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The lesson learned:
What we have learned
from the pandemic
and how to innovate
schools and universities
in order to overcome it

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Online learning in kindergarten during Covid-19: Teachers' experience and perception in Italy

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Abstract

Before pandemic, online learning was not widespread in the Italian educational context with preschoolers. This study investigates how a sample of 143 Italian kindergarten teachers describe their experiences and perception in conducting online learning during Covid-19 lockdown. Findings revealed that collaboration among teachers seems to be one of the most important elements to guarantee quality online learning, as well as the emotional and relational dimensions that involve kindergarten teachers and children with their families as “mediator”, especially with children with Special Educational Needs (SEN). Although this study was conducted in an emergency period, these findings may have important implications in online learning with preschoolers also during the post pandemic period.

Keywords: Covid-19 Lockdown; Online Teaching and Learning; Kindergarten; Preschoolers; Teachers' Perception

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Introduction

From the end of 2019, the Covid-19 pandemic started affecting people all over the world. For schools, this sudden lockdown led to a hasty transition from classroom to distance education, also called “*emergency remote education*” (Williamson et al., 2020).

The adoption of online digital technology has been considered the most appropriate way to keep educational systems functional in many parts of the world during this period (Duraku & Hoxha, 2020). In the digital era, the employment of technology for teaching and learning has been widely investigated. Numerous studies have examined aspects such as the impact of technology on student learning support (Dyson et al., 2015), the use of technology to help teachers in professional advancement and development (Manca & Ranieri, 2017), and the digital competence of the school community (Kampylis et al., 2015; Panesi et al., 2020). While the effective integration of technology into the classroom has been widely promoted and supported around the world (Cope & Ward, 2002), pedagogically meaningful integration remains a challenge for many schools, and the mere adoption of digital technologies does not automatically translate into improved learning outcomes (Bocconi et al., 2020).

The Covid-19 lockdown has compelled teachers to shift from classroom to distance teaching, hence dealing with the use of technologies; this regards not only the use of technological tools, but above all the implementation of pedagogical methods and strategies suitable for distance teaching and learning processes. Thus, teachers have had to adapt to operating in virtual space and time, while maintaining effective relationships and enacting successful teaching strategies (Fantozzi, 2020). To do this, several countries have adopted various flexible online learning¹ in their education systems. Overall, “online learning” refers to the method of content dissemination and rapid

¹ Flexible online learning is a learner-centered educational strategy enacted at the institutional level which offers choices about the main elements of study, such as time and location of learning, resources for teaching and learning, instructional approaches, learning activities, and support for teachers and learners (e.g., Huang et al., 2020)

learning through the application of Information technology (Zhou et al., 2020); in line with Huang and colleagues (2020), we consider it as a subset of distance education.

In Italy, before the lockdown, online learning was more widespread in higher education or limited to specific cases, such as the educational inclusion of homebound children (Benigno et al., 2018) or hospitalized students (Benigno et al., 2017). At the school level, online learning actions were often employed for teacher professional development (Caruso & Ferlino, 2018), in line with the main national policy directive, the National Plan for Digital Education (*Piano Nazionale Scuola Digitale* — PNSD²) of the Ministry of Education (MI) in 2016.

During the Covid-19 lockdown, MI, together with some Italian research institutes, such as INDIRE³ and the Institute for Educational Technology of the National Research Council (CNR-ITD)⁴, developed several online professional development initiatives⁵ supporting teachers' efforts to switch to flexible online education practices. For this, it is fundamental to promote online collaboration among teachers thanks to the co-construction and sharing of educational materials that meet the needs of children, in particular those with SEN (Trentin, 2020). Finally, an empathic attitude and attention to emotional and relational aspects by teachers favors the involvement of both children and their families (Fantozzi, 2020). Despite nationwide supporting actions addressing teachers' needs have been implemented, very few have addressed kindergarten teachers, since preschool education is not compulsory in Italy. In the context of Italian kindergarten, online teaching and learning was not considered before the lockdown, so shifting to virtual classes represented a real novelty for kindergarten teachers. Ideally, this should not be an obstacle to overcome but rather an opportunity to become stronger, more creative, and innovative (<https://colibris.link/x5BUY>). Even if kindergarten is not compulsory, it was crucial to continue the educational activities with all the chil-

² <https://www.miur.gov.it/scuola-digitale>

³ <http://www.indire.it/>

⁴ <https://www.itd.cnr.it/>

⁵ Example of supporting actions during Covid-19 lockdown: (i) <https://www.istruzione.it/coronavirus/didattica-a-distanza.html>; (ii) www.itd.cnr.it/covid19/

dren during the lockdown, especially those with SEN, as preschool is a very important period for child development, especially for cognitive abilities (Panesi & Morra, 2018; 2020; Morra et al., 2018) and socio-emotional competences (Denham et al., 2012).

