




E-inclusion: online special education in Italy during the Covid-19 pandemic

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ABSTRACT

Italian legislation requires that all pupils with special needs be integrated in regular classes through cooperation between the class and special education teachers. After school closure in February 2020 due to the Covid-19 pandemic, **teachers** had to work together to arrange online inclusive activities for all the pupils in their classes. The Department of Education at the University of Genoa (Italy) designed a qualitative study aimed at investigating the factors affecting e-inclusion through a questionnaire composed of six open-ended questions. A total of 785 teachers filled out the instrument in April 2020. The responses were analysed by combining qualitative content analysis with statistical textual analysis. The findings indicate that effective e-inclusion depends on technologies, relationships with families, collaboration among teachers and online teaching strategies; in particular, teachers had to create **personalised** activities through asynchronous and synchronous interactive ways for students to engage in, preferably in small groups and individually.

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Introduction: e-inclusion during an educational disruption

'While teachers, students & families have taken up digital tools *en masse*, the shift to virtual school has exposed inequalities in access to digital resources.' This tweet was posted by the OECD (@OECD) on 9 May 2020. Similarly, the UNESCO Institute for Statistics (@UNESCOstat) tweeted on 2 June that: 'Distance learning presents one solution to mass #SchoolClosures but how do we navigate the challenges, especially for vulnerable populations?' These sentences expressed not only the educational potential of online technologies but also all the concerns related to the educational challenges, mainly entailing an increase in all forms of inequality due to the digital divide.

The school closure imposed during the Covid-19 pandemic forced teachers to create and use online learning environments. This had consequences for students and families because the online activities required both adequate technological skills and new visions of teaching/learning strategies. Many families faced limited availability of digital devices and lack of adequately fast connectivity. Additionally, parents of students with special needs encountered considerable difficulty in supporting their children's online learning (Azoulay, 2020).

This paper reports the results of a study focused on e-inclusion, seen as the ability of teachers to increase the involvement of learners with special educational needs **and disabilities (SEND)** and improve their learning processes (specific learning difficulties and difficulties linked to social, cultural or economic

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disadvantages) through the use of many devices and applications. This study sought to explore how teachers implemented e-inclusion during the school closure to enable inclusive online teaching/learning strategies, emphasising the interaction between digital tools, contexts, pupils, families and teachers to prevent the digital divide from increasing the difficulties of pupils with SEND (Selwyn & Facer, 2007). 40

Theoretical framework

Since the Salamanca declaration in 1994, most countries recognise the importance of inclusive education to ensure equal educational rights for people with SEND. Although the practices adopted are different, the purpose of inclusive education is to enable all students to be integrated in their school, and they are placed in regular classes, supported in their learning process and participate in all everyday educational activities (Hardy & Woodcock, 2014; Haug, 2016; UNESCO, 2015). 45

Moreover, inclusive education should also consider how school organisation is designed and understood as a set of spaces, programmes and activities so that all pupils can participate and learn on par with their peers and realise their potential (Meyer et al., 2014). Students should take part in the educational path within a common learning environment (Benigno et al., 2007; UNESCO, 2015) that can involve each student in daily classroom activities as much as possible, promote a sense of belonging, ensure the progress of all students towards appropriate educational goals and include personalised activities suitable for students' needs and abilities; however, it should be possible to develop together with peers for most of the classroom time in any case. 50 55

In the outlined context, the concept of e-inclusion plays a key role. Bianchi et al. (2006, p. 1) quoted the final report of the eEurope Advisory Group (working group 2 on e-inclusion) that defined this concept as follows: 'E-inclusion refers to the degree to which ICTs contribute to equalising and promoting participation in society at all levels' (eEurope Advisory Group, 2005). One year later, the European Commission (2006, p. 2) confirmed that e-inclusion 'addresses how new technologies can be used to overcome barriers, compensate or restore individuals' functions and empower in particular older persons and people with disabilities to realise their full potential'. 60

E-inclusion emphasises the use of information and communication technologies (ICTs) in compensative uses, overcoming pupils' limitations (Mitchell & Sutherland, 2020), and in participatory uses, allowing pupils to participate in social learning contexts actively and collaboratively (Benigno et al., 2019; Ismaili & Ibrahim, 2016; Pellerin, 2013; Rice & Dykman, 2018). Additionally, evolution in network technologies, including 'always-on' mobile devices and cloud platforms, offers potential for more active support in e-inclusion processes. 65 70

The main question raised by experiences arising from the Covid-19 pandemic is how e-inclusion can be developed in conditions of learner isolation. In this regard, a series of studies that assessed the impact of online education for learners with specific learning difficulties (SpLD) before the pandemic may provide useful input for understanding potential and obstacles.

