

**DEVELOPING A MODEL TO DESCRIBE THE
RELATIONSHIP BETWEEN THE FACTORS
INFLUENCING TEACHERS' TECHNOSTRESS
WHILE TEACHING ONLINE DURING A CRISIS**

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WHILE TEACHING ONLINE DURING A CRISIS**

by

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**Thesis submitted in fulfillment of the requirements
for the degree of
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To my beloved family:

My Wife Eman,

My son Aws

My daughter Rahaf

My son Kenan

To all of my brothers: Hatem, Zahran, and Najih

To my sister

Najwa

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TABLE OF CONTENTS

ACKNOWLEDGEMENT.....	ii
TABLE OF CONTENTS	iii
LIST OF TABLES	x
LIST OF FIGURES	xiii
LIST OF ABBREVIATIONS	xv
LIST OF APPENDICES	xvi
ABSTRAK	xvii
ABSTRACT	xx
CHAPTER 1 INTRODUCTION	1
1.1 Introduction.....	1
1.2 Background of Study	3
1.3 Problem statement.....	5
1.4 Research Objectives	8
1.5 Research Questions	9
1.6 Theoretical Framework	9
1.7 Conceptual Framework	10
1.7.1 Context of the study: Mandatory online learning during the crisis....	11
1.7.2 Individual features	12
1.7.3 Contextual factors	12
1.7.4 Technological pedagogical content knowledge	13
1.8 Research Significance	13
1.9 Research Framework	14
1.10 Operational Definitions.....	17
1.10.1 Technostress.....	17
1.10.2 Technology Integration	17

1.10.3	Information communication technologies	17
1.10.4	Social support.....	18
1.10.5	Emergency Remote Teaching (ERT).....	18
1.10.6	TPACK.....	18
1.11	Summary	19
CHAPTER 2 LITERATURE REVIEW		20
2.1	Introduction.....	20
2.2	Education System in Palestine	21
2.3	Integrating technology into education in Palestine	22
2.4	Emergency Remote Teaching During Crisis	23
2.5	Online Learning	25
2.5.1	Teleconferencing tools for online learning	28
2.5.1(a)	Microsoft Teams in education	28
2.5.1(b)	Microsoft Teams features	29
2.5.2	Online learning in Palestine	30
2.6	Challenges of Using Online Learning.....	32
2.6.1	Technological challenges.....	33
2.6.2	Pedagogical challenges	34
2.6.3	Social challenges.....	35
2.7	Technostress.....	36
2.7.1	Factors influencing technostress	40
2.7.2	Teachers' technostress	46
2.7.3	Theories related to technostress	51
2.7.3(a)	Transactional Theory of Stress	51
2.7.3(b)	Person-Environment Fit Theory	55
2.8	Previous models proposed for technostress	57
2.9	Technostress and the continuance intention of using technology.....	69

2.10	Unified Theory of Acceptance and Use of Technology	73
2.11	Technological Pedagogical Content Knowledge model (TPACK)	75
2.12	Research gaps.....	77
2.13	The Hypothesized Model	77
2.14	Summary	78
CHAPTER 3 METHODOLOGY		80
3.1	Introduction.....	80
3.2	Philosophical world views of the study	80
3.3	Research methodology	81
3.4	Mixed methods approach.....	83
3.5	Reason for using mixed methods research.....	85
3.6	Reasons for Using the Exploratory Sequential Mixed Methods Research Design.....	92
3.7	Phase I: Qualitative phase	98
3.7.1	Recruitment.....	99
3.7.2	Participants.....	100
3.7.3	Qualitative instrument.....	101
3.7.3(a)	Semi-structured interview protocol	101
3.7.3(b)	Development of the interview questions in the protocol	102
3.7.3(c)	Pilot study for the interviews	103
3.7.4	Data collection procedures.....	105
3.7.5	Qualitative data analysis	107
3.7.6	Qualitative data analysis approaches	108
3.7.7	Thematic analysis phases	109
3.7.8	Philosophy for Selecting Thematic Analysis	112
3.7.9	Underpinning principals of thematic analysis.....	113
3.7.10	Data analysis procedures.....	115

3.7.11	Quantizing qualitative data	116
3.8	Bilingual translation procedures	116
3.8.1	Translation process	118
3.8.2	Translation of the interview protocol.....	119
3.9	Quantitative Phase (Phase II): Development of the instrument.....	124
3.9.1	Development of the instrument.....	124
3.10	Phase III: Building and testing the model.....	135
3.10.1	Data Collection	136
3.10.2	Population of the study	136
3.10.3	Sampling	137
3.10.4	Survey Administration	141
3.10.5	Characteristics of the participants	141
3.10.6	Quantitative data analysis	142
3.10.6(a)	Reliability and validity of the research	143
3.10.6(b)	Statistical Procedures.....	144
3.11	Research Ethics	145
3.11.1	Human subjects' protection	146
3.11.2	The principle of beneficence.....	146
3.11.3	The principle of respect for human dignity.....	146
3.11.4	The principle of justice	147
3.12	Summary	148
CHAPTER 4 FINDINGS		149
4.1	Introduction.....	149
4.2	Qualitative phase results	149
	Research question #1	149
4.2.1	Constructs influence teachers' technostress while using MS Teams.....	150
4.2.2	Quantization of the constructs.....	151

4.2.3	Trustworthiness	120
4.2.4	Ethics of the researcher	155
4.3	Quantitative pilot study findings.....	131
4.3.1	Validity and reliability	128
4.3.2	Expert review	129
4.3.3	Subject matter experts.....	129
4.3.4	Cognitive interviews	130
4.3.5	Piloting the survey	131
4.4	Pilot study	132
4.4.1	Performing Exploratory Factor Analysis (EFA).....	134
4.4.2	Sample adequacy	156
4.4.3	Performing EFA.....	157
4.5	Main data analysis.....	163
4.5.1	Missing data	163
4.5.2	Skewness and Kurtosis	163
4.5.3	Reliability of the study instrument.....	165
4.6	Descriptive analysis	165
4.6.1	Perceived usefulness	166
4.6.2	Overall support.....	168
4.6.3	Professional development	172
4.6.4	Technology characteristics.....	174
4.6.5	TPACK	175
4.6.6	Technostress.....	178
4.6.7	Continuance intentions.....	179
4.7	Factor Analysis	181
4.7.1	Model Analysis	184
4.7.1(a)	Composite reliability (CR).....	185

4.7.1(b)	Average Variance Extracted (AVE)	185
4.7.1(c)	Discriminant Validity	186
4.7.1(d)	Fornell-Larcker Assessment	186
4.7.1(e)	Heterotrait-Monotrait Ratio (HTMT)	187
4.7.1(f)	Multi-collinearity	187
4.7.1(g)	Assessment of Structural Model	189
4.7.1(h)	Effect sizes (f^2) analysis	190
4.7.2	Model fit	191
4.7.3	Derived model of the study	193
4.8	Description of the Model	195
4.8.1	Effects on continuance intentions	195
4.8.2	Effects on technostress	196
4.8.3	Effects on TPACK	196
4.9	Chapter Summary	197
4.9.1	Summary of Path Estimates	197
4.9.2	Summary	197
CHAPTER 5 DISCUSSION AND CONCLUSION		198
5.1	Introduction	198
5.2	Summary of the study	198
5.3	Research questions discussion	200
5.3.1	Discussion Research Question 1	200
5.3.1(a)	Perceived usefulness	201
5.3.1(b)	Overall support	203
5.3.1(c)	Professional development	204
5.3.1(d)	Technology characteristics	205
5.3.1(e)	TPACK competencies	206
5.3.2	Discussion Research Question 2	207

