, especially in terms of the educational qualification they possess. Indeed, parents with a university education are, in general, better able to direct their children towards a critical and responsible use of new digital technologies, which is useful in promoting learning at school (Aroldi, 2012; Gui, 2019).

These social differences have a also been confirmed by studies on the evaluation of digital technologies. In Italy, for example, students in vocational

institutes, many of whom are from working-class backgrounds, seem to have a greater appreciation of the capacity of digital technologies to save them time; however, these students tend to have less perception of the risk of technologies pose as a source of distraction (Micheli, 2015). In other words, disadvantaged students - who tend to choose vocational schools that reduce the probability of them enrolling in university - would seem to be characterised by a less critical approach to new technologies.

It is also necessary to take into account the fact that European educational policies are based on a number of contradictory visions (Mayo, 2009, 2015). These contradictory visions stem from the complex relationship of the education system to the broader socio-economic order (Brint, 1998; Apple, 2012): over time, the democratisation process of the first three decades post-World War II has increased the autonomy of the school system and its capacity for critical identity formation (Apple, 2013; Parziale, 2020). However, in the last three decades there have been strong pressures from the capitalist system to strengthen the social selection of students by teachers, since this is functional to the capitalist division of labour (Ball, 2021).

Therefore, it cannot be not excluded that in vocational schools teachers are led to a more instrumental and specialised use of technology, which in some ways panders to the process of learnification, i.e. the reduction of education to technical training (Biesta, 2012), which, according to some scholars, is attributable to the hegemony of neoliberalism also in this field (van Dijck et al., 2018). We also have to consider that among both students and teachers, women seem to continue to be less familiar with new technologies: nonetheless, science and technology are highly significant both for inclusion in the workforce and social mobility, and women continue to show poor socialisation in these fields (Moss & Gunn, 2009; Becker, 2022).

This trend shows how the reversal of the gender education gap has occurred, without, however, affecting family and school socialisation dominated by mental categories pertaining to the male habitus (Bourdieu, 1998).

Based on these observations, the research illustrated here draws on the concepts of educational field, cultural capital and habitus, as proposed by Bourdieu (1979, 1984), to understand the differentiation in the uses of digital technologies due to social origin and gender.

2. Methodology

The research involved the administration of two online surveys, the first aimed at students in Rome attending the fifth year of secondary school in the

academic year 2021-2022 (n. 993) and the second aimed at their teachers (n. 196). The survey was carried out during the entire school year 2021/2022.

The sampling technique used for the students was a reasoned choice sampling (Corbetta, 2014). Twenty secondary schools in Rome were chosen initially, after which three fifth-year classes were then picked for each institute. All students in the classes chosen were interviewed (with a response rate of around 95%). The teachers of the three classes selected in each institute were then contacted, and the response rate was around 50%, although this varied greatly by institution. In fact, teachers from technical and vocational schools, who are presumably more interested in research on digital mediation at school, are over-represented. The twenty institutes selected were subsequently stratified by type of catchment area: 12 are located in areas of the city where the incidence of people with a working-class background should be higher than the city average (based on the socio-economic status index provided by the data of the municipalities of Rome); while the other 8 institutes are located in areas of the city where the presence of people from a middle-class background seems greater.

It was hypothesized that the variable concerning the catchment area of schools was a discriminating factor and added additional information other than the mere distinction of students and teachers by social origin. The results (see par. 3, 4) seem to partly confirm this hypothesis. The 20 selected institutes are 8 middle-class schools (MC) and 12 working-class schools (WC). Table 1 shows

the distribution of students and teachers by social composition and type of school.

The aim of this work was to identify the different profiles of teachers and students and to understand which characteristics, in terms of habitus and positioning in the school field, are associated with the type of use of digital technology in the classroom. Hence, for the purpose of the investigation, in order to examine the nonlinear relationships between the variables, we chose to use a multiple correspondence analysis (MCA) (Benzécri, 1973) - a technique also congenial to the Bourdieusian theoretical and epistemological approach (Bourdieu & Wacquant, 1992). For the realization of the MCA we selected as

active variables: *gender*, *social origin*[1], *family cultural capital*[2], *type of school*[3], *intensity of use*[4], *level of familiarity with digital mediation*[5] (Gui & Büchi, 2021), *basic use*[6], *specialist*

[1] Student sample: Upper-class (children of executives, professionals and entrepreneurs), Middle-class (children of clerks and teachers), Petit bourgeoisie (children of shopkeepers and artisans) Working-class (children of manual workers); teacher sample: Compared with the students' classification, Middle-class and Petit bourgeoisie were put together in "Middle-class".

[2] The family cultural capital was constructed from the parents' level of schooling. Specifically, in the sample of students: 'High level', if both parents are university graduates; 'Medium level', if one parent has a university degree or if both parents are high school graduates; 'Low level', when one parent has a high school degree and the other parent has a lower degree. In the sample of teachers: 'High level' if at least one parent has a university degree and the other parent is a high school graduate; 'Medium level' if both parents have a high school degree or if one has high school degree and the other parent is neither a university graduate nor a high school graduate; 'Low level' if one parent has at most a high school degree and the other lacks this qualification.