ICTs help pupils with SpLD in a number of ways: keeping up with what is happening in class; making them feel they are an integral part of class activity (Lombaert et al., 2006); reducing their sense of loneliness and isolation (Zhu & Van Winkel, 2014); decreasing anxiety (Anderson & Rourke, 2005); and keeping up social connections with their classmates (Jones & McDougall, 2010). ICTs can extend teaching/learning processes beyond the classroom through online activities, overcoming the limits of space and time (Wadley et al., 2014). 75 80

Among the various ICTs adopted in these situations, a set-up that comprises videoconferencing software combined with the use of wireless microphones, webcams and an interactive whiteboard has proved particularly effective (Wilkie & Jones, 2010). The combined use of these technologies allows distance students to have audio-visual access to what happens during lessons, giving them the feeling of being present in the classroom. Furthermore, mobile technologies allow even better participation of learners with SpLD, permitting them to work collaboratively within team projects and participate virtually in everyday activities (Ismaili & Ibrahim, 2016; Saadiah et al., 2010). What's 85

more, they offer solid support for meeting the needs of students with disabilities in inclusive settings, as underlined by the review by Xie et al. (2017).

Although e-inclusion refers to the intensive use of technologies to support learning processes, a pedagogical model is nonetheless needed for their effective use (Abbott, 2007; Florian, 2017; Ronchi, 2019). Rice and Dykman (2018) stated that students with disabilities can benefit from online learning activities, but several critical issues remain such as the low level of technological and pedagogical skills of teachers and support staff, difficulties related to student achievement and the lack of cooperation with students' families.

In online educational contexts, parents play a crucial role. Burdette and Greer (2014) highlighted how parents feel inadequate in coaching their children. Rice and Carter (2015) stressed that schools need to support parents emotionally because they are often overwhelmed by responsibility, and many get highly involved in their children's online learning activities, not leaving adequate time for the demands of domestic life. As highlighted by Turnbull et al. (2015), parents transform themselves into 'parent as teacher', and this requires intense sharing and collaboration with teachers, as it seems that their active participation facilitates learning outcomes (Smith et al., 2016b).

Research design

Context

Before presenting the aims and the research questions, it is necessary to describe the context of special education in the Italian schools. Since 1970s, Italian legislation has required that all pupils with disabilities be integrated in regular classes (act 517/1977). Since then, special education teachers joined regular classes and worked in cooperation with class teachers. The special education teachers do not teach specific subjects but have to support pupils with disabilities in all activities. Furthermore, in 2010, class teachers additionally started to develop personalised educational plans for pupils with SpLD and pupils with difficulties linked to social, cultural and economic disadvantages (act 170/2010). It is important to underscore that special education teachers are responsible not only for activities related to pupils with disabilities but also, jointly with class teachers, for learning and assessment activities of all pupils of the class (act 104/92). In addition, special education teachers can support the progress of more pupils with disabilities divided among different classes, so they have to create cooperative relationships with many class teachers in several classes. However, several studies (Giangreco et al., 2012; Istat, 2019) highlighted some critical issues that created forms of micro-exclusion. In particular, Nes et al. (2017) underscored the 'push out' phenomenon that occurs when a class teacher refuses to collaborate with a special education teacher or perhaps when he/she delegates the activities totally to the special education teacher.

Aims and research questions

This study was aimed at investigating how class and special education teachers set up inclusive online teaching/learning strategies and practices during the emergency due to Covid-19. The overall research question could be expressed as follows: what were the factors that affected the effectiveness of e-inclusion during the school closure? In particular, further sub-questions were identified: (a) What were the strategies used by teachers to arrange online inclusive teaching/learning activities? (b) How did teachers manage inclusive classes online? (c) What kinds of relationships were established with the families of pupils with SEND? (d) What kinds of collaboration were set up between class and special education teachers? (e) Were the teachers prepared from both technical and educational perspectives to set up online inclusive activities?

Instruments, procedures and participants

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To answer the research questions, a questionnaire composed of six open-ended questions was created. The research group chose a qualitative option to allow teachers to feel free to explain their online inclusive teaching experiences, emphasizing limits and opportunities. The questionnaire structure was divided into two sections. The first section included some basic variables: gender, age, teaching experience, role (class or special education teacher) and school level. The second section included six open-ended questions focused on the research topics. These questions were identified on the basis of a number of studies, especially the iNACOL's National Standards for Quality Online Teaching, as used in Smith et al. (2016a); Alamri and Tyler-Wood (2016) developed a research instrument focused on how to facilitate and support social and teaching presence; the study of Straub and Vasquez (2015) was the key reference for online writing instructions; and Hanghøj et al. (2018) focused their research on the topics related to well-being, engagement and performance of students with special needs. The resulting questionnaire was completed by 785 teachers from schools located in the Genoa region of northern Italy. As shown in Table 1, the participants were mainly female, distributed among all ages and experience levels.