5.3.2(a)	Perceived usefulness and continuance intention.....	208
5.3.2(b)	Perceived usefulness and technostress.....	209
5.3.2(c)	Perceived usefulness and TPACK.....	210
5.3.2(d)	Overall support	211
5.3.2(e)	Overall support and continuance intention	212
5.3.2(f)	Overall support and technostress	213
5.3.2(g)	Overall support and TPACK.....	216
5.3.2(h)	Professional development and continuance intention	217
5.3.2(i)	Professional development and technostress.....	218
5.3.2(j)	Professional development and TPACK.....	220
5.3.2(k)	Technology characteristics and continuance intention	222
5.3.2(l)	Technology characteristics and technostress	222
5.3.2(m)	Technology characteristics and TPACK.....	224
5.3.2(n)	Role of TPACK in technostress and continuance intention	224
5.3.3	Discussion Research Question 3	225
5.3.4	Discussion Research Question 4	226
5.4	Limitations of the study	227
5.5	Implications for practice and policy.....	227
5.5.1	Theoretical consideration.....	229
5.5.2	Recommendations for Future Research	233
5.6	Conclusion	234
REFERENCES.....		236
APPENDICES		
LIST OF PUBLICATIONS		

LIST OF TABLES

	Page
Table 2.1	Past studies investigated the factors influencing technostress 40
Table 2.2	Past research related to teachers' technostress..... 46
Table 2.3	Past models investigated the relationship among the factors influencing technostress 57
Table 3.1	Justifications for the decision choice of mixed-methods approach adapted from Venkatesh et al. (2016) 88
Table 3.2	Summarizes the research methods 96
Table 3.3	Summarizes the demographic of the qualitative sample..... 101
Table 3.4	Number of schools and teachers who were invited to participate in the study 141
Table 3.5	Characteristics of the participants of the Study 130
Table 4.1	Constructs influencing teachers' technostress 150
Table 4.2	Frequencies of factors influencing technostress experienced by teachers 152
Table 4.3	Demographic information of the participants in the quantitative pilot study..... 133
Table 4.4	The value of KMO 157
Table 4.5	Constructs and loading factors on each one..... 158
Table 4.6	The main factors of the findings of the pilot study 162
Table 4.7	Skewness and Kurtosis to test normality 164
Table 4.8	Cronbach's alpha value for each construct 143
Table 4.9	Demographic information about the participants in the study 165
Table 4.10	Teacher perceptions about the perceived usefulness of using MS Tams in online teaching during crisis: Descriptive Statistics 166
Table 4.11	Teachers' perceptions about perceived usefulness: Frequencies and Percentages 167

Table 4.12	Teacher perceptions about overall support of using MS Tams in online teaching during crisis: Descriptive Statistics	169
Table 4.13	Teachers' perceptions about overall support: Frequencies and Percentages	170
Table 4.14	Teacher perceptions about the professional development of using MS Tams in online teaching during crisis: Descriptive Statistics	172
Table 4.15	Teachers' perceptions about professional development: Frequencies and Percentages	173
Table 4.16	Teacher perceptions about technology characteristics of using MS Teams in online teaching during crisis: Descriptive Statistics	174
Table 4.17	Teachers' perceptions about technology characteristics: Frequencies and Percentages	174
Table 4.18	Teacher perceptions about TPACK of using MS Tams in online teaching during crisis: Descriptive Statistics	177
Table 4.19	Teachers' perceptions about TPACK: Frequencies and Percentages	177
Table 4.20	Teacher perceptions about technostress of using MS Tams in online teaching during crisis: Descriptive Statistics	178
Table 4.21	Teachers' perceptions about technostress: Frequencies and Percentages	179
Table 4.22	Teacher perceptions about continuance intentions of using MS Tams in online teaching during crisis: Descriptive Statistics	180
Table 4.23	Teachers' perceptions about continuance intention: Frequencies and Percentages	180
Table 4.24	The pattern of the factors found in the pilot study and confirmed with the actual data	181
Table 4.25	The reliability test's findings	184
Table 4.26	Discriminant validity test findings	186
Table 4.27	Heterotrait-Monotrait Ratio (HTMT)	187
Table 4.28	Collinearity based on VIF	188
Table 4.29	Results of path analysis.....	190
Table 4.30	Effect size and confidence interval	191

Table 4.31	Goodness-of-fit indices for the tested model	192
Table 4.32	Direct, Indirect, and Total Effects of the Variables in the Model	194

LIST OF FIGURES

	Page
Figure 1.1 Hypothesized model based on Transaction theory, P-E fit, and UTAUT model	10
Figure 1.2 The conceptual framework of the study.....	11
Figure 1.3 The mixed-methods framework of the research following the steps mentioned by Venkatesh et al. (2016)	17
Figure 2.1 Screenshot of the MS Teams app from the author’s account in 2022.....	31
Figure 2.2 Screenshot of synchronous lesson over MS Teams 2022	32
Figure 2.3 Screenshots of using MS as synchronous and asynchronous in Palestinian schools in 2022	32
Figure 2.4 Presents the four major components of the theory. Adapted from Ioannou et al. (2021)	52
Figure 2.5 Represents the P-E fit theory	55
Figure 2.6 Relationship between technostress and productivity, adapted from Tarafdar et al. (2007) (2000)	60
Figure 2.7 Technostress model proposed by Ayyagari et al. (2011).....	61
Figure 2.8 Wang and Li (2019) multidimensional P-E Misfit framework.....	62
Figure 2.9 Holistic technostress model developed by Califf et al. (2020)	63
Figure 2.10 Joo et al. (2016) presents the relationship between various variables and intentions to use technology	65
Figure 2.11 Structural model of teachers’ technostress experienced. Adapted from Dong et al. (2019).....	66
Figure 2.12 Ozgur’s path analysis model	67
Figure 2.13 Presents the model of the performance of face-to-face university teachers based on technostress.....	68
Figure 2.14 Presents the model of the performance of online university teachers based on technostress.....	69
Figure 2.15 Presents the relationship among the factors influencing the intention to use online teaching. Adapted from Chou and Chou (2021).....	70

Figure 2.16	The direct and indirect relationship among the variables with continuance intentions to use online	71
Figure 2.17	Relationship among the variables. Adapted from Khlaif et al. (2022).	72
Figure 2.18	The hypothesized model of this study	78
Figure 3.1	Research design	86
Figure 3.2	The process of recruiting the participants for the qualitative phase	100
Figure 3.3	The process of interview protocol development	103
Figure 3.4	The six steps of the thematic analysis reported by Braun and Clarke (2006)	110
Figure 3.5	Thematic analysis process model (Adapted from Miles and Huberman (1994, p.12))	114
Figure 3.6	Quantizing process used in the current study.	116
Figure 3.7	The quotations translation process in the current study	119
Figure 3.8	The Process of developing the quantitative data collection tool (survey)	128
Figure 3.9	The sampling process for the study	138
Figure 3.10	The West Bank –Palestine map with the locations of the sample	140
Figure 4.1	AMOS run for CFA analysis	192
Figure 4.2	The estimates coefficients on the proposed model	193

