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Challenges and Opportunities of the COVID-19 Lockdown on the Italian School System: Teachers' Perceptions of Distance Teaching for Students with Disabilities*

Sfide e opportunità del lockdown per COVID 19 nel sistema scolastico italiano: le percezioni degli insegnanti sulla didattica a distanza per gli studenti con disabilità

Fuori Call

ABSTRACT

This study aims at investigating the challenges and opportunities of distance teaching for students with disabilities during the first COVID-19 lockdown period. Despite the Italian school system is known to be a traditionally inclusive one, the COVID-19 pandemic and the consequent lockdown of schools may have created a particularly challenging situation for the education system. In April 2020, 3,291 teachers responded to a questionnaire, with more than 50% of them indicating a total or partial exclusion of their students with disabilities from distance teaching and showing knowledge of other pupils with disabilities being totally excluded. Such exclusion appears caused by the digital divide on one hand, and the didactic level on the other. In fact, the inclusive and the adapted digital materials were not always made available, as well as individualised learning objectives were not mastered in mainstream setting. Although teachers reported some positive aspects, such as a satisfactory collaboration with colleagues and families of children with disabilities, the classmates' involvement was deficient. Moreover, the paper argues that a negative experience with distance learning is significantly associated to a deterioration in the learning outcomes and behaviour of students with disabilities. Practical implications arising from this study, still relevant today, are discussed.

Keywords: inclusion, COVID-19, disability, distance teaching, Italy

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Introduction

Since the COVID-19 pandemic spread worldwide, most countries have temporarily closed their schools, impacting over 90% of enrolled learners at its peak in March 2020 (UNICEF, 2020). Italy, where this study took place, was the first country in Europe to be hit by the pandemic. Starting on 5th March 2020, all schools were closed for about three months (till June 2020) and distance teaching (DT) replaced face-to-face teaching and has been also implemented thereafter due to new waves of COVID-19.

Individuals with disabilities were (and are) particularly at risk in this context. In fact, in the educational system, these students are often the first ones to be marginalised in emergency situations (Stough et al., 2017). The risk of an increasing school dropout rate for the most vulnerable pupils due to the COVID-19 pandemic was also highlighted by the United Nations (UN [United Nations] Coordinated Appeal, 2020), who pointed out that these pupils were the “least likely to benefit from distance learning solutions” (UN, 2020, p. 12).

In general, international organisations have suggested that school shutdowns threaten the right of an inclusive education (e.g., UNESCO, 2020). The implementation of inclusive education is a targeted goal for many countries, although, in some cases, it has not yet been translated into a systematic and sustainable reform (Graham et al., 2020). Italy, in particular, boasts a long-standing school system that claims to be inclusive. The goal of this paradigm is to grant *all* children the possibility to reach their highest learning potential, as well as effective participation, within the mainstream education systems, where particular attention is granted to students with disabilities (IBE-UNESCO, 2016; UN, 2006). Teachers are expected to arrange teaching settings to ensure both academic and social achievements to all and develop individual curricular adaptations for those with disabilities, if needed. Given the relevance of the goal at cultural, political and practice levels, it is fundamental to understand if and how the principles of inclusive education were preserved during each school lockdown and, in particular, during the first one (Spring 2020).

This paper begins with a summary of the components that facilitate the inclusion of students with disabilities in DT, followed by an overview of the emerging research on the topic in the context of the COVID-19 crisis. Subsequently, the findings on a quantitative study examining the way online lessons were realized in Italy between March and April 2020 and the effects it had on the students with disabilities’ inclusion are discussed. Lastly, recommendations for future practice and suggestions for research are made.

Theoretical framework

Börnert-Ringleb et al. (2021) noted that the implementation of digital learning poses a huge challenge in special education at school – , teacher – , and student-levels.

While one general prerequisite refers to the availability of the technical equipment (e.g., computer, internet access; Hawkes, 1996), other dimensions acknowledged as significant in the current literature are the teachers’ and families/caregivers’ skills of information technology (IT) (Lai, 2017).

Following D’Alessio (2020), three other key assumptions can be pointed out with reference to the inclusion of students with disabilities in DT specifically:

- (1) the involvement of team teaching, whereby class teachers and support teachers work together in adapting and modifying materials, establishing goals for the child with disability and possible updates of their Individualised Educational Plans (IEPs) to reflect the fact that the students move to online teaching;
- (2) the involvement of peers in their pathway, with the use of more interactive teaching methodologies, such as cooperative learning, tutoring, etc.;
- (3) the support to families, through the teachers’ creation of a cooperative relationship and help in keeping in contact with external care services.