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The coding process and data analysis procedure

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The coding process and the qualitative data analysis were divided into three stages (Corbin & Strauss, 2015): (1) open coding, where the teachers' answers were classified into 'codes' starting from the teachers' words, and 'coding' meant generating concepts from the data; (2) axial coding, where these concepts were grouped into categories and subcategories, depending on differences and similarities; and (3) selective coding, where the researchers' group interpreted the data, selecting the main categories and identifying the connections among categories and codes.

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We also performed some quantitative analyses (Green, 2001; Srnka & Koeszegi, 2007; Young, 1981). Since the questions were open-ended, it was important to emphasize the percentages of respondents who quoted a specific code, thereby underlining its significance. As shown in the following tables, we indicated the code occurrences and the percentage of teachers who mentioned that topic. Additionally, we analysed the differences between the percentages related to the number of references and the corpus coverage to verify the significance of the main categories. Lastly, we performed some chi-square analyses to highlight specific differences between the participant groups, considering teacher's role and school level as variables. We calculated the number of respondents who quoted a particular code. We then performed the analysis, first calculating

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Table 1. Participants' characteristics.

Factor	Category	Count (%)
Gender	F	90.79
	M	9.21
Age	... - 34	15.37
	35-44	24.58
	45-54	33.53
	55 - ...	26.52
	... - 9	35.79
Teaching experience (years)	10-19	28.66
	20-29	20.88
	30 - ...	14.67
	Class teacher	60.83
Teacher's role	Special education teacher	39.17
	School level	Kindergarten
Primary (grades 1-5)		39.43
Lower secondary school (grades 6-8)		23.73
Upper secondary school (grades 9-13)		21.41

Pearson's chi-square value and secondly the value of adjusted standardised residuals (ASR) to identify the specific differences among the groups, since the contingency tables were not 2×2 .

Findings

E-inclusion map

The data analysis emphasised four main categories (in Figure 1, these categories are included in rectangles with thick borders) that explained how teachers faced the issues related to e-inclusion. These categories were further divided into subcategories (in Figure 1, the subcategories are included in ellipses connected with each category) and codes (in Figure 1, the codes are included in rectangles with thin borders placed close to each subcategory) that specify the subcategories' characteristics.

To understand the significance and weight of the four main categories within the study, we calculated the percentage of references related to each category, thereby estimating the occurring percentages of all references throughout the corpus. The results are shown in Figure 2. The chi-square analysis revealed that there are statistically significant differences between the percentage levels connected to the categories 'Relationships with families' and 'Teacher collaboration' (chi-square 484.810 with df 4 and Sig.000; ASR 17.3 and 8.7, respectively).

E-inclusion categories

Technologies

With regard to technological equipment, 24.07% of the teachers (187 references) declared that the families of their special education pupils did not have devices at their disposal that were sufficiently powerful to launch videoconferencing software or to download several applications necessary to create digital materials. In addition, 129 teachers (16.61%) emphasised the problem of the low quality of families' Internet connectivity. These situations can represent an obstacle, especially for families facing social and economic disadvantages (7.46% of teachers with 58 references). The level of preparedness in using both hardware and software is the second issue. According to 72 teachers

