JOURNAL OF E-LEARNING AND KNOWLEDGE SOCIETY
Vol. 19, No. 2 (2023), pp. 39-51

Distance Learning according to Special Education Teachers: pedagogical considerations and educational instructions

Sara Rizzo[a,1], Salvatore Patera[b], Sebastiano Scirè[c], Ezio Del Gottardo[d]

[a]*DRC - Disability Research Centre, University of International Studies of Rome (Italy)*

[b]*University of International Studies of Rome (Italy)*

[c]*DRC - Disability Research Centre, University of International Studies of Rome (Italy)*

[d]*University of Salento (Italy)*

(submitted: 29/8/2022; accepted: 8/8/2023; published: 19/9/2023)

Abstract

The consequences of the pandemic on the school system are currently being debated in the main international organizations, in the scientific and educational communities. Over the last year, several researches in the educational field have had the purpose, on the one hand, of analyzing the educational implications connected to the introduction of Distance Learning (DaD) then Integrated Distance Learning (DiD), on the other hand, to reflect on aspects related to initial and in service teacher training. The aim is to provide some suggestions for facing the educational challenges of the current situation. In this broad debate, a further focus of analysis concerns the impacts of DAD on the most fragile subjects of the school system such as students with disabilities. For this reason, the research aims to explore some aspects inherent to the teaching experiences carried out by a sample of support teachers of different school grades in the last two years. The research analyzed the strategies used in the perspective of inclusive teaching as well as the results achieved and the personal and contextual resources activated by teachers to face this educational challenge. In line with the results of the main international and national researches, the results here presented give back some pedagogical reflections and some indications for teaching. These considerations can be a further element to hoard the lessons learned from the current educational challenge also in relation to the initial and in-service training of teachers.

KEYWORDS: Distance Learning, Educational Research, Inclusive Teaching, Initial and In-service Training.

DOI
https://doi.org/10.20368/1971-8829/1135740

CITE AS
Rizzo, S.,Patera, S., Scirè,S., & DelGottardo, E. (2023). Distance Learning according to Special Education Teachers: pedagogical considerations and educational instructions. *Journal of e-Learning and Knowledge Society*, *19*(2), 39-51.
https://doi.org/10.20368/1971-8829/1135740

1. Introduction

The data provided by *The World Bank*, UNESCO & UNICEF (Azevedo et. al., 2021a) show how the partial or total closure of schools involved about 1,6 billion students, with prominent effects in terms of social exclusion and the rise of educational and social inequalities (UNESCO, 2021).

In this sense, the reduction of learning opportunities can be read in light of the construct of educational poverty (Save the Children, 2014, p. 4). The rise of educational poverty is understandable not only due to the structural factors linked to the closure of schools or the lack of infrastructural ICT equipment for students and teachers, but also in relation to the approaches to teaching- learning relationships and educational strategies that have not been able to counter phenomena connected to the losses and educational gaps for the new generations of students (Pokhrel, Chetri, 2021; Fiorenzato et al., 2021; Doucet et al. 2021; Hamilton et al., 2020; Petrie, 2020). These critical issues have been worsened by the pandemics, but are already highlighted both on international scale (Azevedo et. al., 2021a; 2021b) and national scale (INVALSI, 2021) in terms of consolidated trends of implicit dispersion and, consequently, of *Early living from education and*

[1]corresponding author – email: sara.rizzo@unint.eu – address Via C. Colombo 200, Rome (IT)

training (ELET) and *Not engaged in education, employment or training* (NEET) (European Council, 2021; IPSOS; 2021; UIS-UNESCO, 2020).

Basically, if the effects of the pandemics have turned into the reduction or worsening of the opportunities of growth, development and learning, on the other hand

> *"This crisis has in many ways exacerbated existing inequalities in education, which is why a focus on equity and learning recovery is paramount as children return to school". (Azevedo et al., 2021a, p. 5).*

Starting from this consideration, the crisis has worsened the inequalities and educational gaps, reducing the opportunities for subjects already in contexts of socioeconomic, cultural and educational disadvantage (Trinchero, 2021; Wagner & Warren, 2020).

In fact, the main educational organizations at international level and the scientific literature focused on infrastructural barriers (closure of schools, connection, Wi-fi at home and within the family; space overcrowding etc.) (Save the Children, 2021; Pokhrel, Chetri, 2021) and the required redefinition of *"suitable pedagogies"* with the introduction of distance learning (Doucet et al. 2021), that can generate a deep rethinking of the teaching-learning relationship, in order to enhance significant learning and compensate the impact of the pandemics (Van de Velde et al., 2021; Vicari, Di Vara, 2021; Schleicher, Reimers, 2020; Hamilton et al., 2020; Petrie, 2020; Basilaia, Kvavadze, 2020).

At the same time, some considerations on this topic, supported by empirical researches on national scale (Mascheroni et al., 2021; Batini, et. al., 2021), although underlining the effects of distance learning on Italian students, stress the need of improving the teacher trainings on developing educational and didactical strategies that increase the student's involvement, interest, motivation (Sannicandro et al., 2021; Stringher, 2021). Also, it has been pointed out the student's burnout with effect on the social connections and on the learning motivation (Gonzalez-Ramirez et al. 2020).

Moreover, phenomena connected to the increased educational poverty, due to the above-mentioned issues, cannot be reduced to structural aspects such as technological equipment of schools and families; on the contrary, there is a need to problematize the pedagogies that lead the educational practices. As Fernández-Cruz and Fernández-Diaz (2016, p. 97):

> *"La mera presencia de recursos tecnológicos […] no son suficientes para desarrollar en los alumnos la competencia digital. La clave fundamental viene determinada por las competencias tecnológicas y pedagógicas de los docentes". (The mere existence of technological resources […] is not enough to promote in the students the digital knowledge. The fundamental key is determined by the teachers technological and pedagogical skills).*

The authors' specification reminds to the importance that teachers think and act in the nowadays educational challenges taking into account the limits of technological infrastructure but, above all, problematizing the educational choices that lead the educational acting, also linked to the enhancing of digital pedagogical skills among the professional competences (Sannicandro, et al. 2021).