In particular, research has identified parents of children with disabilities as one of the strongest components for students' inclusion in online settings, especially if delivered at home (Center on Online Learning and Students with Disabilities, 2016), resulting in a possible intensification of already existing cultural and financial inequalities (Niesyto, 2019). Furthermore, the pupils' dependence on parental support is particularly relevant when the prerequisites of digital learning lie exactly in the areas of learning profile compromised by impairments. In fact, students' participation in DT can be hampered by inadequate self-regulation, executive functioning deficits and low metacognitive skills or organization competences, which imply poor ability to work autonomously in front of a device (Börnert-Ringleb et al., 2021; Calvani, 2020).

Finally, further characteristics are noticeable when analysing the teaching approach used for inclusive online lessons. Theoretically, DT may be an opportunity to strengthen inclusive practices, since it seems to favour the adoption of differentiated and individualised teaching strategies (Thiele & Bosse, 2019). Indeed, DT has the potential to maximise learning opportunities for all students, allowing a more flexible organization of the teaching-learning process thus better meeting pupils' needs (Lee et al., 2015; Radovan, 2019). For example, DT can promote activities that offer a great diversity of content/materials to enrich the self-directed learning phase and present a wide range of interactive forms (with other learners, both synchronously and asynchronously, etc.) (Calvani, 2020; Simonson et al., 2019). However, teachers need significant didactic expertise in order to effectively utilise the technological tools available and orchestrate online learning this way (Ames et al., 2020).

Literature review

All aforementioned elements need to be evaluated in the context of the COVID-19 crisis. In fact, there is a widespread acknowledgement that, given the circumstances which led to an abrupt and unplanned shift to DT, the implementation of these processes could have been more complex, so much so that some authors labelled the DT of that time as emergency remote education (Hodges et al., 2020; Williamsons et al., 2020).

It is therefore not surprising that, while a few studies showed positive outcomes of this shift to DT (e.g., University of Vienna, 2020), a growing amount of research focused on the gap in relation to the access to the necessary equipment and broadband capacity (e.g., Cullinane & Montacute, 2020). Gap that is even wider when considering students with disabilities: the *COVID-19 Survey on Children with Disabilities* (World Bank, 2020) highlighted how only 46% of their parents had access to the internet.

The sudden move to DT also drew attention to the lack of teachers' IT expertise. Internationally, it has already been established that the inappropriate use of digital technology for teaching is a particular concern for a quarter of the principals participating in the TALIS 2018 survey, suggesting that teachers may be limited in their use of ICT (OECD, 2019). From a survey conducted in Germany, Austria and Switzerland between March and April (2020), Huber and Helm (2020) reported that, on average, teachers' IT skills were mediocre. This is true also for students and parents (UNESCO, 2020). In Italy, a survey launched in June 2020 noted the lack of students' devices and IT skills, amplified when considering those with special educational needs (SEN) (INDIRE, 2020). It was moreover indicated how parents with children with SEN reported general difficulties in managing home-schooling, due to poor IT skills and the little support received by teachers and professional helpers (Eshraghi et al., 2020; Fontanesi et al., 2020). The new demands placed on parents, together with the self-isolation measures, resulted in an increase of their anxiety levels, as well as irritability and behavioural problems in their children (Couper-Kenney & Riddell, 2021; Fontanesi et al., 2020).

At a didactic approach level, the majority of studies carried out during the COVID-19 crisis pointed out that teachers tended to offer traditional transmissive practices, for example by simply uploading materials and giving homework (Steinmayr et al., 2020; Supratiwi et al., 2021), "very far from ideal solutions to maximise inclusiveness" (Giovannella et al., 2020, p. 20). Interestingly, in a survey (March-May 2020) by Brändle and Albers (2020), less than half of the teachers/educators declared adequate know-how to



handle children with SEN in DT. Consistent findings by Thorell et al. (2021) noted that children with a mental health condition were more likely to struggle when participating in DT. Conversely, an Austrian study indicated a satisfactory inclusion of primary school students with disabilities in DT during spring 2020, albeit based on a small scale (n=47 pupils) (Bešić & Holzinger, 2020).

Finally, in the Italian context, Mulè (2020), for example, presented some contrasting data. On the one hand, in fact, the 2.993 teachers (including curricular and support teachers) involved in a survey, claimed the need to acquire additional digital skills necessary to practice DT/blended teaching, as well as the need for knowledge regarding active and collaborative methodologies and specific software for sensorial disabilities. These aspects, among other reasons, led to a limited inclusion of students with disabilities in DT. Nevertheless, more than half of these teachers found the discussion with autonomy assistants and the families of these students fruitful. A more specific survey by Fantozzi (2020) focused also on the teachers' training and competence regarding collaborative teaching and peer tutoring between students with and without disabilities. Out of around 1.000 teachers, the overwhelming majority of interviewees highlighted the impracticality of these methodologies during DT, although they considered them valid in face-to-face teaching, which resulted in greater loneliness and relationship difficulties for pupils with disabilities.

