ЮГОЗАПАДЕН УНИВЕРСИТЕТ
·НЕОФИТ РИЛСКИ·
УЛ. ИВАН МИХАЙЛОВ 66
2700 БЛАГОЕВГРАД

SOUTH-WEST UNIVERSITY
·NEOFIT RILSKI·
66 "IVAN MIHAILOV" STR.
2700 BLAGOEVGRAD

Research article

TEACHERS READINESS TO DISTANCE EDUCATION AND COPING STRATEGIES DURING THE COVID-19 PANDEMIC

Maria Botsoglou, Ph.D. student*
***Department of Psychology, SWU "Neofit Rilski", Blagoevgrad, Bulgaria.**
Email: man.bot@hotmail.com

Abstract
Objectives: *The official declaration of the prevalence of the COVID-19 pandemic by the World Health Organization (WHO), led countries to the immediate closure of their educational institutions, and the forced shift from face-to-face education to online education.*
Purpose: *This research aimed to investigate secondary school teachers in Greece concerning their perceptions of their readiness and experience with distance learning during the Covid-19 pandemic; their perception of the school's preparedness; and the perceived obstacles of distance learning education due to Covid-19. Teachers' coping strategies of engagement and disengagement were also measured.*
Methods: *A quantitative and cross-sectional study was designed, with within-subjects measures. The sample of the study was 544 secondary school teachers all over Greece, who had to conduct distance education during the COVID-19 pandemic. A structured questionnaire was utilized for the collection of data, using "Questionnaires on Teachers Awareness, Readiness and Online Learning Experience During COVID-19 ECQ," and Coping Strategies Inventory Short-Form.*
Results: *The results showed that teachers were neither positive nor negative about how ready they were for distance learning education during Covid-19, signified that the school had provided little supplementary materials for distance learning like online learning management systems and library subscriptions, and reported that there were moderate challenges and difficulties in distance learning education during Covid-19. Results showed that teacher readiness had a statistically significant and low positive correlation with the total disengagement score of coping strategies (rho = 0.14, p = 0.001), as well as with the dimension of problem-focused disengagement (rho = 0.20, p < 0.001). There was also a statistically significant and low negative relationship between teacher readiness for distance education with the dimension of emotion-focused engagement (rho = -0.11, p = 0.009). Finally, gender, educational level, and years of service all significantly affected levels of teacher readiness for distance education, but there was no significant correlation between teacher age and seminar attendance.*
Conclusion: *The results of the survey highlighted many aspects of the problems faced by secondary school teachers during the implementation of distance education during the pandemic in Greece, underlining the need for continuous education and training of teachers in the practices of distance education. In this direction, the contribution of school psychologists would be particularly important. In the future, it is necessary to conduct further research to adequately identify the shortcomings of the Greek educational system concerning the training and readiness of teachers for electronic teaching and learning processes.*

Keywords: COVID-19 pandemic; teachers' readiness; distance learning education; secondary teachers; coping strategies.

Introduction

The COVID-19 pandemic resulted in the launch of a new era for education at all levels. The suspension of the operation of educational institutions to limit the spread of the virus has placed a great responsibility on teachers to ensure the smooth continuation of the educational process. In particular, teachers were forced to manage the changes in teaching and communication issues resulting from distance education, as well as to contribute to the continuation of the uninterrupted academic progress of their students. Therefore, they are required to be constantly equipped and prepared to use technological means

in their teaching, to be able to configure online classes, manage the educational material, and interact with their students at the same time.

The advent and persistence of the COVID-19 pandemic had a detrimental effect on the functioning of the education system globally. To cope with the difficulties, educational institutions have had to develop new techniques for their educational programs (Graham et al., 2020; Akhmadieva et al., 2021; Gaba et al., 2021; Insorio & Macandog, 2022; Tal et al., 2022). The activation and development of distance education throughout the COVID-19 pandemic was the only common option for the majority of countries worldwide. In fear of the impossibility of restarting face-to-face education, these countries were forced to increase the use of distance education, making it the exclusive and compulsory form of all education (Falode et al., 2020; Gonçalves et al., 2020; Tugun et al., 2020; Altun et al., 2021; Valeeva & Kalimullin, 2021; Zagkos et al., 2022).

Although the transition from face-to-face to distance education in response to the COVID-19 pandemic has been rapid and unprecedented, the need to use specific technological skills and different pedagogical approaches has highlighted several challenges for both teachers and students (Ferdig et al., 2020; Howard et al., 2021). In addition, there has been much doubt about the readiness of many educational and training institutions to cope with the new data. These challenges are often mentioned in the literature and can be divided into three main categories: technological, pedagogical, and psychological (Ahmed & Opoku, 2022).

Teacher preparedness for managing the educational crisis of the Covid-19 pandemic has been an emerging issue in most educational contexts. In a global survey regarding the readiness of both secondary school teachers and educational institutions to use technology for distance education, it reveals the existence of four profiles: high, medium, low, and mixed perceptions of readiness to teach online (Howard et al., 2021).

Objectives

The aim of the study is to explore the views of Greek secondary teachers in relation to Readiness to Distance Learning Education during COVID-19 pandemic, as its relation to their stress coping strategies. The two main objectives of the study were to assess how ready were the secondary teacher for distance education during the COVID-19 pandemic; and to investigate the stress coping strategies they used during distance education.

Hypotheses

First Hypothesis

The first alternative hypothesis states the following:

H_1. We suppose that teachers were prepared to cope with distance education during the COVID-19 pandemic.

Accordingly, the null hypothesis states that:

H_0. The teachers were not prepared to cope with distance education during the COVID-19 pandemic.

Second Hypothesis

The second alternative hypothesis states the following:

H_2. We suppose that the teachers thought that the schools were ready to meet the needs of distance education.

Accordingly, the null hypothesis states that:

H_0. The schools were not ready at all to meet the needs of distance education.

Third Hypothesis

The third alternative hypothesis states the following:

H_3. We suppose that teachers faced some challenges or difficulties in implementing distance learning during the COVID-19 pandemic.