This research aims to present a further photograph of the representations and didactical practices put in place by a sample of teachers being trained in a "Specialization course for the special education activities for students with disabilities", in order to highlight how they have experienced distance learning. The study is consistent with the educational research instance to promote a reflective process in the involved subjects, with regards to their representations and practices that lead the educational and didactical act (Fabbri, 1994).

2. Materials and Methods

How can the didactical practices of special education teachers involved in the research contribute to the pedagogical debate regarding distance learning?

In compliance with the research request, the research objective explored the didactical practices of the selected sample of special education teachers in order to provide theorical considerations as well as methodological-educational guidance.

The explorative hypothesis that we are to address assumes that the difficulties due to the pandemics and the consequent use of distance learning have not been lived by the subsample of teachers as educational challenges to improve the teaching -learning relationship.

The analysis strategy is explorative with an inductive approach, not lead by theory and oriented to the context of discovering (Guba & Lincoln, 1989; Silverman, 2016). The research schedule can be synthetized as follows: Construction of the instrument, piloting in a group of special education teachers from the previous cycle (CSS5), chosen on a voluntary basis (November 2021); delivering of questionnaires (December 2021); data analysis (January 2022); restitution of the results (ongoing). The survey has been implemented through the delivering of a semi-structured questionnaire (Mantovani, 1998; Zammuner, 1998) to a group of 600 people enrolled into the specialization course for special education teachers (CSS6) at the Università Internazionale degli Studi di Roma – UNINT.

The semi-structured questionnaire has been created *ad hoc* with reference to some heuristic dimensions:

- Teaching experience in the two previous school years;
- Main educational methodologies put in place;
- Opinions and experiences with reference to the teaching experience in the two previous school years.

The validation of the questionnaire required: a phase of discussion among the research equip, made up by pedagogists, sociologists, psychologists and psychiatrics; a testing phase with the deliver to a group of 15 special education teachers; taking into account the issues raised improvement actions have been undertaken.

The questionnaire has been filled anonymously online. The questionnaire provides only two mandatory questions articulated in questions with multiple answer (with one or more options to be selected) and questions with level of agreement and disagreement on the *likert* scale (1 not at all, 2 little, 3 fairly, 4 very much). The questions are all mandatory.

A Likert scale with an even number of choices has been set up in which the "median" or neutral option is not possible. The use of the "forced multiple choice" method had the aim of avoiding non-positioned answers that concealed the respondents' point of view. From a methodological point of view, this choice is justified by the fact that the alternatives represent different degrees of presence of the construct and lie on the same continuum. Furthermore, we preferred to choose this method to reduce the forms of "social desirability" and "misplacement" that could have emerged by designing a 5-point Likert scale.

An analysis on the frequency distribution has been implemented, also for those questions whose answers were agreement or disagreement. The answering frequencies have been grouped in a little/not at all and sufficient/ a lot, calculating the frequency percentage.

This study used a finalized (not probabilistic) sampling, selecting the participants since they were considered experts in that particular context (Patton, 2015).

Criteria of inclusion in the sample are: being enrolled in the course CSS6 at UNINT; willingness to take part in the research; having conducted teaching support activities in the school years interested by distance learning (DaD) and fully implemented in remote. The selection strategy complies with the method of convenience sample. 269 participants answered to the questionnaire and, as per the criteria depicted above, the sample has been reduced to a subsample of 100 units. The analysis of the main background variables of the sample and subsample features enables to explicitating some considerations (Table 1).

Category	**Variables**	**Experience as Support Teacher in distance learning (%)**	
		No	**Yes**
Sex	F	82.4%	83.8%
	M	17.6%	16.2%
Age range	20-35 years	37.6%	29.3%
	36-45 years	38.8%	35.4%
	46-60 years	23.5%	35.4%
Qualification	High school diploma	17.7%	13.1%
	Bachelor	75.3%	76.8%
	Post lauream	7.0%	10.1%
Region of residence	Other regions	10.6%	12.1%
	Campania	67.6%	53.5%
	Lazio	21.8%	34.3%
Years of experience teaching	0 - no experience	10.0%	0.0%
	From 1 to 2 years	50.6%	25.3%
	From 3 to 5 years	3.5%	7.1%
	From 6 to 10 years	27.6%	45.5%
	From 11 to 20 years	6.5%	20.2%
	More than 20 years	1.8%	2.0%
Teaching qualification	No curricular teaching qualification	42.5%	54.5%
	Yes curricular teaching qualification	57.5%	45.5%
	No special education teaching qualification	96.7%	96.0%
	Yes special education teaching qualification	3.3%	4.0%

Table 1 - Socio-demographic characteristics of the sample of respondents in relation to their experience as special education teachers in distance learning (DaD).

Looking at the Table 1, the subsample is made up almost by the total of the female participants (83.8%), equally distributed in the age ranges 20-35 (29.3%), 36-45 (35.4%) and 46-60 (35.4%), while the average age is 41. The prevalent degree is bachelor (in the 76.8% of all cases) and the post-secondary school diploma characterizes the 10.1% of the subsample.

In the 53.6% of the cases Campania is the region of residence, while in 34.3% Lazio; as for the rest of the participants, they were variously distributed in other regions.

In the selected subsample the 70.8% has teaching experience from 1 to 5 years, while only the 29.3% has teaching experience from 6 up to 20 years.

With regards to the teaching qualification, the 96% clearly does not hold any special education teaching qualification and only the 45.5% holds curricular teaching qualification. The 50% declares having had experience in special education teaching both during the school year 2019/20 and in 2020/21, while the 17% just during 2019/2020 and the 33% only in 2020/21.

The activity took place mostly in distance learning, in part individually and in part with the schoolmates (58% of cases) while they attend at distance with the class or part of the class (35%) and at distance exclusively with the student (7%).

The average weekly number of hours dedicated to distance learning is distributed as follows: 13% more than 20 weekly hours, between 1 and 5 hours 17%, between 16 and 20 hours 30%, between 6 and 15 hours 40%.

Reading the research results it is interesting to see also the disabilities, disadvantages and/or educational needs of the students the subsample has worked with during the two school years we focus on. The Table 2 shows among the certified disability options, selected by the subsample, intellectual disability (20,1%), followed by values that do not differ in percentage by the others.