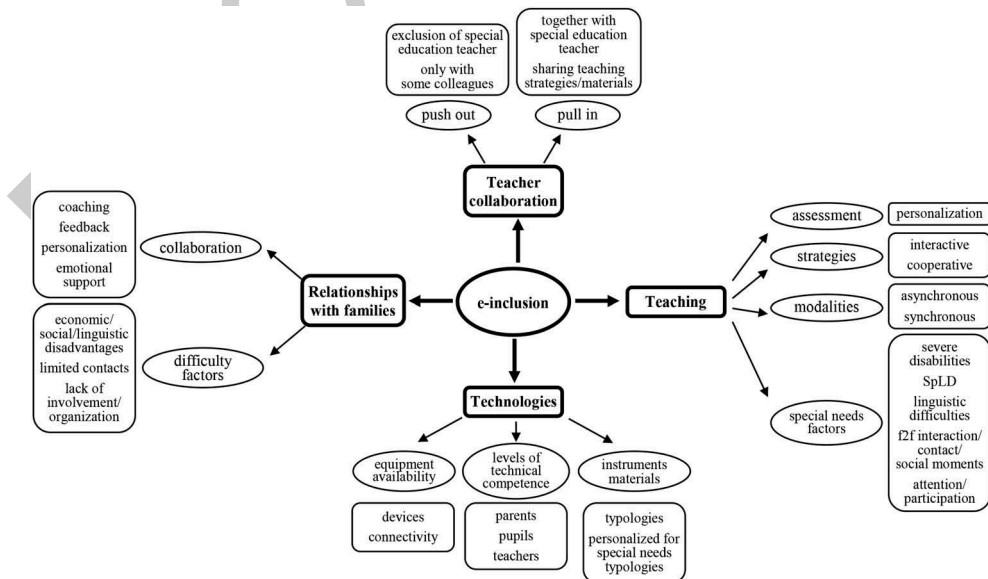


Figure 1. Map of e-inclusion.

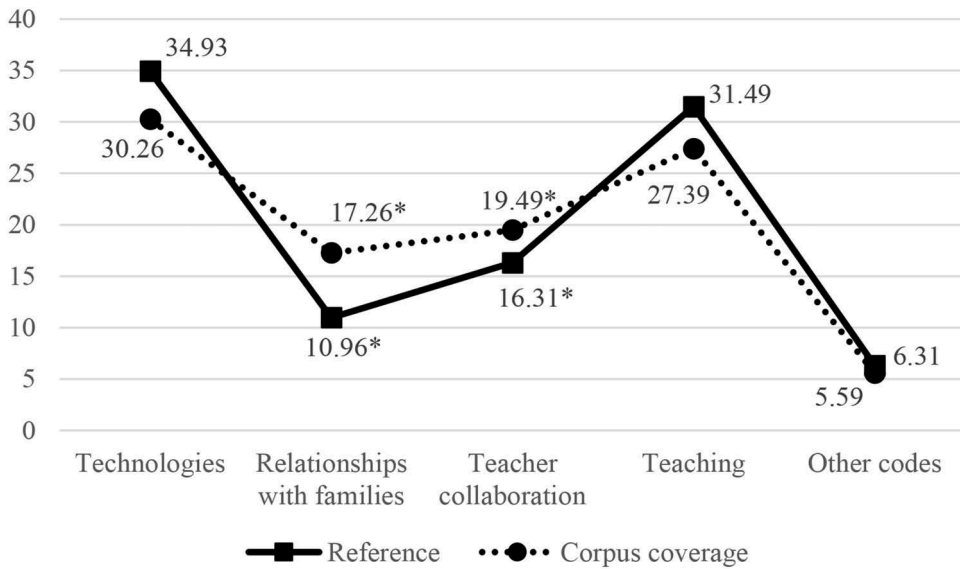


Figure 2. Percentage comparison of category references and corpus coverage.

(9.27%), families were not prepared to manage the online activities, especially those involving younger pupils or pupils with severe disabilities who were unable to manage the devices themselves. For both subcategories 'equipment availability' and 'levels of technical competence', the chi-square analysis highlighted statistically significant differences, regarding the school level as variable. In both cases, the families of special needs pupils at primary level experienced more difficulties (respectively: chi-square 28.800 with df 3 Sig .000 and ASR 4.2; chi-square 10.869 with df 3 Sig .012 and ASR 3.3). Furthermore, the researchers categorised the teachers' sentences about their own technical competence in three levels. A total of 602 teachers wrote sentences about their own levels of competence, and 54.47%, 28.48% and 17.05% of them declared having low, medium and good levels, respectively. The chi-square analysis showed that the kindergarten teachers (chi-square 12.462 with df 6 Sig .048 and ASR 2.5) and the special education teachers (chi-square 6.334 with df 2 Sig .042 and ASR 2.2) affirmed having a low level of technical competence. Regarding the 'instruments and materials' subcategory, the most used platform is Meet (25.48%), followed by Zoom (3.61%), YouTube (3.22%) and Skype (2.06%). Most teachers tried to create personalised materials, such as concept maps (9.14%) and various kinds of diagrams (7.08%), but 60.62% of teachers themselves created specific materials, using several applications, in particular, audio messages, videos, multimedia presentations and tutorials.

Relationships with families

Most families (65.98%) have collaborated in many ways with teachers, in particular, by coaching their children (15.03%) and giving continuous feedback (5.61%), supporting their children emotionally (3.57%) and also helping teachers during the personalisation processes (3.06%) (see Table 2). Teachers also declared that the remaining 34.02% of families seemed to experience many difficulties and did not collaborate with teachers. Some parents did not want to be involved and showed a low capacity to organise the activities of their children.