LIST OF ABBREVIATIONS

ICT	Information and Communication Technologies
IS	Information systems
ERT	Emergency Remote Teaching
TPACK	Technological Pedagogical Content Knowledge
UTAUT	Unified Theory of Acceptance and Use of Technology
MoE	Ministry of Education (Palestine)
P-E theory	Person-Environment theory
MS Teams	Microsoft Teams

LIST OF APPENDICES

Appendix A	Interview protocol
Appendix B	Final version of the survey
Appendix C	Content validity testing sheet
Appendix D	Permission to collect data
Appendix E	List of publications

**PEMBANGUNAN MODEL UNTUK MENERANGKAN HUBUNGAN
ANTARA FAKTOR YANG MEMPENGARUHI TEKNOSTRES GURU
YANG MENGAJAR SECARA ATAS TALIAN SEMASA KRISIS**

ABSTRAK

Kajian ini menyelidik faktor-faktor yang mempengaruhi teknostres yang dialami oleh guru semasa menggunakan teknologi baharu untuk pengajaran secara dalam talian semasa krisis dalam persekitaran pengajaran wajib berdasarkan pengalaman hidup melalui penggunaan Microsoft Teams (MS Teams). MS Teams ialah alat persidangan video yang disesuaikan oleh Kementerian Pendidikan di Palestin untuk mengajar secara dalam talian semasa krisis seperti menutup bandar dan jalan raya kerana isu keselamatan. Selain itu, kajian ini mencuba untuk mengetahui hubungan antara faktor-faktor ini bagaimana ia mempengaruhi teknostress dan jenis hubungan dengan niat berterusan untuk menggunakan MS Teams. Untuk pemahaman yang lebih mendalam, penyelidik membangunkan model konseptual untuk menerangkan hubungan antara faktor-faktor ini dan teknostress serta pengaruhnya terhadap niat berterusan untuk terus menggunakan MS Teams. Kajian bermula dengan pendekatan kualitatif melalui temu bual separa-struktur dengan 24 orang guru dari lokasi yang berbeza dan mengajar topik yang berbeza. Tujuan fasa kualitatif adalah untuk mendapatkan asas latar belakang daripada pengalaman guru dengan teknologi baru untuk membangunkan alat fasa kuantitatif. Alat kuantitatif adalah tinjauan yang dibangunkan berdasarkan teori teknostress seperti Kesesuaian Persekitaran Seseorang dan Teori Transaksi, serta kajian literatur. Bagi menjawab persoalan kajian untuk kajian ini, penyelidik menggunakan pendekatan kaedah campuran berurutan penerokaan (exploratory sequential). Empat soalan kajian membimbing penyelidikan

kaedah campuran berurutan ini. Data kualitatif mendedahkan pelbagai faktor yang mempengaruhi pengalaman teknostress guru yang dialami semasa menggunakan MS Teams. Penyelidik mengukur dapatan kualitatif yang mempunyai kekerapan setiap konstruk yang digunakan dalam pembangunan tinjauan. Konstruk utama yang didedahkan daripada data kualitatif pertama ialah syarat kemudahan, termasuk dua subtema, sokongan teknikal, dan pembangunan profesional; sokongan sosial, termasuk sokongan sekolah, sokongan rakan sekerja, dan sokongan keluarga; ciri individu, termasuk efikasi sendiri pengajaran dalam talian, kebimbangan privasi, dan pengalaman mengajar dengan ICT; persepsi kebergunaan termasuk kebergunaan teknologi baharu; ciri-ciri teknologi termasuk kemudahan penggunaan dan mengemas kini berterusan; TPACK; dan akhir sekali sikap guru. Satu tinjauan telah dibangunkan berdasarkan dapatan fasa pertama selaras dengan dapatan kajian lepas dan kerangka teori. Bagi fasa kedua kajian, 398 responden telah mengambil bahagian dalam kajian ini. Analisis statistik digunakan untuk analisis deskriptif data kuantitatif. CFA telah dijalankan untuk membina dan menguji model dengan menggunakan AMOS untuk melihat model indeks kesesuaian kebaikan (goodness fit indices) di mana varians ramalannya ialah 72%. Pembuat keputusan, penyelidik dan pengamal mungkin mendapat manfaat daripada model dengan mereka bentuk program intervensi untuk mengurangkan pengalaman teknostress guru, yang boleh meningkatkan prestasi pengajaran dalam talian mereka. Hal ini penting untuk Kementerian Pendidikan di Palestin atau pembuat keputusan di mana-mana negara yang menghadapi krisis untuk menyesuaikan teknologi yang biasa digunakan oleh guru untuk mengurangkan teknostres dalam kalangan guru. Batasan kajian ini adalah berkaitan dengan kebergantungan kepada direktorat teknologi pendidikan untuk memilih guru untuk menyertai kajian. Kajian masa hadapan adalah penting untuk mengesahkan model

yang dicadangkan dalam kajian ini dan untuk memasukkan guru dari kawasan tambahan.

**DEVELOPING A MODEL TO DESCRIBE THE RELATIONSHIP
BETWEEN THE FACTORS INFLUENCING TEACHERS' TECHNOSTRESS
WHILE TEACHING ONLINE DURING A CRISIS**

ABSTRACT

This study explores the factors influencing technostress experienced by teachers while using new technology in online teaching during the crisis in a mandatory teaching environment based on their lived experience through using Microsoft Teams (MS Teams). Moreover, this study tried to discover the relationships between these factors, how they influence technostress and the type of relationships with continuance intention to use MS Teams. To have a deep understanding, the researcher developed a conceptualized model to describe the relationships between these factors and technostress and their influence on the continuance intentions to continue using MS Teams. The study started with a qualitative approach through semi-structured interviews with 24 teachers from different locations and teaching different topics. The purpose of the qualitative phase was to have a background foundation from teachers' lived experience with the new technology to develop the quantitative phase tool. The quantitative tool was a survey developed based on the technostress theories such as Person-Environment fit and Transactional Theory, as well as the literature review. The researcher used an exploratory sequential mixed methods approach. Four research questions guided this sequential mixed methods research. The qualitative data revealed various factors influencing teachers' technostress experienced while using MS Teams. The researcher quantified the qualitative findings to have the frequency of each construct used in the survey's development. The major constructs revealed from the first qualitative data were facilitation conditions, including two

subthemes, technical support, and professional development; social support, including school support, colleague support, and family support; individual characteristics, including online teaching self-efficacy, privacy concerns, and teaching experience with ICT; perceived usefulness includes usefulness of new technology; technology characteristics include ease of use and continue updating; TPACK; and finally teachers attitudes. A survey was developed based on the first phase's findings aligned with previous studies' findings and the theoretical framework. For the second phase of the study, 398 participated in the study. Statistical analysis was used for the descriptive analysis of the quantitative data. Confirmatory Factor Analysis (CFA) was conducted to build and test the model by using AMOS software to find out the goodness fit indices of the model where its prediction variance was 72%. Decision makers, researchers, and practitioners may benefit from the model by designing intervention programs to reduce the technostress teachers' experience, which could enhance their online teaching performance. It is important for the Ministry of Education in Palestine or the decision makers in any country suffering from security and political crisis to adapt technology that teachers are familiar with to reduce technostress among teachers. This study's limitations are related to depending on the educational technology directorate to nominate teachers to participate in the study. Future research is important to validate this study's proposed model and include teachers from additional areas.