Rationale for the study and research question

While the extraordinary situation due to school shutdowns caused by the COVID-19 pandemic has become a matter of concern for political authorities and education institutions, children with disabilities have often been “overlooked in discussions, and where they were mentioned, more in-depth attention was lacking” (World Bank, 2020, p. 14).

As described, we assume that the delivery of an inclusive DT sets high demands and this could constitute a barrier for students with disabilities – especially those with difficulties in the areas of self-regulation, executive functioning, metacognitive skills and organization competences –, who are at risk of lagging behind in terms of learning outcomes and well-being. However, as Italy is “at the vanguard of progress in relation to inclusion and equity” (Ainscow, 2020, p. 10), investigating DT challenges and opportunities for students with disabilities in this country represents an interesting opportunity, also considering that DT could be implemented again in case of emergency, as witnessed in Italy in 2021 due to the subsequent waves of COVID-19.

In Italy, at that early stage, DT was officially recommended by the Legislative Decree no. 11/2020 (8th March 2020) and became compulsory in substitution of face-to-face instruction with the Law no. 41/2020¹.

This exploratory research collected the teachers' point of view, guided by the following research questions:

- (1) how has DT been realised for students with disabilities during the first school shutdown (started on 5th March 2020)?
- (2) what have the consequences been, in terms of challenges and opportunities, for their inclusion?

To our best knowledge, this is the first Italian large-scale research focused entirely on students with disabilities.

1 Other regulations will be issued for the planning of school and educational activities for the 2020/2021 school year, such as the Ministerial Decree no. 39/2020 and the Ministerial Decree no. 89/2020 adopting “Linee Guida sulla Didattica Digitale Integrata”.



Method

Sample

Teachers were recruited via social networks, websites and online platforms (e.g., by means of social networks, the websites of institutions involved in the research, teachers' online platforms as Orizzonte Scuola), and then asked to complete an online questionnaire between 7th April and 15th April 2020. Before going live, a draft version of the survey was tested by a panel of experts of the institutions involved in the research (Fondazione Agnelli, Lumsa University, the University of Trento and the Free University of Bozen) and formal ethical approval gained.

The sample included 3,291 teachers: 84.2% support teachers and 15.8% class teachers from various regions in Italy. With regard to the grade level taught, 8.9% reported kindergarten, 40.9% elementary school, 23.3% middle school and 26.9% high school/vocational programme.

Procedure

The questionnaire contained 18 questions divided into three sections (see the whole questionnaire in the Appendix).

Section I addressed the issues related to the delivery of DT. Firstly, teachers needed to indicate if DT was activated in their school and, if not, they needed to indicate the reasons why (item 1: Has DT been activated in your classes? and 2: What are the reasons for not activating DT?). Answers were collected through six pre-set categories and an open-ended category other; multiple choice. Only the teachers involved in DT could move to the second question (no=3,237), where they were required to indicate the inclusion in or the possible exclusion from DT of their students with disabilities and the underpinned rationales (item 3: Are you aware of any pupil(s) with disabilities excluded from the DT of your class?). Such motivations were detected by three pre-set categories. Thirdly, teachers were asked to tick if they were aware of other families with children with disabilities who had been unable to attend DT (item 4: Are you aware of any other family with a son/daughter with disabilities who do not have the possibility of attending DT? Yes/Not) and, if Yes, the reasons for this possible exclusion (item 5: If you answered Yes to the previous question, can you tell us the reasons for the problems you have encountered?). Such data was collected through five pre-set multiple-choice categories. In this case too, teachers were given the opportunity to extend the possibilities listed in the questionnaire with the open-ended category other. The next questions addressed the availability of digital materials for students with disability with or without adaptations (item 6: In your classes, have DT materials which can also be used by pupils with disabilities WITHOUT the need for adaptation been made available? and item 7: In your classes, have DT materials which can only be used by pupils with disabilities WITH adaptations been made available?). Teachers needed to rate on a three-point-scale (1=Yes, basically/almost always; 2= Yes, but only in some cases; 3=No) how often such materials were provided. Furthermore, teachers were asked to indicate who would usually adapt the materials (item 8: If you answered Yes to the previous question, can you tell us who generally adapts the materials?), using five pre-set categories and an open-ended category other; multiple choice. Then, teachers' awareness of availability of adapted material on the web to be used in DT for students with disabilities was explored (item 9: Are you aware of any DT materials available on the web that can also be used by pupils with disabilities? Yes/Not). Finally, teachers were invited to indicate whether students with disabilities deteriorated in terms of behaviour (item 10: Are you aware of any deterioration in terms of behaviour of pupils with disabilities? Yes/Not) and in terms of their learning outcomes (item 11: Are you aware of any deterioration in terms of learning, autonomy and/or communication of pupil(s) with disabilities? Yes/Not).

