Perceptions and effects of distance learning detected during an online course on ICT for aspiring nursery and primary school support teachers

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Abstract

The themes of the acceptance of technology and the effects of distance learning have had a sudden acceleration thanks to online experiments during the COVID-19 pandemic. The forced breaking of resistance and the exclusive use of distance learning have created an unprecedented experimental research situation. The purpose of the article is to present the elements at stake and propose considerations for post-COVID didactic planning. In the study, a validated questionnaire on distance learning was translated into Italian and administered to 299 aspiring teachers of children with special needs in kindergartens and primary schools. Contrary to the first optimistic expectations, this work illustrates the dynamics of resistance among teachers in the use of distance learning in their courses in the dual role of students and teachers.

Keywords 1

Distance learning, teacher training, Expertise, e-learning, perceptions

1. Introduction

The delicate issue of teachers' mental representations with respect to the use of digital technologies in the classroom has aroused strong interest in the international scientific community and illustrates further evolution in the studies of recent years. Trinchero [1] writes, "it is much easier to seek confirmation of one's naïve" world views "than to engage in the construction of alternative, broader and more well-founded world views. Overcoming the inertia of the mind requires an active and intentional process to change one's mental representations and consequently one's professional conduct. (p. 22)".

The specialization of a professional teacher [2] is characterized by two constitutive elements: (1) the discipline-specific training and theoretical background necessary for the transfer of knowledge and (2) the application of the knowledge learned. Theory and practice must exist in a close and constant empirical relationship to obtain satisfactory and effective professional and individual results. The success of the teaching/learning process derives from bridging the gap between theory and practice since the success of every human action consists in solving real problems through creative solutions. To achieve this goal, a preventive and standardized didactic action is essential, one that aims at dialoguing with the contexts to which the subjects belong and proposes unprecedented responses to real educational emergencies.

Since March 2020, the COVID-19 pandemic and the debate related to the changes it has triggered, the outcomes of the pandemic on training systems, and what effects it will have on post-COVID higher education have accelerated both resistance and the process of modification of teachers in relation to the perceptions of the use of digital technology.

Proccedings of the First Workshop on Technology Enhanced Learning Environments for Blended Education (teleXbe2021), January 21–22, 2021, Foggia, Italy
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The transition from resistance to technologies in the didactic field to a professionalizing use by teachers involves a complex process of professional redefinition. Technology in general has produced significant transformations in playful, relational, and social contexts to the point of accentuating the strong pre-existing gap between intra- and extra-curricular realities. The debate initiated by Postman [3] on the conservative nature of teaching (when teaching technology emancipated itself as an autonomous science) underlining the limen between teaching without technology and technology centered teaching is still relevant today. Contemporary research still tries to mediate between these two extreme positions [4] : on the one hand, it is argued that technology has no effect on learning and only represents a modification of the object substrate of teaching tools, and therefore there is no difference between a book or a tablet except for the content presentation format; on the other hand, it is the intrinsic characteristics of digital media that produce cognitive modifications and build operational skills compared to traditional teaching more in step with the cultural backgrounds of youth. Studies also show [5,6] that the greatest resistance by teachers relates to the lack of technological resources, ease of access, and adaptation of the school context to multimedia learning environments. Perceptions also play a role in reinforcing the resistances described, and in fact they are influenced by personal characteristics and motivation, affecting teachers' sense of effectiveness and the real use of ICT in teaching practice.

2. Methodology

The growing interest in distance learning issues and the advent of the COVID-19 pandemic have led to the imposition of online education in initial teacher training in the research landscape. Previous research has focused on the attitudes of teachers in online courses at the University of Phoenix in the United States [7]. In 2010, a questionnaire was developed to determine the attitudes of teachers in the faculty of economics already engaged in online professional training courses. This tool was a modification of a previous questionnaire used to assess students' attitudes towards distance education courses. The second version of the questionnaire was mailed to a random sample of 200 U.S. business school teachers. In addition to demographic questions about gender, grade level, years of teaching experience, employment status, etc., there were also eighteen (18) Likert-type questions regarding online courses and related statements by which the instructor could express various levels of agreement or disagreement (a copy of the questionnaire in Italian is presented in the first column of Tables 2 and 3).

The questionnaire translated into Italian was administered to the teachers of the initial training course for the support of the teachers of the University of Foggia (n = 299). The data were divided by demographic profile and elaboration of the answers and by grade of childhood and primary school. Data were provided through a Google Form in April 2020 during the COVID-19 emergency state. The interviewed teachers comprised 689 participants in the TFA support course at the University of Foggia at the end of their qualification process who were inaccessible for privacy reasons. The use of the online form made it possible to receive results in real time and quickly display a summary of them.