[3] For the MCA, also taking into account the different levels of prestige that classical and scientific high school enjoy in Italy, the decision was made to divide the institutes into: traditional high schools (classical and scientific), other high schools (less prestigious than the first ones) and technical-vocational institutes.

[4] For the student sample, this index (variance σ: 31.3%) is composed of the variables related to frequency of use (scale 0-10): slides, other digital materials (+.282); excel and other calculation programs (+.265); graphics programs (+.273); word processors (+.336); online video/streaming platforms (+.265); interactive games (+.132); artificial intelligence tools (+.143). For teachers, the index (variance: 31%) consists of variables on the frequency of use of: LIM (+.175); PC, tablet and netbook of school (+.144); private PC, tablet and netbook (+.072); private e-reader (+.108); slides, other digital materials (+.210); excel and other calculation programs (+.183); graphics programs (+.119); word processors (+.203); online video/streaming platforms (+.203); interactive games (+.127); speakers and stereos (+.186).

[5] Student sample: (σ 36.3%) Writing on the PC instead of with paper and pen is less tiring +.225 and more pleasant -0.260; reading digital texts compared to reading texts in paper format is more tiring +.296 and less pleasant -0.313; the study through the search for information and materials online instead of resorting to paper or digital books is more pleasant +.260 and less tiring -0.297. Teacher sample: (σ 59.5%) The lessons carried out with the use of digital technologies are more pleasant 0.346, easier -0.316; less strenuous -.329 and with greater possibilities of interaction with students -.304.

[6] Basic skills learned/taught (σ 49.2%, σ 55.7%): how to concretely use the PC and other IT devices (+.440, +.431), how to work in groups and interact with others through IT devices (+.463, +.446) and how to share documents/materials online (+.519, +.461).

use[7], *advanced use*[8] and *critical use* of digital[9] (Szyszka, Tomczyk & Kochanowicz, 2022). While as illustrative variables we selected: social composition of the institutes, average mark of the previous school year, *degree of use of traditional tools*[10], *degree of use of interactive tools*[11], *frequency of theoretical-conceptual activities carried out from home with digital*[12], *frequency of logical application activities carried out from home with digital*[13], *degree of favor for digital mediation in class*[14], *orientation towards*

[7] Computer skills learned/taught (σ 73.8%, σ 73.6%): how to use specific software (+.582, +.583), and how to use the computer programming language (+.582, +.583).
[8]Advanced skills taught/learned (σ 44.3%, σ 46.3%): how to avoid online dangers and fraud (+.365, +.355); how to avoid risks to physical and psychological health due to the incorrect or excessive use of digital technologies (+.337, 308), how to protect your privacy and reputation online (+.426, +.249) and how to express yourself correctly online, also respecting the other (+.368, +.246).
[9]Critical skills taught/learned: (σ 61.8%, σ 66.4%): how to select and evaluate the contents found on the net (+.636, +.609) and how to deepen material and/or topics covered in class through the use of digital (+.636, +.609).
[10] Frequency of use (σ 46.5%, σ 50.1%) slides, other digital materials (+.337, +.344), excel and other calculation programs (+.381, +.394), graphics programs (+.324, +.285), word processors (+.417, +.388).
[11]Frequency of use (σ 47.8%, σ 46.1%) social networks (+.518, +.390); intelligence tools artificial (+.490, 572) and interactive games (+.434,+.569).
[12]Only Student sample (σ 47.7%), Frequency: digital text editing +.227, online information search +.177, production of multimedia texts in Italian +.272, production of multimedia texts in foreign languages +.264, reading/listening to multimedia texts in Italian +.246, reading/listening to texts in foreign languages +.250.
[13] Only Student sample (σ 57.1%) Frequency: graphical representation of +.465 data, construction of concept maps and logical analysis of texts found on the net 0.437, calculation activities and resolution of mathematical problems through +.420 software.
[14]Student sample: (σ 54.7%) The lessons carried out with the use of the most engaging digital technologies +.297, the most interesting +.303; more interactive with classmates +.294 and more interactive with professors +.298; the study through the search for information and materials online instead of using paper or digital books is more in-depth +.291; Teacher sample: (σ 56.6%) agree with the following statements: "In fact, new digital technologies make an effective contribution to the success of the lesson" 0.280; "New digital technologies make lessons more cumbersome than you think" -0.249; "It is worth using new digital technologies as much as possible to make lessons more attractive to students" 0.274; "The use of new technologies facilitates the learning processes of today's students" 0.310; "The degree of effectiveness of the lessons, in terms of attention and learning ability of students, can be significantly reduced with the recurrent use in the classroom of teaching practices based on the use of digital technologies" -0.205.

learnification[15] (Biesta, 2012; Van Dijck et al., 2018) and *degree of connectivity in leisure time*[16].