Section II was addressed only to teachers who had answered, in the second question, that students with disabilities were included in DT (no=3,183). In order to facilitate the cognitive task assigned, teachers



were asked about their experience with a specific student, with a certain type of disability and the severity level in terms of self-regulation, executive functioning, metacognitive skills and organization competences. Respondents were requested to determine the degree of collaboration of their pupil based on a 4-point scale (1=Fully unsatisfactory; 2=Good but improvable; 3=Poor; 4=Fully satisfactory, plus the option not applicable) with five profiles: other teachers; parents; classmates; autonomy assistants – namely external professionals working in schools to support student’s goals related to their autonomy and socialization – ; and care experts, such as psychologists or speech therapists (item 12: For this specific pupil, please evaluate how (1) the involvement of classmates, their help and emotional closeness; (2) the collaboration with the family; (3) the collaboration between teachers; (4) the collaboration with care experts – e.g. psychologists, speech therapists, etc.; (5) the collaboration with the autonomy assistants are these days?).

In section III, teachers were asked to provide demographic information regarding their role/responsibilities, the grade taught and the geographical location of the schools in which they were employed.

Data analysis

Responses to the survey items were analysed using descriptive and inferential statistics. Non-parametric ANOVA was conducted to examine the main effects of the severity of the students’ disability on the collaboration’s quality scores. Multiple correspondence analysis was used to create the *Poor Quality Inclusion Distance Teaching Index*. The strength of the relationship between the quality of DT provided and students with disabilities’ performance in terms of behaviour and learning outcomes was calculated using a measure of association (Cramer’s V). Statistical analyses were performed using the software package R, version 3.6.1 (2019-07-05), “Action of the Toes”, Copyright© 2019 The R Foundation for Statistical Computing. Conventional content analysis techniques (Hsiu-Fang & Shannon, 2005) were used to analyse the open questions and to identify key subjects.

Results

For the sake of clarity, the results will be presented according to the input–process–outcome model of Kyriazopoulou and Weber (2009), which identifies core-areas that contribute to the realisation of inclusive education. Input represents “all aspects provided to the system to achieve a certain outcome” (Kyriazopoulou & Weber, 2009, p. 14), which in our questionnaire are represented by technical equipment availability and teachers’ and parents’ IT skills. The process describes “all educational activities including procedures, state/school/district practice, or classroom instructional practice” (Kyriazopoulou & Weber, 2009, p. 15). In our research, the didactic approaches implemented in DT, in terms of curriculum’ and materials’ provision, and the collaboration with the five different profiles were considered as a process subtheme. Outcome refers to efficiency measures such as, in our case, students’ learning and behaviour achievements.

Technical equipment and IT skills (input)

Nearly all the respondents (91.5%) indicated that DT was activated within their schools. Less than 10% argued that DT was provided only in some classes (6.9%) or did not start at all (1.6%). The main reasons for the non-activation of DT (only for the 54 teachers who had not started it) were: unavailability of technical equipment (37.7%) and inadequate teachers’ IT skills (28.3%).

Among teachers involved in DT who continued the interview, half (50.3%) of them knew families of students with disabilities who had not had the opportunity to participate in DT. The most frequent reasons were the paucity of families’ IT skills (63.9%) and technical equipment (67.2%).



Curricular provision and didactic approaches in DT (process)

Less than half (44.1%) the teachers found that DT was inclusive for the students with disabilities in their classes, while 19.3% of teachers reported that it was implemented only as individualized curriculum in a 1:1 relationship between student and support teacher (and not in mainstream setting). About one teacher out of three (36.5%) indicated that students with disabilities were totally excluded. In this instance, the rationales are that DT turned out to be either ineffective (26.3%) or it was not offered since it was not even conceivable, namely not planned in the student's IEP (10.2%) (Tab. 1).

	n	%
No, they were well included	1,428	44.1
Yes, but only because they followed an individualized pathway	626	19.3
Yes, because in their IEP were only included face-to-face activities	331	10.2
Yes, because distance teaching practices turned out to be ineffective	853	26.3
	3,238	100.0

Table 1. Reasons for the exclusion of students with disabilities from distance teaching

With regards to the materials, the majority of the teachers involved (77.0%) – specifically class teachers 72.9% and support teachers 77.7% – knew that digital materials were available on the web and could be used also by students with disabilities. Nevertheless, in terms provision of the inclusive materials – namely *without* the need for further individual adaptation and customised to the students' needs in advance –, this seems to not have occurred at all in 22.9% of the cases, occasionally 50.2%, basically/almost always in 26.9% of the cases.