CHAPTER 1

INTRODUCTION

1.1 Introduction

Over the past decade, numerous technological initiatives have emerged, integrating advanced technology to enhance people's lives (Botella et al., 2019). The pervasiveness of technology has fostered the incorporation of information and communication technology (ICT) among kindergarten and K-12 teachers worldwide (Oh & Park, 2016). Utilizing ICT in education presents opportunities for collaboration among colleagues, increased work efficiency, positive organizational changes, and reduced teacher workload (Tarafdar et al., 2015). However, the digitalization of education can also induce stress, particularly technostress, for teachers who must employ new technologies in their teaching practice. Consequently, they may need to modify their teaching strategies and adapt to novel methods (Syvänen et al., 2016).

The Organization for Economic Co-operation and Development (OECD, 2020) defined telework for teachers as working from their own space and adapting their working environment by using personal devices and internet connections and setting up arrangements for online teaching at home. Previous studies indicate that telework blurs the boundary between a teacher's professional and personal life (de Macêdo et al., 2020; Filarde et al., 2020). Over the past year, teaching and learning have increasingly shifted from face-to-face to online. The use of various platforms and applications in the Emergency Remote Teaching (ERT) environment, coupled with uncertainty about the pandemic's end, contributes to teacher stress. In Palestine, teaching and learning at public K-12 school levels are based on blended learning, combining online and on-campus learning. While there are benefits to using ERT

during a crisis for teachers and students, several studies have revealed that employing technology in unforeseen situations negatively impacts education, affecting digital equity and privacy and increasing technostress (Christian et al., 2020; Tarafdar et al., 2020).

The concept of technostress was first suggested by Brod (1984), who referred to the skills, knowledge, and time required to conduct purposeful and effective use of any new technology. Prior research has also defined technostress as the pressure generated from using technology and the skills and knowledge necessary to integrate it effectively into classroom practice (Çoklar et al., 2016; Jena, 2015; Tarafdar et al., 2010). In addition, technostress has been defined as the individual feeling of stress caused by technology (Berger et al., 2016). While researchers have documented technology integration in classrooms for academic purposes from the perspectives of both students and teachers (Khlaif, 2018; Wood et al., 2018), few studies have examined mandatory technology adoption and technostress associated with using new technology in public school settings. Finally, the findings of previous studies in different contexts have revealed that due to the continuous emergence of ICT devices and applications, technostress can contribute to various negative consequences (Ioannou & Papazafeiropoulou, 2017; Tarafdar et al., 2015).

Tarafdar et al. (2007) defined technostress as individuals' experiences of finding it challenging to cope with a new experience in their daily work. They proposed a scale with five dimensions: techno-uncertainty, techno-overload, techno-insecurity, techno-invasion, and techno-complexity.

Therefore, the study's background, context description, and research problem are based on previous studies. In addition, this chapter introduces the research

objectives and research questions. After identifying the study's theoretical framework, the researcher presents the study's conceptual framework. At the end of the chapter, the researcher presents the definition of the concepts used in the study

1.2 Background of Study

Palestine is a developing country located in the heart of the Middle East. Palestine is a country that experiences a higher level of economic, technological, and financial crises than the rest of the world; it has existed in a violent and unstable situation for more than 70 years (She, 2021).

The Palestinian educational system is divided into four levels: 1) Pre-school, which is composed of two years in kindergarten; 2) primary schools have four grades, from first grade to fourth grade; 3) middle school level, which contains the grades from fifth to ninth; and 4) the last level is a secondary school (high school) from 10th to 12th grades (Ministry of Education, 2014). Palestine has a centralized education system, which denotes that all of its education policies come as orders from the top down. There is no chances for school administrators or teachers to contribute to the general policy of the educational system such as shorten the length of the school day, changing the curriculum, and allow students to leave the school in case of emergency (Qaddumi et al., 2020).

The political and unstable crisis has negatively influenced Palestine's educational system by closing schools and forbidding teachers from arriving at their schools due to the checkpoints between the villages and cities (Farrah & Al-Bakry, 2020; Traxler et al., 2019). Moreover, many schools are behind the separation wall, where teachers cannot access their schools without permission from the occupied forces (Bzour et al., 2020). The MoE in Palestine has, however, developed a variety of

technological initiatives to support teachers' technology use during emergency remote teaching (ERT) during the political crisis (Shraim & Crompton, 2020).

This technology allows teachers to meet learners' growing needs and provides them access to similar educational resources and technology to their peers in various countries around Palestine (MacKenzie et al., 2020). Baytiyeh (2018) reported that using technology in the educational system in conflict zones plays an essential role in addressing the lack of educational materials and resources. The technology development in the Palestinian context is a cornerstone for reducing daily challenges brought about by restricted mobility; it enhances access to education, increases the quality of learning outcomes, and facilitates emergency management (Shraim & Khlaif, 2010). According to the Internet World Statistics report in 2022, 64.8% of Palestinian citizens have Internet at home (Internet World Statistics [IWS], 2022). Moreover, 76% of Palestinians have smartphones, desktops, and laptops (Palestinian Central Bureau of Statistics, 2021). Therefore, before the era of COVID-19, the MoE had already adapted technological innovations in education to maintain the communication process between school administrations and local communities, including parents and learners. This procedure improved the quality and equity of teaching languages, science, technology, and math through Science, Technology, Engineering, and Math (STEM) (Khlaif, 2018; Shraim & Crompton, 2020). The technological initiatives implemented by the MoE include, among others, the use of Microsoft Teams (MS Teams; 2020) and Zoom for synchronous sessions, digitalization of education (2016), and smart learning (MoE, 2020; MOEHE, 2017). Local communities, Microsoft, and national non-profit organizations funded these initiatives. Moreover, Palestine's MoE adapted various approaches, including project-

based learning and learning by doing, to improve teaching strategies and enhance collaborative work among teachers and learners (MOEHE, 2014).

All Palestinian teachers must integrate technology into their practices for academic purposes (Qaddumi et al., 2020). Technology integration in teaching and learning is required, and teachers are required to use new teaching strategies (Bsharat & Ramahi, 2016). There is an annual performance report for assessing teachers to use new teaching strategies and using technology in the classroom to improve learning outcomes. The annual performance report is a standardized method to evaluate teachers' performance. Based on the performance report, teachers promote every four years (Shraim, 2018). Various technological initiatives to use technology mandatory during crisis leads to put teachers under stress that connected to technostress. Therefore, using new technology in the Palestine context could increase teachers' stress and pressure (Khlaif et al., 2023).

1.3 Problem statement

Previous researchers have conducted many studies to explore the creators of technostress and its negative impact on individuals who work in different sectors and various contexts (García-González et al., 2020; Syvänen et al., 2016; Vesga et al., 2020). Most of these studies were conducted in normal conditions (Joo et al., 2016; Ozgur, 2020; Bondanini et al., 2020; Tarafdar et al., 2019). To the best of the researcher's knowledge, lack of previous studies explored the factors influencing technostress among teachers using new technology during the crisis in the Palestinian context. This reason motivates the researcher to examine the factors influencing technostress experienced by teachers.

Furthermore, Tarafdar et al. (2015) reported that technostress is context-dependent, while Tarafdar et al. (2019) emphasized the need for interdisciplinary edging in technostress research, as the phenomenon “has emerged based on multiple streams of thinking in different contexts” (Bondanini et al., 2020, p. 2). Therefore, exploring the factors influencing technostress experienced by teachers could fill the research gap and provide new variables to existing ones. For example, Camarena and Fusi (2022) conducted a quantitative study to explore the factors influencing technostress in the business sector in France. There were few qualitative studies, and one mixed method investigated technostress among nurses in the health sector (Liua et al., 2020).

