European Journal of Special Education Research
ISSN: 2501 - 2428
ISSN-L: 2501 - 2428
Available on-line at: www.oapub.org/edu

DOI: 10.46827/ejse.v7i4.4050 Volume 7 | Issue 4 | 2021

# DISTANCE EDUCATION IN THE PANDEMIC ERA: THE VIEWS OF GREEK GENERAL AND SPECIAL EDUCATION TEACHERS OF SECONDARY EDUCATION REGARDING READINESS, CHALLENGES AND THE POST-COVID EDUCATIONAL PRACTICES

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**Abstract:**
The present study, via the use of a questionnaire, examined the views of 138 Greek teachers, of general and special education, on the readiness for distance education, the challenges they face during the courses, and the measures to be taken in education in case of a next crisis such as Coronavirus pandemic (COVID-19). Educators' views on the measures to be taken by educational institutions in order to be ready to provide distance education in the post-COVID era were also examined. The analysis of results showed that Special Education teachers appeared to be more ready for distance education; indeed, their field of employment itself, namely teaching, their years of service, the age and the level of studies were found to have a statistically significant influence on their answers. The greater challenge that both groups of teachers faced were the difficulties in communicating with their students. It became apparent also the great need for training

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teachers in issues related to distance education as well as the protection of their personal data of their students.

**Keywords**: distance education, distance learning, COVID-19, teachers' views, readiness, challenges

## 1. Introduction

In December 2019, a new strain of coronavirus (COVID-19) appeared causing severe disorders in the respiratory system. Its rapid spread to many countries around the world led the World Health Organization to declare the spread of COVID-19 a pandemic on March 11, 2020 (WHO, 2020). The education sector seemed to have been the most affected after that of health (Telli Yamamoto & Altun, 2020), as educational institutions in many countries had suspended their operation to protect public health. According to UNESCO (2020), six countries suspended schools in March, while a month later they had risen to 195; about 1.725 billion pupils and students affected by the closure of schools and universities in response to the spread of the virus. Therefore, in a very short period teachers faced the need to utilize distance education (DE), with the aim of unhindered continuation of the educational process.

According to UNESCO (2016), DE is defined as an educational process that takes place in whole or in part online, but also with the use of printed material that is posted to bridge the time and geographical distance between teacher and student. DE appears in three forms depending on the type of communication of the participants: the synchronous, the asynchronous and the mixed (Horton, 2000). In synchronous DE individuals are connected to the network and communicate in real time, thus simulating traditional teaching but allowing the existence of physical distance between the participants (Kartsiotis & Karatasios, 2008). In asynchronous DE individuals have the opportunity to work with the educational material at any time and place without the need for the presence of the teacher (Kartsiotis & Karatasios, 2008), while mixed DE is the form that combines the two previous ones.

The synchronous and asynchronous communication of the participants occurs with specific tools that contribute to the development of "virtual" classes, which they are called Learning Management Systems (LMS). In essence LMS is a software package used to organize and share educational activities in a network (Liodakis, Kalogiannakis, Psarros, & Vassilakis, 2005).

In DE, the successful learning experience is directly intertwined with the primary role played by the teacher (Iliadou & Anastasiadis, 2010). Additionally, to their teaching work, though, teachers are required to have a counseling and mentoring role; and their communication with the learner must be regular and qualitative as a counterweight in the absence of immediacy and personal contact because of DE (Zygouris & Mavroidis, 2011). At the same time, knowledge about the use of technology is a necessary condition

not only for the educational process but for achieving effective communication also. It is important to emphasize that teachers were called upon in a very short period to convert living classes into online ones, without often having the necessary training in technological skills and digital teaching practices (Schleicher, 2020).

In addition, it is necessary for the teacher to explore the various applications of technology in the educational process in order to make full use of them and to cope with emergency online education (Milligan, 2020), which sets as a prerequisite to be ready (the teacher) to use technological means.

Readiness for DE is defined as the stage of preparation for online courses (Martin, Budhrani, & Wang, 2019) and is one of the most important factors for a successful online learning experience (Rohayani, Kurniabudi, & Sharipuddin, 2015). In the research of Phan and Dang (2017) on the readiness of teachers for online courses, factors such as technological skills, training in the DE, and lack of time and knowledge about the pedagogical use of technology, were found to have an impact on their level of readiness for DE. However, teachers, despite the difficulty of time management and the lack of technological knowledge, seemed to meet the requirements of the DE (Ventayen, 2018). In addition, in a survey on the readiness of special educators, 90% of them were in favor of distance learning despite the fact that they taught disparate groups of students, or students who underwent treatments. Furthermore, they defied the lack of specialized support staff such as speech therapists and psychologists (Fedina et al., 2017).

In addition, the assessment of readiness for DE can illuminate the strengths and weaknesses of an educational institution regarding the acquisition and use of technologies (Penna, Stara, & Rose, 2009) making it an important and critical parameter for the quality of DE. However, apart from the material and technical infrastructure, the educational institutions must have a comprehensive crisis management plan in order to continue the training in case of suspension of their operation. Survey findings on crisis management by US educational institutions show that 94.6% of public schools have a crisis management plan including mechanisms for communicating with students and parents, however less than half of the schools had plans for continuing education after an unexpected suspension of their operation (Kersten, Chamberlain, Jones, Uzicanin, & Ahmed, 2021). At the same time, the educational structures have to support adequately the teaching staff by providing the necessary material and technical infrastructure, guidance and training on DE and pedagogical use of technology. Additionally, they (structures) have to operate as a communication channel among the educational community, the students and their families (UNESCO, 2020).

The use of technology in education provided a solution to the developments that followed the Covid-19 pandemic and entails advantages such as flexibility of time and space (Hamzaee, 2005); however, it had a negative effect on the teacher-student relationship as well as on socialization and student motivation. (Niemi & Kousa, 2020). It has also brought to the fore the problems students with special education needs face, as

online learning offers opportunities to some students, but is unlikely to work smoothly for diverse groups of students (Zhao, 2020).

Even before the pandemic, the risk of barring access to services was higher for students with disabilities (Bernard et al., 2020), including the appropriate education in comparison with their non-disabled peers (Gilmour, Fuchs, & Wehby, 2019). These students are mainly at a disadvantage in times of disaster and crisis, as in the case of the current pandemic (Kuper, Banks, Bright, Davey, & Shakespeare, 2020). In a national survey in Germany involving students, parents and teachers, it was found that during online courses all along the pandemic period, differentiated teaching was not used to include students with special education needs, with teachers also showing increased stress, nervousness and anger on the uncertainty and difficulty of managing the current situation (Letzel, Pozas, & Schneider, 2020). In a global survey, 1.845 Special Education teachers highlighted, among other things, the lack of internet connection, the lack of support staff for students with disabilities and the lack of accessible digital material as the main obstacles to the effectiveness of DE. In addition, 21% of teachers feel that does not have the appropriate support/training to meet the needs of students with disabilities (McClain-Nhlapo et al., 2020).