Table 1. Demographic profile of the interviewees in kindergarten.

Demographic Characteristic: Percent of Respondents	Demographic Characteristic: Percent of Respondents
Gender:	
Male	4.4%
Female	95.6%
Age	
Average	42.327
Standard deviation	7.065
Education	
Average	14.482
Standard deviation	2.881
Have you ever frequented/taught an online course?	

Yes	53.7%
No	46.3%
What kind of employment relationship do you have (full-time, part-time, internship, or first experience with the TFA)?	
First experience	28.3%
Internship	0.9%
Part-time	16.8%
Full-time	54%

Table 2. Demographic profile of primary school respondents.

Demographic Characteristic: Percent of Respondents	Demographic Characteristic: Percent of Respondents
Gender:	
Male	1.1%
Female	98.9%
Age	
Average	40.580
Standard deviation	7.705
education	
Average	16.365
Standard deviation	2.492
Have you ever frequented/taught an online course?	
Yes	59.7%
No	40.3%
What kind of employment relationship do you have (full-time, part-time, internship, first experience with the TFA)?	
First experience	22.14%
Internship	3.76%
Part-time	16.1%
Full-time	58%

An initial demographic analysis confirms the research on gender differences [8] which shows that in the lower levels of education (childhood, primary), males make up only 1.1% of the interviewees for primary and 4.4% for childhood education (crossing this last figure with the employment relationship, they are all teachers of another degree at the second qualification, and therefore no male student enrolls in childhood as a first job choice). The average age was over 42 years for kindergarten and over 40 years for primary, and the average of the years of education was 14.4 years for the former and 16.4 years for the latter (in the Italian system, achievement of the diploma requires 13 years of compulsory education, leaving out the years of kindergarten). When asked if they had previously followed/taught an online course, 53.7% of the kindergarten teachers answered affirmatively and 59.7% of the primary school teachers had already attended or taught online courses, while the remaining 40.3% of interviewees, despite having become the main channel for the dissemination of training, had no experience with online courses. In both situations, more than half of the students were permanent teachers in another grade level of school.

3. Results and discussions

The second part of the questionnaire reveals the most interesting part of this research. In addition to monitoring the initial situation of the two groups of teachers with respect to distance learning, it is also possible to juxtapose the considerations of both grades of schools. In accordance with the original version of the questionnaire, Tables 3 and 4 present the answers to the 18 questions with a Likert-type

scale in the survey. These questions have been grouped into similar categories: items 1 and 2 concern flexible lesson times; items 3, 4, 5, and 6 analyze student-teacher interactions; 7, 8, and 9 examine the structure of the online course; 10, 11, 12, and 13 focus on student learning (including the importance of the manual); 14 and 15 address the issue of online assessment and testing; and 16, 17, and 18 relate to general skills and perceptions of online teachers. The table shows the percentage of responses in each category, as well as the means and standard deviations for each statement.

Table 3. Perception of the possibilities offered by online courses for nursery school teachers.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean*	S.D.*
1 One of the advantages for the student of taking an online course is that the "lesson times" are flexible. [Uno dei vantaggi, per lo studente, di seguire un corso online è che gli "orari delle lezioni" sono flessibili].	24,8	**37,2**	24,8	12,4	1,8	2,366	1,024
2 One of the advantages, for the teacher, of teaching an online course is that the "lesson times" are flexible. [Uno dei vantaggi, per il docente, di un insegnamento di un corso online è che gli "orari delle lezioni" sono flessibili].	19,5	**34,5**	27,4	13,3	5,3	2,516	1,049
3 The interaction / lessons with the teacher are more frequent in a normal school context than in an online lesson. [L'interazione / le lezioni con il docente sono più frequenti in un normale contesto scolastico che in una lezione online].	**35,4**	27,4	20,4	14,2	3.5	2,322	1,237
4 Science courses in an online environment are among the hardest for college students. [I corsi di discipline scientifiche in un ambiente online sono tra i più difficili per gli studenti universitari].	11,5	24,8	**40,7**	20,4	2,7	2,866	0,999
5 The online course format allows students to study at their own pace. [Il formato del corso online consente agli studenti di studiare secondo il proprio ritmo].	23,9	**39,8**	20,4	13,3	2,7	2,250	1,083