Tab. 1 Distribution of students and teachers by social composition and type of school.

Students	*MC*	*WC*	Until.
High school	33% (333)	24% (236)	57% (569)
Technical and vocational school	9% (86)	34% (338)	43% (424)
Total	42% (419)	58% (574)	100% (993)
Teachers	*MC*	*WC*	Until.
High school	25% (48)	15% (30)	40% (78)
Technical and vocational school	9% (18)	51% (100)	60% (118)
Total	34% (66)	66% (130)	100% (196)

Indices highlighted in italics are those obtained with the analysis in principal components (Di Franco & Marradi, 2003): in the note corresponding to each index the variance reproduced and the factor score coefficient of the variables that compose it are reported in brackets.

The four factors extracted from the MCA were: "Diffusion of digital mediation at school" (for both samples) that reports the different degree of technology diffusion in the contexts analysed; the "Complicity between cultural capital and digital capital" (Hargittai & Hinnant, 2008) for the student sample, which indicates the degree of complicity between habitus and type of digital use; and finally, for the teacher sample, the "Familiarity and stance toward digital" (Van der Vlies, 2020; Vattøy et al., 2022), a factor it is believed shows the relationship between position and stance towards the use of technologies in

[15]Student sample: (σ 58.2%) The school should: give more space to practical knowledge, of the world of work, and less to theoretical training +.656, and feed the debate and collective reflection in the classroom, starting from in-depth readings and analyzes on books -.656; Teacher sample: (s 69.1%) The school should: strengthen students' reasoning and problem-solving skills +.311; develop students' relational and citizenship skills +.329, transmit professional skills useful to increase the chances of integration into the labor market by students +.242 and feed students the ability to critically reflect and decode social complexity +.312.

[16]Student sample: additive index: online connection frequency by smartphone, PC (fixed or portable), tablet, smart-tv, console. Index divided into two for the sample of teachers: 1. Extra-working use of digital for information and communication purposes (σ 54.5%) Frequency: Chat +.498, use social networks +.448 and search for information on the net for personal interests +.404), 2. Extra-working use of digital for consumption purposes (σ 58.2%) enjoy videos and music on streaming platforms +.441, watch movies / TV series on streaming platforms +.453 and use Apps and / or websites to make purchases +.404.

[16] MCA and cluster analysis in Spad; PCA and descriptive analysis in SPSS.

the classroom. After reading the factors and defining the semi-axes, we proceeded with the cluster analysis to extract the profiles of teachers and students. The precise description of the factors, axes and groups will be presented in the next paragraph.

3. Uses of digital by students

The two factors extracted reproduce 19.1% of inertia: the first 10.1% and the second 9%. The factor "Diffusion of digital mediation at school" (tab. 2) is characterized by a negative semi-axis labeled as "Low diffusion", while the positive axis shows "High diffusion". The two axes outline two opposing situations; the first, of a school context where technology is not used, the second, where it is particularly valued (Gui & Büchi, 2021).

Tab. 2 Diffusion of digital mediation at school.

Factor 1: Diffusion of digital mediation in schools (10.1%)			
Negative axis: Low diffusion			
Active categories		**Illustrative categories**	
Associated categories	**Test-Value**	**Associated categories**	**Test-Value**
Low level of specialist use	-19.5	Low level of use of traditional tools	-9.0
Low level of basic use	-11.6	Middle-class institutes	-8.8
Other high school	-11.5	Medium level of use of traditional tools	-6.3
Low intensity of use	-11.2	Low frequency of theoretical-conceptual activities	-6.0
Low level of critical use	-9.0	Low frequency of logical-applicative activities	-5.3
Women	-7.9	Low degree of use of interactive tools	-4.3
Low level of advanced use	-7.0	Average school grade in the previous year: 8	-3.5
Positive axis: High diffusion			
High critical use	9.0	Average mark previous year: 7	2.3
Medium level of specialist use	10.6	Average mark previous year: 6	3.5
Low cultural capital	10.8	High degree of use of interactive tools	4.7
High level of basic use	12.6	High frequency of logical-applicative activities	5.9
High intensity of use	14.8	High frequency of theoretical-conceptual activities	5.9
High level of specialist use	15.7	Working-class institutes	8.8
Technical and vocational institutes	16.2	High degree of use of traditional tools	14.5

The second factor (tab. 3), "Complicity between cultural capital and digital capital" (9%) (Hargittai & Hinnant, 2008) is characterized instead by a negative semi-axis called "Depleting digital use" and a positive semi-axis labeled

"Enriching digital use", since this produces the opposing combination of use of digital with respect to cultural capital and social class. In fact, according to Hargittai and Hinnant (2008), the theory of *capital enhancing*, is particularly useful in the reading of the two semi-axes: the negative semi-axis highlights a declining use of digital by the most disadvantaged classes, while the positive axis shows improved use by the upper-classes.

Tab. 3 Complicity between cultural capital and digital capital.

