

# Levels of Technostress Resulting from Online Learning among Language Teachers in Palestine during Covid-19 Pandemic

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**Abstract** This study examines the effect of online learning on technostress levels among language teachers in Palestine during the Covid-19 pandemic. The research method that is used is quantitative with a database of research respondents. The researchers used a scale and validated the instrument carefully to measure the technostress levels among language teachers in Palestine. The collected data were analyzed using (SPSS) to provide answers to the questions of the study. The sample consisted of 101 Palestinian English language teachers who teach at private and public schools. Results indicate that the level of technostress among Palestinian English language teachers is moderate; this shows that teachers seem to be comfortable with both styles of teaching; face to face and virtually. Other promising finding is that there were no statistically significant differences in the technical stress levels of Palestinian English language teachers in terms of gender, length of service, educational level, and levels of frequent internet use. Moreover, the results also demonstrate that technical field sores the highest rate of technostress. Technological causes related to technology ranked first in terms of technical stress levels. The researchers recommend the Palestinian Ministry of Education to enhance teachers' proficiency in using technology, specifically integrating technology into the educational process in the long run in Palestine.

**Keywords:** *technostress, Palestinian teachers, technostress levels, technology, COVID-19, social media, Learning during Covid-19*

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## 1. Introduction

This research constitutes a relatively new area that has emerged from using technology in the learning process. The fast development in using technology and its ubiquity has made teachers heavily rely on technology in their teaching-style. Teachers are extensively using technology for automating the learning process and promoting their teaching quality. Technology is widely used by all parties of the learning process i.e. administration, teachers, parents, and students [1].

Technology has proved itself to streamline education for 21st-century students through different mobile applications. Not surprisingly, teachers exponentially use technology in their teaching for its multi-benefits. Technology can

decrease paperwork, bring transparency, and facilitate distance learning. Therefore, government incentives aimed at using technology to ensure the continuation of the learning process during the Covid-19 crisis [2].

Despite the fact there are many benefits of technology, there has been an ongoing argument in understanding the negative sides of technology for end-users. Teachers are suffering from what is called "technostress". Studying technostress that is resulting from online learning during Covid-19 is now a mature field that is being spun out to be investigated. This term has been studied in the literature for years by many researchers. It can be best defined as "inability to cope with new technology." [3,4,5,6].

A careful review of previous work, there is a dearth of empirical pieces of research that have dealt with the prevalence of technostress among language teachers. Technostress can lead teachers to a decrease in their

productivity because they are not used to using technology in their teaching style. This paper proposes that teachers are facing many problems with dealing with technological apps in their teaching; therefore, the researchers intend to study the prevalence levels of technostress among English language teachers.

Based on the foregoing, the researchers use a scale and validate the instrument carefully to measure the technostress levels among English language teachers in Palestine. This paper aims at addressing the following main questions:

1. What is the level of technostress among Palestinian English language teachers?
2. What is the level of technostress among Palestinian English language teachers in terms of teaching and learning process-oriented?
3. What is the level of technostress among Palestinian English language teachers in terms of profession-oriented?
4. What is the level of technostress among Palestinian English language teachers in terms of Technical Issue Oriented?
5. What is the level of technostress among Palestinian English language teachers in terms of Social Oriented?

## 2. Literature Review

### 2.1. Advantages of Technology

Studies on technology are well documented, it is also well acknowledged that the world has been witnessing a technological revolution in all fields of life, one of which is education. It is very essential to shed light on this field particularly in the light of sudden changes such as the diffusion of the global virus of COVID-19. This situation requires physical distance to avoid the possible dangers of the virus. Technology is a wise solution that bridges the gaps in education. Fortunately, technology is available and students can use technological information everywhere and at any time [7].

Many studies have been conducted on the advantages of online learning. Shaba [8] indicated that learning through technology affected students positively and increased the chances to develop their levels of learning.

Evans and Fan [9] pointed out three advantages of investing in technology in the educational process. They are presented as follow:

- 1-The flexibility of students' learning in terms of their choices and the place of learning.
- 2- Enhancing the self-learning of students, they can learn whenever they want during the organization and management of their time.
- 3- Students can learn in a way that suits their pace without being influenced by the speed of others' learning.

Fuller [10] has confirmed the advantages of learning through E-tools, one of which is that online learning does not cost like traditional learning. It is cheaper than face-to-face learning as well as how online learning decreases the danger of cars' gases on the environment. After the pandemic has been hitting the educational

system, the instructional orientations toward making the classes live [11].

### 2.2. Disadvantages of Technology

Many authors in literature have discussed disadvantages of technology. The researchers found in the literature that teachers face difficulties in employing teaching strategies and methods in e-learning, especially in distance learning through digital media such as zoom. Moreover, some teachers do not have sufficient technological knowledge [12,13].

Some researchers believe that teaching with technology is dehumanizing. This means that some teachers deal with their students as they are machines or robots during the learning process; without considering human basis [14].

The authors bring some information about the background of the problem. It is found in the literature that using the internet is on the rise, especially in the teaching fields, whether the user is a teacher, student, or family. As a result, this constitutes to become a source of concern for users that their privacy is breached and making them feel unsafe. So, teachers' and parents' concern is increasing towards students, especially towards young students, whose privacy is compromised in technology [14].

As has been previously reported in the literature, technology has negative effects on the health and physical effects of the body, especially on those who use technology constantly. In general, those effects include frequent eye strain, headache, blood pressure, back pain, stomach problems, irritability, and heart attacks [15].

Some studies indicate that persons who work constantly for long hours in front of the computer will cause stress, burnout, and a feeling tired. As a result, this reduces performance quality, job satisfaction, and continuance commitment [16,17,18].