Type of need/certified disability (more options)	**%**
Specific learning disabilities	13.6%
Autism	11.5%
Intellectual disability	20.1%
Communication disorders	15.0%
Movement disorders	9.1%
ADHD	13.3%
Intellectual disability associated to a genetic Syndrome	10.6%
Other disability	6.8%
Total	**100.0%**

Table 2 - Type of need/certified disability.

3. Results

With regards to the research objective and the research inquiry, we hereby report the results collected on the basis of statistically significant dimensions related to the life experience and the perception of the teaching experience at distance learning during the pandemics.

A first topic that has been explored and helps understanding the special education teachers' previous technological skills, not reported in a Table for space reasons, embraces a dimension that explores the normal use of technologies as educational resource as well as their selecting criteria. The 18.9% of the subsample declares that, before the introduction of distance learning, would regularly use the tablet, video and clips (18.9%), and the smartboard 17.3%. About 3% indicates other tools: specific software for disabilities, digital newsstand, educational apps and games. Digital tools that, on the contrary, they declare to regularly use for personal use. Moreover, we find that teachers, while choosing the educational tools, ground their decisions for more than the 80% on the previous experience with regards to the objectives achieved with the students and the verification of the criteria of their appropriateness and accessibility.

A particularly interesting figure concerns the teachers' training in the new technologies: 93.8% of the subsample declares to have made their choice following suggestions and instructions received during their trainings. With the introduction of distance learning, besides the above-mentioned tools, we register an increase in the use of specific digital tools that were not reported in presence. In fact, more than the 50% of the subsample declares to have increased the use of: PPT presentation 72.9%, specific software for disabilities 51%, educational apps and games 57.3%.

Their knowledge of the technological tools applied to didactics, for the special education teachers, is not due to trainings put in place by the school institutions (14.8%), but to online courses attended apart from the school context (74% of the subsample).

The data in Table 3 and Table 4 show the answers of the subsample regarding the methodological changes and the classes at distance learning.

Although almost half of the subsample (46%) declares to have "fairly" changed their educational methodologies (Table 3), from the data in Table 4 we find that for a 22% and a 21% the traditional class and individual exercises are preeminent.

Another point investigated by this analysis concerns the subsample's evaluation of the worsening or bettering of the relationship with the student during distance learning: 66% declares that the relationship did not change, 22% that it has been ameliorated and 12% that it got worse.

Also, the inclusive aspects with regards to the students are perceived as they worsened during distance learning

(Table 5), as well as the quality of the relationships, in particular with the classmates: worse in the 45% (Table 6).

At this stage of our investigation, we wanted to understand what perception the special education teachers had with regards to distance learning from an educational point of views (difficulty and/or helpfulness of distance learning) and from the point of view of the impact on students with disabilities. As for the first point, the main challenge is represented by connection problems during classes, more than by problems due to the lack of technological skills, the lack of support from colleagues and/or school institutions as well as the difficulties in stimulating the students' attention (Table 7).

During the distance learning, did you make any change in the methodologies you used in presence?	N.	%
1 - Not at all	11	11.0%
2 - Little	30	30.0%
3 - Fairly	46	46.0%
4 - Very much	13	13.0%

Table 3 - Change of the educational methodology during distance learning.

During distance learning. how was the class characterized?	**N.**	**%**
Individual Exercises	53	21%
Flipped classroom	17	7%
Interactive games	34	14%
Group works	43	17%
Traditional class	54	22%
Activities to be performed at home with the parents	31	12%
Simulation	14	6%
Other	3	1%
Total	**249**	**100%**

Table 4 - Class characterization during distance learning.

The inclusion and/or integration is	**N.**	**%**
Better	8	8%
Worse	59	59%
Same as before	33	33%
Total	**100**	**100%**

Table 5 - Changes of inclusion/integration during distance learning.

The relationship with the classmates is:	**N.**	**%**
Better	11	11%
Worse	45	45%
Same as before	44	44%
Total	**100**	**100%**

Table 6 - Changes in the relationships with schoolmates during the distance learning.

What difficulties did you have to face? (more options)	**N.**	**%**
Lack of technological skills	25	11.0%
Lack of support from the colleagues	13	5.7%
Lack of support in general from the school institutions	25	11.0%
Lack of tools	27	11.8%
Difficulty in establishing a relationship with the class	10	4.4%
Difficulty in obtaining the student's attention	22	9.6%
Frequent changes in the regulations	18	7.9%
Instructions not clear enough	21	9.2%
None	19	8.3%
Connection issues	48	21.1%
Total	**228**	**100.0%**

Table 7 - Difficulties that have been faced.

Moreover, the subsample declares that teaching conditions worsened for the 60%, at such extent that the 69% declares to reject distance learning as integrative part of teaching in presence (against the 31% that sustains the contrary). The positive aspects, instead, are: the improvement of teachers' methodological skills and the innovation of the school system (Table 8).

Concerning students with disabilities, the subsample declares that distance learning has had a generally negative impact on diverse aspects (Table 9).

Once again it has been highlighted that the quality of participation has worsened with regards to the progresses with the classmates.

In order to identify significative differences with respect to the special education teachers' life experience, some significative variables have been crossed:

Age groups, experience with respect to methodologies applied during distance learning.

Although the variations among the percentages are minimal, it has been pointed out that lecturing -style teaching increase with the diminution of the special education teachers' age, so do the group works and just a little the individual exercises (Table 10).

This figure is most probably explainable because the age has an impact on the years of experience as a teacher and because when the experience is less, they feel more comfortable using more sure and traditional methodologies instead of those more innovative. These data are confirmed by linking the methodologies adopted during distance learning, with the years of experience in the next Table (Table 11).

3.1 Age groups, experience and challenges faced during distance learning

While for older teachers the lack of technological skills and connection problems are identified as issues in distance learning, when it comes to younger teachers

In a scale from 1 (not at all) to 4 (very much) how much do you think the experience of distance learning was useful for:	Little/Not at all		Fairly/Very much	
	N.	%	N.	%
Enhancing teachers' competences	22	22.9%	74	77.1%
Changing the methodological approaches	13	13.7%	82	86.3%
Improving the learning of students with disabilities	59	62.8%	35	37.2%
Improving the students' learning in general	56	59.6%	38	40.4%
Improving disability handling at school	66	70.2%	28	29.8%
Innovate the school system	32	34.0%	62	66.0%
Improving teachers' working conditions	52	56.5%	40	43.5%

Table 8 - Helpfulness of distance learning.