Accordingly, the null hypothesis states that:

H_0. Teachers faced no challenges or difficulties in implementing distance learning during the COVID-19 pandemic.

Fourth Hypothesis

The fourth alternative hypothesis states the following:

H_4. We suppose that there is statistically significant relationship between stress coping strategies and their readiness and experience in conducting distance education during the COVID-19 pandemic.

Accordingly, the null hypothesis states that:

H_0. There is no significant relationship between stress coping strategies and their readiness and experience in conducting distance education during the COVID-19 pandemic.

Fifth Hypothesis

The fifth alternative hypothesis states the following:

H_5. We suppose that there is statistically significant relationship between demographic characteristics (gender, age, years of service and education) and teacher's readiness in conducting distance education during the COVID-19 pandemic.

Accordingly, the null hypothesis states that:

H_0. Demographic characteristics (gender, age, years of service and education) do not have a significant effect on teacher's readiness in conducting distance education during the COVID-19 pandemic.

Research Method

Design

A quantitative and cross-sectional study was designed, with within-subjects measures (Creswell & Creswell, 2022). More specifically, the approach used was that of a quantitative survey, with data collection being achieved through the use of a self-report questionnaire, which is a psychometrically valid and reliable instrument. Data were processed using SPSS 26. 0 statistics software and descriptive as well as inferential statistical analyses, so that conclusions could be drawn pertains to the whole sample of the study. In addition, as the data were collected at a single, specific time point with no repeated measures across time, the study had the character of a cross-sectional study.

Sample

For the determination of the number of participants needed for this study, we conducted power analysis using IBM®SPSS®Sample Power software. The significance of this program is that allows the user to specify the type I (α) and type II(β) error rates as well as the proposed effect size, where the accepted type II error rate is below 0.2 or a power of 0.8. According to Cohen's standard (1992), small effect size is 0.2; medium effect size is 0.5; and large effect size is 0.8. According to the power analysis, the sample of study was 544 secondary school teachers all over the Greece, who had to conduct distance education during the COVID-19 pandemic. The sampling method used was that of opportunity, which is based on availability of appropriate potential participants, given recourse constraints for the realization of this research project (Creswell & Creswell, 2022). In particular, the academic and occupational contacts of the researcher were used to approach potential respondents.

The inclusion criteria for inclusion in the study were adults, teachers of public secondary education, regardless of gender, length of teaching experience, type of school (high school, lyceum, technical or evening school, special education) and location of school (urban or rural), and who were teaching during the pandemic.

The exclusion criteria for the sample concerned participants in private schools and participants teaching in different levels of education (i.e., elementary, tertiary education), as well as individuals with psychological, neurological or other disorders, because such difficulties could potentially have a negative effect on participants' ability to understand and accurately complete the questionnaire.

Instruments

A structured questionnaire was utilized for the collection of data, which included four sections. The first section includes 10 questions, concerning the general demographic and background information for the description of the sample, and their previous acquaintance and training in distance education. This section included the items of age, gender, studies/training, years of teaching and teaching specialty. The second part concerned Teachers Awareness, Readiness and Online Learning Experience through the use of the instrument, "Questionnaires on Teachers Awareness, Readiness and Online Learning Experience During COVID-19 ECQ," (Lapada et al., 2020). The third part assess stress coping strategies using the Coping Strategies Inventory Short-Form (CSI-SF) (Addison et al., 2007).

Questionnaires on Teachers Awareness, Readiness and Online Learning Experience During COVID-19 ECQ

As a basic research tool will be used part of the instrument, ***"Questionnaires on Teachers Awareness, Readiness and Online Learning Experience During COVID-19 ECQ,"***(Lapada et al., 2020), which in the initial reliability test scored a degree of reliability Cronbach's alpha 0, 9 and in the final research Cronbach's alpha 0.89. This questionnaire was chosen because it has already been translated and used in two Greek surveys, receiving a degree of reliability of Cronbach's alpha 0.84 (Triantafylopoulou, 2021) and Cronbach's alpha 0.825 (Papadopoulou, 2021) respectively.

The questionnaire consists of 22 closed-ended questions, divided into 3 parts:

A. The first part includes 5 items of Lapadas' et al. (2020) *"Teacher's Readiness to Distance Learning Education Due to COVID-19"* questionnaire, *tailored from the "Coronavirus Disease 2019 Report*" (WHO, 2020), in the form of a 5-point Likert scale, which are related to teachers' readiness to distance learning education during COVID-19.
B. The second part concerns *"Schools' Preparedness to Distance Learning Education Due to COVID-19," tailored from the "Distance Education Models and Best Practices"* (Academy Administration Practice, 2011), and includes 5 items of Lapadas' et al. (2020) questionnaire, in the form of a 5-point Likert scale.
C. The third part includes 12 items of Lapadas' et al. (2020) *"Perceived challenges in distance learning education Due to COVID-19"* questionnaire in the form of a 5-point Likert scale, and investigates teachers' challenges in distance learning education.

Coping Strategies Inventory Short-Form

The Coping Strategies Inventory Short-Form (CSI-SF) (Addison et al., 2007) was used to assess stress coping strategy strategies. The CSI-SF was developed by Addison et al. (2007) and constitutes a 16-item CSI, which includes 4 coping strategies defined in two binary dimensions: problem-focused vs. emotion-focused; and engagement vs. disengagement. The 4-item subscales of the CSI-SF are (a) Problem-Focused Engagement, (b) Problem-Focused Disengagement, (c) Emotion-Focused Engagement, and (d) Emotion-Focused Disengagement.

A 4-point Likert scale is used to record the participants' responses. Respondents are asked to rate the general frequency with which they utilize each listed coping strategy on the survey and to indicate their choices in the following manner: 1 = "Never", 2 = "Seldom", 3 = "Sometimes", 4 = "Often" and 5 = "Almost Always"). Individuals scored on each of the 1st tier subscales (Engagement and Disengagement: range = 8 - 40), as well as each of the four 2nd tier subscales (Problem-Focused Engagement, Problem-Focused Disengagement, Emotion-Focused Engagement, and Emotion-Focused Disengagement: range = 4 - 20), with the 2nd tier subscales including 4 items each.