Teacher collaboration

A total of 70.81% of teachers declared having had a good level of collaboration, whilst 154 teachers (19.62%) noted situations where special education teachers were excluded and left alone in managing the pupils with SEND (see Table 3). The remaining 9.57% of teachers did not express

Table 2. Relationships with families.

Subcategory	Code	Sentence	Reference	% of respondents
Collaboration	Cooperation	Fortunately, the families of my pupils collaborated actively	304	38.71
	Coaching	There is a useful collaboration with families, which is necessary to coach children during activities	118	15.03
	Feedback	I asked for families' feedback to examine what I did with their children so I could implement some strategies	44	5.61
	Emotional support	I involved families in the online activities by asking them to accompany their children to support them emotionally	28	3.57
	Personalisation	Families' collaboration was essential for children with severe disabilities, who followed personalised learning plans	24	3.06
Factors representing obstacles	Lack of involvement/organisation	E-inclusion is difficult if families are totally absent	127	16.18
	Economic/social/linguistic disadvantage	E-inclusion is difficult in cases of economic, social or linguistic disadvantage. There are instances of lack of devices, lack of connection, and inability to understand instructions about how to manage technology	106	13.51
	Limited contacts	Special needs pupils are difficult to involve. The only way to do so is by calling their parents, unfortunately without necessarily achieving the expected results	34	4.33

Table 3. Teacher collaboration.

Subcategory	Code	Sentence	Reference	% of respondents
Push out	No collaboration	There was no collaboration with the class teachers	85	10.83
	Only with some colleagues	There are many difficulties in communicating with most colleagues	46	5.86
	Exclusion of special education teachers	I work with my students with special needs on my own	23	2.93
Pull in	Sharing teaching strategies and materials	We decided together how to present the activities and the specific content	340	43.31
	Together with special education teachers	We follow a common approach and collaborate with class and special education teachers	135	17.19
	Personalisation	All the paths are devised by a team and personalised	81	10.32

considerations about this category. The chi-square analysis indicated that the 'push out' phenomenon was more significant at the upper secondary level (chi-square 23.925 with df 3 and Sig .000; ASR 3.6), whilst the 'push in' phenomenon (good collaboration between class and special education teachers) was more significant at the kindergarten and primary levels (ASR values of 3.4 and 2.5, respectively).

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Teaching

Online inclusive teaching activities are strictly related to the **typology of special needs**. Teachers had to manage various cases: severe disabilities, specific learning difficulties (SpLD) and linguistic difficulties. The activities involving pupils with severe disabilities were conducted mainly by the special education teachers in cooperation with the families and the other teachers: 'I work with a pupil who has a severe disability with another special teacher by attending the whole class lessons

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Table 4. Teaching: factors affecting online inclusive activities.

Subcategory	Code	Sentence	Reference	% of respondents
<i>Special needs typology</i>	<i>Severe disabilities</i>	The family was involved in setting online activities; otherwise, it wouldn't have been possible to work with the pupils	53	6.75
	<i>SpLD</i>	I involved the students with SpLD in the main class but via personalised activities and tasks	26	3.31
	<i>Linguistic difficulties</i>	The special needs pupils whom I work with are migrants so they have many linguistic gaps	25	3.18
<i>Additional factors</i>	<i>Lack of physical contact</i>	Contact and physical closeness are fundamental to understand a student emotionally	133	16.94
	<i>Lack of face-to-face interaction</i>	Genuine inclusion should be driven through face-to-face interaction between students and teachers	92	11.72
	<i>Lack of attention</i>	Virtual classes are inappropriate given the short attention span of pupils, especially younger students	35	4.46
	<i>Lack of social moments</i>	There are difficulties in maintaining contact with the rest of the class	27	3.44
	<i>Lack of participation</i>	I involved the families many times because students were not participating in the class activities	16	2.04

and managing individual meetings', and 'With pupils with severe disabilities, I work in collaboration with the other teachers and with families to tutor pupils during the activities and to assist with technical issues'. The activities with pupils with SpLD were principally arranged through the preparation of personalised materials, setting flexible times and using interactive strategies: 'I sent them activities to study thoroughly the content encountered in class and I gave them more time to complete the tasks.' The linguistic difficulties were mainly experienced by migrant pupils and dealt with by trying to involve some family members able to speak Italian: 'The brother is involved because he is the intermediary and translator in interactions with the family and the student.'