Lastly. in a scale of -2 (very negative) to + 2 (very positive) thinking about students with disabilities. what impact do you think distance learning has had with regards to these dimensions	Negative impact (-2 and -1)		Positive impact (+1 and +2)	
	N.	%	N.	%
Existence and quality of learning environments	35	36.5%	58	24.0%
Participation quality	44	45.8%	46	30.2%
Progressing along with the classmates	49	51.0%	42	21.9%

Table 9 - Impact of distance learning on some dimensions.

Methodology	Age range (years)						Total	
	20-35		36-45		46-60			
	N.	%	N.	%	N.	%	N.	%
Traditional class	17	24.3%	20	21.7%	17	19.5%	54	21.7%
Group works	14	20.0%	16	17.4%	13	14.9%	43	17.3%
Individual exercises	15	21.4%	22	23.9%	16	18.4%	53	21.3%
Flipped classroom	4	5.7%	5	5.4%	8	9.2%	17	6.8%
Interactive games	8	11.4%	14	15.2%	12	13.8%	34	13.7%
Simulation	6	8.6%	2	2.2%	6	6.9%	14	5.6%
Home activities to be performed with the parents	5	7.1%	12	13.0%	14	16.1%	31	12.4%
Other	1	1.4%	1	1.1%	1	1.1%	3	1.2%
Total	**70**	**100%**	**92**	**100%**	**87**	**100%**	**249**	**100%**

Table 10 - Characterization of class performing modalities in distance learning for age group.

Methodology	Years of experience as special education teacher				Total	
	More than 2 years		Up to 2 years			
	N.	%	N.	%	N.	%
Traditional class	24	19.5%	30	23.8%	54	21.7%
Group works	21	17.1%	22	17.5%	43	17.3%
Individual exercises	22	17.9%	31	24.6%	53	21.3%
Flipped classroom	11	8.9%	6	4.8%	17	6.8%
Interactive games	17	13.8%	17	13.5%	34	13.7%
Simulation	8	6.5%	6	4.8%	14	5.6%
Home activities to be performed with the parents	17	13.8%	14	11.1%	31	12.4%
Other	3	2.4%		0.0%	3	1.2%
Total	**123**	**100%**	**126**	**100%**	**249**	**100%**

Table 11 - Characterization of class performing modalities in distance learning as per years of experience in special education.

the challenges that emerged more often are related with minimal variation to lack of tools, instructions not clear enough and the insufficient support from the school institution (Table 12). This figure might also be understandable to the younger teachers' short experience: hypothetically, they perceived a deeper need of support and clear instructions than their older colleagues. In fact, it is possible in Table 13 to appreciate this link with years of experience.

In addition to this, the research has shown that the majority of the special education teachers declared that the school performance in distance learning remained unvaried in comparison with the class in presence, and so did the difficulties related to the disability. The same is not true for the motivation, where an important worsening has been registered, 44%.

Difficulties in distance learning	Age range (years)						Total	
	20-35		36-45		46-60			
	N.	%	N.	%	N.	%	N.	%
Lack of technological skills	5	7.7%	3	4.2%	16	17.8%	24	10.6%
Lack of tools	9	13.8%	7	9.7%	11	12.2%	27	11.9%
Connection problems	12	18.5%	16	22.2%	20	22.2%	48	21.1%
Lack of support from the colleagues	1	1.5%	7	9.7%	5	5.6%	13	5.7%
Lack in general of support from the school institutions	8	12.3%	8	11.1%	9	10.0%	25	11.0%
Instructions not clear enough	8	12.3%	4	5.6%	9	10.0%	21	9.3%
Frequent changes in the regulations	5	7.7%	8	11.1%	5	5.6%	18	7.9%
Difficulty in stimulating the student's attention	6	9.2%	9	12.5%	7	7.8%	22	9.7%
Difficulty in establishing a relationship with the class	3	4.6%	4	5.6%	3	3.3%	10	4.4%
None	8	12.3%	6	8.3%	5	5.6%	19	8.4%
Other	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Total	**65**	**100%**	**72**	**100%**	**90**	**100%**	**227**	**100%**

Table 12 - Difficulties in distance learning per group age.

Difficulties in distance learning	Years of experience as special education teacher				Total	
	More than 2 years		Up to 2 years			
	N.	%	N.	%	N.	%
Lack of technological skills	13	11.6%	11	9.6%	24	10.6%
Lack of tools	13	11.6%	14	12.2%	27	11.9%
Connection problems	29	25.9%	19	16.5%	48	21.1%
Lack of support from the colleagues	7	6.3%	6	5.2%	13	5.7%
Lack in general of support from the school institutions	14	12.5%	11	9.6%	25	11.0%
Instructions not clear enough	9	8.0%	12	10.4%	21	9.3%
Frequent changes in the regulations	8	7.1%	10	8.7%	18	7.9%
Difficulty in stimulating the student's attention	10	8.9%	12	10.4%	22	9.7%
Difficulty in establishing a relationship with the class	1	0.9%	9	7.8%	10	4.4%
None	8	7.1%	11	9.6%	19	8.4%
Other		0.0%		0.0%	0	0.0%
Total	**112**	**100%**	**115**	**100%**	**227**	**100%**

Table 13 - Difficulties in distance learning as per years of experience in special education teaching.

	Teachers that note a worsening both of performance and of motivation		Teachers that note an improvement in performance and motivation	
	N. and % of those that declare to have increased the use of the following technologies		N. and % of those that declare to have increased the use of the following technologies	
	N.	%	N.	%
Tablet	19	73.1%	13	86.7%
Platforms or web-based resources	21	80.8%	13	86.7%
Clips and on-line video	20	76.9%	14	93.3%
Presentation/ppt	17	65.4%	10	66.7%
Disability Specific Softwares	10	38.5%	11	73.3%
Gaming Apps	13	50.0%	12	80.0%
Console	5	19.2%	3	20.0%
E-book	11	42.3%	7	46.7%
Digital newsstand	10	38.5%	6	40.0%
Galleries and museums on-line	10	38.5%	4	26.7%
On-line events (concerts, shows, seminars, etc.)	10	38.5%	7	46.7%
Average frequency		51.0%		60.6%

Table 14 - Comparison of the increase of the use of multimedia tools among the teachers that declare a worsening of the performance and motivation and the teachers that indicate an improvement of the performance and motivation.