Procedure

Participants were approached through the academic and professional contacts of the researcher, through the use of telephone, email and social media platforms (Facebook, viber, instagram). Interested potential participants received an electronic link to the electronic questionnaire to be completed through the online survey platform of Google Forms.

Secondary school teachers from different regions of Greece completed and returned the questionnaires during the period of January 2022 to December 2022. The first page of the questionnaire includes an introductory note, that informed participants about the aim of the study, which was to "*examine Teacher's Readiness to Distance Learning Education during COVID-19 pandemic and its relation to their self-esteem and stress coping strategies*," and the ways of communication to resolve any questions. This introduction informed potential respondents that their participation is anonymous and voluntary, in that no personal data is collected that can be used to identify them, as well as that participants were free to withdraw at any time during the study without having to provide explanations.

In order for participants to be able to complete the questionnaire, it was required to signify with a "yes" that they consent to participation. Participants could then proceed to complete the questionnaire, starting with reporting their demographic/occupational information, and then completed the main questionnaire. After completing the questionnaire, respondents were provided with a final form, that elaborated the aim and research hypotheses of the study, and provided the personal contact information of the researcher, so that any participants who wish to provide comments, pose questions, or withdraw their data from the study could.

Results

Demographic Characteristics and Seminar Attendance

Most participating teachers were female (69%), aged between 41 to 60 (overall 72%), and held postgraduate degrees (54%), with 9% holding doctorate titles. Three out of five teachers had 11 to 30 years of teaching experience (overall 60%), with 13% having more than 30 years of service, while 19% had up to 5 years of teaching experience. Overall, 77% of participants covered most of their schedule in high school and in the Lyceum. Fourteen percent (14%) reported that they served in technical high schools, while 6% taught in special education (Table 1).

Table 1. Demographic characteristics of the teachers (N = 547)

		Frequeny	Percent
Gender	Male	168	30.7
	Female	379	69.3
Age	22-30	19	3.5
	31-40	84	15.4
	41-50	172	31.4
	51-60	220	40.2
	60+	52	9.5
Studies/Training	University degree	198	36.2
	Postgraduate	293	53.6
	Doctorate	51	9.3
	Other	5	.9
Years of service in teaching	0-5	101	18.5
	6-10	51	9.3
	11-20	193	35.3
	21-30	133	24.3
	30+	69	12.6
Type of school in which you cover most your schedule	High school	262	47.9
	Lyceum	159	29.1
	Technical high school	76	13.9
	Evening Lyceum	7	1.3
	Private education	8	1.5

	Special education	35	6.4

The various specialties reported by the teachers are presented in Table 2, the most frequent of which were in philology (31%), mathematics (11%), foreign languages (8%) and informatics (8%), while 19% reported that they had another specialty.

Table 2. Teachers' specialty in education

	Frequency	Percent
Philologist	169	30.9
Mathematician	61	11.2
Chemist	12	2.2
Physicist	35	6.4
Foreign language	45	8.2
Physicaleducation	10	1.8
Biologist	13	2.4
Theologian	28	5.1
Music	17	3.1
Informatics	45	8.2
Art	10	1.8
Other	102	18.6
Total	547	100.0

Most of the teachers in the study had attended distance education management seminars (74%). Most of those seminars had been organized by the public sector (90%), and most seminars included both the technological and pedagogical dimensions of distance education (67%); another 32% focused exclusively on the technology of distance education. Overall, approximately one in two teachers found that the seminars they attended helped them at least enough (39%) or very much (8%). On the other hand, almost one in three reported a moderate benefit (29%), while almost one in four reported low or no benefit from participation in the seminars (overall 23%). Table 3 presents these descriptive results.

Table 3. Occupational characteristics of teachers (N = 547)

		Frequency	Percent
Attendance to seminars on management of distance education	Yes	402	73.5
	No	145	26.5
If you attended, by which sector was it organized? *	Public sector	363	89.6
	Private sector	42	10.4
What were the seminars about? *	Technology of distance education	129	32.0
	Pedagogy of distance education	4	1.0
	Both	270	67.0
To what extent do you consider that these specific seminars have helped you?	Not at all	17	4.2
	A little bit	77	19.1
	Moderate	118	29.2
	Enough	159	39.4
	Very	33	8.2

**. N = 403-405.*

Teacher Readiness to Distance Learning Education Due to Covid-19

With regard to the items of teacher readiness and experience for distance learning education due to Covid-19, on average teachers agreed that they were ready to use online modules or learning materials available on the internet, like Word, Excel and Power Point.

The teachers neither agreed nor disagreed that they are ready to use the printed module as a tool for learning at home, or to use learning management systems, like e-class, Webex and Zoom for online or

distance learning education. On average, the teachers were also neutral on the question of whether they can conduct distance learning education to their students in times of Covid-19 (Table 4).

Table 4. Teacher readiness to distance learning education due to Covid-19

	Mean	Std. Deviation
1. Ready to conduct distance learning education to my students in times of Covid-19	2.78	1.246
2. Ready to use the printed module as a tool for learning at home	2.95	1.182
3. Ready to use online modules or learning materials available on the internet (as Word, Excel, Power Point)	3.69	1.158
4. Ready to utilize learning management systems (as e-class, e-me, Cisco Webex, Zoom, Skype, e-mail) as a means of online or distance learning education	2.95	1.334

School Preparedness to Distance Learning Education Due to Covid-19

Regarding school preparedness for distance learning due to Covid-19, on average the teachers of the study moderately agreed that the school was prepared by having a system of information dissemination to communicate with parents and learners during Covid-19. They also moderately agreed that the school has provided regulations and policies on distance learning for the protection of the identity and data privacy of students. Moderate, to low, was agreement on the school has provided capacity building on distance learning education management for teachers, or that the school has a designated workforce for Covid-19.