As far as teaching materials specifically adapted for students with disabilities are concerned, in 20.1% of cases this type of material was not even made available. It is also noteworthy that 51.6% reported that these were offered only occasionally (basically/almost always 28.2%).

Data reveals that the adaptation of materials was a task which was almost always assigned to support teachers (92.0%). The involvement of other individuals from class teachers (26.8%), autonomy assistants (12.3%), parents (10.7%) to classmates (1.2%), was much lower or practically non-existent.

Collaboration (process)

Among teachers of pupils with disabilities attending DT, when asked to refer to a specific student, more than half (55.7%) referred to a student with intellectual disability, while 31.1% referred to those with autism. The remainder of teachers focused on students with physical disabilities (3.5%), multiple sensorial disabilities (3.4%), hearing (2.6%) or visual impairments (1.8%). Regarding the level of disability severity in terms of self-regulation, executive functioning, metacognitive skills or organization competences, it appeared that 16.2% had a lighter disability, 53.2% moderate and 30.6% severe. Against this background, the most satisfactory levels of collaboration reported were found with students' families and with other teachers: fully satisfactory in 40.7% and 35.0% of participants, respectively. However, shortcomings were noted with regard to autonomy assistants (fully satisfactory cooperation only for 19.0%), classmates (10.6%) and care experts (10.4%) (Tab. 2).



	Fully satisfactory		Good but improvable		Poor/Fully unsatisfactory		Full sample	
	N	%	n	%	n	%	n	%
Teachers	1,122	35.0	1,280	39.9	786	24.5	3,188	100.0
Parents	1,304	40.7	1,044	32.6	855	26.7	3,203	100.0
Classmates	314	10.6	916	30.9	1,735	58.5	2,966	100.0
Assistants	457	19.0	445	18.5	1,506	62.6	2,408	100.0
Experts	277	10.4	469	17.6	1,919	72.0	2,665	100.0

Note. The cases in which it was not possible to evaluate the collaboration were excluded from analysis
Table 2. Collaboration during distance teaching with different profiles

We then tested the differences in level of collaboration related to the disability severity of students, recoded in two categories: severe/medium (no=2,698) and light (no=523). Data about collaboration meet the assumption of homogeneity of variances (homoscedasticity) among levels of disability severity but not the normality of distributions (Tab. 3).

Collaboration by severity of disability with...	Bartlett's K-squared Test	Kolmogorov-Smirnov Test
Teachers	K(1)=2.4025	D=0.24575***
Parents	K(1)=2.0217	D=0.24219***
Classmates	K(1)=1.3599	D=0.21559***
Assistants	K(1)=0.0729	D=0.23274***
Experts	K(1)=1.1009	D=0.24935***

***p < .001.

Table 3. Distributions of collaboration by severity of disability. Bartlett's K-squared Test for Homoscedasticity and Kolmogorov-Smirnov Test for Normality

As data fails normal distribution assumption, we turned to a non-parametric ANOVA and run the Kruskal-Wallis test (Conover, 1998). The average quality of collaboration significantly differed with respect to disability severity: in all cases, the more severe the disability was, the more compromised was the collaboration (Tab. 4).

Collaboration by severity of disability with...	Moderate/severe		Light		Kruskal-Wallis rank sum test
	M	SD	M	SD	
Teachers	2.0	0.939	1.8	0.891	Chi-squared(1)=30.512***
Parents	2.0	0.986	1.8	0.939	Chi-squared(1)=28.29***
Classmates	2.8	0.906	2.4	0.944	Chi-squared(1)=56.365***
Assistants	2.9	1.132	2.6	1.145	Chi-squared(1)=13.054***
Experts	3.1	0.998	2.9	1.038	Chi-squared(1)=10.202***

***p < .001.

Table 4. Difficulties in collaboration in relation to the students' severity of disability. Non parametric ANOVA



Students' behaviour and learning (outcome)

During the period under examination, most teachers (51.1%) realised that their students with disabilities were deteriorating in terms of behaviour. A higher proportion (62.0%) mentioned a worsening trend in terms of learning performance.

We created the *Poor Quality Inclusive Distance Teaching Index* to explore the possible influence of DT inclusion quality on students' outcomes. The Index is the result of the answers to these questions:

- 1) "Do you know if any students with disabilities in your class were excluded from DT?" (1=Yes, in some cases the DT activated forms proved ineffective from the point of view of inclusion; 2=Yes, but only because he/she is following an individualized DT pathway; 3=Yes, but only because, on the basis of his/her IEP, didactic interventions that are not face-to-face are not conceivable; 4=No, the pupils I teach are well included into the activated forms of DT)
- 2) "In your classrooms, were digital materials made available also for pupils with disabilities without need for adaptation?" (1=Yes, basically/almost always; 2=Yes, but only in some cases; 3=No)
- 3) "Do you know any digital learning materials available on the Web that can also be used by students with disabilities?" (1=Yes; 2=No).