Saal and his colleagues' study [19] indicates that a teacher can enhance social interaction and communication between himself and with his students, however, the opposite is true for students. Saals' study has shown that students feel bored about the lesson with technology because of the teacher who manages the technological tool. This teacher's control will lead to a disruption in communication between students and their teacher. In another study [20], the absence of social communication between teacher and student can lead to many students deciding not to continue learning. As a survey of 50% of academic students in Pakistan who saw their unwillingness to continue, the survey also showed 78.6% of students felt that face-to-face communication with their teacher was important for effective learning that lacks a distance learning status.

The results of Hornaes found that technology has negative effects on student's self-efficacy. Also, results showed that few men stated that technology has negatively affected their self-efficacy, while a third of women showed that technology affects their self-efficacy [21].

Teachers take time to become familiar with computer hardware and software. Because technology producers are constantly upgrading their products, schools are always getting new computer hardware and software. This is a recurring problem in schools, and they cannot relate

between the new product and teaching goals. Teachers point out that even if they become accustomed to computers and software in their schools, teaching with them becomes less efficient than teaching with traditional methods [22].

The weakness of the infrastructure of the internet networks, the lack of technical support for any malfunction, as well as the specialists in the technological side of everything related to digital media and platforms such as Zoom and others. Teachers and students suffer from this dilemma, especially when the network is interrupted for a long time and the great pressure on the internet due to the intense and continuous use of teachers and students at the same time, as well as power cuts, or when facing any technical or technical problem in the digital platform [12].

Some teachers do not have the technical knowledge that enables them to deal with e-learning smoothly and easily, and to manage distance learning, for example, with all its requirements [12,23].

### 2.3. What is Technostress?

Current studies examine the effect of technology on our lives. Recently, technology has become an essential pillar of 21st-century careers. Previous studies show that 21st-century employees are massively using technology in their work. Some researchers believe that workers are available to communicate and work all the time due to modern technology [17]. Subsequently, stress will increase among individuals while the level of performance will decrease.

In 1984, technostress was widely known as a disease caused by an individual's inability to deal with technology [24]. Will and Rosen defined technostress as "any negative effect on attitudes, thoughts, behaviors, or body physiology caused directly or indirectly by technology" ([25], p. 5).

Recently one of the most prominent definitions of technostress has been developed as "user stress as a result of multitasking in the application and continuous communication, repeated information, repeated system improvements and the resulting uncertainty, continuous re-learning and the resulting functional insecurity and technical problems associated with the ICT use organization" (Tarafdar et al., pp. 304-305). However, one of the most accepted and widely used definitions of technostress in the literature states that "phenomenon of technostress experienced by end-users in organizations as a result of their use of information and communication technologies" (Ragu-Nathan et al. [16], pp. 417-418).

The authors bring some information about the background of the term. Some authors suggested that technostress is related to some terms like anxiety, mental exhaustion, skepticism, and ineffectiveness that is caused by the inability to focus on the use of ICTs or their future use [26]. The demands of work that can provoke technostress are called techno-stressors or technostress creators [27].

Concerning technostress levels, a thorough investigation in the literature would reveal that little research has been conducted on this area. It can be argued that researchers have been more interested in exploring this relatively new emerging phenomenon. However,

Çoklar and his colleagues developed what is called "Teachers' Techno-stress Levels Defining Scale (TTLDS)" to define teachers' technostress levels [28]. Scale development was the main goal of the study that tried to find a way for measuring teachers' technostress level. The authors argue that their study is important as "literature review didn't present any measurement instrument that can provide a multi-perspective on the reasons of techno-stress among teachers' [28]. The authors go on to clearly say that their study is a "scale development" one.

The study targeted 395 teachers where they were asked to respond to a 28-item questionnaire with five-level Likert items. The items fall into five main categories as follows: "Learning-Teaching Process Oriented", "Profession Oriented", "Technical Issue Oriented", "Personal Oriented" and "Social Oriented" [28]. The study ends up encouraging researchers who will investigate teachers' technostress to use that scale.

### 2.4. Causes of Technostress

Over time, an extensive literature has developed on the causes of technostress. Technostress' causes are classified by researchers into several classifications, the most important of which is the Meyer [29] classification. Meyer argues that these are the main causes of technostress a) functional characteristics b) organizational and c) personal characteristics of ICT users [30].

A series of recent studies have examined other causes of technostress. The researchers found the following to be the possible causes of technostress a) an overload of information: due to the large number of sources that provide workers with large amounts of information, this may result in a feeling of inability to know and control this information, which causes a feeling of burden [31]; b) due to the availability of information and communication technology intake of smartphones and devices tablets, computers, and internet connectivity are now available at any time and place. This fact reinforces the expectation that continuous communication with employees and their response to the requests of officials and operators without interruption [32]; c) the intensity of remote work [33]; (d) frequent interruptions during work due to various disturbances [34]; e) receiving many emails, and the low quality of email messages [35].

The majority of previous literature adopts the classification of Tarafdar and his colleagues. The invasion of technology for the users' lives, lack of respect for their privacy, forcing employees to work more and faster, and changing the pattern of work. Admittedly, technology users feel inadequate due to technological complexity. The loss of security sense and the fear of being replaced by those who are more proficient in using technology than them are stressing the low-skilled employees [3].

Previous research has shown that technostress causes are associated with behavioral and psychological stress outcomes [16,17,36]. Stress occurs through a virtual process where environmental demands go beyond individual resources. In this process, stress refers to psychological and behavioral responses to stress in the environment of the workplace.