The ultimate purpose of the present study was to investigate the views of Greek General and Special Education teachers of secondary education about the DE, as its imposition has brought about changes for all students who are a heterogeneous group with different characteristics and needs. More specifically, it was investigated the readiness of teachers for distance learning, the challenges they face during the courses, their views about the measures, which are necessary to be taken in education in the event of a future crisis, and that entail adoption of measures by educational institutions so that they are ready to provide DE in the post-COVID era.

The aims were as follows:

1) To seek for differences between General and Special Education teachers on their readiness to provide DE due to the pandemic of COVID-19
2) To seek for differences between the two groups of teachers in terms of the challenges they face in the new framework of DE
3) To seek for differences in their views regarding the measures to be taken to deal with a possible crisis in the future and
4) Finally, to seek for differences in their views regarding the measures to be taken by educational institutions so that they are ready to provide distance education in the post-COVID era?

## 2. Participants

The total of 138 teachers of secondary education participated in the present study on a volunteer basis (85 of General and 53 of Special Education). The eighty seven (87) of them were women and fifty one (51) were men. As far their age variance was concerned: thirty

two (32-23.2%) teachers were between (22-30) years old, thirty three (23.9%) were between (31-40) years old, forty three (31.2%) were between (41-50) years old and thirty (21.7%) of them were between (51-60) years old. Furthermore, eighty nine teachers (64.5%) stated that were employed in public sector, sixteen of them (11.6%) were employed in private sector and thirty three (23.9%) were self-employed. The overwhelming majority of teachers (63 - 45.7%) had a University degree only, forty five of them (32.6%) had a Master's degree, and twenty seven (19.6%) had a basic University degree and special education seminars. Only three teachers stated that had a PhD degree. Coming to their actual –years of service-, seventy eight teachers stated that they had (0-10) years of working experience, thirty two of them had (11-20) years of experience and the remaining twenty eight teachers had (21-30) years of working experience. Ninety five (95) of the subjects completed the questionnaire manually (*the researcher had in advance visited their schools and left the questionnaires to be filled by them*) while the forty three of them (43) completed the same questionnaire electronically (*data gathering procedure in this case was done through Google forms*).

## 3. Materials

For the purpose of the present study, a questionnaire was created based on the review of the relevant literature. The construction of the questionnaire was carried out according to the objectives of the present research having as main axes the readiness, the challenges and the future actions in the field of education. More specifically, the questionnaire consists of 5 parts: the first part concerns the demographic and individual data of the participants; the second one the readiness of the teachers for DE; the third regards the challenges the teachers face during the DE; the fourth refers to the measures to be taken in education to deal with a possible crisis in the future; and the fifth one concerns the expected readiness of educational institutions for DE in the post-COVID era.

The second, third and fifth part based on the sections "Teacher's Readiness to Distance Learning Education Due to COVID-19", "Teachers' Challenges in Distance Learning Education", and "Schools' Preparedness to Distance Learning Education Due to COVID-19" of the questionnaire found in "Questionnaires on Teachers Awareness, Readiness and Online Learning Experiences During COVID-19" (Lapada, Miguel, Robledo, & Alam, 2020), which had a Cronbach a = 0.89 reliability index.

For the fourth part, which refers to the measures to be taken in education, the reports of the section "Measures to be Taken in Education against A Potential Outbreak in the Future" of the Korkmaz and Toraman questionnaire (2020) were used. The reliability of this questionnaire was taken for granted as, according to the researchers, experts developed it. More specifically, 30 scientists in the field of Informatics and in that of Education were asked to submit a report with their views on problems, changes and measures related to the DE during the COVID-19 pandemic, which were analyzed, categorized and resubmitted for consideration. Afterwards, the questionnaire that was

created it was evaluated by two experts in study programs, two experts in the field of educational technology, a statistician and after the necessary modifications, it took its final form. Table 1 presents the four main parts of the developed questionnaire.

The four parts of the questionnaire were:

**Table 1:** The four parts of the questionnaire

| |
|---|
| **2.Teacher's Readiness to Distance Learning Education Due to COVID-19** |
| 1. Ready to conduct distance learning education to my students in times of COVID-19 |
| 2. Ready to use the printed module as a tool for learning at home |
| 3. Ready to use online modules or learning materials available on the internet |
| 4. Ready to utilize learning management systems like (e-class, e-me, Cisco Webex, or Zoom) as a means of online or distance learning education |
| 5. Well-equipped and ready for distance learning since I attended a training or workshop on distance learning education management |
| **3. Perceived challenges in distance learning education** |
| 1. Challenges on Knowledge and skills required in delivering distance learning education classes. |
| 2. Challenges on establishing communication with my students |
| 3. Challenges on having stable internet access intended for distance learning education |
| 4. Challenges on the use of phones, laptops, and tablets or any devices for distance learning education |
| 5. Challenges on the use of any Learning Management System (LMS) |
| 6. Challenges on Use of social media, e-mails, and other platforms of distance learning education |
| 7. Challenges on Giving instruction and responding to queries through e-mail and messages. |
| 8. Challenges on Encouraging participation and utilization of features in online classes. |
| 9. Challenges on Time management in the conduct of classes, monitoring of responses, availability of students, and other online classes issues. |
| 10. Challenges on the sudden shift from face to face to online classes. |
| 11. Challenges on Managing the stress caused by community quarantine at home and in between online classes demands. |
| 12. Challenges on Beating the deadlines and requirements set by the school administrators. |
| 13. Challenges on Establishing a network of communication among stakeholders such as parents for support at home. |
| 14. Challenges on Checking and evaluating students' output from the e-mail of an online Learning Management System. |
| 15. Challenges on Building a positive environment through online classes through emotional support among my students aside from content-based teaching and learning |
| **4. Measures to be Taken in Education against A Potential Outbreak in the Future** |
| 1. The requirements such as network capacity, internet speed, information technology should be enhanced |
| 2. Educators' competencies related to online learning environment need to be supported more |
| 3. All educators should undergo training to use online learning management systems. |
| 4. Every student's access to the internet or other necessary equipment should be guaranteed. |
| 5. Special trainings about getting ready for another potential outbreak in the future should be organized for both students and educators. |
| 6. Educator, student and parent cooperation needs to be dynamized. |
| 7. More emphasis should be placed on teaching real-life problem-solving skills. |
| 8. Curricula should be revised and made more effective. |
| 9. Topics related to self-care, health, hygiene etc. should be integrated more in the curriculum content. |
| 10. Educational decision makers need to make effective plans for extraordinary conditions in the future. |

| |
|---|
| 11. Starting from the concept of education itself, all educational practices should be revised, and a new structuring program should be made<br>12. Educators should have in-service training about online learning at least a day per week as a matter of lifelong learning.<br>13. Measures need to be taken to promote educators' creative thinking skills<br>14. Educators need to be considered as professionals who can manage complex processes rather than technical employees.<br>15. Educational decision makers do not have to take any measures about the post-COVID educational practices. This is a temporary situation, and everything will be fine in the future. |
| **5. Expected readiness of educational institutions for Distance Learning Education in a post COVID-19 era**<br>1. The school/or the institution must have a system of information dissemination to communicate with the parents and the learners in cases of its imposed closure/suspension in future<br>2. The school /or the institution must provide a predefined and specialized staff for distance learning and education (*in cases where both distance and lifelong learning occur simultaneously*)<br>3. The school or/ the institution must contribute to reshaping - increasing educators' competencies for distance learning and use of online learning environments<br>4.The school /or the institution must provide the regulations and policies on the use of distance learning to protect student's identity and data privacy<br>5. The school /or the institution must provide supplementary materials for distance learning such as subscriptions to online libraries, procurement of online learning management systems |