To the best of our knowledge, only few studies investigated online learning in Italian kindergarten (Benvenuti et al., 2021), and to fill this gap, the present study aims to explore how a sample of Italian kindergarten teachers perceived and described their experience in online teaching and learning practices during the Covid-19 lockdown. This study adopted a mixed research design in which quantitative and qualitative data were collected through a purposely devised survey and then analyzed in order to answer the following research questions:

- *RQ1: What organizational and educational strategies have kindergarten teachers adopted for online teaching and learning during the Italian Covid-19 lockdown?*
- *RQ2: How did kindergarten teachers describe their experiences with online learning during the Italian Covid-19 lockdown?*

Method

Participants

143 Italian kindergarten teachers took part in this study (1 male and 142 female; mean age = 46.73 years; SD = 9.75; mean age of experience in education = 17.56 years; SD = 10.41). Participants had different levels of education: 53 (37.1%) had a high school diploma, 39 (27.3%) had a degree and 51 (35.7%) had a post-graduate qualification (Master's, PhD). Furthermore, participants came from different macro-geographical areas: 66 (46.2%) from the North, 13 (9.1%) from the Centre, and 64 (44.8%) from the South/Islands⁶.

⁶ The majority of the participants came from the macro-geographical area South/Islands came from Sardinia (49; 34.3%), the region with more educational disadvantages during the lockdown (<https://www.statista.com/statistics/1106536/online-school-classes-due-to-coronavirus-in-italy/>)

Instrument

A custom questionnaire (see <https://colibris.link/OtoIU>) was developed for the study including multiple-choice items and one optional open-ended question. The multiple-choice items covered socio-demographic data (gender, age, experience in education, geographical location, level of education) and information on organizational and educational strategies applied during the lockdown. The open-ended question asked kindergarten teachers to freely describe their experiences in conducting online learning in preschool.

Procedure and data collection

The study stems from a survey conducted in Italy during the Covid-19 lockdown, after the presentation of a webinar titled “At a distance but close: experiences in kindergarten” (<https://www.youtube.com/watch?v=P5wTsG2QwpE>). This online event was part of a broader initiative promoted by CNR-ITD aimed at supporting teachers during the forced closure of schools.

Kindergarten teachers who had followed the webinar were invited to fill in a custom online survey to collect information about their online teaching and learning experience during the lockdown. The questionnaire was available online, along with the recording of the webinar, from 6/04/2020 to 15/05/2020. All teachers filled in the questionnaire on a voluntary basis.

In compliance with the General Data Protection Regulation (GDPR), all the collected data was anonymous and safely stored in an aggregated manner on a CNR-ITD server.

Data analyses

Quantitative data (N = 143) was analyzed using descriptive statistics (frequency analysis) with the SPSS 20.0 software program (Arbuckle, 2011). Qualitative data, i.e. answers to the open question (N = 60)

was analyzed with the Thematic Analysis approach (Braun & Clarke, 2006): two researchers read all the data independently, identifying the emerging conceptual categories (“codes”). The codes were then organized into themes by aggregating codes embodying similar meanings (Vaismoradi et al., 2016). Researchers then used this grounded classification to code the entire qualitative dataset of textual responses. This phase was carried out using MaxQDA, a software package for qualitative research (Kuckartz, & Rädiker, 2019). This software is a tool for analyzing qualitative data, and we used it in order to organize and systematize the collected data.

Results

RQ1: What organizational and educational strategies have kindergarten teachers adopted within online teaching and learning during Italy’s Covid-19 lockdown?

This research question is addressed by six multiple-choice questionnaire items (quantitative findings) and the open-ended question (qualitative findings).

Quantitative Analysis

The first questionnaire item was about how kindergarten teachers interacted with children and their families (Table 1). Most of the kindergarten teachers chose to contact the class representative via WhatsApp, who forwarded the message to the other parents via WhatsApp chat. Therefore, some strategies adopted in regular teaching practice also proved useful during the lockdown period.