The authors selected these questions due to their relevance in reference to the issue of the provision of an inclusive DT, since the inclusion/exclusion from online activities and the provision of digital materials are the basic dimensions of DT (Steinmayr et al., 2020). To summarize them in a single Index, since they are categorical variables, a multiple correspondence analysis with v-principal parametrization was used. The extracted dimension ranges from a minimum to a maximum of inclusiveness and explains 40.8% of the total variability (Tab. 5).

	n	Min.	Max.	M	SD
Poor Quality Distance Teaching Index	3,293	-1.67	2.00	0.0000	1.0

Table 5. Poor Quality Distance Teaching Index

We examined whether this *Poor Quality Inclusive Distance Teaching Index* was associated with the students' behavioural deterioration and of learning performance. The Index was significantly correlated, even if slightly, with higher levels of decline in behaviour (Cramer's $V=0.144$, $p\text{-value} < 0.01$) and in learning performance (Cramer's $V=0.160$, $p\text{-value} < 0.01$).

Discussion

The present study focused on the view of Italian teachers regarding the challenges and opportunities of DT for the inclusion of students with disabilities just over a month after the 2020 spring lockdown of schools due to the COVID-19 pandemic.

There are multiple rationales related to the unsuccessful provision of an inclusive DT that can be addressed regarding the input–process–outcome model of Kyriazopoulou and Weber (2009).

The lack of ownership of technical equipment and IT skills (input) was discussed as a barrier and appears quite pronounced in the Italian context, as confirmed by the general official statistics existing on the topic (ISTAT, 2020b). In line with the literature (World Bank, 2020), the effect of the digital divide on families with children with disabilities was also confirmed. Our findings are also not surprising considering the lack of IT skills underlined among teachers (UNESCO, 2020). With regards to the latter, while the *Na-*



tional Plan for Digital Schools (Law no. 107/2015) aimed at promoting teacher training in digital education, the data provided by the aforementioned TALIS 2018 survey corroborated that on average only 36% of Italian teachers felt sufficiently prepared when they concluded their studies, while the average in OECD countries being over 40% (OECD, 2019).

In addition, it is important to bear in mind that, altogether, around 56% of teachers reported that students with disabilities were totally excluded from DT or only partially included (namely in a 1:1 relationship with their support teachers). This was mainly due to the difficulties they experienced in trying to cater for the diverse learning needs in the context of a common curriculum in mainstream settings (process). In fact, according to more than half of the teachers, for students with disabilities DT was either ineffective or not conceivable because not planned in the IEP, or only feasible through a highly individualised curriculum. This raises the question as to what extent teachers should try to find points of contact between the students with disabilities' individualised curricula and the general education curriculum. In this regard, the inclusive model by Lanes and Cramerotti (2009) suggested that when the work on the instructional goals aligned to class contents is not possible, one should still introduce some goals in the IEP that allow students to participate at least in the class atmosphere, feeling part of it, even in online settings (e.g., goals related to the generalization of learned skills).

The results relating to students attending an individualized digital path with their support teachers show a phenomenon equally worrying, i.e. they receive part of their education in a different space – separated from their classmates. This happened also in face-to-face teaching in Italy and in other countries with an inclusion-oriented educational system (Nes et al., 2018). However, note that, when these pathways are always developed in a different space (even if in mainstream schools), this can lead to what D'Alessio (2011) called micro-exclusion, as well as what Slee (2019) considers a dividing practice. As a result, in line with other studies carried out during the COVID-19 pandemic (INDIRE, 2020; Thorell et al., 2021), we can argue that many students with disabilities were excluded or micro-excluded during the first phase of DT and assume that this exclusion was even more widespread, especially if considering the other families with children with disabilities reported as unable to participate by half of our teachers. The data confirm serious equity issues to which the pandemic gave rise, even within an education system that has a strong reputation for inclusive education.

Again, the lack of a regular provision of inclusive materials – which should encompass the preparation in advance of contents with different scaffolding to address all students' readiness needs, their interests, and their learning profiles (see for example, for the theoretical underpinnings of such concepts, Tomlinson, 2014) – confirms the fact that teachers were barely competent and ready to organise an open, flexible and inclusive DT (e.g., Giovannella et al., 2020). Moreover, although the majority of class and support teachers knew of the existence of online digital materials for students with disabilities, the delegation of the responsibility of the materials adaptation to support teachers was dominant. This is not a new issue in Italy (Canevaro et al., 2011; TreeLLe et al., 2011), yet it appears to have been exacerbated by DT.