## 4. Procedure

The questionnaire was given to secondary school teachers working in schools or tuition centers in the Prefecture of Larissa or to teachers who simply teach private lessons. The distribution of the questionnaire started in January 2021 and completed in February 2021. It included an introductory note informing the participants about the research topic and emphasizing the anonymity of their data. For the data obtained from the questionnaires, a statistical analysis was performed with the statistical program IBM SPSS Statistics.

## 5. Results

The Cronbach alpha (a) index was calculated to test the reliability of the internal consistency of the hypothesis of each scale. The results found are presented in Table 2.

**Table 2**: Cronbach's alpha reliability index on four scales

| **Scales** | **Cronbach's alpha for general education teachers** | **Cronbach's alpha for special education teachers** | **Total** | **Number of questions** |
|---|---|---|---|---|
| | n=85 | n=53 | n=158 | |
| Teacher readiness for DE | .836 | .817 | .830 | 5 |
| Challenges in DE | .929 | .859 | .914 | 15 |
| Measures to deal with a possible crisis in the future | .827 | .776 | .802 | 15 |
| Expected readiness of an institution in the post-COVID era | .605 | .864 | .754 | 5 |

The total Cronbach's alpha index for the 40 questions in the questionnaire was a = 0.825. In the reliability analysis for the scale "Teacher readiness" is a = 0.830, for the scale "Challenges" is a = 0.914, for the scale "Measures" is a = 0.771 and for the scale "Institution Readiness" is a = 0.754. The Cronbach index for the scale "Expected readiness of an institution in the post-COVID era" presented a value of $\alpha$ = 0.605, probably due to the small number of formalities in this scale. Therefore, the reliability of the questionnaire was considered good. In addition, it is important to note that the method of double translation was used to capture the statements in the Greek language, which was done with the contribution of a teacher of English language and literature.

Having calculated the Cronbach indexes for each scale, the next step was to compare the answers of the General and Special Education teachers in each module-scale of the questionnaire. At any scale, the frequencies of the answers of the respondents (i.e., teachers of General (GE) and Special (SE) Education) were reported. Columns MED and MOD refer to the *median* and *mode* of each question respectively. The median of the measurements of a sample is the average measurement in the order of their size, i.e., 50% of the measurements to be less than or equal to it and at least 50% to be larger than it. As for the mode, it is the price with the highest frequency. The corresponding non-parametric Mann-Whitney test was performed with the statements as dependent variables and regardless of whether he/she is a Special or General Education teacher.
Table 3 shows the percentages, the corresponding modes, the medians and the corresponding Mann-Whitney values for the 2nd section of the questionnaire concerning "the readiness of teachers for DE due to the COVID-19 pandemic".

**Table 3:** Frequencies, percentages and Mann Whitney values for the 2nd section statements concerning the "readiness of teachers for DE due to the COVID-19 pandemic"

| **Teacher readiness** | | **Totally disagree** | **Rather disagree** | **Neither agree nor disagree** | **Rather agree** | **Totally agree** | **MED (median)** | **MOD (mode)** | **Mann-Whitney U (level Sig. p<.05)** |
|---|---|---|---|---|---|---|---|---|---|
| 1) | G.E. | 11 (12.9 %) | 20 (23.5 %) | 19 (22.4 %) | 20 (23.5%) | 15 (17.6%) | *3* | *2* | *2158.5 (0.674)* |
| | S.E. | 4 (7.5 %) | 12 (22.6 %) | 19 (35.8 %) | 16 (30.2%) | 2 (3.8 %) | 3 | 3 | |
| 2) | G.E. | 11 (12.9 %) | 20 (23.5 %) | 26 (30.6 %) | 22 (25.9%) | 6 (7.1 %) | 3 | 3 | 2020 (0.292) |
| | S.E. | 2 (3.8 %) | 12 (22.6 %) | 22 (41.5 %) | 10 (18.9%) | 7 (13.2%) | 3 | 3 | |
| 3) | G.E. | 14 (16.5 %) | 24 (28.2 %) | 14 (16.5 %) | 23 (27.1%) | 10 (11.8%) | 3 | 2 | 2137.5 (0.606) |
| | S.E. | 5 (9.4 %) | 13 (24.5 %) | 15 (28.3 %) | 17 (32.1%) | 3 (5.7 %) | 3 | 4 | |
| 4) | G.E. | 15 (17.6 %) | 14 (16.5 %) | 22 (25.9 %) | 21 (24.7%) | 13 (15.3%) | 3 | 3 | 2081.5 (0.442) |
| | S.E. | 4 (7.5 %) | 11 (20.8 %) | 11 (20.8 %) | 24 (45.3%) | 3 (5.7 %) | 4 | 4 | |
| 5) | G.E. | 30 (35.3 %) | 12 (14.1 %) | 23 (27.1 %) | 16 (18.8%) | 4 (4.7 %) | 3 | 1 | 2220.5 (0.887) |
| | S.E. | 12 (22.6 %) | 16 (30.2 %) | 19 (35.8 %) | 5 (9.4 %) | 1 (1.9 %) | 2 | 3 | |

No statistically significant differences were observed between the responses given by General and Special Education teachers. At the same time, it was noteworthy that in the fifth question concerning the training of teachers regarding DE, only 4.7% of General Education teachers and 1.9% of Special Education ones had attended a corresponding program.

Moving to the third section of the questionnaire concerning the "related to the challenges faced by teachers in DE", Table 4 shows the percentages, the corresponding modes, the medians, as well as the statistically significant differences between the two groups.

A statistically significant difference was found between General and Special Education teachers, with the former agreeing more that they faced challenges in knowledge and skills for distance learning compared to Special Education teachers ($Mann-Whitney = 1797, p = 0.04, mean\ rank_{\Gamma.A} = 74.86, mean\ rank_{E.A} = 60.91$). At the same time, the highest agreement rates for both groups of teachers (51.8% for GA, 50.9% for EA) were presented in the statement on the challenges in communicating with students during the DE.