The second item was about the personalization of educational activities (Table 2). 129 kindergarten teachers (90.2%) reported using personalized educational activities. In particular, creating video tutorials or using video tutorials created by your colleagues (88.8%) or creating songs/ nursery rhymes/short stories or using those created by your colleagues (58%). On the other hand, only 14 kindergarten teachers (9.2%) reported using only non-personalized online educational materials, and the other teachers used both personalized

Table 1. Item 1: “When conducting online learning activities, you interact with the children via...”

Responses	Frequency	Percentage
WhatsApp message to the parent representative, who forwarded messages	82	57.3%
School’s online registration system	10	0.1%
E-mail	6	4.2%
Direct contact with individual child/family by phone or WhatsApp	5	3.5%
Other (specify) Video-calls (Skype, Google Meet or Zoom)	21	14.7%
School’s online tools, such as website, online platform or page, or private channels	17	11.9%

and non-personalized materials. Concerning non-personalized online educational materials, kindergarten teachers used video tutorials located on YouTube (21.7%), songs/nursery rhymes/short stories from the Internet (33.6%), and downloadable and printable worksheets (32.9%). Therefore, these findings showed that despite the difficulties related to the Covid-19 lockdown, teachers continued to pay attention to preschoolers’ educational needs providing them mostly personalized educational materials.

Table 2. Item 2: What kind of learning materials do you use in online learning with children?

Personalized educational materials	Frequency	Percentage
Video tutorials you or your colleagues created	127	88.8%
Songs/nursery rhymes/short stories you or your colleagues created	83	58%
Non-personalized online educational materials		
Video tutorials located on YouTube	31	21.7%
Songs/nursery rhymes/short stories from the Internet	48	33.6%
Downloadable and printable worksheets	47	32.9%

The third item is “How do you plan and design online learning activities?” (Table 3). Results show that most kindergarten teachers (52.5%) organized educational activities with their colleagues, defining weekly online meetings. This reveals that despite the difficulties in organizing distance education, teachers continued to work with colleagues on educational activities, at least within the class. On the other hand, only a few teachers managed to discuss and share educational materials online fostering collaborative online co-construction of artifacts (24.5%).

Table 3. Item 3: How do you plan and design online learning activities?

Responses	Frequency	Percentage
I set learning activities by myself	5	3.5%
When I felt the need, I interacted with colleagues on WhatsApp about learning materials for the children	28	19.6%
Together with my school colleagues, we held regular on-line meetings on Skype, Google Hangout, Zoom etc. to decide what learning activities to set the children, then we shared them.	75	52.5%
Together with my school colleagues, we created an on-line platform where we could interact or we held online planning meetings on Skype, Google Hangout, Zoom etc., and we share educational materials online, fostering collaborative online co-construction of artifacts (using Dropbox, Drive, etc.).	35	24.5%

The fourth item was “How are learning activities delivered to the children?” (Table 4). Results show that most teachers sent educational materials to children/families, and each child carried out the proposed educational activities independently. This shows that in distance learning during lockdown, most teachers focused on the interaction with the individual child/family unit. Only a small percentage (14; 9.8%) considered that children needed to continue interacting with their peers.

Table 4. Item 4: How are learning activities delivered to the children?

Responses	Frequency	Percentage
Online Learning materials sent separately for each individual child to use if and when desired as part of set learning activities	128	89.5%
Online sessions in which children carried out activities together, synchronously (materials were accessible afterwards so that those unable to connect during online session could carry out the activity individually later	14	9.8%
Educational materials posted on Padlet for children to access them individually	1	0.7%

The following item was “How do the children in your class hand in the results of their activities?” (Table 5). Results show that most children preferred to show their teachers the outcome of their activities by drawing. Nevertheless, findings revealed that children used many other channels as well, such as audio-messages, videos, screenshots, etc.

Table 5. Item 5: How do the children in your class hand in the results of their activities?

Responses	Frequency	Percentage
Recorded audio-messages	91	26.6%
Drawings	112	32.7%
Screenshots	26	7.6%
Video clips of the work done	90	26.3%
Photo of the work done	18	5.3%
E-mail messages	5	1.5%

A final item focused specifically on SEN was “How does your school handle activities destined for children with SEN?” (Table 6). Results show that in the kindergarten context, most SEN support teachers tended to personalize materials for children with SEN while coordinating with the class teachers, or, jointly organizing educational activities for children with SEN.