Factor 2: Complicity between cultural capital and digital capital (9%)			
Negative axis: Depleting digital use			
Active categories		**Illustrative categories**	
Associated categories	**Test-Value**	**Associated categories**	**Test-Value**
Low cultural capital	-16.1	Low degree of use of traditional tools	-5.3
Working-class	-14.8	Average mark previous year: 7	-4.7
Technical and vocational institutes	-12.7	Low frequency of theoretical-conceptual activities	-3.9
Low level of advanced use	-11.7	Average mark previous year: 7	-2.9
Low level of basic use	-9.2	Medium degree of connectivity in leisure time	-2.7
Low level of critical use	-9.2	Low degree of connectivity in leisure time	-2.7
Low intensity of use	-8.0	Middle orientation true learnification	-2.5
Positive axis: Enriching digital use			
Petit bourgeoisie	6.9	High frequency of logical-applicative activities	2.1
High level of basic use	9.1	Average frequency of theoretical-conceptual activities	2.2
Middle-class	9.7	Low degree of orientation towards learnification	4..0
Medium level of advanced use	11.7	High degree of connectivity in leisure time	4.8
High cultural capital	12.3	High degree of use of traditional instruments	5.3
High level of critical use	14.5	Average mark previous year: 9	5.9
Traditional high school	15.7		

After building the axes following the multiple correspondence analysis procedure, clusters were then extracted to reconstruct student profiles in relation to the use of digital technologies. The cluster analysis with four groups resulted in a ratio of 70%[17].

[17] With the same variables and the same number of clusters, the analysis of the teachers results in a ratio of 75%.

3.1 The marginals

This group comprises 22% of students, predominantly girls (70.7 %), who are marginal to digital innovation (no. 188) (tab. 4). In fact, examining the main reference values (t-value, % grp/cat and % cat/grp), it can be seen that the two categories that characterize the group are low cultural capital and working-class origin; the presence in the group of female students attending technical and vocational colleges is less pronounced, but is still highly significant. Members of this group make a low level of use of basic, specialist, advanced and critical digital skills; 70% attend working-class institutions and 38%make a low level use of traditional tools, while this is true for only 27% of the overall sample. Finally, those in this group use digital tools to a medium degreeduring leisure time.

Tab. 4 The marginals.

Test-value	GRP/CAT	CAT/GRP	GLOBAL	Characteristic categories
13.3	54.0	68.1	27.8	Low cultural capital
12.0	56.7	56.4	21.9	Working-class
8.4	35.9	69.7	42.8	Technical and vocational institutes
6.2	30.4	72.9	52.9	Low level of basic use
6.0	27.0	88.8	72.5	Low level of advanced use
5.5	33.0	52.7	35.2	Low intensity of use
4.1	28.2	62.2	48.7	Low critical use
3.8	26.5	70.7	58.7	Female
3.6	30.8	38.3	27.4	Low degree of use of traditional tools
3.2	25.8	69.7	59.6	Working-class institutes
3.1	24.6	83.5	74.8	Low level of specialist use
2.9	28.4	39.9	30.9	Medium degree of connectivity in leisure time

3.2 The technicians

The second group is made up of 19.3% of cases (165) (tab. 5); this group was named "the technical experts", since it is mainly characterized by students who reported a high level of specialist use of digital technologies. In fact, of the total number of students who make a high level of specialist use of digital (about 10%), about 68% are in this group, that is also characterized by the presence of students attending technical and vocational institutes (89.1%). The students of this group are predominantly male (62.4%), use the internet frequently in class, both with traditional and interactive tools, have a high level of familiarity with digital and are highly favorable towards the use of technologies in the classroom. This group carry out both theoretical-conceptual and logical-

applicative activities intensively using digital means and belong mostly to the petit bourgeoisie and working-class with low cultural capital.

Tab. 5 The technicians.

Test-value	GRP/CAT	CAT/GRP	GLOBAL	Characteristic categories
13.7	40.3	89.1	42.8	Technical and vocational institutes
10.3	67.9	34.5	9.8	High level of specialist use
9.8	36.6	72.1	38.1	High level use of traditional tools
9.8	41.1	61.8	29.1	High intensity of use
9.0	51.1	40.6	15.4	Medium level of specialist use
8.0	41.1	47.3	22.3	High level of basic use
7.0	35.4	50.9	27.8	Low cultural capital
6.1	42.5	29.1	13.2	Petit bourgeoisie
6.0	29.3	62.4	41.3	Male
4.0	23.8	73.3	59.6	Working-class institute
3.8	28.0	40.0	27.7	High frequency of logical-applicative activities
3.5	28.9	32.7	21.9	Working-class
3.5	29.7	29.7	19.3	High degree of use of interactive tools
3.5	34.4	18.8	10.6	Average school grade in the previous year: 6
2.8	26.1	35.2	26.0	High frequency of theoretical-conceptual activities
2.8	24.7	44.8	35.2	High level of familiarity
2.7	26.9	29.7	21.3	High level of critical use
2.3	23.7	44.8	36.6	High degree of favor to the digital lesson