Joo, Lim, and Kim show that TPACK and school support had significant effects on technostress. TPACK refers to technological-pedagogical and content knowledge Ozgur [37]. The TPACK theory simply refers to the skills that teachers should have in teaching their students. These skills include the ability to teach students a subject effectively using technology.

## 2.5. Factors that may Contribute to Alleviating the Severity of Technostress and Their Negative Effects among Lecturers and Teachers

### 2.5.1. Computer Self-efficacy

A self-effective computer refers to the general beliefs of individuals in their ability to perform any task [38]. The theory of self-efficacy states that an individual's attitude towards his or her competence in performing a particular task affects emotional response (including stress, anxiety, and feeling of overburdened) and actions [39]. Computer self-effectiveness is defined on a self-foundation basis that shows a person's confidence or attitude to their ability to use technologies [40].

Teachers' self-competence beliefs regarding their ability to use certain technologies are a very important factor in shaping their attitudes to technologies and the way teachers integrate and use technologies in teaching [41,42]. The results of previous studies indicate that computer high self-efficacy has contributed to solving difficulties and mitigating the negative effects of computer technology [43,44]. Besides, if teachers are more self-sufficient in technology integration, it may mean that teachers have a higher TPACK [45,46]. Therefore, this study can assume that working to strengthen Computer Self-efficacy effects among lecturers and teachers may contribute to alleviating the severity of technostress and their negative effects on them.

### 2.5.2. TPACK Framework

Shulman [47] developed the TPACK framework to provide qualified teachers with educational content knowledge (PCK) that combines content knowledge (CK) and pedagogical knowledge (PK), to design and organize curricula that meet students' needs and their different interests. With the arrival of the information age, the ability of teachers in the educational uses of technology was one of the key elements of educational innovation [48]. Koehler and Mishra [49] proposed additional knowledge arising from the synthesis of PK, CK, and technological knowledge (TK) as technological content knowledge (TCK), technological pedagogical knowledge (TPK), and technological pedagogical content knowledge (TPCK/TPACK).

Teachers must have comprehensive knowledge and skills to adapt to educational technology. Teachers' lack of TPACK-rated knowledge is one of the main constraints on teachers' technological integration. Teachers with comprehensive knowledge and skills need to adapt educational technology in the design and organization of curricula in effective ways [50]. The absence of TPACK has been identified as one of the main barriers to technological integration [51,52].

Studies indicate that there is a negative relationship between the TPACK and the technostress of teachers regarding computer use. Research has indicated that the high level of TPACK teachers has reduced teacher training concerning computer use [53].

### 2.5.3. School Support

Support from the school environment is described as the main factor for promoting teachers' intention to use technology [54,55,56]. Therefore, a strong infrastructure and pedagogical technological support must be provided and established to facilitate the use of e-learning technology. School support is also shown through mutual assistance, collaboration, psychological and knowledge support, and fellow teacher administrative support [57,58].

## 3. Research Methodology

This study applied the descriptive-analytical method. Based on Brown & Rodgers ([59]: 117) Brown and Rodgers ([59]: 117) definition, a descriptive study is "a research that describes group characteristics or behaviors in numerical terms." To achieve this, the design was quantitative design to explore the levels of technostress among Palestinian EFL teachers in the scholastic year 2020\2021. This study has adopted a 28-item questionnaire. The questionnaire was distributed to teachers online via google form because of Covid 19 lockdown.

### 3.1. Instrument

This study adopted a 28-item questionnaire developed by Turkish researchers. It is a five-Lickert questionnaire that includes five domains to be investigated: teaching and learning process-oriented, profession-oriented, technical issues-oriented, personal-oriented, and social-oriented.

To achieve the objectives of the study, the researchers used a questionnaire consisted of two sections; the first focused on the demographic profile such as gender, experience, study level, and Frequency of using the internet. The scores of responses to each item were calculated according to a five-point Likert scale, in which Strongly Totally Agree =5 points, Agree =4 points, Undecided = 3, Disagree = 2 points, and Totally Disagree = 1 point.

### 3.2. Validity

The Turkish experts have approved the validity of the original questionnaire. In terms of the questionnaire's content and face validity for this study, a panel of experts comprised of two assistant professors of English language and literature and two non-native EFL teachers with a master's degree in ELT was asked to assess its comprehensiveness acceptability, and clarity. Two items were deleted from the questionnaire. The researchers acted after receiving input from these four experts. Cronbach alpha reached 0.96.

To ensure the validity of the questionnaires, it was rated by a jury of experts in the field of TEFL and Education at the Faculties of Education and Arts at the Palestinian

universities. The respondents' comments and the jury's suggestions were taken into consideration to modify and improve the questionnaire's content and wordings by omitting, adding, or rephrasing items bringing the number of items from 30 to 28 the final drafts.

### 3.3. Reliability of the Questionnaire

The reliability of the questionnaire was calculated through the Cronbach Alpha formula. Cronbach Alpha coefficient was (0.956) for the questionnaire. This value is excellent and acceptable for the study.

### 3.4. Sample

The participants of the study were the Palestinian English language teachers in the academic year 2020/2021. The questionnaire was distributed via google form in all educational groups on social websites including Facebook and WhatsApp. Only 101 questionnaires were answered. Male teachers outnumber females. The number of male language teachers who responded was 85, constituting 84.2%, while the number of female language teachers responding to was 16, constituting 15.8%.

The sample consisted of 101 Palestinian English language teachers in Palestine in the academic year 2021/2012 as shown in [Table 1](#).