Table 6. Item 6: How does your school handle activities destined for children with SEN?

Responses	Frequency	Percentage
SEN is not addressed	5	3.5%
SEN support teacher individually sends the family personalized activities for their children	35	24.5%
SEN support teacher collaborates with colleagues to personalize class activities and sends them to the family of the child with SEN	53	37.1%
SEN support teacher is an integral part of the teaching team, designing activities that all children handle	45	31.5%

Qualitative Analysis

Analysis of the kindergarten teachers' answers to the open-ended question brought to light four themes related to RQ1, grouped in two meta-themes: technological tools and proposed activities; teaching and institutional strategies (for details, see supplementary materials).

Technological tools and proposed activities

Teachers reported proposing distance learning activities involving games, tales, songs and, in some cases, creative and empowerment tasks; these activities were supported by use of technological tools such as videos, tutorials and voice messages; other tools adopted supported communication with children and families, as well as with colleagues (school website, institutional e-mail, social networks, video calls).

Teaching and institutional strategies

Teachers developed several strategies to start and maintain distance learning with children. One action that fostered the resumption of school services was the collaboration among colleagues to schedule learning activities. Other teaching strategies concern activity planning. In some cases, changes to or a reduction in the frequency and duration of activities were adopted; in others, teachers proposed educational activities linked to the existing program. Moreover, some

respondents reported trying to maintain daily contact with children, in some cases working with small groups and implementing daily routines.

Some teachers differentiated their teaching to ensure inclusion, for example by planning individual meetings with children with SEN. Finally, some strategies, defined as institutional actions, focused on teachers' collaboration with colleagues, school principals, parents or with other educational actors.

RQ2: How did kindergarten teachers describe their experience with on-line learning during the Italian Covid-19 lockdown?

This research question is addressed by the open-ended question (for details, see supplementary materials) about the following meta-themes: teachers' attitudes and needs, relationship with children and families, positive aspects and critical issues regarding distance learning, response to distance learning.

Teachers' attitudes and needs

During the first phases of the emergency, some teachers reported initial disorientation and reticence towards the implementation of distance learning. However, analysis highlighted an attitude of sensitivity towards the emotional dimension of their work, their desire to keep in touch with children and families, and to remain a "remote community".

Furthermore, many respondents showed a positive attitude towards their online learning experience in terms of work satisfaction; however, some teachers seem to have experienced a sense of loneliness and disappointment due to the low participation of children in the online activities; in some cases the perception of artificiality connected to the use of technologies and greater work commitment were also reported.

Distance learning experiences at kindergarten level also brought to light some needs: teachers declared the need to share and cooperate, and to be more flexible. Some respondents also reported having engaged in special preparation and training to cope with the new job situation.

Relationship with children and families

Teachers recognized that sustaining kindergarten-level distance learning involves the on-going involvement of families (and in some cases older siblings), who played an important support and mediation role during the activities. This was more onerous for families of SEN children. Overall, kindergarten teachers highlighted the need to devote special attention to domestic conditions, especially where children with SEN are concerned. In addition, some respondents declared that the children's actions expressed a spontaneous need to maintain contact with their teachers during the emergency.

Positive aspects and critical issues regarding distance learning

From the teachers' perspective, distance learning allowed to reduce the feeling of isolation and to maintain relationships with children and families. The analysis suggests that they recognized other interesting positive aspects of the experience: for some, distance learning led to a rediscovery of educational technologies, an increase in teacher creativity, and an improvement in collaboration with colleagues.

By contrast, some kindergarten teachers highlighted critical issues concerning the relational aspects: some educational activities seemed to be impoverished due to the absence of physical contact. Other critical issues were related to the children: distance learning was more difficult with younger and SEN children, thus risking non-inclusiveness.

Other critical issues concern the actual activities. The main difficulties kindergarten teachers reported concern difficulties in finding materials and adapting learning activities, as well as an inadequacy in their training for such a situation, and the organizational complexities in dealing with it.

Response to distance learning

Overall, teachers reported positively their distance learning experience, and most had positive feedback from children and families; however, some teachers complained of low participation in learning activities; in some cases, only a few children regularly followed the educational proposals.