3.3 The critical users

The third group consists of 19.9% of cases (170) (tab. 6). This group, nominated "the critical users", is characterized by the highly critical use of digital made by male students of traditional high schools. The students of this group have a high cultural capital and make frequent use of digital technologies, but generally stop at an average level of skills before reaching the critical or advanced sphere of use, and in any case demonstrate what can be referred to as a "careful use of digital". In fact, this category includes specific competences concerning the use of the network such as: avoiding certain dangers (e.g. protecting one's privacy and avoiding fraud) and increasing one's resources (e.g. building a digital identity). In addition, the students in this cluster are represented by a high level of basic use. The students in this group have high school grades, a low orientation towards learnification, make frequent use of digital media in their leisure time and perform theoretical-conceptual activities with high frequency when completing homework assignments.

Tab. 6 The critics.

Test-value	GRP/CAT	CAT/GRP	GLOBAL	Characteristic categories
13.0	57.1	61.2	21.3	High level of critical use
10.1	40.6	66.5	32.6	Traditional high school
9.8	43.0	59.4	27.5	Medium level of advanced use
7.5	40.5	45.3	22.3	High level of basic use
5.3	34.8	37.1	21.2	High cultural capital
4.7	28.3	54.1	38.1	High level of use of traditional tools
4.6	30.2	44.1	29.1	High intensity of use
4.3	27.0	57.1	42.1	Middle-class
3.5	25.9	53.5	41.3	Male
3.2	30.9	24.7	15.9	Average school grade in the previous year: 9
3.0	26.1	43.5	33.3	Low orientation towards learnification
2.8	24.3	55.9	45.8	High level of connectivity in leisure time
2.8	27.3	31.2	22.7	Upper-class
2.4	25.7	33.5	26.0	High frequency of theoretical-conceptual activities

3.4 The resisters

The last group consists of 38.7% of cases (330) (tab. 7). Similar to the first group, this group is characterized by a less frequent use of the internet compared to the three types presented above, but the fundamental difference is traceable to their cultural capital and social origin. In fact, compared to the first group, in this group the scarce use of technologies concerns girls belonging to the upper-class and with a high-medium cultural capital: these students attend less traditional high schools. In this cluster, the less frequent use of digital technologies seems to originate not from scarce access due to the low cultural capital (as in the first group) in addition to social origin, but to a general lack of interest in this area, possibly due to the school path chosen. This group has therefore been defined as "the resisters".

To sum up, the students' use of technology differs on the basis of their school track and social background. In fact, working-class women who attend vocational institutes use technology very rarely (the marginals), especially if they attend institutes located in working-class neighborhoods.

The same situation is found in the fourth group (the resisters), despite their high cultural capital and belonging to the upper-class.

On the contrary, working-class students with low cultural capital make intensive use of technologies, especially if they attend technical schools in working-class neighborhoods. Nevertheless, their use of technologies is less critical than that of middle-class male students.

Tab. 7 The resisters.

Test-value	GRP/CAT	CAT/GRP	GLOBAL	Characteristic categories
12.6	49.8	96.4	74.8	Low level of specialist use
8.8	64.8	41.2	24.6	Other high school
7.6	54.2	56.7	40.4	Middle-class institutes
7.5	50.6	69.1	52.9	Low level of basic use
7.2	51.1	64.2	48.7	Low level of critical use
6.8	49.9	65.8	51.0	Medium cultural capital
6.7	59.8	35.2	22.7	Upper-class
6.1	52.7	47.9	35.2	Low intensity of use
5.4	44.2	82.7	72.5	Low level of advanced use
5.1	48.7	53.0	42.1	Middle-class
5.0	55.2	30.3	21.2	High cultural capital
4.8	52.1	37.0	27.4	Low degree of use of traditional tools
4.7	45.3	68.8	58.7	Female
4.5	49.3	43.9	34.5	Medium degree of use of traditional tools
4.5	49.6	41.8	32.6	Traditional high school
3.8	46.4	49.1	40.9	Low frequency of logical-applicative activities
3.4	45.5	50.3	42.8	Low frequency of theoretical-conceptual activities
2.4	42.5	58.8	53.6	Low degree of use of interactive tools

Therefore, we can note the connection between use of digital technologies and position within the educational field (Bourdieu, 1994).

4. Uses of digital by teachers

The two factors extracted from the sample of teachers reproduce 22.8% of inertia: the first 13.5%, the second 9.3%. As for the student sample, the first factor (tab. 8), renamed "Diffusion of digital mediation at school" (Garneli et.al, 2015), is characterized by the negative semi-axis labeled as "High diffusion" and the positive axis labeled as "Low diffusion". Also in this case the two axes reveal differences between the various school contexts with respect to the use of technology (Hargittai & Hinnant 2008; Gui & Büchi, 2021).