Among the central process for an inclusive participation in DT, classmates' involvement is likely to have a relevant potential, in line with our theoretical assumptions (D'Alessio, 2020). Therefore, their scarce involvement in the learning pathways of those pupils with disabilities attending online lessons indicates a lack of peer support practices (e.g., cooperative learning; see also Fantozzi, 2020) occurred that cannot be underestimated, especially during the COVID-19 lockdown. In this regard, the study by Bešić and Holzinger (2020) revealed that the willingness and motivation to learn online of students with disabilities increased if they were involved in communication and learning paths with the whole class.

Encouragingly, the relationships with other teacher colleagues and with students' families appear positive in our study. The first seems to be in contrast with the results commented so far, which indicated how support teachers were delegated all the responsibility regarding students with disabilities. Yet, the data might provide evidence of a sort of co-responsibility developed among teachers, perhaps manifesting itself more in other dimensions, maybe emotional, than in effective co-teaching strategies (Huber & Helm, 2020). The finding related to families' cooperation is even more pivotal for the students with disabilities' participation in DT, since the lack of parental support was reported among the rationales for their exclu-



sion in other studies (e.g., Couper-Kenney & Riddell, 2021). This positive collaboration is then promising and suggests that the tools of DT could represent a future potential lever to engage families in the active participation in the educational goals of for their child. By contrast, the relationships with external experts (e.g., care services, autonomy assistants) emerge as deficient, although their continuity was needed even more during the COVID-19 lockdown (UN, 2020). Finally, the collaboration with all the target groups investigated was challenged by the disability severity, i.e. by the gap between students with disabilities' learning profile in terms of deficits of self-regulation, executive functioning, metacognitive skills, organization competences and the prerequisites of digital learning (Börnert-Ringleb et al., 2021). Being reminded of this is crucial since the collaborative processes are widely documented to be at the core of an inclusive education (Ainscow & Sandhill, 2010), especially for students with severe disabilities (Alquraini & Gut, 2012).

Accordingly, teachers perceived students' behaviour and the outcome of learning areas as deteriorating (outcome). In particular, our study recognised an association (even if weak) between the display of a decreased performance in both behaviour and learning performances and a negative DT experience, measured by the *Poor Quality Inclusion Distance Teaching Index* we designed. In the introduction to this paper, we underlined how those children with SEN have unduly suffered as a result of missing school and crucial routines during the COVID-19 lockdown (e.g., UN, 2020). Our analysis seems to confirm that the exposure to exclusionary DT practices played a role in their learning loss and, all in all, in their well-being.

Limitations, future research, and implications for practice

Limitations to this study need to be acknowledged. Firstly, it used convenience sampling including teachers who agreed to participate in the research on a voluntary basis. As respondents were not recruited by specifying a sampling frame, it is not possible to assess the redemption rate. Therefore, there is a possibility that the sample was biased due to the recruitment criteria. However, the choice was motivated by the need to collect swiftly teaching solutions undertaken during the time of crisis from as many teachers as possible. Additionally, the clear dominance of support teachers among respondents must be considered when interpreting these results. Secondly, our goal was to provide a comprehensive look at what was happening in schools from the point of view of teachers. Obtaining families' and other professionals' opinions and listening to the students' voices would have provided additional insights and reduced the risk of unreliable information. Thirdly, the data was collated just over a month after the school closure, representing a first picture of the system response, since DT had probably not reached its steady state. Over time, a successful evolution in terms of the planning of online activities may have happened. Finally, our study focused only on some determinants of an inclusive implementation of DT. Other variables identified by models from general education – e.g., teachers' self-efficacy and their attitudes towards DT (Kreijns et al., 2013) – may have an impact on a general successful provision of DT also with regards to students with learning and/or behavioural difficulties (Börnert-Ringleb et al., 2021). However, we chose to consider only the most relevant dimensions regarding the inclusion for the sake of the questionnaire sustainability. Future research, which includes an analysis of these other input variables, is required.

Concerning the process, school practices – for example – were little discussed and it can be argued that these should be considered, since they can critically impact practices at classroom level and widen existing differences between students even more.

Regarding the outcome, while some studies have looked at the effectiveness of DT programmes on IEP goals of students with severe disabilities in special settings (Tomaino et al., 2021), more work is needed to determine the effects of inclusive DT programmes on students' IEP goals progress. It is also essential to examine the long-term impact of DT on socialisation and the learning achievement area of this prolonged period characterized by school hiatus for many students with disabilities. Previous evidence has already demonstrated that, during school closure due to the summer break, children are likely to experience a loss of academic skills (Alexander et al., 2007), especially those ones with SEN (Asquini & Sabella,



2018). A 2021 Report on national assessments in Italy provided consistent evidence of the failure of the education system during the pandemic, resulting in lower achievements in Italian language and mathematics than in 2019 (in secondary schools; INVALSI, 2021); yet the lack of specific data on students with disabilities limits our ability to generalise.