The Table 14 shows how, correlating the consideration of the worsening or bettering of the two variables with the use of technologies by the teacher, two interesting figures emerged. In fact, the teachers that consider the two variables as "worse", declare (in inferior percentages) that they had increased the use of digital tools that were at disposal during distance learning (51%). On the contrary, who registered an improvement in the student performance and motivation declares to have increased the use of the same tools in higher percentages (an average of 60.6% of the cases).

In the same way (Table 15), the choices are the same, regardless of the years of experience as special education teacher.

The most frequent resources used to cooperate among teachers, for all age groups, are "Messanger/Whatsapp /Telegram or similar", followed by teamworking platforms (Teams, Zoom etc.).

Finally, Table 16 and Table 17 show the sectors in which the respondents have declared cooperation was at its highest.

In the Table 16 we can see differences per age group: for the age group 20-35 years the first choice is "sharing educational materials" (19.5%), while for the age group 36-45 years the first choice is "creating educational materials" (15.8%) and, lastly, for the age group 46-60 the first choice is "sharing educational materials" (20.7%).

In the Table 17, with respect to the years of experience in special education, we note that, regardless of the modalities of this variable the main respondents' choice is again "sharing educational materials". In fact, respondents that pertain to the "more than 2 years" group choose this modality for the 19.9%, while those in the "up to 2 years" group make this choice for the 18.2%.

4. Discussion

The results showed in the previous paragraph offer some sparks for the theorical reflection and the educational practice. In the subsample a central figure is that 90% of the teachers involved in the research had experience in special education in a timespan from 1 to 6 years. As the literature reports (Caena & Redecker, 2019; Fernández-Cruz & Fernández-Diaz, 2016) regarding the need to invest in professional skills and in particular in teachers' digital skills, about 75% of the subsample affirms that their knowledge of technological tools was gained thanks to online courses outside the school context. Technological tools are not considered as connected to didactical intentionality that guides the use of these technologies in school contexts.

More than a half of the teachers think that their technological knowledge is appropriate (Table 7) and 69% does not want distance learning as integrative part of the class in presence, saying that teaching conditions were substantially deteriorated.

In fact, as we have noted (Table 8) distance learning has been seen as a chance to increase teachers' knowledge (77.1%), changing the methodological approaches (86.3%) and innovating the school system (66%) are not considered appropriate to enhance the learning of students with disabilities (62.6%), improving in general the student learning (59.6%), and bettering the handling of disability in the schools (70.2%). In the teacher subsample these latter 3 aspects do not seem to have helped or having been helped by distance learning. Form the teachers' perspective (Table 9), the negative impact of distance learning is identified in quality of participation (45.8%) – against the 30.2% of positive impact on the same dimension – and improvement along with the classmates (51%) – against the 21.9 % of positive impact on the same dimension.

This research also explored the cooperation among teachers, that has not been showed in a Table for reasons of space. In particular, for the total of 70% of the subsample, cooperation among colleagues in general remained the same, except for the fact that cooperation was enhanced especially among younger teachers while remained the same for the older ones. We also see that, as per the years of service as special education teacher, the overall cooperation remained the same for 70% of the respondents, although when service years increase, also polarizations increase about modalities different from "remains the same". The resources to cooperate among teachers, for all age groups and regardless of years of experience as special education teacher, are most of the times "Messanger/Whatsapp/Telegram or similar", followed by "teamworking platforms (Teams, Zoom etc.).

To wrap up the results, for the fields in which the respondents declare cooperation was stronger (Table 16 and Table 17) we find differences in the age groups: the age group 20-35 years and 46-60 years the first choice is "sharing educational materials", while for the age group 36-45 years the first choice is "creating educational materials". considering the years of service in special education, regardless of the modalities of this variable the respondents' principal choice is again "sharing educational materials".

Another aspect that the research has explored is the eventual adaptation of the didactical methodologies by the teachers in the shifting from the class in presence to that in distance learning (Table 3). 40% of the teachers declares that during distance learning methodologies that were used in presence did not get changed, compared to a 46% that declares to have "fairly" modified them. A key to understand the answer to this question is given by the following question (Table 4): teachers declare that didactical methodologies that were used more during distance learning have been the

Years of experience as Special Education Teacher	Teamworking platforms (Teams. Zoom. etc.)		Messanger/Whatsapp/Telegram or similar		Teamworking platforms provided by school institutions (for ex. Gsuite)		In presence meetings in the school context		Informal meetings		Shared cloud space		Other	
	N.	%	N.	%	N.	%	N.	%	N.	%	N.	%	N.	%
More than 2 years	28	23.7%	36	30.5%	27	22.9%	9	7.6%	6	5.1%	12	10.2%	0	0.0%
Up to 2 years	37	33.0%	37	33.0%	25	22.3%	3	2.7%	5	4.5%	5	4.5%	0	0.0%
Total	**65**	**28.3%**	**73**	**31.7%**	**52**	**22.6%**	**12**	**5.2%**	**11**	**4.8%**	**17**	**7.4%**	**0**	**0.0%**

Table 15 - Distribution % of options of selecting the resources used to cooperate with other teachers as per years of experience in special education.

Age group	Design/updating PEI/PDP		Sharing methodologies		Creating educational materials		Sharing educational materials		Design of assessment and evaluation tools		Learning assessment and evaluation		Formative evaluation of learning processes		Discussion on events/facts related to the class and the student		Other	
	N.	%	N.	%	N.	%	N.	%	N.	%	N.	%	N.	%	N.	%	N.	%
20-35 years	15	11.3%	14	10.5%	19	14.3%	26	19.5%	18	13.5%	17	12.8%	9	6.8%	15	11.3%	0	0.0%
36-45 years	14	10.5%	15	11.3%	21	15.8%	22	16.5%	18	13.5%	15	11.3%	10	7.5%	18	13.5%	0	0.0%
46-60 years	16	11.4%	19	13.6%	23	16.4%	29	20.7%	15	10.7%	13	9.3%	11	7.9%	14	10.0%	0	0.0%
Total	**45**	**11.1%**	**48**	**11.8%**	**63**	**15.5%**	**77**	**19.0%**	**51**	**12.6%**	**45**	**11.1%**	**30**	**7.4%**	**47**	**11.6%**	**0**	**0.0%**

Table 16 - Distribution % of the options of choice regarding the cooperation fields with other teachers per age group.