6 Humanities courses should be offered online. [I corsi di discipline umanistiche dovrebbero essere offerti online].	14,2	24,8	**33,6**	24,8	3,5	2,716	1,136
7 For me it is important to interact with students (face to face) outside the classroom. [Per me è importante l'interazione con gli studenti (faccia a faccia) fuori dalla classe].	**31,9**	**36,3**	26,5	6,2	0	2,066	**0.860**
8 It is inspiring that an online course does not have a structured classroom-like physical environment. [è stimolante che un corso online non abbia un ambiente fisico di tipo aula strutturata].	10,6	23	**34,5**	23	8,8	2,950	1,095
9 Online courses attract students because classroom layout is not required. [I corsi online attirano gli studenti perché non è richiesta la disposizione dell'aula].	8,8	25,7	**31,9**	24,8	9,7	2,983	1,025
10 In the future, I will teach as many online classes as possible. [In futuro, insegnerò al maggior numero di lezioni online possibile].	2,7	8,8	**34,5**	**35,4**	18,6	3,683	1,016
11 I miss face-to-face interaction with students in an online lesson. [Mi perdo l'interazione faccia a faccia con gli studenti in una lezione online].	**31**	**33,6**	23	8	4,4	2,133	1,080
12 Lack of student-student interaction in an online classroom could hinder their learning experience. [La mancanza di interazione studente-studente in una classe online potrebbe ostacolare la loro esperienza di apprendimento].	23	**35,4**	26,5	13,3	2,7	2,316	1,049
13 The textbook is a necessary aid more in an online lesson than in a	7,1	23	**33,6**	25,7	10,6	3,100	1,174

traditional lesson. [Il libro di testo è un sussidio necessario più in una lezione online che in una lezione tradizionale].							
14 Tests in an online course are more difficult for students. [I test in un corso online sono più difficili per gli studenti].	0,9	12,4	**31,9**	**41,6**	13,3	3,500	**0,873**
15 For a teacher The tests in an online course are more difficult to administer. [Per un docente I test in un corso online sono più difficili da somministrare].	2,7	19,5	**41,6**	**28,3**	8,8	3,200	**0,916**
16 Online courses require students to prepare the material themselves more than in a "traditional" classroom course. [I corsi online richiedono agli studenti di predisporre da soli il materiale più che in un corso in classe "tradizionale"].	11,5	**32,7**	**31**	21,2	3,5	2,583	0,961
17 The technology required to take an online course increases the educational value of the experience. [La tecnologia necessaria per seguire un corso online aumenta il valore educativo dell'esperienza].	**27,4**	**40,7**	20,4	10,6	0,9	2,033	0,990
18 Online courses require the student to be more self-disciplined than traditional courses. [I corsi online richiedono che lo studente sia più autodisciplinato rispetto ai corsi tradizionali].	23	**31,9**	24,8	14,2	6,2	2,433	1,212

In relation to items 1 and 2 (i.e., those related to the flexibility of schedules in both grades of school), the interviewees believed that it appealed to students and teachers, although the students in this case were in a particular age group of 3–5 years for childhood and 6–10 years for primary school. Regarding items 3–6, which analyze student-teacher interactions in the university context where the supporting teaching apprentices now found themselves stationed, the interviewees considered the online interaction very positive and a fundamental element for learning scientific disciplines, and they were skeptical (or neutral) in both cases for learning humanities (33.6% and 44.6%, respectively). For items 7, 8, and 9 concerning the structure of the course and the kindergarten, although interviewees preferred face-to-face interaction (31.6% and 36.6%), they suspended judgment and were neutral with respect to

attendance or management of an online course. Primary school, while showing a lower preference for face-to-face interaction, shows greater resistance to the use of technologies (items 8 and 9).