Moreover, previous technostress studies focused on quantitative research by adapting existing tools in data collection (Joo et al., 2016; Ozgur, 2020). Therefore, the lack of mixed methods approaches to investigate technostress phenomena compared with quantitative studies is another motivator to conduct this study to develop a survey from teachers’ perspectives. Using a mixed methods approach to explore the phenomena in a new context in abnormal conditions could benefit researchers in finding out the constructs that influence teachers' technostress while using new technology during the crisis.

Research has revealed conflicting findings concerning administrative and colleague support's effects on technostress. Moreover, there has been inconsistency among previous studies' results on the factors influencing technostress. For instance, Dong et al. (2020) found no significant direct impact of support from colleagues or school administration on teachers' technostress, which contradicts the earlier findings of Joo et al. (2016). Ozgur (2020) also highlighted the necessity of exploring how different factors affect technostress levels under various circumstances.

While some studies have investigated the educational dimension regarding technostress, these were conducted in different contexts and performed in normal situations (Jeo et al., 2016; Ozgur, 2020; Scherer et al., 2020; Syvänen et al., 2016). However, as discussed above, there is a shortage of studies about technostress in teachers in a new context (Joo et al., 2016; Upadhyaya, 2020). Furthermore, recent studies have stressed a need to investigate the impact of environmental factors and individual characteristics on technostress (Dong et al., 2019; Krishnan, 2017; Marchiori et al., 2019).

Finally, previous models in the educational context have not explicitly focused on understanding the relationship between individual and technological characteristics of technostress among teachers (Ozgur, 2020). Furthermore, Ozgur (2020) recommended exploring the influence of teachers' professional identities (e.g., attitudes, self-efficacy, technological competencies) on their technostress levels. There is a lack of empirical research examining technostress experienced by teachers teaching in online during crises. In particular, it would be valuable to study the impact of technostress on teachers in a mandatory Emergency Remote Teaching (ERT) setting during crises in Palestine. Teachers teaching various subjects under mandatory ERT conditions during a crisis may possess unique skills, knowledge, and characteristics, making them an intriguing group for further investigation.

The expected contribution of this study might add new factors that influence technostress levels while teachers are using new instructional technology during the crisis and how technostress influences the continuance intentions to continue using this new technology. The study can offer new sight to the decision makers to design training programs for teachers to use new technologies in teaching practice. Moreover, the findings of this study can benefit countries like Palestine in its unstable situation.

The lack of extensive research on abnormality in the Palestinian crisis, being a new context, coupled with the inadequate application of mixed methods to examine technostress among individual practitioners, highlights a significant gap. Furthermore, there is a lack of studies exploring the relationship among various variables and inconsistencies in the findings of some studies. These gaps have inspired the current study to uncover new constructs and propose the most fitting model to elucidate the relationship between these constructs.

1.4 Research Objectives

The objectives of the current study are to:

1. To identify the constructs of technostress experienced by teachers during the mandatory use of technology during a crisis that requires ERT.
2. To investigate the relationship among the constructs of technostress experienced by teachers during the mandatory use of technology during a crisis that requires ERT.
3. To investigate the relationship of teachers' technostress on continuance intentions to use technology by teachers during the crisis that requires ERT
4. To test and validate a model that describes the relationship among the constructs of technostress and how it affects teachers' continuance intentions to use technology in a mandatory environment during the crisis

1.5 Research Questions

1. What are the constructs of technostress experienced by teachers during mandatory ERT use of technology during a crisis?
2. What is the relationship among the constructs of technostress experienced by teachers during mandatory ERT use of technology during a crisis?
3. What is the relationship between technostress and continuance intentions to use technology by teachers experienced technostress during a crisis?
4. What is the best-fitting model to explore and explain the relationships among the constructs of technostress experienced by teachers and continuance intentions to use technology during a crisis in a mandatory environment?

1.6 Theoretical Framework

In this study, the researcher needed to identify the main factors influencing technostress levels to shape the relationship between technostress and the continuance intentions of teachers to use technology during the crisis. Therefore, researchers in technostress research follow two research paths, the transaction theory of stress and the person-environment theory fit (Chou & Chou, 2021; Califf & Brooks, 2020). The transaction theory of stress investigated technostress from situation-based perspectives (Lazarus & Folkman, 1984). On the other hand, the Person-Environment Fit Theory considers technostress as a consequence of the misfit between the person and the environment (the situation surrounding the person). Therefore, technostress does not occur by the individual or the environment alone but when interaction occurs between

the person and the environment (Chou & Chou, 2021; Edwards & Cooper, 1990; Qi, 2019). This study builds upon the transaction theory of stress, the P-E fit theory, and the significance of teaching in a mandatory environment during a crisis as situational factors. Based on the theoretical framework, the researcher hypothesized the research model as illustrated in Figure 1.1

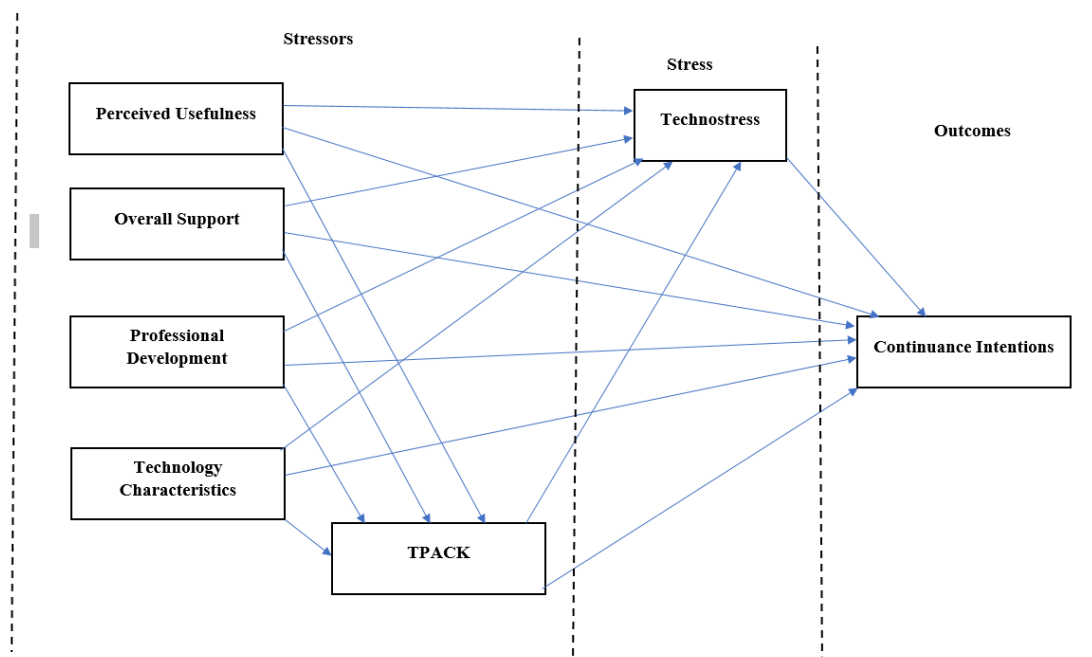


Figure 1.1 Hypothesized model based on Transaction theory and P-E fit theories

1.7 Conceptual Framework

Based on the theoretical framework of this study, which are the P-E and transactional theory of stress, figure 1.2 shows how stressors, strain, and outcomes interrelate within a mandatory technology integration environment. The illustration has four major components: contextual factors, individual factors, and TPACK (Technological pedagogical content knowledge). The intersection between them forms the fourth element in the diagram: technostress. Based on the P-E fit theory and the UTAUT model, the conceptual framework (Figure 1.2) below defines the expected

relevant variables that could influence the levels of technostress and show how these variables connect.