Furthermore, teachers on average showed little agreement that the school has provided supplementary materials for distance learning, such as online library subscriptions and online learning management systems (Table 5).

Table 5. School preparedness to distance learning education due to Covid-19

	Mean	Std. Deviation
1. The school has a system of dissemination information to communicate with parents and the learners during the Covid-19 outbreak	3.07	1.219
2. The school has provided capacity building on distance learning education management for teachers	2.55	1.173
3. The school has a designated workforce for the Covid-19	2.59	1.202
4. The school has provided the regulations and policies on the use of distance learning to protect student’s identity and data privacy	2.92	1.247
5. The school has provided supplementary materials for distance learning such as subscriptions to online libraries, procurement of online learning management systems	2.08	1.115

Perceived Challenges in Distance Learning Education Due to Covid-19

With respect to the perceived challenges to distance learning education due to Covid-19, participants on average agreed after a year of experience that they were familiar with distance learning education; they also agreed that they had difficulties with the availability of students.

The teachers in the study neither agreed nor disagreed in most items, relating to the difficulties in communicating personally with students and colleagues; motivating the students' interest'; managing the students during the course; managing their teaching time during the courses through the HEI; and they remained neutral on the difficulty of customized use of the WebEx platform. On average, the teachers also remained neutral on whether it had been difficult for them to manage the students' answers, although their response on this item approached a negative response ("disagree"). Teachers also were neutral on the question of how feasible student assessment is within distance education.

Teachers on average disagreed that personal communication during the HEI with the principal of the school unit was difficult, but they also disagreed that the communication network with the parents had improved compared to the live communication of previous years (Table 6).

Table 6. Perceived challenges in distance learning education due to Covid-19

	Mean	Std. Deviation
1. Rate your difficulty in customizing using WebEx	2.67	1.063
2. How difficult was the personal communication with your students during the distance learning education?	3.38	1.112
3. How difficult was the personal communication with your colleagues during the distance learning education?	2.95	1.200
4. How difficult was the personal communication during the HEI with the principal of the school unit?	2.48	1.199
5. How difficult was it for you to manage the teaching time during the courses through the HEI?	2.73	1.190
6. How difficult it was for you to manage the students during the course?	3.09	1.220
7. How difficult it was for you to motivate the students' interest?	3.37	1.136
8. How difficult it was for you to manage the students' answers?	2.61	1.121
9. How difficult was the availability of students for you?	3.50	1.141
10. How feasible is the assessment of students during the distance learning education?	3.23	1.255
11. The communication network with the parents has improved compared to the live communication of previous years?	2.18	1.245
12. After a year of experience with distance learning education evaluate your current level of familiarity?	3.87	.992

Coping Strategies (CSI-SF)

Regarding the items of coping strategies, on average teachers often looked for the silver lining or the positive side of things; tackled problems head on; made plans of action and followed them through;

tried to talk about a problem with a friend or family member; and often asked a close friend or relative that they respected for help or advice.

Teachers sometimes stepped back from a situation and tried to put things into perspective; tried to spend time alone; let their feelings out to reduce stress; tried to let their emotions out; kept their thoughts and feelings to themselves; and they sometimes tried to put a problem out of their mind.

Teachers rarely ("seldom") tended to blame or to criticize themselves, and rarely tried to not think about a problem. Finally, they rarely hoped for a miracle or hoped that a problem would resolve itself (Table 7).

Table 7. Teacher coping strategies

	Mean	Std. Deviation
1. I make a plan of action and follow it	3.81	.815
2. I look for the silver lining or try to look on the bright side of things	4.07	.714
3. I try to spend time alone	3.38	.852
4. I hope the problem will take care of itself	1.97	.918
5. I try to let my emotions out	3.08	.913
6. I try to talk about it with a friend or family	3.61	.974
7. I try to put the problem out of my mind	2.71	1.032
8. I tackle the problem head on	4.02	.892
9. I step back from the situation and try to put things into perspective	3.49	.971
10. I tend to blame myself	2.48	1.015
11. I let my feelings out to reduce the stress	3.17	.955
12. I hope for a miracle	2.02	1.126
13. I ask a close friend or relative that I respect for help or advice	3.54	.945
14. I try not to think about the problem	2.37	1.012
15. I tend to criticize myself	2.40	1.057
16. I keep my thoughts and feelings to myself	2.84	1.008

Inferential Analysis of Study Dimensions

In order to examine the relationship between stress coping strategies and teacher readiness and experience in conducting distance education a Spearman rho correlation was conducted.

Results showed that teacher readiness had a statistically significant and low positive correlation with the total disengagement score of coping strategies (rho = 0.14, p = 0.001), as well as with the dimension of problem-focused disengagement (rho = 0.20, p < 0.001). There was also a statistically significant and low negative relationship between teacher readiness for distance education with the dimension of emotion-focused engagement (rho = -0.11, p = 0.009). All other relationships were statistically non-significant (Table 8).

Table 8. Relationship between coping strategies and teacher readiness for distance learning education due to Covid-19

		Teacher readiness for distance learning education due to Covid-19
Coping strategies: Total engagement	rho	-.058
	p	.178
	N	547
Coping strategies: Total disengagement	rho	.143**
	p	.001
	N	547
Coping strategies: Problem-focused engagement (PFE)	rho	.028
	p	.512
	N	547

Coping strategies: Problem-focused disengagement (PFD)	rho	.202**
	p	.000
	N	547
Coping strategies: Emotion-focused engagement (EFE)	rho	-.111**
	p	.009
	N	547
Coping strategies: Emotion-focused disengagement (EFD)	rho	-.015
	p	.722
	N	547

***. p < 0.01.*

In order to examine the extent to which demographic and occupational characteristics affect teacher readiness and experience in conducting distance education due to Covid-19, a series of Mann-Whitney and Kruskal-Wallis non-parametric tests were performed, used for comparisons where the independent variables had two or more than two response categories, respectively. The dependent variable was teacher readiness for distance education due to Covid-19.