Discussion and conclusion

This study attempted to identify the organizational and educational strategies that Italian kindergarten teachers adopted during the Covid-19 lockdown (particularly related to online learning) and sought to examine how they described their experiences and perception. Results are related to an appropriate adoption of digital technologies, and suitable pedagogical methods and strategies. These findings are a good starting point for reflecting on how to promote online learning with young children and with children with SEN, whether in an emergency context like the lockdown, or in a more 'normalized' post-pandemic context.

The Covid-19 lockdown forced kindergarten teachers to use online digital technologies to solve an issue that could not be handled with other means. This may have helped them appreciate the advantages of using technologies and virtual classes, a real novelty for kindergarten teachers. Regarding self-perception, the results showed that kindergarten teachers considered themselves more creative in this context. Furthermore, in line with Reimers and Schleicher (2020), kindergarten teachers tended to use the technological tools they were already familiar with, such as Whatsapp, to maintain contact among teachers and families.

Since an investigation of the use of digital technologies must also consider the pedagogical aspects, the analysis needs to start from the identification of the elements related to successful online learning in kindergarten. Firstly, a key element that emerged from both the quantitative and qualitative results is teachers' aptitude and the ability for peer collaboration in planning and organizing learning activities. On the other hand, our findings highlighted that only a few kindergarten teachers managed to discuss and share educational materials online, or foster collaborative online co-construction of artifacts, in line with Trentin (2020). Nevertheless, kindergarten teachers produced and proposed personalized learning materials. This is central when planning and organizing activities for SEN children. Kindergarten support teachers tended to personalize materials for SEN children while interacting with class teachers or jointly designing with them educational activities for SEN children.

Results from the qualitative analysis show that in implementing organizational strategies and educational planning, some teachers felt the need to share and cooperate more with colleagues, especially those who were not at ease with distance learning; they also reported the need to be more flexible. Therefore, findings show the need for actions fostering flexible online learning with a flexible pedagogy, a result in line with literature (Huang et al., 2020).

With respect to the emotional and relational dimension of online kindergarten learning during Covid-19 lockdown, findings are related to the relationship between kindergarten teachers and preschoolers and their families. Most of the teachers in this study expressed an empathic attitude and attention to the emotional and relational aspects, considering the importance of the involvement of both the children and their families (Fantozzi, 2020). Most of the teachers were satisfied with their relationships with the children and families, including those with SEN. However, some teachers reported a sense of loneliness and low response levels from the children. This shows that there is still work to be done in scaffolding the relation between teachers, children, and their families so as to build resilient relational networks supporting online distance learning. In some cases, other critical factors that emerged concern the lack of children's feedback or their low participation in activities; even if these aspects can be explained by a low knowledge in the use of ICTs or by poor technological resources of the families, they need to be further investigated and assessed.

Results from this study highlight a strong need for teacher professional development, especially for kindergarten teachers, to facilitate their effective adoption of online teaching and learning practices. In the Italian context, starting from the PNSD, the Ministry, together with research bodies, could develop teacher training actions for kindergarten teachers, focusing on distance learning practices using appropriate digital technologies, as well as on two closely related and intertwined objectives: enhancing teachers' peer collaboration (fundamental for the success of practices related to learning outcomes); and promoting the co-construction of online materials, only adopted by a few teachers, but that could provide added value to online learning practices with young children (Trentin, 2020). These are fundamental

for fostering the implementation of flexible online learning linked to flexible pedagogy (e.g. Gordon, 2014), and may support new training paths promoting good educational practices based on collaboration among teachers. Furthermore, these training actions ought to focus on promoting a good relational networking with young children and their families, especially for young SEN children. Inclusion could and should be paramount in non-emergency situations as well. Although some actions have already been undertaken with this respect in Italy, for example relating to inclusive hybrid learning spaces (Benigno et al., 2018; Trentin, 2020), there still is lack of research studies aimed at educational and organizational strategies and technological solutions capable of ensuring the inclusion of young and SEN children in the online learning practices. Indeed, the findings of this study suggest the need to explore such issues in future research.

Finally, findings and practical implications emerging from this study could be of great value not just to kindergarten teachers, but also to school leaders and policymakers. These findings may also offer significant input to educational researchers for deepening their studies, as well as supporting the work of different educational stakeholders involved in implementing teacher training interventions with the Ministry of Education.

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