Years of experience as Special Education Teacher	Design/updating PEI/PDP		Sharing methodologies		Creating educational materials		Sharing educational materals		Design of assessment and evaluation tools		Learning assessment and evaluation		Formative evaluation of learning processes		Discussion on events/facts related to the class and the student		Other	
	N.	%	N.	%	N.	%	N.	%	N.	%	N.	%	N.	%	N.	%	N.	%
More than 2 years	17	9.4%	20	11.0%	26	14.4%	36	19.9%	25	13.8%	21	11.6%	12	6.6%	24	13.3%	0	0.0%
Up to 2 years	28	12.4%	28	12.4%	37	16.4%	41	18.2%	26	11.6%	24	10.7%	18	8.0%	23	10.2%	0	0.0%
Total	**45**	**11.1%**	**48**	**11.8%**	**63**	**15.5%**	**77**	**19.0%**	**51**	**12.6%**	**45**	**11.1%**	**30**	**7.4%**	**47**	**11.6%**	**0**	**0.0%**

Table 17 - Distribution % of options of choosing the cooperation fields with the other teachers as per years of experience as special education teacher.

traditional class and individual exercises. In the research promoted by SIRD (Batini et al., 2021) about the Italian teachers' life experience and evaluations we note the prevalent use of transmission methods in distance learning; in challenging situations the trend is to adopt educational strategies already experimented and consolidated, rather than innovating educational methods. The same figure emerges in the inquiry made by Indire (2020) targeting a selected sample of 2.546 of teachers: the curricular teachers state that in distance learning videoconference and assigning exercises were their most adopted teaching method (75% of the sample interviewed with a questionnaire). To the same consideration lead the data about the students' opinions photographed by the research of Fondazione Agnelli (2021) on distance learning. The survey shows how 9 students out of ten state that video classed, homework and tests were the sole activities proposed by the teachers. The teachers involved in the same research state that they used the video-class as prevalent educational methodology. Another useful figure to understand how the subsample of teachers has lived the experience in distance learning during the previous two school years concerns the variation of challenges

related to disability. The 83% of the teachers, state that the issues addressed before distance learning have not been reduced by the digital tools (51% of the teachers): as shown in Table 3 and Table 4, this often implied just lecturing and individual exercises. Herberger (2020) underlines the importance for teachers of structuring in distance learning an online learning environment that helps in general the student's needs, not only students with disabilities.

As shown also in other studies (Van de Velde et al., 2021; Hamilton et al., 2020; Petrie, 2020; Basilaia, Kvavadze, 2020; Gonzalez-Ramirez et al., 2020), considering the point of view of the teachers involved, the experience in distance learning did not contribute positively to enhancing the relationship with the students, nor did it help, in several cases, to obtain a better achievement.

As per these researches, as well as those conducted in the Italian context (Batini et al., 2021), for the 82% of the teachers their class motivation to study has worsened or has not been modified while, for the 44%, it has worsened.

Ajello (2002, p. 41), notes:

> *"se ci accorgiamo che problemi di motivazione si pongono tutte le volte che sfugge il senso e il significato di quello che si fa, allora dovremo convenire che all'origine di molte disaffezioni c'è proprio il mancato riconoscimento di tale significato e conseguentemente la perdita di interesse per ciò che si propone". ("if we understand that motivational problems arise every time the sense and the meaning of what is done are not clear, then we should agree that at the origin of many disaffections there is exactly the lack of recognition of that meaning and, therefore, the drop in interest for what is proposed").*

This consideration reminds us to plan educational activities that foster motivation: they have not been activated in the subsample due to the pedagogies subtended to the didactical methodologies supported by the employed ICT (Maragliano, 2000; Murdaca et al. 2017).

Another interesting aspect, already highlighted in the SIRD survey, shows (Table 15 and Table 16) how the quality of the relationship, especially with the classmates, in the teachers' opinion has worsened in the 45% of cases (Table 6). In the Indire (2020) study we see how teachers state that most fragile students have been more affected by the segregation during distance learning. We also note that in this survey the younger are the teacher the more they rely on lecturing, group work and individual exercises (Table 10). The less experienced is the teacher, the more traditional methodologies will be trusted compared to the more innovative ones, because they are considered safer.

Lastly, if older teachers identify as problems the lack of technological skills and connection difficulties during distance learning, the younger teachers, on the other hand, find challenging the lack of tools, instructions not clear enough, and the insufficient support from the school institutions (Table 11). This aspect also emerged in an article about the teachers' initial education in the TFA (Patera, 2018), where it is underlined how, even if at the end of the TFA course there were methodological and educational placings related to the socio-constructivist didactics, many of them after one year have opted for a more traditional training ascribable to a transmission approach.

The experience of distance learning, as reported in the analyzed literature, highlights a need: "Teaching strategies need to change, along with the competence profiles teachers need to develop, so as to deploy innovative pedagogies and empower responsible learners" (Caena & Redecker, 2019, p. 356).

In the same way (Stringher, 2021), qualitative educational research carried out just a bit before the pandemics, underlines the teachers' point of view regarding the need of reflecting on their own way of teaching: in fact, it is considered a factor that can lead to explicit and implicit dropouts and that increases the cultural gap between the way students learn and the way teachers teach.

Starting from the results that emerged in this research, we find that the teachers' initial training and during their service is even more important and actual, when including educational topics in which technology represents a tool to enhance the student participation, interests and motivation towards a quality teaching – learning relationship.