There was a statistically significant effect of gender on teacher readiness (U = 24668.00, p < 0.001). Table 9 presents this finding.

Table 9. Effect of gender on teacher readiness for distance learning education due to Covid-19

	Teacher readiness for distance learning education due to Covid-19
Mann-Whitney U	24668.000
p	.000

Specifically, male teachers reported significantly higher distance education readiness levels compared to female teachers (Table 10).

Table 10. Mean ranks for teacher readiness for distance learning education due to Covid-19, by gender

	Gender	N	MeanRank
Teacher readiness for distance learning education due to Covid-19	Male	168	316.67
	Female	379	255.09
	Total	547	

Educational level also statistically significantly influenced levels of teacher readiness (H = 20.07, p < 0.001). Table 11 presents this result.

Table 11. Effect of studies/training on teacher readiness for distance learning education due to Covid-19

	Teacher readiness for distance learning education due to Covid-19
Kruskal-Wallis H	20.066
df	2
p	.000

As can be seen in Table 12, as educational level increased, there was a corresponding increase in self-reported teacher readiness; university graduates had the lowest mean score, while doctorate graduates had the highest teacher readiness score.

Table 12. Mean ranks for teacher readiness for distance learning education due to Covid-19, by studies/training

	Studies/Training	N	MeanRank
Teacher readiness for distance learning education due to Covid-19	Universitydegree	198	234.55
	Postgraduate	293	287.12

	Doctorate	51	325.20
	Total	542	

There was also a statistically significant effect of years of service on teacher readiness for distance learning education due to Covid-19 (H = 10.32, p = 0.035). Table 13 presents this finding.

Table 13. Effect of years of service on teacher readiness for distance learning education due to Covid-19

	Teacher readiness for distance learning education due to Covid-19
Kruskal-Wallis H	10.319
df	4
p	.035

As can be seen in Table 14, as the years of service increased, there was a corresponding incremental decrease in teacher readiness for distance education due to Covid-19. Specifically, participants with up to 5 years of experience reported the highest readiness, while participants with over 30 years of experience reported the lowest readiness for distance education.

Table 14. Mean ranks for teacher readiness for distance learning education due to Covid-19, by years of service

	Years of service	N	MeanRank
Teacher readiness for distance learning education due to Covid-19	0-5	101	307.90
	6-10	51	295.11
	11-20	193	274.24
	21-30	133	257.70
	30+	69	239.54
	Total	547	

Age, however, did not significantly affect teacher readiness levels (H = 8.62, p = 0.071). Table 15 presents this non-significant result. Specifically, as age increased, teacher readiness levels showed a consistent decrease, however these observed differences were not statistically significant.

Table 15. Effect of age on teacher readiness for distance learning education due to Covid-19

	Teacher readiness for distance learning education due to Covid-19
Kruskal-Wallis H	8.619
df	4
p	.071

Finally, seminar attendance did not have a significant effect on teacher readiness (U = 26755.50, p = 0.142). Table 16 presents this result. Specifically, teachers who had attended seminars reported greater readiness for distance education compared to teachers who had not attended seminars; however, this difference was not statistically significant.

Table 16. Effect of seminar attendance on teacher readiness for distance learning education due to Covid-19

	Teacher readiness for distance learning education due to Covid-19
Mann-Whitney U	26755.500
p	.142

Discussion

The changes in the way the educational process is conducted due to the Covid-19 pandemic have enabled teachers to use both asynchronous and modern methods of teaching and learning. Asynchronous learning methods provide the possibility of students and teachers interacting both before and after online teaching, using discussions and email messaging, while modern forms of learning provide the possibility of interaction between students and teachers during sessions, using techniques such as video conferences or chat rooms.

This violent and abrupt change from face-to-face to online learning, in synergy with the lack of training and education of teachers in these new experiences, has caused them intense concern and anxiety (Müller et al., 2021; González-Calvo et al., 2021).

In addition, for a large part of teachers, these changes caused intense frustration, as they did not see a parallel strengthening of their capabilities (Mehta, 2021). Although hybrid or blended learning approaches were more widely used, however, it is considered necessary to provide the required support to teachers for the implementation of technology-based and pedagogy-informed teaching (Müller et al., 2021).

This chapter reported the results from a study with 547 secondary school teachers in Greece concerning their perceptions of their readiness and experience with distance learning during the Covid-19 pandemic; their perception of the school's preparedness; and the perceived obstacles of distance learning education due to Covid-19. Teachers' self-esteem levels and their coping strategies of engagement and disengagement were also measured.

H_1. We suppose that teachers were prepared to cope with distance education during the COVID-19 pandemic.

In answer to the first research question, "*1. How prepared do teachers think they were to cope with distance education during the Covid-19 pandemic?*", teachers felt they were prepared ("agree") to use online modules and learning materials like Word and Excel. Teachers on average were unsure about their readiness to use the printed module as a tool for home learning, or to use learning management systems like e-class and Zoom for online teaching. The teachers were also on average unsure as to the extent to which they can perform distance learning education with their students in times of Covid-19. The total teacher preparedness score, indicated that teachers were neither positive nor negative about how ready they were for distance learning education during Covid-19.

A similar study by Lapada et al. (2020), explored 2300 teachers' awareness about the COVID-19 pandemic and their opinion on their respective schools' readiness, as well as their response to the challenges of conducting distance learning education in the Philippines, found that almost all teachers said they were prepared to "conduct distance learning education during difficult times. However, two-thirds of them confirmed affirmative regarding their readiness to use the printed module as a tool for distance learning. In addition, only half of the respondents were ready to use online modules or learning materials available on the internet, such as Youtube, Ted Talk, and Khan Academy, and learning management systems like Edmodo, Canvas, Google Classroom, and Zoom as means of online or distance learning education. Regarding their readiness in terms of technological equipment for delivery, it was observed that only half had the required equipment, indicating that the lack of facilities, equipment, and capacity building to distance learning education also affected their readiness for offering distance learning education.