Table 4 shows also the additional factors that represent obstacles for the online inclusive activities. The lack of physical contact represented a substantial educational limitation: 'The physical nearness is necessary for pupils with SEND.' Similarly, teachers emphasised the lack of face-to-face interaction during the virtual lessons because 'it was problematic for students to talk and to relate freely between peers'. Additional factors are represented by the limits related to the students' level of attention ('Unfortunately, the students with SEND are not able to stay long enough in front of a screen') and the pupils' difficulties in engaging actively in online activities ('Not all the students participate actively in the lessons'). 'To avoid and overcome these limitations and make inclusive online activities meaningful, the teachers planned teaching strategies to involve deeply the pupils with SEND in discussions and activities and to encourage them to cooperate with peers. The most used strategies can be called 'interactive' (208 references, 26.49%) and 'cooperative' (81 references, 10.32%); they are used in lessons including those based on discussions, gaming, problems and flipped activities. Additionally, pupils with SEND were assessed through personalised, facilitated or assisted tests: 'I gave them more time to perform the tasks, complete tests with basic objectives and the option to use maps while facing the tasks'. From 'technological point of view, the most important subcategory is represented by the modalities through which the teachers organised their online inclusive activities. Figure 3 shows in detail the subcategories and the codes related to teaching modalities.

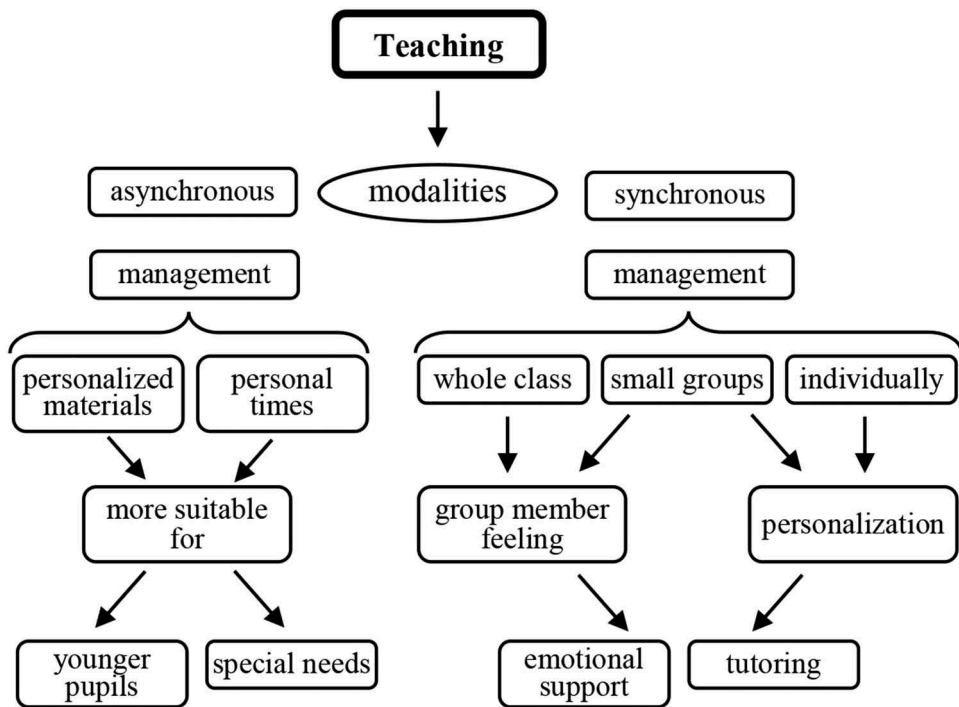


Figure 3. Teaching for e-inclusion.

Discussion

The map of categories and the subcategories that emerged during data analysis (see Figure 1) visualises the potential and obstacles of effective e-inclusion.

The category 'Technologies' represents the technical bases used to start the e-inclusion processes. This category is divided into three subcategories that specify the availability of devices and connectivity to both teachers and families, the ability and the preparedness to use equipment and applications, the instruments (platforms, apps etc.) used to communicate, and the materials created by the teachers to carry out effective inclusive online practices. Regarding the availability of equipment, the lack of devices represented one of the main barriers to supporting inclusive online activities, especially for families with social and economic disadvantages. In addition, the low quality of Internet connectivity drastically reduced the fluidity and smoothness of lessons, leading the pupils to lose part of them: 'Not all the students have adequate instruments to attend the online lessons.' Another issue concerns some families' low competence levels in using both hardware and software, especially those with children at primary level. This is evident in statements such as 'It is necessary to sustain families step-by-step', 'It could be useful to think about free preparation courses for families' and 'There were limits in using technologies where there were severe problems of attention or cognitive disabilities.' Moreover, more than half the teachers declared that their level of technical competence was low; this was especially prevalent among kindergarten and special education teachers. In fact, these teachers would have had the possibility of attending a specific course, focusing specifically on pupils with SEND and aiming to create materials and manage lessons through platforms, as indicated by the following comments: 'I was absolutely not prepared, I followed some free webinars' and 'I was not prepared, a course would have been useful to understand how to use the technological instruments available.'