The findings from this study lead to other recommendations for practice.

In addition to fighting the gap with regard to technical equipment, initiatives should be provided to qualify teachers in digital teaching and its various forms (from fully online to blended) since it is likely to become an essential part of future teaching. The key could be the professional development in line with the *DiKlusion* approach (Schulz, 2018), which combines the area of digital competences, along with pedagogical strategies sensitive to address all students' differences and, in particular, the needs of those with disabilities in inclusive settings. This second aspect has been largely ignored so far in the strategies put in place in many countries to respond to the requirements necessary in an education system in the digital era (European Commission/EACEA/Eurydice, 2019). In Italy, the implementation of the already cited *National Plan for Digital Schools*, which provides the training of digital animators (i.e., expert peer teachers) as an asset to widespread digital education in the whole school community, must be strongly supported. Moreover, as already recommended in the Commitments by the World Bank (2018), for example, the integration of principles of Universal Design for Learning (Rose & Meyer, 2002) into digital teaching – or other differentiated teaching approaches (Tomlinson, 2014) – could address the urgent need to innovate the educational system, taking into account an inclusive way.

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Appendix- The questionnaire

1. Has DT been activated in your classes?
 - Yes, in all of them (Go to question 3).
 - Yes, in some of them (Go to question 3).
 - No (Go to question 2).

2. What are the reasons for not activating DT? (please select all relevant answers)
Please select all applicable items.
 - Technical difficulties for teachers (unavailability of devices and connections)
 - Training deficiencies for teachers
 - Organisational and scheduling deficiencies
 - Disagreement within the school community (teaching staff, head teacher, pupils' families, etc.)
 - Technical difficulties for pupils (unavailability of devices and home connections)
 - Absence of family support for the pupil(s)
 - Other:

3. Are you aware of any pupil(s) with disabilities excluded from the DT of your class?
 - Yes, in some cases the DT activated have proved ineffective from the point of view of inclusion
 - Yes, but only because he/she is following individualised DT paths
 - Yes, but only because according to his or her IEP no teaching interventions other than presence are conceivable
 - No, the pupil(s) I follow are well included in the DT activated

4. Are you aware of any other family with a son/daughter with disabilities who do not have the possibility of attending DT??
 - Yes
 - No

5. If you answered Yes to the previous question, can you tell us the reasons for the problems you have encountered? (please select all relevant answers)
 - language difficulties
 - technical impediments (technology, connection...)
 - families' poor computer skills
 - inadequate homework support from the family
 - Other:

6. In your classes, have DT materials which can also be used by pupils with disabilities WITHOUT the need for adaptation been made available?
 - Yes, practically always
 - Yes, but only in some cases
 - No

7. In your classes, have DT materials which can only be used by pupils with disabilities WITH adaptations been made available??
 - Yes, practically always
 - Yes, but only in some cases
 - No



8. If you answered Yes to the previous question, can you tell us who generally adapts the materials? Please select all applicable items.
- parents
 - support teacher
 - curricular teacher
 - autonomy assistant
 - one or more classmates
 - other
9. Are you aware of any DT materials available on the web that can also be used by pupils with disabilities?
- Yes
 - No
10. Are you aware of any deterioration in terms of behaviour of pupils with disabilities?
- Yes
 - No
11. Are you aware of any deterioration in terms of learning, autonomy and/or communication of pupil(s) with disabilities?
- Yes
 - No

Section II

Let's talk about a specific situation

We now ask you to refer to a specific situation among those of the pupils you follow. We will begin by asking for some simple background information on the case, just to contextualise the answers you will make in the following questions.

12. Type of pupils' disability
- intellectual
 - physical
 - hearing
 - visual
 - multiple sensorial disabilities
 - autism
13. Your pupil's overall level of functioning:
- low
 - medium
 - high
14. For this specific pupil, please evaluate how (fully satisfactory; good but improvable; poor satisfactory; fully unsatisfactory) are these days:
- the involvement of classmates, their help and emotional closeness
 - the collaboration with the family
 - the collaboration between teachers



- the collaboration with care experts (psychologists, speech therapists, etc.)
- the collaboration with the autonomy assistants

Section III

15. Province of school:

16. You are:

- a curricular teacher or educator
- a support teacher or autonomy assistant, without specialisation
- a support teacher or autonomy assistant, with specialisation

17. Please tell us if you currently also hold one or more of the following roles: Please select all that apply.

- inclusion reference person
- class coordinator

18. Level of school

- kindergarten
- primary
- middle
- secondary
- vocational education