Triantafillopoulou's (2021) survey of 201 Greek secondary school teachers regarding their readiness for distance education, showed that teachers described their initial level of readiness as low, with about 34% reporting zero readiness, while only 6% felt comfortable with the process.

In particular, more than half of the teachers said they were unaware of the WebEx online platform, and very few of them (9%) were familiar with its use. Concerning e-class almost 36% of teachers were not at all familiar with its use and 11% of teachers were completely familiar with it. Even though Google has had Google Class for many years, 66% of teachers had never used it and only 6% were aware of its use. 53% were not aware of the Zoom platform at all. The results were better when

compared to the use of Skype, which 45% were quite familiar with and 14% were not at all. Similar to the other communication platforms (messenger, Viber, WhatsApp, telegram) where 61% are quite familiar with its use, and only 11% are not at all. Similarly, concerning the computer programs useful for teaching (Word, Excel, and Power Point), the majority of teachers showed high levels of familiarity. Particularly disappointing were the percentages about Quizlet, Hot, and Kahoot, with almost two-thirds of teachers saying they were completely unaware.

Papadopoulou (2021), studying the views of 138 secondary, general, and special education teachers on their readiness for distance education, showed similar results, as in the first statement, neither group gave a clear answer. However, there was a differentiation between them, with special education teachers appearing more ready to use digitized and online materials and to manage Learning Management Systems and online platforms for distance learning than the second group.

Probably this differentiation can be attributed to the fact that, as special educators are called upon to respond to the needs of a heterogeneous group of children with diverse characteristics, they need to become more familiar with alternative ways of presenting educational material compared to "traditional" educational material.

Therefore, it becomes clear that, in special education, the pedagogical use of technology by teachers plays a key role in ECEC, due to the positive effects on the academic performance of children with special educational needs (Xanthouli, Gooli, & Smyrnaiou, 2013; Tsiavos, Koyiami, &Flagou, 2021).

In conclusion, it appears that the outbreak of the COVID-19 pandemic revealed a significant variation in teachers' readiness to use technology to support students at a distance. Concerning Greek teachers, except for communication platforms (email, messenger, etc.), the majority of them did not even know about the existence of suitable platforms for online teaching. For decades, scholars have highlighted this problem, noting that teachers are "inadequately prepared to teach with technology" (Foulger et al., 2017).

Therefore, the null hypothesis regarding "The teachers were not prepared to cope with distance education during the COVID-19 pandemic" is neither confirmed nor rejected.

H_2. We suppose that the teachers thought that the schools were ready to meet the needs of distance education.

In the second research question, *"2. How ready do they think the schools were to meet the needs of distance education?"*, the teachers on average felt that the school was moderately prepared, and the overall school preparedness score was lower that the teacher readiness score. Teachers showed moderate agreement when asked if the school had a system of information dissemination to communicate with parents and learners; if it had provided data privacy policies and regulations on distance learning; if it had provided capacity building on distance learning education management for teachers; and if it had a designated workforce for Covid-19. Teachers on average signified that the school had provided little supplementary materials for distance learning like online learning management systems and library subscriptions.

Therefore, the null hypothesis regarding *"The schools were not ready at all to meet the needs of distance education" is rejected.*

The lack of preparation and support on the part of school units, especially during the first period of the pandemic, forced teachers to become constantly updated with online learning platforms and to seek other sources of support, highlighting their insufficient understanding of how ICT tools mediated learning (Oliveira et al., 2021). Characteristically, teachers were forced to use the same pedagogical methods as those used in face-to-face training, wasting additional

time to adapt the material to the new situations. Even in the case where teachers had attended an earlier online learning class or webinar, they still struggled in their work when their school units or the relevant ministry was unable to provide them with fundamental necessities for lessons, such as Internet connectivity (Dogra & Kaushal, 2021; Uzun et al., 2021). This situation could be justified by the persistence and dependence of most educational systems on traditional teaching pedagogies, as well as the necessity of redefining them to build up a positive teacher-student relationship and engage students in online discussion (Nang et al., 2022).

H_3. We suppose that teachers faced some challenges or difficulties in implementing distance learning during the COVID-19 pandemic.

Concerning the third research question, "*3. What are the challenges or difficulties faced by teachers in implementing distance learning during the Covid-19 pandemic?*", the teachers on average agreed that a year of experience had made them familiar with distance education, and they agreed that the availability of students posed difficulties for them. The teachers disagreed that communication with the principal and the school during the HEI was difficult, however they also disagreed that the communication network with the parents had been improved during the time of distance learning, when compared to previous years. For the remaining items of challenges in distance education, teachers remained neutral or unsure. In the overall perceived challenges score, teachers reported that there were moderate challenges and difficulties in distance learning education during Covid-19.

Therefore, the null hypothesis regarding *Teachers faced no challenges or difficulties in implementing distance learning during the COVID-19 pandemic, is rejected.*

Research shows that one of the biggest challenges teachers faced was related to the ability to understand and manage the needs of diverse students. Indicatively, there was a lot of pressure from teachers concerning the objectives that had to be achieved to be able to adapt to this new situation, and many of them admitted that there was a great limitation about the content that had to be taught (González-Calvo et al., 2021; Petrakova et al., 2021).

To address this situation, teachers have had to spend a lot of time finding the appropriate formats that would allow them to teach the material more effectively while supporting the well-being of their students. The main cause of this situation is attributed to the fact that teachers were already uncomfortable with implementing an online curriculum before the pandemic, which was further exacerbated by the advent of the pandemic (Uzun et al., 2021). The conclusion from this data is that the implementation of distance teaching/learning requires careful and extensive planning (Marek et al., 2021).

Some of the other challenges that teachers felt while trying to adapt to the new teaching methods were related to their technological complexity, literacy, and competency (Dogra & Kaushal, 2021). Indicatively, Physical education (PE) teachers had particular difficulties in the online transfer of their lessons, as this is mainly based on physical activity (Wakui et al., 2021).