**Table 1. Distribution of Teachers' Sample According to Study Independent Variables**

Variable	Class	Frequency	Percentage %
Gender	Female	16	15.8
	Male	85	84.2
Experience	Less than 5 years	12	11.9
	5-10 years	26	25.7
	11-15 years	18	17.8
	16 or more	45	44.6
Level of Education	Primary	36	35.6
	Secondary	26	25.7
	High School	39	38.6
Frequency of using the Internet	1-2 hours a week	5	5.0
	1-2 hours a day	23	22.8
	3-4 hours a day	24	23.8
	3-4 hours a week	16	15.8
	More than 4 hours a day	33	32.7
<b>Total</b>		<b>101</b>	<b>100%</b>

### 3.5. Data Analysis

The data collected were analyzed using (SPSS) to provide answers to the questions of the study. Means,

frequencies, standard deviations, t-tests for Independent Samples, and One-Way Analysis of Variance (ANOVA). To analyze the findings, the researchers used the following scale to represent the estimation level of students' responses.

- 4.5 4.50 and more: Very High
- 4 – 4.49: High
- 3-50–3.99: Moderate
- 3- 3- 3.49 Low
- less than 3: Very Low

## 4. Results and Discussion

This section describes the data obtained concerning the study questions. The results related to each question were presented in tables, where means and standard deviations are shown. The researchers interpret such findings based on their understanding of the Palestinian contexts.

### 4.1. Results Related to Study Questions

#### 1-Results related to the First Question

*Q 1: What is the level of technostress among Palestinian English language teachers?*

[Table 2](#) demonstrates that the level of technostress among Palestinian English language teachers is moderate (3.08). Interestingly, the technical factors related to the use of technology in the teaching process come in the first place with an average of (3.53). However, the personal factors constitute the least factors that lead to technostress with an average of (2.65).

Such results are not surprising for the researcher for many reasons. Most importantly, it can be argued that the Palestinian English language teachers rarely merge technology in teaching in the traditional face-to-face mode. With the rapid shift to E-learning due to the spread of the COVID-19 pandemic in Palestine, teachers have been forced to instruct online using different computer-mediated applications. Such movement has noticeably affected the English teachers' performance when adopting e-learning.

#### 2-Results related to the Second Question.

*What is the level of technostress among Palestinian English language teachers in terms of teaching and learning process-oriented?*

To answer this question, the researchers used means and standard deviations, and estimation levels are calculated as shown in [Table 3](#).

**Table 2. Levels of the technostress among Palestinian English language teachers**

No.	No. in the Questionnaire	Domains	Means	Standard deviations	Percentage %	Estimated level
1	3	Technical Issue Oriented	3.53	1.21	70.6	Moderate
2	5	Social Oriented	3.33	1.22	66.6	Low
3	1	<b>Learning-Teaching Process Oriented</b>	3.00	1.06	60.0	Low
4	2	<b>Profession Oriented</b>	2.89	1.09	59.8	Very Low
5	4	<b>Personal Oriented</b>	2.65	1.09	53.0	Very Low
Total			3.08	0.90	61.6	Moderate

**Table 3. Levels of technostress among Palestinian English language teachers in terms of learning-teaching process factors**

No.	Item	Means	Standard deviations	Percentage %	Estimated level
1	The idea that I won't be able to teach the whole course content, because technology use takes time makes me anxious.	2.91	1.44	58.2	Very Low
2	I think, that technology use requires more effort in the classroom, affects technology use negatively	3.19	1.54	63.8	Low
3	I feel forced to become more dependent on the Internet in the educational process.	3.49	1.57	69.8	Low
4	I am worried because digital-technology-oriented materials are becoming more common in the educational process.	2.86	1.42	57.2	Very Low
5	I feel uncomfortable that, technological devices are used for extra-curricular purposes during the lessons by the students.	2.79	1.43	55.8	Very Low
6	I feel uncomfortable that technology leads everyone in the educational environments to laziness and free riding.	3.03	1.44	60.6	Low
7	I am worried that technology use blunts students' research skills.	2.74	1.368	54.8	Very Low
Total		3.00	1.06	60.0	Low

An examination of [Table 3](#) demonstrates that the total degree for the level of technostress among Palestinian English language teachers in terms of the teaching-learning process is low (3.00). Questionnaire statement 3, which is about forcing teachers to use the internet in the educational process, comes in the first place with an average of (3.49). This result reveals that English teachers still consider e-learning education an obligatory process at least at the time of data collection. It is not an option at all, especially in the presence of the COVID-19 pandemic.

However, questionnaire statement 7 which is about the technology's role in blunting students' research skills got the lowest average (2.74). Undeniably, students enjoy learning through technology-based applications. Thus, technology does not affect students' willingness to search for a given piece of information. On the contrary, the researchers believe that technology positively enhances students' research skills.

### 3-Results related to the Third Question.

*What is the level of technostress among Palestinian English language teachers in terms of profession-oriented?*

To answer this question, the researchers used means and standard deviations, and estimation levels are calculated as shown in [Table 4](#).

[Table 4](#) demonstrates that the total degree for the level of technostress among Palestinian English language teachers in terms of profession-oriented is very low (2.89). This might be ascribed to the fact that English language teachers are forced to stay at their jobs regardless of obstacles. They have to find coping strategies to meet the emerging challenges, particularly e-learning. The highest

mean was given to the questionnaire statement 13 where teachers think technology increased their workload. This important finding suggests e-learning has negatively affected the teachers. Teachers are required to prepare digital materials, develop their technological competencies and further deliver the intended outcomes online. Such tasks are considered an additional burden on teachers.