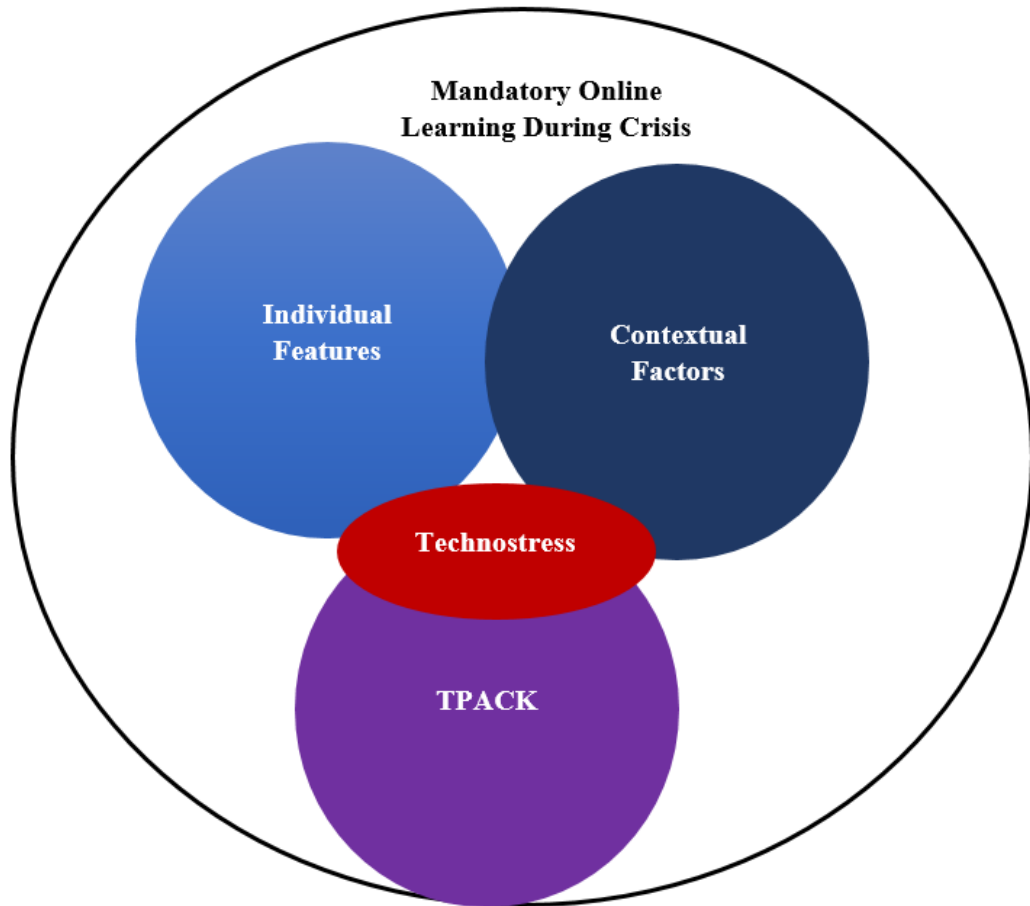


Figure 1.2 The conceptual framework of the study

1.7.1 Context of the study: Mandatory online learning during the crisis

Based on the transactional theory and P-E fit, the environment demands to use of technology in an online learning environment to continue communication with students and to teach them. Therefore, technology characteristics related to the technological environment through online teaching will have a crucial role since teachers are using technology, which is updated/upgraded occasionally. Upgrading the new technology will require teachers to update their skills and knowledge to use the

new features. The policy of using technology during the crisis is mandatory, as reported by the MoE in Palestine, to reduce the negative influence of Israeli procedures on the education system. The emergency new learning environment was completely different from the normal situation, online learning was optional, and educators had adequate time to prepare their instructional materials and teaching environments (Hodges et al., 2020). Moreover, mandatory online teaching puts some teachers under increased stress because they may have their children to care for and their social and financial commitments to provide them with devices.

1.7.2 Individual features

As mentioned in the Person-Environment (P-E) fit theory, individual characteristics related to technostress encompass a person's abilities to meet the demands of an organization teaching online in this study. These individual abilities include experience with technology, teaching experience, education level, self-efficacy, and digital competencies in using various educational tools (Hsiao, 2017; Marchiori et al., 2019). However, researchers have disagreed on how technostress varies based on individual characteristics. Furthermore, the majority of previous studies were conducted in the business sector rather than the education sector.

1.7.3 Contextual factors

Contextual factors related to the organization's demands and support include the organization's policy to use technology, administration support, and technical support. For example, contextual support in this study relates to school support and the MoE's mandatory policy to use new technology during ERT. School support refers to teacher professional development, which could provide training on using new

technology and providing technical support. Recent studies have shown that technical support can mitigate teachers' technostress (Drossel et al., 2017; Eickelmann et al., 2017; Kim & Lee, 2021; Ozgur, 2020). Moreover, previous studies' findings revealed that training and support from administration and school colleagues play a significant role in teachers' intentions to use new technology (Dong et al., 2019; Koh et al., 2017).

1.7.4 Technological pedagogical content knowledge (TPACK)

Dong et al.'s (2019) study found a connection between technostress and TPACK regarding teachers' TPACK skills and competencies. Joo et al. (2016) found that teachers' TPACK competence for using technological devices in education is important for reducing technostress. However, while multiple studies have revealed the impact of TPACK competence on technostress, previous work has not connected this with individual characteristics or contextual factors in a mandatory ERT environment.

1.8 Research Significance

This study contributes to the current knowledge of technostress by expanding research on the factors that influence teachers' technostress levels from their perspectives and the relationship among these factors. It also compares to prior studies that focused mainly on the higher education sector or worker population or used only one (quantitative) approach. In this research, the researcher also developed a model to demonstrate the relationship among the factors that influence technostress levels based on the transaction theory of stress. This newly-developed model will provide a framework for determining the factors that affect technostress levels among teachers and how to mitigate these factors in contexts similar to the Palestinian context.

The current research also contributes to the existing literature by identifying the influential factors that influence technostress among teachers teaching in an ERT situation during a crisis in a country that has been in crisis for over 70 years. The current work could reveal new and emerging factors that influence technostress. The recent study could assist researchers and policymakers in countries that experience ongoing crises. In the context of other developing countries, the outcomes of this research may also help to broaden their understanding of the negative and positive impact of these factors on teachers' motivation to continue using ICTs in an ERT environment. Consequently, this research will contribute to understanding the complexity of technostress in teachers in an ERT situation by evaluating the relationship between the factors that influence teachers who use new technology in a mandatory ERT environment.

Finally, this research contributed to the existing literature on the emerging factors that influence teachers who teach online during crises and how technostress affects their teaching through using exploratory sequential mixed methods approach to explore the new phenomenon from lived experience of teachers. It tested a model to describe the relationship among the factors influencing technostress. Additionally, this work extended the previous literature to include teachers, a new context, and a new learning environment.