**Table 4:** Frequencies, percentages and Mann-Whitney values for the 3rd Section of statements related to the "challenges faced by teachers in DE"

| Challenges | | Totally disagree | Rather disagree | Neither agree nor disagree | Rather agree | Totally agree | MED (median) | MOD (mode) | Mann-Whitney U (Level of Sig $p < .05$) |
|---|---|---|---|---|---|---|---|---|---|
| 1) | G.E. | 10 (11.8 %) | 14 (16.5 %) | 21 (24.7 %) | 26 (30.6%) | 14 (16.5%) | 3 | 4 | 1797 (0.04) |
| | S.E. | 5 (9.4 %) | 16 (30.2 %) | 16 (30.2 %) | 15 (28.3%) | 1 (1.9 %) | 3 | 2 | |
| 2) | G.E. | 7 (8.2 %) | 14 (16.5 %) | 20 (23.5 %) | 30 (35.3%) | 14 (16.5%) | 4 | 4 | 2089.5 (0.458) |
| | S.E. | 1 (1.9 %) | 3 (5.7 %) | 22 (41.5 %) | 19 (35.8%) | 8 (15.1%) | 4 | 3 | |
| 3) | G.E. | 4 (4.7 %) | 14 (16.5 %) | 31 (36.5 %) | 22 (25.9%) | 14 (16.5%) | 3 | 3 | 2192 (0.785) |
| | S.E. | 0 (0 %) | 9 (17 %) | 22 (41.5 %) | 20 (37.7%) | 2 (3.8 %) | 3 | 3 | |
| 4) | G.E. | 20 (23.5 %) | 16 (18.8 %) | 22 (25.9 %) | 22 (25.9%) | 5 (5.9 %) | 3 | 3 | 2000 (0.256) |
| | S.E. | 4 (7.5 %) | 14 (26.4 %) | 18 (34 %) | 13 (24.5%) | 4 (7.5 %) | 3 | 3 | |
| 5) | G.E. | 11 (12.9 %) | 21 (24.7 %) | 26 (30.6 %) | 20 (23.5%) | 7 (8.2 %) | 3 | 3 | 2053.5 (0.368) |
| | S.E. | 6 (11.3 %) | 7 (13.2 %) | 22 (41.5 %) | 14 (26.4%) | 4 (7.5 %) | 3 | 3 | |
| 6) | G.E. | 24 (28.2 %) | 20 (23.5 %) | 15 (17.6 %) | 20 (23.5%) | 6 (7.1 %) | 2 | 1 | 2101 (0.498) |
| | S.E. | 10 (18.9 %) | 14 (26.4 %) | 14 (26.4 %) | 11 (20.8%) | 4 (7.5 %) | 3 | 2 | |
| 7) | G.E. | 24 (28.2 %) | 14 (16.5 %) | 18 (21.2 %) | 20 (23.5%) | 9 (10.6%) | 3 | 1 | 2213.5 (0.861) |
| | S.E. | 4 (7.5 %) | 19 (35.8 %) | 22 (41.5 %) | 7 (13.2%) | 1 (1.9 %) | 3 | 3 | |
| 8) | G.E. | 12 (14.1 %) | 11 (12.9 %) | 25 (29.4 %) | 23 (27.1%) | 14 (16.5%) | 3 | 3 | 2038.5 (0.333) |
| | S.E. | 2 (3.8 %) | 12 (22.6 %) | 21 (39.6 %) | 18 (34 %) | 0 (0 %) | 3 | 3 | |
| 9) | G.E. | 10 (11.8 %) | 14 (16.5 %) | 27 (31.8 %) | 23 (27.1%) | 11 (12.9%) | 3 | 3 | 2157.5 (0.669) |
| | S.E. | 3 (5.7 %) | 11 (20.8 %) | 22 (41.5 %) | 13 (24.5%) | 4 (7.5 %) | 3 | 3 | |
| 10) | G.E. | 7 (8.2 %) | 15 (17.6 %) | 28 (32.9 %) | 20 (23.5%) | 15 (17.6%) | 3 | 3 | 1976 (0.210) |
| | S.E. | 2 (3.8 %) | 13 (24.5 %) | 23 (43.5 %) | 12 (22.6%) | 3 (5.7 %) | 3 | 3 | |
| 11) | G.E. | 12 (14.1 %) | 14 (16.5 %) | 19 (22.4 %) | 28 (32.9%) | 12 (14.1%) | 3 | 4 | 2206.5 (0.837) |
| | S.E. | 2 (3.8 %) | 7 (13.2 %) | 27 (50.9 %) | 12 (22.6%) | 5 (9.4 %) | 3 | 3 | |
| 12) | G.E. | 22 (25.9 %) | 17 (20 %) | 24 (28.2 %) | 16 (18.8%) | 6 (7.1 %) | 3 | 3 | 2076.5 (0.430) |
| | S.E. | 6 | 15 | 20 | 9 | 3 | 3 | 3 | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | (11.3 %) | (28.3 %) | (37.7 %) | (17 %) | (5.7 %) | | | |
| 13) | G.E. | 8 (9.4 %) | 20 (23.5 %) | 30 (35.3 %) | 14 (16.5%) | 13 (15.3%) | 3 | 3 | 2062 (0.385) |
| | S.E. | 6 (11.3 %) | 9 (17 %) | 27 (50.9 %) | 11 (20.8%) | 0 (0 %) | 3 | 3 | |
| 14) | G.E. | 14 (16.5 %) | 17 (20 %) | 17 (20 %) | 25 (29.4%) | 12 (14.1%) | 3 | 4 | 2134 (0.569) |
| | S.E. | 3 (5.7 %) | 7 (13.2 %) | 23 (43.4 %) | 16 (30.2%) | 4 (7.5 %) | 3 | 3 | |
| 15) | G.E. | 13 (15.3 %) | 18 (21.2 %) | 19 (22.4 %) | 24 (28.2%) | 11 (12.9%) | 3 | 4 | 2176.5 (0.733) |
| | S.E. | 7 (13.2 %) | 6 (11.3 %) | 24 (45.3 %) | 14 (26.4%) | 2 (3.8 %) | 3 | 3 | |

As far as the fourth section of the questionnaire was concerned, regarding "the measures to be taken in education to deal with a possible crisis in the future", Table 5 also shows the percentages, the corresponding modes, the medians, as well as the statistically significant differences between the statements of the two groups.