On the other hand, teachers are less worried about losing their prestige when compared with the newer teacher who can use technology better (questionnaire statement 12). It seems that English language teachers are self-confident and do not care about the new teacher who is more capable of using technology.

### 4-Results related to the Fourth Question.

*What is the level of technostress among Palestinian English language teachers in terms of Technical Issue Oriented?*

To answer this question, the researchers used means and standard deviations, and estimation levels are calculated as shown in [Table 5](#).

A thorough look at the [Table 5](#) shows that the total degree for the level of technostress among Palestinian English language teachers in terms of technical issues is moderate (3.53). It is clear that English language teachers are more worried when it comes to dealing with technological information like passwords and account numbers (questionnaire statement 16). As stated earlier, this is the first time for English language teachers to shift to e-learning, where technology has constituted the main barrier for them. Therefore, it is normal that English language teaching experience such difficulties.

**Table 4. level of technostress among Palestinian English language teachers in terms of profession-oriented factors**

No.	Item	Means	Standard deviations	Percentage %	Estimated level
8	I think technology use makes the teaching profession more difficult.	2.69	1.49	53.8	Very Low
9	I think the teaching profession is losing its value because information sources have become technology-oriented.	2.87	1.41	57.4	Low
10	I am worried that educational understanding might change because of technological devices.	3.21	1.57	64.2	Low
11	I am worried that I might get unemployed in the future due to technology use.	2.52	1.46	50.4	Very Low
12	I am worried that I might lose prestige because newer teachers can use technology better.	2.43	1.44	48.6	Very Low
13	I think technology use increased teachers' workload.	3.62	1.548	62.4	Moderate
Total		2.89	1.09	59.8	Very Low

**Table 5. Level of technostress among Palestinian English language teachers in terms of technical oriented factors**

No.	Item	Means	Standard deviations	Percentage %	Estimated level
14	I feel uncomfortable, as I am constantly worried about infecting technologies with viruses.	3.15	1.43	63.0	Low
15	I am worried that data I store in digital environments (memory sticks, Internet, etc.) can be lost, or change hands.	3.45	1.50	69.0	Low
16	I am worried because there is too much information (password, account name, etc.) to remember for technological environments, and I might forget this.	3.78	1.49	75.6	Moderate
17	I feel uncomfortable because technology costs a lot (purchase, repair, and maintenance, paid websites, etc.).	3.59	1.49	71.8	Moderate
18	I am worried about the negative effects of technological devices within the classroom (noise, heating, etc.).	3.47	1.55	69.4	Low
19	I am worried about the security of technological devices (storing, keeping, etc.) at the school.	3.72	1.50	74.4	Moderate
Total		3.53	1.21	70.6	Moderate

English language teachers, on the other hand, are less worried when it comes to virus infection (i.e. questionnaire statement 14). Such a result could be attributed to the fact that teachers are not familiar with the technical aspects of viruses including their impact.

### 5-Results related to the Fifth Question.

What is the level of technostress among Palestinian English language teachers in terms of Personal Oriented?

To answer this question, the researchers used means and standard deviations, and estimation levels are calculated as shown in Table 6.

Table 6 shows that the total degree for the level of technostress among Palestinian English language teachers in terms of personal oriented factors is very low (2.65). English language teachers are more worried about technology use due to the necessity to keep up with constantly developing technology (questionnaire statement 21). On the contrary, they are less worried about their learning ability to use technology (questionnaire statement 21) with an average of (2.41).

Overall, the very low level of technostress related to this domain could be attributed to the fact that the Palestinian teachers constantly develop their skills in

different fields. Besides, they easily manage the challenges they face, especially if such challenges are personal ones.

### 6-Results related to the sixth Question.

What is the level of technostress among Palestinian English language teachers in terms of Social Oriented?

To answer this question, the researchers used means and standard deviations, and estimation levels are calculated as shown in Table 7.

Table 7 shows that the total degree for the level of technostress among Palestinian English language teachers in terms of social-oriented factors is low (3.33). Respondents believe that the social interaction between everyone in the educational processes is damaged due to technology use (questionnaire statement 26). Undeniably, e-learning not only affected the intended learning outcomes but also it has negatively decreased the interactive side of the educational process. Respondents, on the other hand, are less worried about having problems with their colleagues about technology use (questionnaire statement 27) with an average of (2.76). Being in a formal environment, teachers are supposed to act professionally.

**Table 6. Levels of technostress among Palestinian English language teachers in terms of personal oriented factors**

No.	Item	Means	Standard deviations	Percentage %	Estimated level
20	I am worried that I might not be able to learn using technology, even if I want to.	2.41	1.25	48.2	Very Low
21	I am worried about technology use, due to the necessity to keep up with constantly developing technology.	3.03	1.50	60.6	Low
22	I feel uncomfortable being dependent on individuals who are better at using technology.	2.77	1.50	55.4	Very Low
23	I might give up on using technology, as I cannot find sufficient opportunities for technology education.	2.46	1.33	49.2	Very Low
24	I am uncomfortable because I am not familiar with the terminology used in defining new technologies.	2.57	1.37	51.4	Very Low
Total		2.65	1.09	53.0	Very Low

**Table 7. Levels of technostress among Palestinian English language teachers in terms of social-oriented factors**

No.	Item	Means	Standard deviations	Percentage %	Estimated level
25	I feel uncomfortable that, digital technology use takes too much time.	3.46	1.55	69.2	Very Low
26	I think social interaction between everyone in the educational processes is damaged due to technology use.	3.44	1.54	68.8	Low
27	I am worried that I can have problems with my colleagues about technology use.	2.76	1.35	55.2	Very Low
28	I am worried that technology use can cause health problems (sight, hearing, pain, etc.).	3.68	1.51	73.6	Very Low
Total		3.33	1.22	66.6	Low

## 4.2. Results Related to Study Hypothesis

1. Results related to the first hypotheses, which is: There are no significant differences in the levels of

technostress among Palestinian English language teachers in terms of gender.