In the corresponding Greek surveys (Papadopoulou, 2021; Triantafylopoulou, 2021), the main challenges faced by teachers concerned the knowledge and skills necessary for distance education, with general education teachers showing a greater lack of knowledge and skills than special education teachers. In addition, general education teachers appeared to face greater challenges in assessing student progress and in encouraging student participation in online lessons and using the technological

capabilities of digital classrooms at a higher rate. At the same time, teachers noted a greater degree of difficulty in dealing with the stress caused by the pandemic and the demands of distance learning. However, this was to be expected, as even in non-pandemic situations, the lack of technical skills harms teachers' psychological state, due to the experience of intense stress when they are required to use technological tools and programs for which they do not feel competent and ready to use (Al-Fudail & Mellar, 2008).

In a similar study by Klapproth et al. (2020) of 380 teachers, general education teachers also showed higher levels of anxiety than those in special schools. This differentiation may be attributed to the fact that general education teachers, as well as secondary education teachers, in addition to working longer hours, are required to manage a larger volume of homework, resulting in a reduction of their involvement in the educational process and psychological burden.

As research shows, unstable internet connectivity, assessing learning, and monitoring student progress is one of the major challenges that teachers faced during the pandemic (Asanov et al., 2021; Fauzi & Sastra Khusuma, 2020; Lapada et al., 2020; Sintema, 2020; Tranafillopoulou, 2021), an issue that seems to be of concern to students' parents (Duraku & Hoxha, 2020). This common finding demonstrates the need for teacher training on issues related to distance education (Hamilton et al., 2020; Zhang, 2020), in particular by training them on the use of technologies and monitoring the progress of learners' learning (Rasmitadila et al., 2020), both overall and at the individual level (Zhang, 2020).

The issues related to the problem of internet access in distance learning are not a new concern in online teaching and learning. One of the key elements of ensuring effective online distance learning is the existence of good connectivity (Marek et al., 2021). In addition, there were also many problems related to the quality of the internet connections (Oliveira et al., 2021), as teachers were asked to manage an unpredictable situation that caused them frustration and stress, especially when during the online class the internet down, causing a communication delay which disrupts their class.

Research conducted during the COVID-19 pandemic shows the crucial role of facilitating conditions, positive attitudes, and initiatives on the part of teachers to make the online transition successful (Yan & Wang, 2022). Facilitation on the part of educational institutions includes the leadership role of principals (Thornton, 2021), the provision of teacher training opportunities, and the development of bottom-up professional learning communities (König et al., 2020; Donitsa-Schmidt & Ramot, 2020).

At the same time, a positive attitude and proactive efforts on the part of teachers are necessary. Specifically, researchers show that the most vital variables that affect teachers are teacher attitude, digital competence, and proactivity (Chen, 2021; Guillén et al., 2020; Huang et al., 2021; Huber & Helm, 2020; Li & Wang, 2021; Luan et al., 2020; Talidong, 2020; Teng & Wu, 2021). According to MacIntyre et al. (2020), to achieve teachers' positive psychology and self-efficacy, a coping approach, rather than avoidant coping, is preferable.

Another common finding of relevant research is the high levels of agreement among teachers regarding the challenges in communicating with students during distance education (Asanov et al., 2021; Fauzi & Sastra Khusuma, 2020; Lapada et al., 2020; Sintema, 2020; Tranafyllopoulou, 2021). In particular, this lack of physical coexistence of students and teachers in the same space reduces the quality of interaction between them and makes communication difficult, constituting one of the most serious challenges of online teaching (Hebebci, Bertiz, & Alan, 2020; Nambiar, 2020; Niemi & Kousa, 2020; Orhan & Beyhan, 2020).

H_4. We suppose that there is statistically significant relationship between stress coping strategies and their readiness and experience in conducting distance education during the COVID-19 pandemic.

Regarding the fifth research question, "*5. What is the relationship between stress coping strategies and their readiness and experience in conducting distance education?*", teachers on average reported higher coping strategy disengagement compared to engagement, while problem-focused

engagement and disengagement were higher than emotion-focused engagement and disengagement. For example, teachers often looked for the bright side of things, tackled problems directly, made plans and carried them out, and asked for help and advice from their close friends or relatives about their problems. The teachers rarely blamed or criticized themselves for a problem, rarely hoped for a miracle, or that a problem would be resolved on its own, and rarely tried put a problem out of their mind. Teacher readiness for distance learning education was significantly and positively related with total coping strategy disengagement, as well as with the problem-focused disengagement dimension, where an increase in teacher readiness corresponded to a small increase in disengagement, and vice versa. Teacher readiness for distance learning during Covid-19 was also significantly and negatively related with the emotion-focused engagement dimension, where an increase in teacher readiness corresponded to a small decrease in coping strategy emotion-focused engagement.

Therefore, the null hypothesis regarding *There is no significant relationship between stress coping strategies and their readiness and experience in conducting distance education during the COVID-19 pandemic*, is refuted.

The systematic review by Nang, Maat, and Mahmud (2022) concerning Teacher Technostress and Coping Mechanisms During COVID-19 Pandemic, showed that most teachers use coping strategies. Coping strategies are described as the behavioral strategies that an individual adopts to overcome threats causing psychological stress (Petrakova et al., 2021). Research shows that the most common coping strategies used by individuals to manage stressful situations involve seeking social support, exercising, engaging in leisure activities, spiritual activities, reading books and novels, and listening to music (Akour et al., 2020; Hidalgo-Andrade et al., 2021). Primarily, teachers during the pandemic used seeking social support as a behavioral strategy in stressful situations (Petrakova et al., 2021). Despite the fact of the mandatory social distancing imposed by the pandemic, teachers used individual or group online social media platforms like WhatsApp, Telegram, and Zoom to build strong social relationships (Zaalouk et al., 2021).

H_5. We suppose that there is statistically significant relationship between demographic characteristics (gender, age, years of service and education) and teacher's readiness in conducting distance education during the COVID-19 pandemic.