5. Conclusions

In conclusion, as per the research inquiry and explorative hypothesis, the data related to the subsample confirm what already vastly registered in the thematic literature: the fact that the problems due to the pandemics and the subsequent adoption of distance learning did not become real educational challenges for the subsample teachers and their school contexts in order to improve the teaching – learning relationship, starting from reflection on the representations and on the practices of their educational action. The research highlights the need of improving the teacher designing skills, starting from a reflection on their own educational action (Marek et al. 2021), with the perspective of building the profile of an inclusive teacher (Sannicandro et al. 2021). Moreover, some limits emerged that, in meta-evaluative terms (Trinchero, 2002), can represent an opportunity for an in-deep exploration of this research data. In particular, we believe it is advisable to adopt a *mixed-methods* approach jointly to qualitative research strategies and

analyses (Denzin, Lincoln, 1994) to appreciate the teachers' representations and educational practices with reference to the modalities and strategical choices that lead their own educational action (Aiello& Pace, 2020).

Acknowledgements

The contribution is the result of a work shared by the authors, but we underline that Salvatore Patera wrote the Introduction" and the Discussion, Sebastiano Scirè the paragraphs Materials and Method, Sara Rizzo the Results and the Discussion; Ezio Del Gottardo the Conclusions.

References

Ajello A. M., (2002), Apprendimento e competenza: un nodo attuale. Scuola e Città, 1, pp. 39-56. (Tr.: Learning and competence: an actual issue)

Aiello, P., Pace, E.M.,(2020) Inclusive Educational Principles, Policies and Practices in Italy,In Oxford Research Encyclopedia of Education. Ed. Umesh Sharma. New York: Oxford University Press, pp. 1-22.

Azevedo, J.P., Halsey, Rogers, F., Ahlgren, S. E., Cloutier, M. H., Chakroun, B., Chang, G., Mizunoya, S., Reuge, N. J., Brossard, M., Bergmann, J. L., (2021a), The State of the Global Education Crisis: A Path to Recovery. Washington, D.C.: World Bank Group, url: http://documents.worldbank.org/curated/en/416991638768297704/The-State-of-the-Global-Education-Crisis-A-Path-to-Recovery

Azevedo, J.P., Montoya, S., Akmal, M., Wong, Y. N., Gregory, L., Geven, K. M., Cloutier, M. H., (2021) Learning Poverty Updates and Revisions: What's New? Working Paper. Washington, DC: World Bank, url: https://openknowledge.worldbank.org/handle/10986/36082

Basilaia, G., Kvavadze, D., (2020), Transition to online education in schools during a SARS-CoV-2 coronavirus (COVID-19) pandemic in Georgia. Pedagogical Research, url: https://doi.org/10.29333/pr/7937

Batini, F., Sposetti, P. & Szpunar, G., (2021), La parola alle e agli insegnanti. Prima analisi di categorie e sottocategorie delle risposte qualitative al questionario SIRD, in AA.VV. La DaD in emergenza: vissuti e valutazioni degli insegnanti italiani. Scelte metodologiche e primi risultati nazionali, Pensa MultiMedia, Lecce, (Tr.: Leaving the floor to teachers. First analysis of categories and subcategories of qualitative answers to the SIRD questionnaire, in AA. VV., Distance learning in emergencies: Italian teachers' life experience and evaluation. Methodological choices and first national results)

Bocci, F., (2017) Valorizzare il corso di formazione per la specializzazione alle attività di sostegno: l'esperienza laboratoriale di RomaTre, in G. Domenici (ed.), La formazione iniziale e in servizio degli insegnanti, Armando, Roma, (Tr.: Valuing specialization training in Special Education: the workshop experience of RomaTre, in G. Domenici (ed.), The teacher's initial training and during their service)

Council of the European Union, (2021-2030) 2021/C 66/01. Council Resolution on a strategic framework for European cooperation in education and training towards the European Education Area and beyond Retrieved, url: https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX3A32021G0226280129

D'Alonzo, L., & Cottini, L., Promuovere l'inclusione: l'insegnante specializzato per le attività di sostegno in primo piano, (numero monografico), II/2, 2014. (Tr.: Fostering inclusion: focus on the teacher qualified in Special Education)

Denzin, N. K., Lincoln, Y. S., (1994) Handbook of Qualitative Research. Thousand Oaks: Sage Publications.

Doucet, A., Netolicky, D., Timmers, K. & Tuscano, F. J, (2020) Thinking about pedagogy in an unfolding pandemic. Work of Education International and UNESCO. Retrieved, url: https://issuu.com/educationinternational/docs/2020_research_covid-19_eng

Fabbri, L., (1994) Ricerca pedagogica e pratiche educative. Per una pedagogia come scienza pratica. Tecnodid, Napoli, (Tr.: Pedagogical research and educational practices. For a pedagogy as practical science).

Fernández-Cruz, & F. J., Fernández-Diaz, J., (2016) Generation Z's Teachers and their Digital Skills, Comunicar, 46(24), 97-105.

Fiorenzato, E., Zabberoni, S., Costa, A. & Cona, G., (2021), Cognitive and mental health changes and their vulnerability factors related to COVID-19 lockdown in Italy, PLoS ONE, 16, 1: e0246204.

Fondazione Agnelli (2021), La DaD alle scuole superiori nell'anno scolastico 2020-21: una fotografia, url: (Tr. Distance learning at high school in the school year 2020-21)

https://www.fondazioneagnelli.it/2021/07/09/la-DaD-alle-scuole-superiori-nellanno-scolastico-2020-21-una-fotografia/

Gonzalez-Ramirez, J., Mulqueen, K., Zealand, R., Silverstein, S., Mulqueen, C., & Bushell, S., (2021) Emergency Online Learning: College Students' Perceptions During the COVID-19 Pandemic, College Student Journal, 55(1), 29-46.

Guba, E. G., & Lincoln, Y. S.,(1989) Fourth generation evaluation. Thousand Oaks, Sage.

Hamilton, L. S., Kaufman, J. H., & Diliberti, M.,(2020) Teaching and Leading through a Pandemic: Key Findings from the American Educator Panels Spring 2020 COVID-19 Surveys. Data Note: Insights from the American Educator Panels. Research Report. RR-A168-2. RAND Corporation.

Herberger, D.,(2020) Considerations for teachers providing distance learning to students with disabilities, WestEd.