To answer the hypotheses, t-tests for Independent Samples, was used and the following table shows the results:

**Table 8. T-test for Independent Samples of the levels of technostress among Palestinian English language teachers in terms of gender:**

Domain	Gender	N	Mean	S. D	t	Sig.*
Learning-Teaching Process Oriented	Male	16	3.03	1.01	0.122	0.903
	Female	85	3.00	1.08		
Profession Oriented	Male	16	3.15	.97	1.038	0.302
	Female	85	2.84	1.12		
Technical Issue Oriented	Male	16	3.52	1.13	0.001	0.998
	Female	85	3.53	1.24		
Personal Oriented	Male	16	2.90	0.99	0.980	0.329
	Female	85	2.60	1.11		
Social Oriented	Male	16	3.21	1.10	-0.427	0.670
	Female	85	3.36	1.24		
Total degree	Male	16	3.16	0.87	0.401	0.689
	Female	85	3.06	0.91		

\*. The mean difference is significant at the 0.05 level.

Table 8 shows that there are no statistically significant differences in the levels of technostress among Palestinian English language teachers in terms of gender. The significant value was (0.689) which is more than (0.05). Also, no statistically significant differences in the five domains.

2. Results Related to Second Hypotheses Which is: There are no significant differences in the levels of technostress among Palestinian English language teachers in terms of length of service.

To answer the hypothesis, the One Way ANOVA test was used and the following tables show the results:

**Table 9. Frequencies, Means and Standards Deviations of the levels of technostress among Palestinian English language teachers in terms of length of service for the total degree**

length of service (Total Degree)	N	Mean	S.D	
the levels of technostress among Palestinian English language teachers in terms of length of service	Less than 5 years	12	3.34	.75
	5-10 years	26	3.20	1.01
	11-15 years	18	3.10	0.84
	16 or more	45	2.93	0.89
	Total	101	3.08	0.90

Table 9 shows that there are differences in means of the levels of the *length of service*. To show these differences, the One Way ANOVA test was used and Table 10 shows the results:

**Table 10. Results of One Way ANOVA of the levels of technostress among Palestinian English language teachers in terms of length of service**

Domain	Experience	Sum of Squares	df	Mean Square	F	Sig.
Learning-Teaching Process Oriented	Between Groups	7.184	3	2.395	2.181	0.095
	Within Groups	106.487	97	1.098		
	<b>Total</b>	113.670	100			
Profession Oriented	Between Groups	2.980	3	0.993	0.817	0.488
	Within Groups	118.004	97	1.217		
	<b>Total</b>	120.985	100			
Technical Issue Oriented	Between Groups	1.581	3	0.527	0.347	0.791
	Within Groups	147.180	97	1.517		
	<b>Total</b>	148.762	100			
Personal Oriented	Between Groups	1.266	3	0.422	0.344	0.793
	Within Groups	118.885	97	1.226		
	<b>Total</b>	120.151	100			
Social Oriented	Between Groups	4.140	3	1.380	0.919	0.435
	Within Groups	145.683	97	1.502		
	<b>Total</b>	149.823	100			
<b>Total</b>	Between Groups	2.240	3	0.747	0.911	0.439
	Within Groups	79.525	97	0.820		
	<b>Total</b>	81.766	100			

\* The mean difference is significant at the 0.05 level.



Table 11 shows that there are no statistically significant differences in the levels of technostress among Palestinian English language teachers in terms of length of service. The significant value was (0.439) which is more than (0.05). Also, no statistically significant differences in the five domains.

3. Results Related to Third Hypotheses Which is: There are no significant differences in the levels of technostress among Palestinian English language teachers in terms of the level of education.

To answer the hypothesis, the One-Way ANOVA test was used and the following tables show the results:

**Table 11. Frequencies, Means and Standards Deviations of the levels of technostress among Palestinian English language teachers in terms of the level of education for the total degree**

level of education (Total Degree)		N	Mean	S.D
the levels of technostress among Palestinian English language teachers in terms of length of service	Primary	36	3.08	0.95
	Secondary	26	3.11	0.88
	High School	39	3.06	0.89
	Total	101	3.08	0.90

Table 11 shows that there are differences in means of the levels of the length level of education. To show these differences, the One Way ANOVA test was used and Table 12 shows the results

**Table 12. Results of One Way ANOVA of the levels of technostress among Palestinian English language teachers in terms of the level of education**

Domain	Experience	Sum of Squares	df	Mean Square	F	Sig.
Learning-Teaching Process Oriented	Between Groups	1.048	2	0.524	0.456	0.635
	Within Groups	112.622	98	1.149		
	<b>Total</b>	113.670	100			
Profession Oriented	Between Groups	0.814	2	0.407	0.332	0.718
	Within Groups	120.171	98	1.226		
	<b>Total</b>	120.985	100			
Technical Issue Oriented	Between Groups	0.947	2	0.474	0.314	0.731
	Within Groups	147.815	98	1.508		
	<b>Total</b>	148.762	100			
Personal Oriented	Between Groups	0.119	2	0.059	0.049	0.953
	Within Groups	120.032	98	1.225		
	<b>Total</b>	120.151	100			
Social Oriented	Between Groups	0.446	2	0.223	0.146	0.864
	Within Groups	149.377	98	1.524		
	<b>Total</b>	149.823	100			
<b>Total</b>	Between Groups	0.038	2	0.019	0.023	0.978
	Within Groups	81.728	98	0.834		
	<b>Total</b>	81.766	100			

\* The mean difference is significant at the 0.05 level.