**Table 5:** Frequencies, percentages and Mann-Whitney values for 4th Section of statements related to the "measures to be taken to deal with a possible crisis in the future"

| **Measures** | | **Totally disagree** | **Rather disagree** | **Neither agree nor disagree** | **Rather agree** | **Totally agree** | **MED (median)** | **MOD (mode)** | **Mann-Whitney U (Level of Sig. p<.05)** |
|---|---|---|---|---|---|---|---|---|---|
| 1) | G.E. | 0 (0 %) | 0 (0 %) | 6 (7.1 %) | 24 (28.2 %) | 55 (64.7 %) | 5 | 5 | **1448 (<0.001)** |
| | S.E. | 0 (0 %) | 1 (1.9 %) | 8 (15.1 %) | 28 (52.8 %) | 16 (30.2 %) | 4 | 4 | |
| 2) | G.E. | 0 (0 %) | 2 (2.4 %) | 3 (3.5 %) | 28 (32.9 %) | 52 (61.2 %) | 5 | 5 | **1256 (<0.001)** |
| | S.E. | 0 (0 %) | 3 (5.7 %) | 14 (26.4 %) | 23 (43.4 %) | 13 (24.5 %) | 4 | 4 | |
| 3) | G.E. | 0 (0 %) | 3 (3.5 %) | 5 (5.9 %) | 19 (22.4 %) | 58 (68.2 %) | 5 | 5 | **1378 (0.001)** |
| | S.E. | 1 (1.9 %) | 1 (1.9 %) | 11 (20.8 %) | 24 (45.3 %) | 16 (30.2 %) | 4 | 4 | |
| 4) | G.E. | 10 (11.8 %) | 2 (2.4 %) | 7 (8.2 %) | 12 (14.1 %) | 54 (63.5 %) | 5 | 5 | **1813.5 (0.032)** |
| | S.E. | 14 (26.4 %) | 1 (1.9 %) | 1 (1.9 %) | 13 (24.5 %) | 24 (45.3 %) | 4 | 5 | |
| 5) | G.E. | 0 (0 %) | 2 (2.4 %) | 3 (3.5 %) | 24 (28.2 %) | 56 (65.9 %) | 5 | 5 | **1541 (<0.001)** |
| | S.E. | 3 (5.7 %) | 0 (0 %) | 14 (26.4 %) | 14 (26.4 %) | 22 (41.5 %) | 4 | 5 | |
| 6) | G.E. | 3 (3.5 %) | 5 (5.9 %) | 13 (15.3 %) | 22 (25.9 %) | 42 (49.4 %) | 4 | 5 | 1718.5 (0.009) |
| | S.E. | 0 (0 %) | 1 (1.9 %) | 2 (3.8 %) | 14 (26.4 %) | 36 (67.9 %) | 5 | 5 | |
| 7) | G.E. | 2 (2.4 %) | 0 (0 %) | 12 (14.1 %) | 30 (35.3 %) | 41 (48.2 %) | 4 | 5 | 1937 (0.128) |
| | S.E. | 0 | 0 | 5 | 16 | 32 | 5 | 5 | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | (0 %) | (0 %) | (9.4 %) | (30.2 %) | (60.4 %) | | | |
| 8) | G.E. | 1 (1.2 %) | 2 (2.4 %) | 16 (18.8 %) | 25 (29.4 %) | 41 (48.2 %) | 4 | 5 | 2195 (0.780) |
| | S.E. | 0 (0 %) | 0 (0 %) | 13 (24.5 %) | 16 (30.2 %) | 24 (45.3 %) | 4 | 5 | |
| 9) | G.E. | 1 (1.2 %) | 4 (4.7 %) | 15 (17.6 %) | 30 (35.3 %) | 35 (41.2 %) | 4 | 5 | 2144.5 (0.614) |
| | S.E. | 0 (0 %) | 1 (1.9 %) | 5 (9.4 %) | 27 (50.9 %) | 20 (37.7 %) | 4 | 4 | |
| 10) | G.E. | 2 (2.4 %) | 1 (1.2 %) | 5 (5.9 %) | 24 (28.2 %) | 53 (62.4 %) | 5 | 5 | 2128 (0.537) |
| | S.E. | 0 (0 %) | 0 (0 %) | 6 (11.3 %) | 17 (32.1 %) | 30 (56.6 %) | 5 | 5 | |
| 11) | G.E. | 4 (4.7 %) | 0 (0 %) | 13 (15.3 %) | 38 (44.7 %) | 30 (35.3 %) | 4 | 4 | 2189 (0.762) |
| | S.E. | 0 (0 %) | 2 (3.8 %) | 8 (15.1 %) | 23 (43.4 %) | 20 (37.7 %) | 4 | 4 | |
| 12) | G.E. | 5 (5.9 %) | 12 (14.1 %) | 18 (21.2 %) | 22 (25.9 %) | 28 (32.9 %) | 4 | 5 | 2118 (0.545) |
| | S.E. | 0 (0 %) | 4 (7.5 %) | 19 (35.8 %) | 22 (41.5 %) | 8 (15.1 %) | 4 | 4 | |
| 13) | G.E. | 1 (1.2 %) | 7 (8.2 %) | 11 (12.9 %) | 37 (43.5 %) | 29 (34.1 %) | 4 | 4 | 2040.5 (0.321) |
| | S.E. | 0 (0 %) | 1 (1.9 %) | 9 (17 %) | 21 (39.6 %) | 22 (41.5 %) | 4 | 5 | |
| 14) | G.E. | 3 (3.5 %) | 0 (0 %) | 14 (16.5 %) | 25 (29.4 %) | 43 (50.6 %) | 5 | 5 | 2015.5 (0.265) |
| | S.E. | 0 (0 %) | 5 (9.4 %) | 8 (16.1 %) | 18 (34 %) | 22 (41.5 %) | 4 | 5 | |
| 15) | G.E. | 44 (51.8 %) | 15 (17.6 %) | 13 (15.3 %) | 5 (5.9 %) | 8 (9.4 %) | 1 | 1 | **1733.5 (0.010)** |
| | S.E. | 39 (73.6 %) | 6 (11.3 %) | 4 (7.5 %) | 3 (5.7 %) | 1 (1.9 %) | 1 | 1 | |

A statistically significant difference was found between General and Special Education teachers, with the former agreeing more than the latter on the following: (1) on the first statement about the prerequisites for improving DE, such as network power, internet speed, information technology ($Mann-Whitney = 1448, p < 0.001, mean\ rank_{\Gamma.A} = 78.96, mean\ rank_{E.A} = 54.32$). (2) On the second statement about enhancing teachers' accessibility to online environment ($Mann-Whitney = 1256, p < 0.001, mean\ rank_{\Gamma.A} 81.22, mean\ rank_{E.A} = 50.70$). (3) On the third statement on participation in training programs for DE ( $Mann-Whitney = 1378, p < 0.001, mean\ rank_{\Gamma.A} = 79.79, mean\ rank_{E.A} = 53$). (4) On the fourth statement concerning students' certain access to the internet and in equipment( $Mann-Whitney = 1813.5, p = 0.032, mean\ rank_{\Gamma.A} = 74.66, mean\ rank_{E.A} = 61.22$). (5) On the fifth statement regarding the offer of training for both students and teachers in order to prepare for a possible future crisis ( $Mann-Whitney = 1541, p < 0.001, mean\ rank_{\Gamma.A} 77.87, mean\ rank_{E.A} = 56.08$). Finally in the last statement, regarding the situation of non-taking of measures in education due to the temporary nature of the

situation, a statistically significant difference was also found between General and Special Education teachers, with the former agreeing more than the latter $Mann-Whitney = 1733.5, p < 0.010, mean\ rank_{\Gamma.A} = 75.61, mean\ rank_{E.A} = 59.71$.