The second factor (tab. 9) indicates "Familiarity and stance toward digital" (Vattøy et al., 2022). In this regard, the negative semi-axis defined as "Unfamiliarity and resistance" (Van der Vlies, 2020) is related to low familiarity and low favorability towards the use of digital, while the positive semi-axis "Familiarity and enthusiasm" describes those who are highly familiar and favorable. This factor allows us to deduce the different positions taken by teachers in terms of evaluation (degree of favorability) and use (intensity of use and familiarity) of digital technologies both in lessons and in their free time (McGarr & Johnston, 2020).

Tab. 8 Diffusion of digital mediation at school.

Factor 1: Diffusion of digital mediation at school (13.5%)			
Negative axis: High diffusion			
Active categories		**Illustrative categories**	
Associated categories	**Test-Value**	**Associated categories**	**Test-Value**
High level of basic use	-10.1	High degree of use of traditional tools	-6.0
Medium level of specialist use	-8.3	High degree of use of interactive tools	-3.8
High intensity of lessons	-5.9	High degree of use for relaxing during leisure time	-2.6
High level of advanced use	-5.8	Working-class institutes	-2.4
Male	-5.7		
High level of critical use	-5.3		
Technical and vocational institutes	-4.6		
High level of familiarity	-3.9		
Positive axis: Low diffusion			
Petit bourgeoisie	4.0	Middle-class institutes	2.4
Low level of advanced use	4.2	Low degree of use of interactive tools	2.4
Medium level of basic use	4.5	Low degree of use of traditional tools	4.4
Traditional high school	4.5		
Low level of basic use	4.9		
Female	5.7		
Low degree of favorability towards digital lessons	5.8		
Low level specialist use	8.3		

Tab. 9 "Familiarity and stance toward digital".

Factor 2: Familiarity and stance towards digital (9.3%)			
Negative axis: Unfamiliarity and resistance			
Active categories		**Illustrative categories**	
Associated categories	**Test-Value**	**Associated categories**	**Test-Value**
Low level of familiarity	-8.8	Low degree of use of traditional tools	-6.0
Low intensity of use	-7.1	Low degree of digital use for leisure consumption	-4.7
Low degree of favorability towards digital lessons	-6.0	Low orientation towards learnification	-3.6
Low level of basic use	-5.2		
High level of advanced use	-5.2		
Low cultural capital	-3.1		
Medium level of specialist use	-3.0		
Low level of critical use	-2.1		
Positive axis: Familiarity and enthusiasm			
Low level of specialist use	3.0	High orientation towards learnification	2.5
Low level of advanced use	3.0	High degree of use of digital for consumption in leisure time	3.1
Medium level of critical use	3.6	High degree of use of traditional tools	3.9
Medium level of familiarity	3.9		
High intensity of use	4.2		
High level of familiarity	5.3		
Medium level of basic use	5.6		
High degree of favorability towards digital lessons	7.1		

4.1 Neophytes and enthusiasts

One group consists of 38.3% of cases (tab. 10). This cluster is mainly characterized by female teachers (82.2%) from the upper-class (40.3%) with a low level of specialist use (88.7%). Those in this group make an average use of basic digital technologies, a low use of advanced digital applications, have a medium level of familiarity and a medium intensity of use. However, they have a high degree of favorability. In light of these considerations, this cluster was renamed the "Neophytes and enthusiasts", since it represents a portion of female teachers who are not very experienced in the use of digital technologies, but who are highly favorable to their use in the classroom.

Tab. 10 Neophytes and enthusiasts.

Test-value	GRP/CAT	CAT/GRP	GLOBAL	Characteristic categories
6.4	68.2	72.6	40.7	Basic level of medium use
4.4	62.5	56.5	34.6	Medium level of familiarity
4.4	49.5	88.7	68.5	Low level of specialist use
3.8	61.2	48.4	30.2	High degree of favorability towards digital lessons
3.4	62.5	40.3	24.7	Upper-class
2.6	45.1	82.3	69.8	Female
2.5	51.7	48.4	35.8	Medium intensity of use
2.4	49.3	56.5	43.8	Low level of advanced use

4.2 The resisters

The second group consists of 25.9% of cases (tab. 11). This cluster is mainly characterized by female teachers (85.7%), who show resistance towards technical-organizational changes in the school.

Tab. 11 The resisters.

Test-value	GRP/CAT	CAT/GRP	GLOBAL	Characteristic categories
7.7	75.0	71.4	24.7	Low degree of favor to the digital lesson
5.6	52.5	73.8	36.4	Low level of familiarity
5.0	55.6	59.5	27.8	Low intensity of use
4.5	51.0	59.5	30.2	Low degree of use of traditional tools
4.4	49.1	61.9	32.7	Low level of basic use
4.1	35.1	92.9	68.5	Low level of specialist use
2.9	54.5	28.6	13.6	Low level of critical use
2.8	40.7	52.4	33.3	Low degree of digital use for consumption in leisure time
2.5	31.9	85.7	69.8	Female

Moreover, more than 70% of the members of this group are characterized by a low level of familiarity and a lack of favorability towards using digital technologies in lessons. In fact, these teachers demonstrate poor use of digital technologies in all its forms, in particular almost all (93%) make low specialist use of digital technologies and more than 60% have a low level of use of even basic technology.