The category 'Relationships with families' has proven to be crucial to effective e-inclusion. With good collaboration between teachers and families, the inclusive practices could be implemented and carried out successfully, as indicated by the comments: 'We have worked together, parents gave me feedback every day in order to improve their children's learning process' and 'Families' involvement was necessary in such a difficult period.' Instead, when families did not demonstrate willingness to collaborate with teachers (partly due to the parents' inability to organise their children's activities), it was quite difficult to develop e-inclusion. The economic, social and linguistic disadvantages represented the other main factor that reduced the effectiveness of online inclusion because it appears to be strictly connected with technological limitations (lack of devices and/or connection). 275

Similarly, 'Teacher collaboration' denoted another key point. Poor and limited collaboration between class and special education teachers did not support inclusive practices, whilst a high-level and effective collaboration allowed teachers to arrange meaningful learning activities. E-inclusion depended on collaboration among class and special education teachers, especially when the latter were teaching pupils with severe disabilities, as demonstrated by statements such as 'Achieving collaboration with inclusion is always a very difficult topic to face. There is an excellent collaboration with some colleagues and none with others' and 'For students with severe disabilities, I have personalised teaching programmes, I got some information about what pupils have to do, but then I worked alone.' In particular, collaboration among teachers aimed at sharing teaching strategies and materials and creating personalised solutions for students, as indicated by statements 'All the activities that we are doing are before shared and decided in detail with all colleagues', 'We tend to share all materials' and 'We discuss deciding how to simplify content for pupils and monitor students' participation.' In some cases, the relationships with the families of pupils with severe disabilities were delegated to the special education teachers, who took care of such relationships individually. A class teacher said, 'I did not have any relations with families, but I am sure that the special education teacher did.' 280 285 290 295

The last category, 'Teaching', is more complex because teachers had to reinvent, in a short amount of time, a new model of inclusion that was completely online. As shown in Figure 3, teachers arranged both synchronous and asynchronous activities for pupils with SEND. Management of the asynchronous activities was based on personalised materials and activities to be developed according to flexible schedules. These strategies were particularly successful with kindergarten pupils and, in general, with pupils with SEND because such strategies allowed pupils to face the tasks without emotional pressure and gave pupils enough time to perform such tasks. During asynchronous activities, there was an ongoing relationship between class and special education teachers and the families to support and help pupils with any technical or didactical difficulties. In addition, asynchronous activities can be used as a form of personalisation after a synchronous video class in which the class teachers can give some tasks to the whole class, and the special education teachers personalise such activities for pupils with SEND, arranging digital materials to be viewed during additional asynchronous study moments, as described in the following notes: 'We have synchronous video lessons, and then, I send additional simplified materials' and 'I manage different activities based on the group of students that are split according to level of competence, then they perform the activity and send it to me.' Similarly, asynchronous activities can represent a starting point for synchronous activities: 'I started preparing lessons that were aimed at creating materials and trying to stimulate the contact between peers through video calls, and messages. The second time, these activities were shared in class during the online meetings.' The synchronous activities were first aimed at involving the pupils with SEND and supporting the interactions and the cooperation with peers: 'I used to stimulate students with SEND during the lessons so that they could interact even more.' Initially, the teachers managed the synchronous lessons with the whole class. Then, the teachers divided the pupils into small groups to enhance the interactions. This collective phase was important for pupils with SEND because they had the chance to feel that they were part of the class and the group: 'Pupils with SEND feel more included and involved, they can see their schoolmates and they feel part of the group and the same as others.' After this step, special education teachers arranged synchronous moments for individual pupils or very small groups to personalise the activities focused on the specific needs: 'Special needs pupils 300 305 310 315 320

participate in the whole class lessons and in individual lessons with the special education teacher. 325
 During the individual lessons, the contents of the class lessons are reviewed and learned in greater
 depth. In some cases, teachers managed the individual lessons together with schoolmates of some
 special needs pupils, and schoolmates played the role of tutors: 'We work both individually and with
 the whole class, but we also have small group sessions in which the special needs pupil can be
 supported by peers. This is a precious resource.' 330

From a quantitative point of view, it is important to underline the significance and the weight of
 the four main categories, as shown in Figure 2. The categories 'Technologies' and 'Teaching' amass a
 higher number of references than 'Relationships with families' and 'Teacher collaboration' but
 nonetheless cover a lower proportion of the overall corpus. This means that teachers quoted the
 codes related to those categories fewer times, but when they did, they expressed their ideas and 335
 comments at greater length and detail, underlining the value and the complexity of those codes.