Table 4. Perception of primary school teachers.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean*	S.D.*
Item 1	12,4	**36**	25,8	16,7	11,3	2,775	1,179
Item 2	10,2	**31,2**	27,4	18,3	18,3	2,887	1,242
Item 3	17,7	24,7	28,5	23,1	6,5	2,806	1,223
Item 4	8,1	19,4	**37,6**	**26,9**	8,6	3,051	1,068
Item 5	12,4	**38,2**	23,7	16,1	9,7	2,928	1,203
Item 6	7	18,3	**44,6**	22	8,6	3,154	1,003
Item 7	19,4	**37,1**	29,6	12,4	2,7	2,536	1,031
Item 8	7,5	20,4	**37,6**	**29**	5,4	3,173	0,941
Item 9	7	17,2	**34,9**	**31,7**	9,1	3,275	1,033
Item 10	3,2	8,1	**45,2**	**32,8**	10,8	3,428	**0,861**
Item 11	18,3	28	23,7	24,2	6,5	2,795	1,201
Item 12	11,8	28	27,4	23,7	9,1	2,928	1,262
Item 13	4,8	15,6	**25,8**	**40,9**	14	3,515	1,011
Item 14	0,5	5,9	**28,5**	**51,1**	14,5	3,752	**0,804**
Item 15	3,8	14,5	**27,4**	**44,1**	10,8	3,387	1,041
Item 16	9,1	21,5	**35,5**	**29**	6,5	3,091	1,094
Item 17	21	**45,2**	23,7	9,1	2,2	2,204	**0,930**
Item 18	18,8	**28**	25,3	22,6	7	2,928	1,294

Questions 10–13 focus on the prospects for the future use of online lessons in teaching practice and the effects of student learning (while for kindergarten teachers, online lessons are to be avoided because the socialization dimension of children is lost). Because children and teachers do not carry out face-to-face relationships, and because use of the textbook is considered superfluous during online lessons, primary school teachers (even if they are distributed almost equally between the positive and negative poles of the Likert scale) are more likely to refuse to engage in many distance lessons. In contrast to what has been said so far, in both grades of school it is believed that online tests and assessments are not a complex practice for either students or teachers (items 14 and 15). The last three items concern the general skills of the students and the perceptions of the teachers, and between the two grades of school there are substantial differences: according to the teachers of the kindergarten, students are required to have greater self-discipline and autonomy in the preparation of online courses [9].

Homework, for primary school teachers, is not perceived in online courses, even though teachers consider technology as an added value to teaching practice.

4. Conclusion

The data collected by the demographic section confirm the need for training of highly qualified primary school teachers (average = over 16 years of training). In both situations, more than half of the students are permanent teachers in another grade level. In compiling the questionnaire, two clear themes emerged: resistance to the acceptance of technology in kindergarten and the awareness of a new audience of pupils in contemporary school. The transition from resistance to technologies in the didactic field to a professionalizing use by teachers involves a complex process of professional redefinition. Technology in general has produced significant transformations in playful, relational, and social contexts to the point of accentuating the strong pre-existing gap between intra- and extra-curricular realities. The change of perspective described here clearly shows the need to move towards a social analysis of the impact of technology on the working life of the subjects and also to describe the change taking place that determines the effects of professional well-being/malaise. Although paradigmatically discordant, the succession of different models testifies to the construction of a professional paradigm oriented towards competence and professional well-being. The conclusions of a recent experiment conducted by Radovan and Kristl [10] confirmed that the introduction of digital technologies in current teaching models is subject to the acceptance and willingness of teachers to use these innovative tools. Finally, in addition to the instrumental value of technology, a fundamental element is also assumed by the presence of virtual learning environments, hybridized to school practice, that structurally reform this ongoing process.

As for the second theme, the new students—the ones who populate the classes—are students who live in the infosphere and are influenced by it; they read the world through the digital eyes of this ecosystem. They are the so-called 'digital natives,' an overused form to describe students who were all born in a context in which the information society is the norm, not an innovation. The contemporary student is at ease in such contexts, with digital and multimedia documents, and with the hybridization of different types of textual forms, i.e., texts, images, videos, and sounds put together in a single cultural communication operation. Such a student is able to activate forms of horizontal communication with peers, or vertical communication with parents, experts, and teachers in ways that were unthinkable until ten years ago [11]. For the teacher, it is called a learning goal (also called a learning outcome). It is the teacher's design goal to shape the learning process in which the student is inserted. To achieve the goal, it is possible to use a series of stimuli which are not necessarily self-produced by the teacher and which can also be found in the infosphere. The teacher's new role is certainly that of an authoritative figure, because he knows where he is going and is aware of his own skills and limitations; you know the digital ecosystem, so you take advantage of the resources that are available online [12].

It is clear that the changes triggered by the COVID-19 pandemic in terms of distance learning and online training are no longer reversible, and the researcher's task is to track these changes in positive and negative perceptions towards digital technologies and provide models and tools that allow a better development of teaching practices [13]. There is no inherent conflict between face-to-face teaching and distance teaching. Coexistence and mutual hybridization will allow a real development of mixed, hybrid, and flexible teaching in the post-COVID era that is taking shape.

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