4.3 Intensive and enthusiastic users

The third group consists of 19.7% of cases (132) (tab. 12). This cluster is mainly characterized by teachers who use basic digital technology on a highly frequent basis (84.4%). The cases that fall into this group use digital intensively and have a high degree of familiarity with technology (72%). About 53% of the teachers in this group are highly favorable towards digital lessons, despite generally making only a basic level of use of technology. For these reasons, this cluster was redefined as: "Intensive and enthusiastic users".

Tab. 12 Intensive and enthusiastic users.

Test-value	GRP/CAT	CAT/GRP	GLOBAL	Characteristic categories
7.7	62.8	84.4	26.5	High level of basic use
5.5	48.9	71.9	29.0	High level of familiarity
4.4	39.0	71.9	36.4	High intensity of use
4.3	41.2	65.6	31.5	Medium level of specialist use
3.8	37.5	65.6	34.6	High degree of use of traditional tools
2.8	34.7	53.1	30.2	High degree of favorability towards digital lessons
2.8	34.7	53.1	30.2	Male
2.5	36.1	40.6	22.2	High degree of use of interactive tools

4.3 Selective and critical users

The last group, corresponding to 16% of the cases (n. 26) (tab. 13) of the sample, is formed by the "Selective and critical users". In fact, about 84.6% of teachers in this group make highly critical use of digital and slightly less (76.9%) make a highly advanced use, while an average level of computer-specialized use prevails. This overall attitude towards the use of digital is also connected to the unfamiliarity with technologies demonstrated by more than three-quarters of teachers. 85% of the teachers in this group work in technical and vocational institutes and (88%) are located in working-class areas.

In general, male teachers appear to have a higher level of familiarity and a greater intensity of use than female teachers, regardless of the degree of

favorability that they demonstrate. A case of particular interest (see para. 5) is the last group that emerged (tab. 13) in which teachers, a number of whom from the working-class, working in technical and vocational schools located in working-class neighborhoods, use digital technologies in a selective and critical way. This group show a less marked relationship between habitus and type of use of technology (Hargittai & Hinnant, 2008).

Tab. 13 Selective and critical users.

Test-value	GRP/CAT	CAT/GRP	GLOBAL	Characteristic categories
5.9	47.6	76.9	25.9	High level of advanced use
5.0	39.2	76.9	31.5	Medium level of specialist use
4.4	33.9	76.9	36.4	Low level of familiarity
3.5	34.9	57.7	26.5	High level of basic use
3.2	24.4	84.6	55.6	High level of critical use
3.0	30.6	57.7	30.2	Male
3.0	23.7	84.6	57.4	Technical and vocational institutes
2.9	26.0	73.1	45.1	Medium degree of favorability towards digital lessons
2.7	21.9	88.5	64.8	Working-class institutes
2.4	28.9	50.0	27.8	Low intensity of use
2.4	26.3	57.7	35.2	Working-class

5. Discussion and conclusion

In Bourdieusian terms, the uses of digital technologies in the classroom can be examined as 'stances' arising from the location of agents in the school environment (Bourdieu, 1984).

According to Bourdieu, position in this educational field depends on the social trajectory of each individual (called an 'agent') and the latter is connected to their economic and cultural resources. The French sociologist pays close attention to the family cultural capital, since depending on the knowledge passed on to them by their parents, an agent is able to develop specific knowledge, skills and abilities that are useful for their educational and professional path. These competences, knowledge and skills contribute to the formation of the habitus (Bourdieu, 1979), which from our analysis also appears to affect the use of digital technologies at school.

Specifically, the results of our research point to an analogy between students and teachers, and reveal the presence of four different uses of digital technologies.

However, within this general trend, interesting differences emerge that allow us to understand salient aspects of the generative mechanisms of educational inequalities among upper-secondary students.

The reproductive mechanisms of school inequalities can be better understood if we consider the intersection of school track with social background and gender.

In this regard, our research shows how 70% of students in the "marginal" group attend technical and vocational institutes, with a high composition of young people from working-class backgrounds; while students who are "resistant" attend traditional high school institutes (see note 3), which are tailor-made for the middle and upper-class.

Our analysis confirms that women have less familiarity with new digital technologies, an aspect that must be interpreted considering in particular female insecurity with respect to practices that are still dominated by men.

However, in-depth analysis of the data obtained from the cluster analysis reveals a significant difference between the women of the two populations: on the one hand, as many as 45% of the students in the marginal or resistant to digital technologies groups, while only 15% of the students with one of these two orientations are boys (see Tables 4 and 7); on the other hand, 32% of the teachers who are passionate about technology are women, despite the fact they have low familiarity with it (88% of the cases in the group: see table 10).