Lastly but not least, Table 6 shows the percentages, the corresponding modes, the medians, as well as the statistically significant differences for the 5th section of the questionnaire related to "the expected readiness of educational institutions (schools / tuition centers) for DE in the post-COVID era".

**Table 6:** Frequencies, percentages and Mann-Whitney values for the 5th Section statements related to the "expected readiness of educational institutions (schools / tuition centers) for DE in the post-COVID era"

| Expected Foundation Readiness | | Totally disagree | Rather disagree | Neither agree nor disagree | Rather agree | Totally agree | MED (median) | MOD (mode) | Mann-Whitney (p value) |
|---|---|---|---|---|---|---|---|---|---|
| 1) | G.E. | 0 (0 %) | 15 (17.6 %) | 11 (12.9 %) | 29 (34.1 %) | 30 (35.3 %) | 4 | 5 | 1966 (0.187) |
| | S.E. | 0 (0 %) | 5 (9.4 %) | 9 (17 %) | 14 (26.4 %) | 25 (47.2 %) | 4 | 5 | |
| 2) | G.E. | 6 (7.1 %) | 2 (2.4 %) | 19 (22.4 %) | 27 (31.8 %) | 31 (36.5 %) | 4 | 5 | 2174.5 (0.723) |
| | S.E. | 0 (0 %) | 6 (11.3 %) | 14 (26.4 %) | 14 (26.4 %) | 19 (35.8 %) | 4 | 5 | |
| 3) | G.E. | 0 (0 %) | 1 (1.2 %) | 10 (11.8 %) | 29 (34.1 %) | 45 (52.9 %) | 5 | 5 | 2178.5 (0.725) |
| | S.E. | 4 (7.5 %) | 1 (1.9 %) | 8 (15.1 %) | 10 (18.9 %) | 30 (56.6 %) | 4 | 5 | |
| 4) | G.E. | 0 (0 %) | 1 (1.2 %) | 7 (8.2 %) | 24 (28.2 %) | 53 (62.4 %) | 5 | 5 | 1874.5 (0.064) |
| | S.E. | 0 (0 %) | 6 (11.3 %) | 2 (3.8 %) | 20 (37.7 %) | 25 (47.2 %) | 5 | 5 | |
| 5) | G.E. | 0 (0 %) | 0 (0 %) | 13 (15.3 %) | 20 (23.5 %) | 52 (61.2 %) | 5 | 5 | **1757.5 (0.017)** |
| | S.E. | 0 (0 %) | 9 (17 %) | 5 (9.4 %) | 16 (30.2 %) | 23 (43.4 %) | 4 | 5 | |

It was found, with a statistically significant difference, that General Education teachers agree more than Special Education ones in the view that the school / tuition center should provide additional material for DE, such as free access to online libraries, and provision of Learning Management Systems ($Mann-Whitney = 1757.5, p = 0.017, mean\ rank_{\Gamma.A} = 75.32, mean\ rank_{E.A} = 60.16$ ).

Furthermore, wanted to determine whether there was a difference in the mean of the variables expressed between the levels of demographic characteristics, a new variable was constructed as the average of the teachers' answers for each section of the questionnaire. Therefore, it was investigated whether the factors "Gender" and "Teacher Specialty" had a statistically significant influence on the teachers' answers, by using the parametric t test, whereas for the factors "Employment Field", "Studies / Education", "Years of service", "Age" and "Teaching" the One-Way ANOVA analysis was employed.

Note that the extreme values in each sample of the levels of the above demographic variables were subtracted (if any) and in each test, they did not exceed 10% of the sample size. In addition, in several cases, the assumption of normality was not valid; however, the size of the samples was large enough to address the above problem using the Central Marginal Theorem, except for two tests for which the non-parametric Kruskal-Wallis control was used.

Checking the effect of demographic characteristics on teachers' responses, the employment field (Public Sector / Private Sector) was initially found to have a statistically significant influence: Private Sector teachers declared that they are more prepared for DE than those ones in the Public Sector [F (2,135) = 11.319, p <0,00]); so, the latter face more challenges than the former [F (2,135) = 8.003, p <0,002].

In addition, age (22-30 / 31-40 / 41-50 / 51-60 +) was found to be statistically significant: younger teachers stated that they were more prepared for DE (Kruskal-Wallis p <0.001) and with fewer challenges than older teachers [Welch (3,72.366) = 14.444, p <0.001].

At the same time, the years of service (0-5 / 6-10 / 11-20 / 21-30 +) were found to have a statistically significant influence: teachers with fewer years of service declared that they were more ready for DE (F (3,134) = 9.190 , p <0.001), and, having faced fewer challenges [F (3,134) = 5.668, p <0.001], stated an agreement in favor of measures to address a possible future crisis [Welch (3,64,406) = 4,301, p = 0,009 ] in a higher degree compared with colleagues with more years of service. Likewise, the level of readiness of the educational institutions in the post-COVID [Welch (3,67.409) = 3.678, p = 0,014], obtained a higher agreement among the teachers with less years of service than those ones with more years.

Similarly, there was a statistically significant difference between teachers with different levels of study (University Degree / Special Education Seminar / Postgraduate-Doctorate). Those who had a higher educational level agreed more with taking measures to ensure the readiness of educational institutions in the post COVID era [Welch (2,59.275) = 3.724, p = 0,031]. In addition, there was a statistically significant difference between teachers of different branches of education (Arts/ Humanities / Sciences): those of Sciences were more prepared [F (2,134) = 13.130, p = 0.001] and to due to this they faced fewer challenges than those of the Arts/ Humanities [F (2,135) = 0.020, p <0.001].

The specialty variable (General Education / Special Education) was not found to be statistically significant. However, it should be noted that in the scales "Readiness for distance education", "Challenges in distance education", "Expected readiness of an institution in the post-COVID era" Special Education teachers showed a higher average value than those ones of General Education; on the contrary, in the scale "Measures to deal with a possible crisis in the future " they (Special Education teachers) had a less average value.

The correlations between the score variables, created for General and Special Education teachers, were examined next. Table 7 shows the Pearson correlation

coefficients for General Education teachers and the corresponding p-value in an effort to check the null hypothesis that there was no (linear) correlation between the variables.

**Table 7:** Pearson correlation coefficients for score variables regarding General Education teachers

| **Scales** | **1** | **2** | **3** | **4** |
|---|---|---|---|---|
| 1. Readiness to provide distance education | 1 | **.382**** | -.056 | .056 |
| 2. Challenges in distance education | | 1 | .144 | .016 |
| 3. Measures to deal with a possible crisis in the future | | | 1 | **.659**** |
| 4. Expected readiness of an institution in the post-COVID era | | | | 1 |

**. Correlations statistically significant at 0.05 significance level (bilateral control).

It was observed that there was a moderate, negative correlation ($r_P = -0.382$) between the variables of distance education readiness and those of challenges in distance education which was statistically significant ($p < 0.001$). Furthermore, a strong, positive correlation was found ($r_P = 0.659$) between the variables of measures to deal with a possible future crisis and the expected readiness of the institution in the post-COVID era which was statistically significant ($p < 0.001$).