Conclusions

After having presented and discussed the findings, we can now move on and attempt to answer the
 research questions, identify the nature of the factors that support effective e-inclusion processes, and
 establish the contribution this study may make to improving online educational activities from the
 perspective of pupils with SEND. The first question concerns the main strategies for arranging
 inclusive online teaching/learning activities. Both class and special education teachers declared
 that the most useful strategies must be based on interactive and cooperative methods, on the one
 hand, to allow pupils with SEND to feel part of a group, interacting and communicating with
 schoolmates and teachers and, on the other hand, to have specific moments with personalised 340
 activities and digital materials. The direction that emerges from the teachers' words starts with online
 activities involving the whole class and proceeds to focus on more dedicated activities in small
 groups and moments of individual instruction, supported by the families. 345

In this sense, the management of online inclusive classes (second research question) can include both
 asynchronous and synchronous modalities. The former appear more suitable for personalisation because 350
 the teachers can have ongoing relationships with the families and create specific digital materials and
 activities. In addition, asynchronous activities are regarded as the cornerstone of e-inclusion because they
 can occur after a synchronous moment or, vice versa, also as a starting point to set up live moments.
 In any case, asynchronous activities represent the key moments and are, in particular, connected with
 small-group activities where the peers can play the role of tutors. 355

If the families do not collaborate, e-inclusion processes are difficult to implement. The families'
 collaboration is the core of the answer to the third research question because such collaboration
 represents one of the main factors that affect the effectiveness of online inclusive strategies, in
 particular, when families are characterised by economic, social and linguistic disadvantages, and
 because it appears to be strictly connected with technological limitations. The digital divide appears 360
 to be an evident aspect of educational poverty not only from a technical point of view (a lack of
 devices and/or connectivity) but also from a cultural and social perspective when families cannot
 understand the value of technology in supporting the learning processes of their own pupils with
 SEND, as suggested by this study.

The collaboration between class and special education teachers (fourth research question) is the 365
 other factor that strongly affects the e-inclusion processes mainly for pupils with severe disabilities.
 Our study indicates that, in a totally online scenario, the shortage of relationships among teachers
 can cause a quite complete exclusion of pupils with SEND. The 'push out' phenomenon can reduce e-
 inclusion significantly because teachers work without coordination. This situation can occur mainly
 at the upper secondary level, where many teachers work in the same class and are more focused on 370
 subject-specific knowledge. This research highlights that, in the event of a lockdown being repeated,
 teacher collaboration becomes particularly effective when teachers schedule recurrent online plan-
 ning sessions to share the teaching strategies they intend to adopt and create personalised

solutions. For these reasons, it is fundamental that teachers set up weekly online meetings during which they can share ideas and plan strategies together. 375

The last research question was focused on the teachers' preparation level. Most of the class and special education teachers affirmed that they were not prepared to create online inclusive activities, and in fact, they would have needed to follow specific courses. Most of them followed online courses and looked for tutorials to learn how to use applications and specific devices to create personalised materials (video, audio etc.). It is important to emphasise that some teachers also did not have devices and applications at their disposal that were sufficiently powerful to set up effective inclusive strategies. E-inclusion is affected not only by the families' digital divide but also by the lack of equipment and Internet connectivity of the teachers. 380

The Covid-19 pandemic represents an unprecedented event since all actors (teachers, pupils and parents) had to interact exclusively online while being at home. The main challenge to be overcome during the emergency situation was represented by the loss of contact with the students with SEND and their consequent marginalisation. This study confirms the studies regarding the importance of keeping the pupils with SEND involved through the use of interactive and cooperative teaching strategies that allow the opportunity to maintain strong relationships with schoolmates and teachers and feel that they are part of a community. 385

Additionally, family collaboration continues to be a crucial factor, but in this case, the lack of family collaboration entails a total exclusion of pupils, mainly the younger pupils and those with severe disabilities who cannot manage the online activities by themselves. For these reasons, this study suggests the families should be provided with both technical and educational support in order to tackle issues related to the digital divide. 390

An effective alternation of synchronous and asynchronous activities is confirmed by this study but, in this situation, the asynchronous moments represented the educational pillars connected with other activities. In this sense, it is important to educate teachers to design learning sequences composed of asynchronous-synchronous-asynchronous moments, combined with activities performed in a large group, a small group and individually and to maintain ongoing contact with families so that parents can coach their children more easily. 395

This study of e-inclusion in extreme moments such as the Covid-19 pandemic has revealed significant features needed to improve inclusion in both face-to-face and distance modalities, enhancing the relationships among the actors involved and setting up activities in which technologies can support integration effectively. 400

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