1.9 Research Framework

The researcher chose the mixed methods research based on the steps mentioned by Venkatesh et al. (2016). The researcher used a sequential mixed methods approach to achieve the study's objectives. Therefore, the researcher developed the mixed-

methods framework (Figure 1.3) to show the consequences of the research and provided more details about the framework in chapter 3.

In the study context, the researcher employs a mixed-methods approach, informed by the transactional theory of technostress and the Person-Environment (P-E) fit view, to explore technostress based on teachers' lived experiences and perceptions. The qualitative approach establishes a general conceptual foundation, drawing on a theoretical framework incorporating the transactional theory of technostress, P-E fit theory, and the UTAUT model.

Conducting interviews with teachers allows them to express their experiences of technostress, contributing to a better understanding of the environmental and technological conditions that could result in technostress. The researcher can identify emerging factors that influence technostress by analyzing the interview data and iteratively reviewing the theoretical framework. These findings were used to develop a quantitative tool for the study's second phase. Overall, the mixed-methods research design offers a comprehensive perspective on teachers' technostress experience levels and the factors influencing them, uncovering new factors and facilitating a deeper understanding of the issue.

Other researchers have explored the reasons behind teachers' experiences of technostress in various contexts, including higher and public education (Çoklar et al., 2017; Joo et al., 2016). Previous studies have also developed a variety of technostress scales to determine technostress levels, such as the work of Çoklar et al. (2017), Dong et al. (2020), and Ozgur (2020). Cliff and Brooks (2020) classified contributors to technostress into techno-overload, techno-uncertainty, techno-invasion, techno-complexity, and techno-insecurity; other scholars have subsequently considered these

as the levels of technostress experienced by the end users of a given technology (Tarafdlar et al., 2007). In the current study context, techno-overload elaborates on situations in which MS Teams force teachers to work longer and provide feedback faster for their students. Whereas techno-uncertainty refers to contexts in which continuing changes and upgrades to MS Teams create worry and uncertainty for teachers, forcing them to learn quickly and continue to educate themselves about the new features. Techno-invasion refers to the invasive effect of MS Teams; teachers can be contacted anytime, feel the need to be connected, and the boundaries between teaching online and personal life can be at risk. Techno-complexity describes situations in which the complexity associated with MS Teams makes teachers feel inadequate; their knowledge and skills may be insufficient, forcing them to spend time and effort learning and understanding all of the aspects of MS Teams. Finally, techno-insecurity is associated with situations in which teachers feel their jobs are at risk if they do not use MS Teams. They may also have concerns about their digital privacy in teaching online.

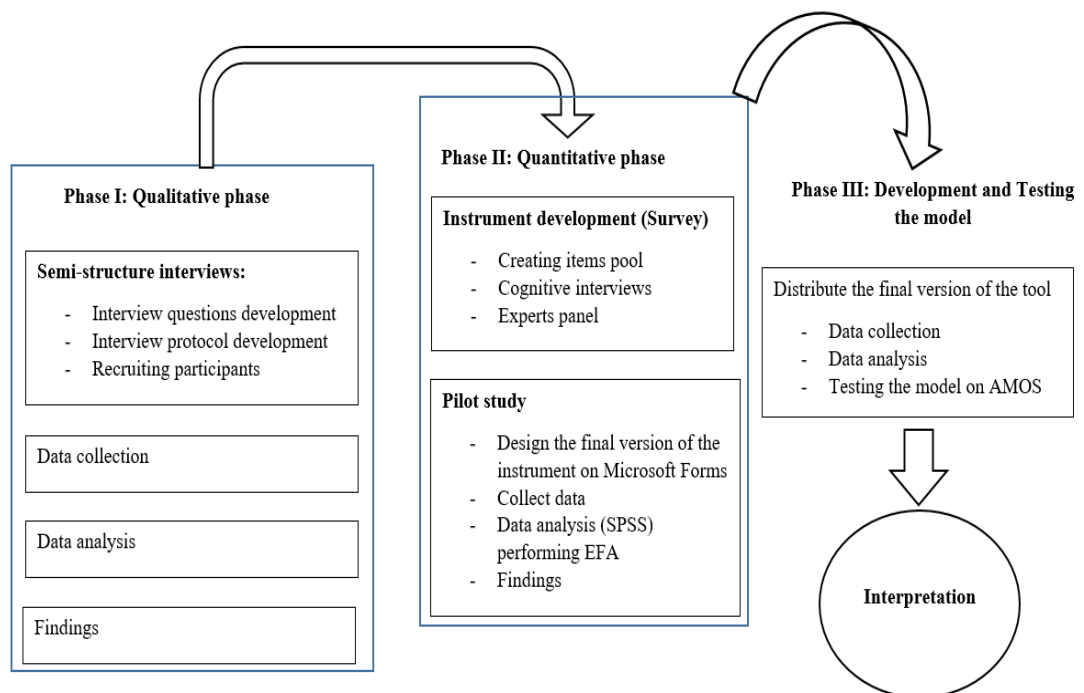


Figure 1.3 The mixed-methods framework of the research following the steps mentioned by Venkatesh et al. (2016)

1.10 Operational Definitions

1.10.1 Technostress

Technostress is a modern disease of adaptation caused by an inability to cope with new computer technologies healthily (Brod, 1984). In addition, Tarafdar et al. (2007) defined technostress as “Information System stress creators appraised by the individual as threatening” (p. 5). Moreover, Verkijika (2019) considers technostress as a boundary condition that could explain the impact of perceived usefulness in pre-adoption and the continuance use of new technology. Technostress in this study is teachers’ inability to use MS Teams in online teaching in a mandatory environment during the crisis.

1.10.2 Technology Integration

Technology Integration: Teachers’ use technologies including computers, projectors, printers, scanners, television, overhead projector, DVD/VCD/Video player, television, overhead projector, and instructional software, for instructional purposes in their lessons (Hew & Brush, 2007). Technology integration in this study uses Microsoft Teams in online teaching during the crisis in a mandatory teaching environment.

1.10.3 Information communication technologies

Technological devices and software enable people and organizations to do their jobs quickly without time and place restrictions (Rutkowski & Saunders, 2019). In this study, ICT refers to using MS Teams in learning. MS Teams is a new technology

Palestine's MoE adopted after implementing different tools (such as Zoom and Edpuzzle). Using MS Teams in online teaching is mandatory in Palestine.

1.10.4 Social support

Social support is “the social resources that persons perceive to be available or provided by nonprofessionals in the context of formal support groups and informal helping relationships” (Cohen et al., 2000; p.4). Social support teachers receive from their families and colleagues in the organization (Venkatesh et al., 2003). In this study, social support refers to colleague support through peer coaching, sharing ideas for using new technology, and sharing open educational resources that support using MS Teams.

1.10.5 Emergency Remote Teaching (ERT)

ERT is suddenly transferring teaching and learning from traditional mode to online mode without any preparation to fight the pandemic's outbreak (Rodríguez-Muñoz et al., 2020). Emergency remote teaching is an alternative, temporary learning and teaching that evolved in response to a specific crisis (Wang et al., 2020). This study defines ERT as online teaching and learning during a crisis since Palestine has suffered from a crisis for more than 70 years.