Concerning the sixth hypothesis about the extent to which gender, affects teacher readiness and experience in conducting distance education found a significant effect on the levels of teacher readiness for distance education. Specifically, male teachers reported more readiness to tackle distance education compared to female teachers. However, this result is not confirmed by other research. In particular, in Lapada et al. 's (2020) survey, it appeared that female respondents are more ready to offer distance learning education to their students. This is also confirmed by other studies in higher education institutions, in which female respondents significantly differ from men in terms of technology literacy, concerning the required readiness for offering distance learning education (Alwraikat, 2017). In a similar Greek study, gender was not found to have a significant effect on teacher readiness and experience in conducting distance education during the COVID-19 pandemic (Papadopoulou, 2021).

Regarding the extent to which educational level affects teacher readiness and experience in conducting distance education, a significant effect was found on the levels of teacher readiness for distance education. Additionally, as teachers' educational levels increased, from undergraduate to doctorate level, reports of teacher readiness levels increased. In a similar Greek survey, the level of their studies was found to have a significant effect on teachers' responses regarding their expected readiness for distance education. Also, the level of education exerted a significant influence on their responses to the need for educational institutions to take measures for the post-COVID era, with teachers with higher-level

degrees agreeing more in favor of taking measures to ensure the readiness of educational institutions in the post-COVID era.

This is probably because the higher the level of teachers' studies, the higher their demands for support from educational institutions, as they may have come into contact with foreign educational institutions during their studies and have worked with many educational units. In addition, the higher the level of teachers' studies, the greater the requirements for them to become familiar with technological means and distance learning to complete their studies.

Concerning the extent to which years of service affect teacher readiness for distance education, a significant effect was found on levels of teacher readiness for distance education. A similar pattern was found for the statistically significant effect of years of service, where an increase in the number of years of teaching experience corresponded to a decrease in reported teacher readiness for distance education due to Covid-19. Research shows that the length of teaching experience affects readiness to distance learning education, in the sense that, compared to inexperienced teachers, teachers who have taught for several years, can deal more effectively with critical situations, like pandemics or natural calamities (Kini &Podolsky, 2016).

Although years of experience affected teacher readiness, the same was not true for teacher age. Specifically, the increase in age was accompanied by a small decrease in self-reported teacher readiness, but these differences were small and statistically non-significant. The same results are obtained in other studies (Lapada et al., 2020; Papadopoulou, 2021; Triantafillopoulou, 2021), indicating that compared to teachers with many years of experience, and therefore older, younger teachers are at higher levels of digital literacy and familiarity with the technological tools used in distance education. As the teachers with more years of teaching experience are by default in the older age group and hence are relatively less tech-savvy, need more assistance in using the online tools to deliver their lessons.

Finally, seminar attendance also was not a significant influence on teacher readiness for distance learning during Covid-19. While seminar attendees reported higher levels of teacher readiness, this difference was small and statistically non-significant. Although teachers who have served for a long time have had the opportunity to attend more seminar workshops needed in offering distance learning education, however, this does not seem to have had a significant impact on their readiness.

Triantafillopoulou's (2021) survey of 201 Greek secondary school teachers regarding their readiness for distance education and the challenges and difficulties they encountered in its implementation, the efforts they made, the ways of coping with the problems they encountered, and finally the evaluation of the whole project, showed similar results, as the teachers who used technology more often in their teaching, were those who had attended pre-pandemic seminars, reporting an easier transition to distance learning for themselves and their students. In contrast, teachers who had not attended distance learning seminars seemed to learn online strategies and teaching tools while teaching online or remotely ("building the plane while flying it").

In conclusion, it appears that the null hypothesis that Demographic characteristics (gender, age, years of service, and education) do not have a significant effect on teacher's readiness in conducting distance education during the COVID-19 pandemic, is refuted for gender, educational level, and years of service, as all had significantly affected levels of teacher readiness for distance education. However, it is confirmed for teacher age and seminar attendance.

Limitations

The present study is not without limitations. The main limitations of the research are related to the way data is distributed and collected, as attracting participants through social media can limit the intention to participate. Therefore, as it is a cross-sectional study, does not allow the extraction of causal relationships, but only probabilistic relationships with the possibility of error. In order to draw more reliable conclusions regarding teacher’s readiness teacher’s readiness in conducting distance education, further studies with a larger number of participants should be carried out to reduce the chances of random error. In addition, there is a risk of insufficient representativeness of the sample, as it is likely to that the

questionnaires in Google form could be approached primarily by younger teachers with better knowledge of technology and familiarity with online surveys, excluding older teachers. Finally, as participation in the research was not mandatory, it is possible those who participated were more sensitive to related issues, so there may be a systematic error.

Epilogue

The educational needs of the 21st century indicate the importance of introducing technology into the teaching and learning process. In addition, the new forms of online teaching require the use of various facilities to make the training effective. The recent covid-19 pandemic and the subsequent need to close schools have led to the need to develop new ways to keep the curriculum running by utilizing relevant and connected technology. The results of surveys regarding teacher readiness and experience in conducting distance education during the pandemic made it clear that technology is increasingly becoming an important tool in the classroom as the needs 21st-century skills. Even though the educational process has returned to pre-pandemic normality, the shortcomings that have emerged regarding teachers' capacity for distance education should be the lesson and the basis for preparing against a future crisis.

Therefore, the above offers target school psychologists directly, while at the same time, they are indirectly addressed to the educational authorities in charge of funding allocation and policies. Within this framework, the results of this research could also provide informative information to school psychologists regarding their practices, as well as spark evidence-based policy advocacy.

In conclusion, it could be said that the results of the survey highlight the need for secondary school teachers for their help and encouragement during this pandemic teaching session. To ensure effective online learning and teaching, the synergy of all educational stakeholders, including the educational community, the school's management, and the school units, was essential. Even though online education still constitutes the primary responsibility of teachers, the lack of presence of other stakeholders in ensuring adequate facilities and training to guarantee that instructors' lack of technology understanding, further increased the teaching load of teachers.

In the future, it is necessary to conduct further research to adequately identify the shortcomings of the Greek educational system concerning the training and readiness of teachers for electronic teaching and learning processes.

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