Table 8 shows the corresponding correlation coefficients of the score variables for Special Education teachers.

**Table 8:** Pearson correlation coefficients for score variables for Special Education teachers

| **Scales** | **1** | **2** | **3** | **4** |
|---|---|---|---|---|
| 1. Readiness to provide distance education | 1 | **-.533**** | **-.457**** | **-.380**** |
| 2. Challenges in distance education | | 1 | **.338**** | .185 |
| 3. Measures to deal with a possible crisis in the future | | | 1 | **.686**** |
| 4. Expected readiness of an institution in the post-COVID era | | | | 1 |

** Correlations statistically significant at 0.05 significance level (bilateral control).

It was similarly observed for Special Education teachers that there was also a negative correlation between distance education readiness and that of challenges in distance education and in fact even stronger than that for General Education teachers ($r_P = -0.533, p < 0.001$). Nevertheless, there was a strong positive correlation between the measures to deal with a possible crisis in the future and the expected readiness of the institution in the post-COVID era ($r_P = 0.686, p < 0.001$).

However, regarding the former statistically significant correlations being observed for the group of Special Education teachers it was obvious that they did not follow exactly the same pattern as those observed for the group of General Education ones. More specifically, a moderate, negative correlation ($r_P = -0.457$) between the variables of distance education readiness and measures to deal with a possible crisis in the future ($p = 0.001$) was emerged. There was a similar negative relationship between the variable of Special Education teacher readiness and the expected institution readiness in the post-COVID era ($r_P = -0.380, p = 0.005$). Finally, there was a moderate, positive

correlation ($r_P = 0.338$) of the variable of the challenges faced by Special Education teachers during DE with the measures to deal with possible future crisis which is statistically significant ($p = 0.013$).

It was then checked whether the variables-score, "Readiness to provide distance education (RDE-score), Challenges during distance education (CDE-score), Measures to deal with a possible crisis in the future (P Crisis in Future-score)", as independent variables, could predict the variable-score "Expected institution readiness in the post-COVID era" (ER in Post Covid –score), which was considered a dependent variable. In order to investigate the above relationship, it was performed a multiple linear regression analysis with the input method (enter) of all independent variables. The aim was to identify which of these have a statistically significant predictive character for the dependent variable. The analysis was done separately for General and Special Education teachers.

For General Education teachers the results of multiple linear regression to predict the expected institution readiness score in the post-COVID era, having (1) distance learning readiness, (2) distance education challenges, and (3) measures to deal with a possible crisis in the future as independent variables, explained the 44.2% fluctuation of that variable score ($R^2 = 0.442, F(3, 81) = 21.364, p < 0.001$). Of the 3 independent variables of the model, only that one referred in the measures for dealing with a possible crisis in the future seemed to be a statistically significant predictor variable for the expected institution readiness in the post-COVID era with coefficients $B = 0.732, \beta = 0.671 (95\%\ CI\ [0.550, 0.915], t = 7.994, p < 0.001)$. And that was because for an increase of one unit in the score for the measures to deal with a possible crisis in the future there was an increase of 0.732 in the total score of the expected institution readiness in the post-COVID era. Therefore, the view of General Education teachers in favor of taking measures to deal with a future crisis, during which distance learning could be imposed, contributes positively to the view in favor of measures for the readiness of institutions for the provision of DE in the post-COVID era.

The corresponding analysis was performed for Special Education teachers. The results of multiple linear regression to predict the expected institution readiness score in the post-COVID era, having (1) distance learning readiness, (2) distance education challenges, and (3) measures to deal with a possible crisis in the future as independent variables, explained the 48.5% fluctuation of that variable score ($R^2 = 0.485, F(3, 49) = 15.362, p < 0.001$). Of the 3 independent variables of the model, only that one referred in the measures for dealing with a possible crisis in the future seemed to be a statistically significant predictor variable for the expected institution readiness in the post-COVID era with coefficients $B = 1.270, \beta = 0.661$ ($95\%\ CI\ [0.821, 1.719], t = 5.687, p < 0.001$). And that was because for an increase of one unit in the score for the measures to deal with a possible crisis in the future there was an increase of 1.270 in the total score of the expected institution readiness in the post-COVID era. Therefore, the conclusion reached for Special Education teachers is similar to that previously mentioned for General

Education teachers, i.e. the view of Special Education teachers in favor of taking measures to deal with a future crisis, during which distance learning could be imposed, contributes positively to the view in favor of measures for the readiness of institutions for the provision of DE in the post-COVID era.

## 6. Discussion

The purpose of this study was to explore the views of Greek General and Special Education teachers about (1) their readiness for DE, (2) the challenges they face, (3) the measures to be taken in education to deal with a possible crisis in the future and (4) the measures to be taken by educational institutions so that they are ready to provide distance education in the post-COVID era. Finally, it was investigated which demographic characteristics of teachers have an effect on the four abovementioned issues.

Regarding the first research issue concerning DE readiness, Special Education teachers seemed more prepared than General Education ones. This may be the case as special educators are called upon to meet the needs of a heterogeneous group of children with a variety of characteristics and thus, they become more familiar with the alternative ways of presenting the educational material compared to the "traditional ones". Thus, the pedagogical use of technology has a primary role in DE due to the positive results in the academic performance of children with special educational needs (Tsiavos, Kogiami, & Flaggou, 2021). Another important finding is the need for teacher to be trained in issues related to DE, as only 4.7% of General Education teachers and 1.9% of Special Education teachers had attended a corresponding program or seminar. In the research of Bakirtzi (2020), in which 23 teachers from the wider area of Thessaloniki participated, the main reason for problems during the DE was the lack of training on the use of online platforms. Similarly, the research of Stachteas and Stachteas (2020), with 226 teachers participating, the need for specialized training became apparent at a rate of 85%.

In relation to the second research issue, which related to the challenges encountered in DE, Special Education teachers agreed more on the existence of challenges in DE than the General Education ones. This probably means that, while Special Education teachers are more familiar with the technology than General Education ones, they also have shortcomings in its pedagogical use. In addition, they may think they are ready, but they encounter significant obstacles in conducting online courses.

Furthermore, there was a statistically significant difference between the two specialties in terms of knowledge and skills necessary to provide DE: General Education teachers showed a greater lack of knowledge and skills than Special Education teachers, which lack was confirmed by the fact that they appeared to be less ready for DE. An important finding is that the highest agreement rates for both groups of teachers (51,8% for G.E., 50,9% for S.E.) presented in the statement about the challenges in communicating with students during DE.

The lack of physical coexistence of students and teachers in the same place reduces the quality of interaction and makes communication difficult, and this is one of the main challenges for educators (Orhan & Beyhan, 2020).