Table 12 shows that there are no statistically significant differences in the levels of technostress among Palestinian English language teachers in terms of the level of education. The significant value was (0.978) which is more than (0.05). Also, no statistically significant differences in the five domains.

4. Results Related to Third Hypotheses which is: There are no significant differences in the levels of technostress among Palestinian English language teachers in terms of the level of internet use frequently.

To answer the hypothesis, the One Way ANOVA test was used and the following tables show the results:

**Table 13. Frequencies, Means and Standards Deviations of the levels of technostress among Palestinian English language teachers in terms of the level of internet use frequently for the total degree**

level of education (Total Degree)		N	Mean	S.D
the levels of technostress among Palestinian English language teachers in terms of length of service	1-2 hours a week	5	4.00	0.41
	1-2 hours a day	23	3.23	0.91
	3-4 hours a day	24	2.79	0.90
	3-4 hours a week	16	3.24	0.86
	More than 4 hours a day	33	2.97	0.88
	Total	101	3.08	0.90

Table 13 shows that there are differences in means of the levels of the level of internet use frequently. To show these differences, the One Way ANOVA test was used and Table 14 shows the results

**Table 14. Results of One Way ANOVA of the levels of technostress among Palestinian English language teachers in terms of the level of internet use frequently**

Domain	Experience	Sum of Squares	df	Mean Square	F	Sig.
Learning-Teaching Process Oriented	Between Groups	6.853	4	1.713	1.540	0.197
	Within Groups	106.817	96	1.113		
	<b>Total</b>	113.670	100			
Profession Oriented	Between Groups	7.667	4	1.917	1.624	0.175
	Within Groups	113.318	96	1.180		
	<b>Total</b>	120.985	100			
Technical Issue Oriented	Between Groups	6.492	4	1.623	1.095	0.363
	Within Groups	142.270	96	1.482		
	<b>Total</b>	148.762	100			
Personal Oriented	Between Groups	19.168	4	4.792	4.555	0.052
	Within Groups	100.983	96	1.052		
	<b>Total</b>	120.151	100			
Social Oriented	Between Groups	12.671	4	3.168	2.217	0.073
	Within Groups	137.152	96	1.429		
	<b>Total</b>	149.823	100			
<b>Total</b>	Between Groups	7.524	4	1.881	2.432	0.053
	Within Groups	74.242	96	0.773		
	<b>Total</b>	81.766	100			

\* The mean difference is significant at the 0.05 level.

Table 14 shows that there are no statistically significant differences in the levels of technostress among Palestinian English language teachers in terms of the level of internet use frequently. The significant value was (0.053) which is more than (0.05). Also, no statistically significant differences in the five domains.

## 5. Conclusion and Recommendation

In light of the present study results, it is clear that EFL teachers' technical skills are poor. The researchers recommended that the competent Palestinian authorities develop technical courses in line with this century's technological development and let teachers be ready for any inconvenience. They also recommended providing teachers with laptops and internet service to facilitate their mission. Finally, regarding recommendations for future studies, to study the technostress levels on Palestinian teachers of other subjects such as science and mathematics. The coming researchers can study the relationship between teachers' technostress levels and their motivations toward online teaching.

## References

- [1] Wang, B., Deng, K., Wei, W., Zhang, S., Zhou, W., & Yu, S. (2018). Full Cycle Campus Life of College Students: A Big Data Case in China. 2018 IEEE International Conference on Big Data and Smart Computing (BigComp), 507-512.
- [2] Dunn, T.J., & Kennedy, M. (2019). Technology Enhanced Learning in higher education; motivations, engagement and academic achievement. *Comput. Educ.*, 137, 104-113.
- [3] Tarafdar, M., Tu, Q., Ragu-Nathan, B. S., & Ragu-Nathan, T. (2007). The impact of technostress on role stress and productivity. *Journal of Management Information Systems.*, 24(1), 301-328.
- [4] Tarafdar, M., Tu, Q., Ragu-Nathan, T. S., & Ragu-Nathan, B. S. (2011b). Crossing to Environmental Health, 92(1), 13-35.
- [5] Tarafdar, M., Cooper, C., & Stich, J. (2019). The technostress trifecta - techno eustress, techno distress and design: Theoretical directions and an agenda for research. *Information Systems Journal*, 29, 42-6.
- [6] Torre, G.L., Esposito, A., Sciarra, I., & Chiappetta, M. (2018). Definition, symptoms and risk of techno-stress: a systematic review. *International Archives of Occupational and Environmental Health*, 92, 13-35.
- [7] Hodes, D. (2019). Information Technology Everywhere, All The Time. Retrieved December 7, 2020, from: <http://bxjmag.com/information-technology-everywhere-all-the-time>.
- [8] SHABHA, G. (2000). Virtual universities in the third millennium: an assessment of the implications of teleworking on university building and space planning Facilities, 18(5/6). (accessed 7th December 2020) [https://www.researchgate.net/publication/243460668\\_Virtual\\_universities\\_in\\_the\\_third\\_millennium\\_An\\_assessment\\_of\\_the\\_implications\\_of\\_teleworking\\_on\\_university\\_buildings\\_and\\_space\\_planning](https://www.researchgate.net/publication/243460668_Virtual_universities_in_the_third_millennium_An_assessment_of_the_implications_of_teleworking_on_university_buildings_and_space_planning).
- [9] Evans, C. & Fan, F. (2002) Lifelong learning through the virtual university Campus-Wide Information Systems, 19(4). (accessed 7th December 2020). <https://www.emerald.com/insight/publication/issn/1065-0741>.
- [10] Fuller, C. (2009). Advantages and Disadvantages of eLearning. Retrieved December 7, 2020 from <https://ezinearticles.com/?Advantages-and-Disadvantages-to-eLearning&id=2729026>.
- [11] Owusu-Fordjour, C., Koomson, C.K., & Hanson, D. (2020). T the impact of Covid-19 on learning – The perspective of the Ghanaian students. *European Journal of Education Studies*. <https://oapub.org/edu/index.php/ejes/article/view/3000>.
- [12] Bachiri, H., & Sahli, R. (2020). International Journal of Language and Literary Studies. *International Journal of Language and Literary Studies*, 2(3), 240-256.
- [13] Rasmitadila, Aliyyah, R. R., Rachmadtullah, R., Samsudin, A., Syaodih, E., Nurtanto, M., & Tambunan, A. R. S. (2020). The perceptions of primary school teachers of online learning during the covid-19 pandemic period: A case study in Indonesia. *Journal of Ethnic and Cultural Studies*, 7(2), 90-109.
- [14] Mantiri, F. (2014). Multimedia and Technology in Learning. *Universal Journal of Educational Research*, 2(9), 589-592.
- [15] Tams, S., Hill, K., & Thatcher, J. (2013). NeuroIS: Alternative or complement to existing methods? Illustrating the holistic effects of neuroscience and self-reported data in the context of technostress