1.10.6 TPACK competencies

TPACK is a framework describes the types of knowledge required by teachers to succeed in using technology. In the context of this study, the researcher considers it as TPACK competencies without the details of the specific knowledge.

1.10.7 Microsoft Teams

MS Teams is a video conferencing tool for online meeting. Many sectors used it for organizing synchronous and synchronous activities. In Palestine, the Ministry of Education adopted it for online teaching and learning.

1.11 Summary

Chapter 1 introduced the research topic of the study by introducing the background of the study and research problem based on the findings of previous studies and the theories related to technostress. The research framework was to start with the qualitative phase ending with the quantitative through conceptualizing a model to describe the factors influencing technostress and its impact on the continuance intentions to use technology.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

The purpose of the literature review was to find out the gap in studying the factors influencing technostress to build upon the previous studies the foundations and motivation of the current study. The researcher scanned a lot of prior studies published in the last six years to write down the literature review. The researcher used these studies to explore the factors that influence technostress among end-users in different sectors and contexts and how technostress affects the continuance intentions to use technology. The researcher found the articles by accessing various databases using Google Scholar and the library at An Najah Nation University in Palestine. Moreover, the literature did not focus only on technostress but also on emergency remote teaching, e-learning, theories related to stress, continuance intention, and teachers and technology.

This chapter includes the following related topics to this study: the education system in Palestine, using technology in education in Palestine, emerging remote teaching during the crisis, e-learning versus online learning, the challenges of online learning, teachers and technology, emerging technologies such as Microsoft teams in education, TPACK, UTAUT, factors influencing technostress, the technostress model, and at the end of this chapter and based on the findings of previous studies a hypothesized model was presented.

2.2 Education System in Palestine

Taking control over education was the first time the Palestinians built their educational system. In 1994, the Palestinian Authority got the authority on education in the West Bank and Gaza Strip after transferring it from the Israeli Civil Administration after establishing the Ministry of Education (MoE). The MoE is responsible for developing and administrating the Palestinian education system on three levels: primary, middle, and secondary education (Shraim, 2018). The major challenge for the Palestinian MoE was to unify the education system since two education systems had been implemented, including the Jordanian Education System in West Bank and the Egyptian Education System in Gaza Strip. The education system in Palestine is compulsory in primary and middle schools covering ages 6-15 years (Shraim, 2018). In the Palestinian education system, three different types of schools provide general education: government schools, United Nations Relief and Works Agency (UNRWA), and private schools.

The education system has many constraints on teachers' training and providing schools with suitable educational materials for teaching and scientific experiments (Veronese et al., 2018). Palestinian teachers are exposed to continuous risks due to political violence and military occupation (Makkawi, 2015). Teachers living and working in conflict zones with restrictions on movement are not only in basic economic situations but also have to suffer in their daily life due to the consequences of the conflict (Veronese et al., 2018). Moreover, because of Israeli procedures, schools lack resources, disrupting academic life for teachers and students. Teachers sometimes need permission to go to schools behind the separation fence (Shraim & Khlaif, 2010). Teachers in conflict zones may lack self-esteem and confidence in terms

of their abilities in teaching due to the unstructured and uncertain environment of conflict.

Based on the procedures on the ground, the MoE launched many projects to improve the quality of education by establishing the Curriculum Center to develop the curriculum for Palestinian students, building new schools, and establishing libraries and computer laboratories in the schools. Moreover, the MoE adopted many educational initiatives to reduce the impact of the ongoing military operations on education, such as The Palestinian Initiative for E-Learning (PIE), Learning by Doing, and ABJAD to provide schools with the Internet (Qaddumi et al., 2021; Shraim & Khlaif, 2010).

2.3 Integrating Technology into Education in Palestine

The MoE in Palestine considers ICT a high potential responsibility to mitigate the influences of occupation on the Palestinian education system and improve the education quality in Palestine (Obaid, 2020). Therefore, the MoE has established a plan to invest in using technology in the education system. For example, in 2013, schools were gradually prepared for the Internet, interactive projectors, and LCDs, training teachers to use technology, which reflected positively on the rapid use of technology among Palestinian teachers (Qaddumi et al., 2021).

However, teachers and schools were not equally equipped with devices, technological knowledge, and skills to use technology in their practices (Khlaif & Salha, 2021). Due to the technological initiatives, Palestinian teachers are familiar with using technology for academic purposes and utilizing various tools such as smartphones and social media in teaching. They could use computing to deliver educational resources (Shraim & Crompton, 2020). However, some teachers still have

lower levels of technology integration in education and need training and guidance to use technology and be prepared to teach online (Khlaif et al., 2021; Shraim & Crompton, 2020). Moreover, many families, educators, and students do not see the value of technology, specifically online learning, which could be another challenge for them to use technology (Hew et al., 2020; Shraim & Crompton; UNESCO, 2020).

To summarize, the proliferation of Information and Communication Technologies (ICTs) and their rapid development are essential to be used in conflict areas to reduce the impact of the unstable situation on education in two ways. Firstly, it provides a communication tool to mitigate the physical movements to avoid the checkpoints on the ground created by the Israeli occupation. Secondly, ICT is helping in social and economic development, building human and the educational system in Palestine.

2.4 Emergency Remote Teaching during Crisis

ERT refers to a temporary shift from delivering traditional or hybrid instruction to an alternate (online) mode of delivery for a short period due to a natural or political crisis (Affouneh et al., 2020; Hodges et al., 2020). ERT involves employing remote teaching solutions for teaching and learning that can be delivered through other modes of instruction. Teachers can provide online or distance education modes for a short time; there is expected to return to traditional teaching and learning or a hybrid mode once the crisis has ended. The objective of ERT is not to create a strong educational system but to continue communicating with learners and to provide access to educational resources and support quickly and reliably. Affouneh et al. (2020) argued that ERT and its learning are entirely different from e-learning regarding planning and the ability to train teachers and design suitable content. Teachers, students, and parents

were shocked by the unplanned transition to ERT during the crisis, as they had not been prepared for this transition (Khlaif & Salha, 2020).

Some examples of ERT contexts from different countries include the responses to higher education institutions and school closures in times of natural and political crisis. These examples demonstrate how different teaching models, such as e-learning and mobile learning models, were implemented and how other solutions were used to keep learners connected to learning. One such example is that of Palestine (as well as Afghanistan) between 2000 and 2004 (Shraim & Khlaif, 2010; Traxler et al., 2019) when education was interrupted by conflict and violence that specifically targeted schools—especially schools for girls (Hodges et al., 2020). This study defines ERT as online teaching and learning during a crisis since Palestine has suffered for over 70 years.

During a crisis like the COVID-19 crisis in 2020, schools and higher education institutions were shut down to reduce the spread of the virus. Before COVID-19, many universities and ministries of education had developed long-term plans for integrating online learning. Many educational systems had already begun to use e-learning on an optional basis—very few teachers had used it under mandatory ERT circumstances (Martin & Bolliger, 2018). In a normal situation without crisis, teachers were found to have positive attitudes toward online learning; these teachers were generally provided enough time to design interactive technological activities and enjoy their implementation in their practice (Khlaif, 2018; Burgos et al., 2020). However, these teachers' positive attitudes toward e-learning use in education were due to being the only way to continue the learning process. A shift toward online learning was not enough for a mandatory switch to ERT to go smoothly, as students needed to be able to upload lectures, communicate with peers and teachers, and complete assignments.