The social isolation imposed by the pandemic is undoubtedly one of the most important challenges facing humanity. Technology, however, gave the solution to the basic problem of the educational systems worldwide, which is summed up in the saying "all students should be in the same space at the same time" for teaching process to be effective. Thus, the venue where teaching-learning process takes place ceases to be the school classroom; every part of the planet can be a classroom anymore. This spatial flexibility also leads to temporal flexibility: since the learner does not have to be in a specific space, he manages his time differently. Therefore, it is likely that in the future the traditional way of teaching characterized by direct frontal instruction will give way to more flexible asynchronous and mixed educational models that have proven effective, collaborative and student-centered (Bishop & Verleger, 2013), turning thus the disadvantage of lack of physical presence to the advantage of having it (the presence) whenever and wherever we want.

As regards the third research issue concerning the measures to be taken in the field of education in order to deal with a possible crisis in the future, General Education teachers seemed to agree more in favor of measures than Special Education ones. Initially, General Education teachers agreed largely, with a statistically significant difference, in favor of taking measures to strengthen network capabilities and improve applications / software, but also to support / enhance teachers' technological skills and training for use of DE; their percentage (80) was higher than that of Special Education teachers who, however, had an almost equally high agreement rate. Improving the operation of the network and the applications / software used for the DE is something that concerns teachers in the event that distance education becomes necessary in the future (Bakirtzi, 2020). In the research of Lapada et al. (2020), teachers showed significant shortcomings in the use of technologies in the educational process, a problem that, according to researchers, could have been dealt with by teacher training. Furthermore, in the research of Trust & Whalen (2020), it was found that a key requirement of the majority of teachers was further training on the use of technologies, and the use of applications and online services in the educational process.

Concerning the strengthening of cooperation among teachers, students and parents was a measure about which Special Education teachers agreed with the highest percentage (94.3%), showing thus a statistically significant difference. In order to properly deal with the necessities of students with special education needs, is necessary for educators to communicate with their parents, as the latter are the main supervisors for home education and the ones who offer feedback, thus helping teachers to develop individualized activities. (Parmigiani, Benigno, Giusto, Silvaggio, & Sperandio, 2020).

At the same time, both groups of teachers presented high percentage of agreement on measures related to the revision of the curriculum and the integration of activities that

contribute positively to problem-solving skills, to self-care as well as to improve hygiene and safety, etc. According to the OECD (2018), students have to evolve and to adapt well to unknown and changing conditions; and for that purpose, they will need a wide range of cognitive and metacognitive skills.

The onslaught of the pandemic and its effects, combined with globalization, digitization, as expected, marginalizes skills and knowledge considered valuable and brings out new ones. Thus, creativity, critical thinking, self-regulation and improvement/initiative/collaboration and communication mindsets, as well as use of new information and communication technology devices became necessary already. However, each student has different needs and abilities. This means that perhaps the curriculum will be developed in collaboration with students, as teachers are encouraged to use differentiated teaching (Tomlinson, 2014), and students to play an active role in their learning process. This will render them autonomous in what (and how) they want to learn. Therefore, the given situation may be the opportunity for an inclusive education model, adapted to the real needs of all students.

Continuing, General Education teachers were more in favor of taking measures to ensure that all students have access to the necessary technological equipment. It is possible for General Education teachers to come into more frequent contact with students who have linguistic or cultural specificities and come from poorer socio-economic backgrounds, as such students do not qualify for special education units. Without ensuring accessibility, social inequality translates into digital inequality due to DE, as students from low socioeconomic environments are less likely to have adequate conditions for DE at home (Onyema et al., 2020).

The "digital divide" remains an obstacle to a future inclusive education model and it is regarded as a major inhibitory factor in several studies (Scully, Lehane, & Scully, 2021). It is important to redefine education, not only to include creative ways of engaging technology, but also ways to empower vulnerable groups in order to close this gap. It is important that the redefinition of education not only to enhance innovation in the classroom and to find creative ways of engaging technology in the learning process, but also to help vulnerable groups close this gap.

Regarding the fourth research issue concerning the measures that must be taken by educational institutions in order to be ready to provide DE in the post-COVID era, Special Education teachers agreed largely in favor of taking measures.

The two groups of teachers had the highest percentages of agreement (90.8% for GE and 84.9% for SE) for the same measure: protection of students' identity and personal data on the part of educational institutions during distance learning process. The General Data Protection Regulation (GDPR) seems to be a factor influencing the conduct of DE. Specifically, there were teachers who avoided using the Cisco Webex online platform for teleconferencing, which was proposed by the Ministry of Education. They stated that there was no guarantee of protection for students' and teachers' personal data as Cisco is a private company (Bakirtzi, 2020). Furthermore, in the Verma & Priyamvada research

(2020) 74% of participating teachers expressed their concern about their privacy during online courses. Therefore, educational institutions should inform the teaching staff about the protection of their personal data and the proposed applications / platforms should also comply with the regulations.

In addition, in the linear regression analysis it was found that the view in favor of taking measures in education to deal with a possible crisis in the future was a predictive factor for "taking measures by educational institutions to be ready for DE in the post-COVID era" view; both groups of teachers agreed in that. This shows how important the teachers' views are in the process of taking educational measures, since they bring to the fore the different needs and wants/expectations of each group of students.

Finally, it is worth mentioning that for Special Education teachers statistically significant correlations emerged among the readiness for DE and both the measures to deal with a possible future crisis and those for the readiness of an institution for DE in the post-COVID era. Thus, the more prepared a Special Education teacher was for DE, the less he agreed with both the views that preventive measures should be taken in case of a future crisis and that educational institutions should take preventive measures as well. Nevertheless, a similar conclusion did not come up for General Education teachers. This probably means that Special Education teachers have found ways to respond to the increased needs of DE through personal self-education process, as opposed to General Education teachers who, regardless of their level of preparedness, appear to have increased need for government support.

Regarding the fifth and final research issue concerning the effect the demographic characteristics of the teachers have on their answers in each of the questionnaire's four sections, the employment field (teaching), age, years of service, and level of study were found to exert a statistically significant influence. Findings in other studies are similar (Korkmaz & Toraman, 2020; Lapada et al., 2020).

Studies on teachers' perceptions of DE contribute significantly to the redefinition of education policies as teachers' needs are highlighted. However, the views of the parents are equally important, as they are the ones who are involved in an essential way in the emergency-induced DE. Thus, it is proposed to study the views of parents of students with or without special education needs about DE, focusing on communication issues, parental involvement in the education process and the impact of COVID-19 on the mental health of parents/students. At the same time, it would be useful to consider the views of the students themselves regarding both the challenges and benefits of DE. Finally, a teacher-training program on DE could be organized and a review process could follow (after a certain period of time) in order to check the retention and application of the acquired knowledge.

**Conflict of Interest Statement**

The authors declare no conflicts of interests.

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