INDIRE,(2020) Indagine Impatto della pandemia sulle pratiche didattiche e organizzative delle scuole italiane nell'anno scolastico 2020/21 report giugno 2020. (Tr.: Survey Impact of pandemics on the educational and operational practices in the Italian schools during the school year 2020/2021)

INVALSI, (2021) I risultati delle prove INVALSI, url: (Tr.: INVALSI tests: the results)

(https://www.invalsiopen.it/risultati/risultati-prove-invalsi-2021/

IPSOS, (2021)I giovani ai tempi del coronavirus, (Tr.: The youth at the time of Coronavirus) url: https://s3.savethechildren.it/public/files/uploads/pubblicazioni/i-giovani-ai-tempi-del-coronavirus.pdf

Mantovani, S., (a cura di), (1998) La ricerca sul campo in educazione. I metodi quantitativi, Mondadori, Milano, (Tr.: On field research in Education. Quantitative Methods)

Maragliano, R., (2000) Tre ipertesti su multimedialità e formazione. Laterza. (Tr. Three Hypertexts about multimedia and education)

Marek, M. W., Chew, C. S., & Wu, W. C. V. (2021). Teacher experiences in converting classes to distance learning in the COVID-19 pandemic. International Journal of Distance Education Technologies (IJDET), 19(1), 40-60.

Mascheroni, G., Saeed, M., Valenza, M., Cino, D., Dreesen, T., Zaffaroni, L. G., & Kardefelt-Winther, D., (2021) Learning at a Distance: Children's remote learning experiences in Italy during the COVID-19 pandemic, UNICEF Office of Research. Florence, url: https://www.unicef-irc.org/publications/pdf/learning-at-a-distance-childrens-remote-learning-experiences-in-italy-during-the-covid-19-pandemic.pdf (accessed 20 April 2021).

Murdaca A.M., Epasto A., Smeriglio D., Oliva P., (2017) Fattori individuali e atteggiamenti degli insegnanti per un uso efficace delle tecnologie digitali. Un progetto di ricerca. In P. LIMONE e D. PARMIGIANI (a cura di), Modelli pedagogici e pratiche didattiche per la formazione iniziale e in servizio degli insegnanti (240-257). Progedit, Bari, - ISBN 978- 886194-293-6 (Tr. Individual factors and the teachers' behaviors for using efficiently digital technologies. A research project. In P. LIMONE e D. PARMIGIANI (a cura di), Pedagogical models and educational practices for the teachers' initial training and during their service)

Patera, S.,(2018) Tra "il dire e il fare" nella relazione insegnamento-apprendimento. Un caso di studio sulle rappresentazioni degli insegnanti in formazione iniziale. Formazione & Insegnamento XVI (3), 2018. (Tr.: "Talk is cheap" in the teaching – learning relationship. A case study on the representations of the teachers in initial training)

Patton, M.Q., (2015)Qualitative Research and Evaluation methods. Thousand Oaks, Sage.

Petrie, C., (2020) Spotlight: Quality education for all during COVID-19 crisis. United Nation,url: https://hundred.org/en/collections/quality-education-for-all-during-coronavirus

Pokhrel, S. & Chetri, (2021) A literature review on impact of COVID-19 pandemic on teaching and learning, Higher Education for the Future, 8(1), pp. 133-141.

Sannicandro, K., De Santis, A., Bellini, C., Minerva, T. (2021). Competenze digitali e di (ri)progettazione didattica: proposte di formazione per gli insegnanti. QTimes, Anno XIII - n. 2, pp. 292-309 (Tr.: Digital Skills and for educational (re-) designing: training proposals for teachers)

Save the Children, (2016) Liberare i bambini dalla povertà educativa. A che punto siamo? Roma, Save the Children Italia. (Tr.: Rescuing children from educational poverty. Where are we?)

Save the Children, (2021) Our covid-19 response. Impact in 2020. Save the Children International, 2021, Retrieved, url: https://resourcecentre.savethechildren.net/document/covids-educational-time-bomb-out-of-school-children-global-snapshot/

Save the Children, (2014) La lampada di Aladino, url: (Tr. Alladin's Lamp) https://s3.savethechildren.it/public/files/uploads/pubblicazioni/la-lampada-di-aladino.pdf

Schleicher A., & Reimers F.,(2020) Schooling Disrupted, Schooling Rethought: How the

COVID-19 Pandemic is Changing Education, OECD Publications, Paris.

Silverman, D., (2016) Qualitative research. Thousand Oaks, CA: Sage Publication.

Stringher, C., (2021) Apprendere ad apprendere in prospettiva socio-culturale. Rappresentazioni dei docenti in sei paesi, Franco Angeli, Milano, (Tr. Learning how to learn in a socio-cultural perspective. Teachers' representations in six countries)

Trinchero, R., (2002) Manuale di ricerca educativa, Franco Angeli, Milano. (Tr.: Educational research Handbook)

Trinchero, R., (2021) Insegnare ai tempi del lockdown. Le differenze regionali, in AA.VV, La DaD in emergenza: vissuti e valutazioni degli insegnanti italiani. Scelte metodologiche e primi risultati nazionali (pp. 52-72). Lecce: Pensa multimedia. (Tr.: Teaching in times of lockdown. regional differences).

UIS-UNESCO, (2020)Out-of-School Children and Youth, url: http://uis.unesco.org/en/topic/out-school-children-and-youth

UNESCO, (2021) Understanding the impact of COVID-19 on the education of persons with disabilities: Challenges and opportunities of distance education, Paris, Policy Brief. url: https://unesdoc.unesco.org/ark:/48223/pf0000378404

Van de Velde, S., Buffel, V., Bracke, P., Van Hal, G., Somogyi, N. M., Willems, B., (2021) The COVID-19 International Student Well-being Study. Scandinavian Journal of Public Health, 49(1), pp. 114-122

Vicari, S., & Di Vara, S., eds., (2021) Bambini, adolescenti e Covid-19. L'impatto emotivo della pandemia dal punto di vista emotivo, psicologico e scolastico. Trento: Erickson. (Tr. Children, adolescents and Covid-19. The emotional impact of the pandemic from an emotional, psychological and academic point of view).

Wagner, E., & Warren, H., (2020) Save Our Education: Protect every child's right to learn in the COVID-19 response and recovery. Save The Children, 2020, url: https://resourcecentre.savethechildren.net/node/17871/pdf/save_our_education_0.pdf

Zammuner, V.L., (1998) Tecniche dell'intervista e del questionario. Il Mulino, Bologna. (Tr.: Interviewing techniques and of the questionnaire)