The Italian educational field, at least as regards the upper-secondary school, is stratified into two macro segments.

The "dominated" segment is formed by the less prestigious vocational institutes, mainly attended by working-class students and where there are also teachers of disciplines based on applied knowledge; while the "dominant" segment is made up of the institutes that are most closely connected to university education (high schools), which are preferred by young people of the middle and upper-class (Pitzalis, 2012). Teachers more oriented towards the identity of "magistri" (Hirshhorn, 1993; Pitzalis, 2009) work in high schools: this identity enhances the figure of the intellectual as a faithful guardian of official culture (Bourdieu, 1984; 1991), which separates theoretical, "sacred" knowledge from that of the "profane", i.e. applied knowledge (Bernstein, 2000; Maton, 2009).

By performing a more in-depth analysis, we can see how the MCA applied to the student population leads to distinguishing a factor that refers to the curricular paths and to the specific institutional habitus (Tarabini et al., 2017) of the different types of upper-secondary schools, and a factor more specifically linked to the individual habitus of social agents. In summary, the data show how for students from working-class families the difficulties of making the most of their scarce cultural capital and making adequate use of "digital mediation" in class are added to the disadvantages from attending technical and vocational schools: the results show, especially in the vocational curricula, the persistence of the idea that schools must convey practical knowledge above all; this idea

turns out to be functional in supporting the propensity of the most disadvantaged students to build short educational paths aimed at professional training (for the Italian case: Romito, 2014; Pinna & Pitzalis, 2021). Therefore, our research shows the "complicity" between the lower scholastic dispositions of students from a working-class background and a more instrumental way of approaching integrated digital teaching.

Nonetheless, the concrete use of new technologies by teachers is by no means unique. In this case, the MCA clearly distinguishes one factor that shows the connection between habitus and "stance" towards digital mediation at school: those who have inherited low cultural capital are less likely to develop a familiarity with technologies, and hence nurture a greater hostility towards their use in the classroom. The other factor, on the other hand, relates to the type of use of digital technologies, which is evidently affected by the segment of the school field (school track) in which teachers work, thus affecting the specific use that students then make of them.

At the same time, we can note the presence of some teachers who make a more critical use of technology in technical and vocational institutes, in several cases located in working-class neighbourhoods. These teachers are inclined to make a selective use of the digital technologies: they seem to proceed with the domestication of new technologies (Silverstone, 2005) by integrating them into their everyday teaching practices.

In other words, these teachers convert their cultural capital into a critical and not merely technical use of digital mediation in the classroom. This also concerns those teachers in the critical user group from working-class backgrounds who have thus experienced a path of upward social mobility: given their biographical trajectory, these teachers might be more sensitive to the fight against school inequalities and at the same time be endowed with knowledge about the possibility of reconverting the cultural capital typical of the subaltern classes into school capital, without there necessarily being mere cultural assimilation.

Therefore, the presence of these heretical subjectivities (Parziale, 2016), which are not only male (only 53.7% of the teachers in the critical users group are men: see tab. 13), could benefit students, particularly if they have the double disadvantage of being women of working-class origin. Obviously, future research is needed on this aspect to understand whether this emancipatory sensitivity is really more widespread among teachers from the working-class.

In any case, the poor familiarity of women with technology, in a school system that is increasingly feminised in its teaching staff, together with the division into rigid school-tracks, leads to a re-appropriation of the digital by students connected to the reproduction of social inequalities in the educational system: the more advantaged students can learn critical use of technologies

more easily, also thanks to the fact that they attend traditional high schools (see note 3), and so still avoid the more radical outcomes of learnification (van Dijck et al., 2018). This latter consists of reducing education to a personalised service (Ball & Grimaldi, 2022), geared towards individual technical training instead of collectively constructed critical education in the classroom (Biesta, 2012).

In this regard, learnification may tend to appeal more to the most disadvantaged students, in such a way as to ensure they are better prepared for subordinate work through the attendance of vocational schools.

Indeed, the presence of critical use of technology in the classroom among less than a fifth of students and teachers seems to confirm the risk that the prevailing trend of digitisation is learnification. However, this outcome is not a foregone conclusion, but depends on how school actors re-engage with externally induced digitisation.

In brief, although the risk of learnification is more likely in the dominated segment of the Italian educational field (vocational schools attended especially by students from working-class backgrounds), contributing to the widening of the distances between social classes, our analysis also reaffirms the ambivalence of the modern educational system (Parziale, 2020): the presence of some teachers who are oriented towards a more critical use of technology, based on emancipatory pedagogy (Giroux, 2018) and employed in technical and vocational schools, could weaken the generative mechanisms of school inequalities.

Future research, also focused on a wider context than just the city of Rome, could be directed at investigating to what extent this countercultural action is possible, overcoming the limitations of this analysis that does not investigate concrete classroom practices: this cognitive objective could be pursued through the use of the ethnographic method.

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