- research. *Journal of the Association for Information Systems*, 15(10), 723-753.
- [16] Ragu-Nathan, T. S., Tarafdar, M., Ragu-Nathan, B. S., & Tu, Q. (2008). The consequences of technostress for end users in organizations: Conceptual development and validation. *Information Systems Research*, 19(4), 417-433
- [17] Ayyagari, R., Grover, V., & Purvis, R. (2011). Technostress: Technological antecedents and implications. *MIS Quarterly*, 35(4), 831-858.
- [18] Mahapatra, M. & Pati, S. P. (2018). Technostress creators and burnout a job demands-resources perspective. In Aubert, B., Compeau, D. & Tarafdar, M. (Eds.) *Proceedings of the 2018 ACM SIGMIS conference on computers and people research*, (pp. 70–77). New York, USA: Association for Computing Machinery.
- [19] Saal, P. E., van Ryneveld, L., & Graham, M. A. (2019). The Relationship between using Information and Communication Technology in Education and the Mathematics Achievement of Students. *International Journal of Instruction*, 12(3), 405-424.
- [20] Adnan, M. & Anwar, A. (2020). Online learning amid the COVID-19 pandemic: Students perspectives. *Journal of Pedagogical Research*, 1(2), 45-51.
- [21] Hornaes, H. P., & Royrvik, O. (2000). Aptitude, gender, and computer algebra systems. *Journal of Engineering Education*, 89(3), 323.
- [22] Dogan, T., & Ilhan, V. (2006). In Annual Proceedings of Selected Research and Development [and] Practice Papers Presented at the National Convention of the Association for Educational Communications. In *Technology Explosion and Its Impact on Education*. <https://files.eric.ed.gov/fulltext/ED470179.pdf>.
- [23] Uluyol, C. & Sahin, S. (2016). Elementary School Teachers' ICT Use in the Classroom and Their Motivators for Using ICT. *British Journal of Educational Technology*, 47(1), PP 65-75.
- [24] Brod, C. (1984). Technostress: The human cost of the computer revolution. Reading, Mass.: Addison-Wesley.
- [25] Weil, M.M., & Rosen, L.D. (1997). TechnoStress: Coping with Technology @Work @Home @Play.
- [26] Salanova, Cifre & Nogareda, (2007). Salanova, M., Llorens, S., & Ventura, M. (2014). Technostress: The Dark Side of Technologies. Technostress among users of information and communication technologies, *International Journal of Psychology*, 48:3, 422-436.
- [27] Molino, M., Ingusci, E., Signore, F., Manuti, A., Giancaspro, M. L., Russo, V., ... & Cortese, C. G. (2020). Wellbeing Costs of Technology use during Covid-19 remote working: An investigation using the Italian translation of the technostress creators scale. *Sustainability*, 12(15), 591.
- [28] Çoklar, Efilti, & Sahin, (2017). Çoklar, A., Efilti, E., & Sahin, Y. (2017). Defining Teachers' Technostress Levels: A Scale Development. *Journal of Education and Practice*, 8, 28-41.
- [29] Meyer, B. (2012). Mediation and the genesis of presence. Towards a material approach to religion.
- [30] Oladosu, K. K., Alasan, N. J., Iboronke, E. S., Ajani, H. A., & Jimoh, T. A. (2020). Learning with Smart Devices: Influence of Technostress on Undergraduate Students' Learning at University of Ilorin, Nigeria. *International Journal of Education and Development using Information and Communication Technology*, 16(2), 40-47
- [31] Derks, D., van Mierlo, H., & Schmitz, E. B. (2014). A diary study on work-related smartphone use, psychological detachment and exhaustion: examining the role of the perceived segmentation norm. *Journal of occupational health psychology*, 19(1), 74.
- [32] Ghislieri, C., Emanuel, F., Molino, M., Cortese, C. G., & Colombo, L. (2017). New technologies smart, or harm work-family boundaries management? Gender differences in conflict and enrichment using the JD-R theory. *Frontiers in psychology*, 8, 1070
- [33] Suh, A., & Lee, J. (2017). Understanding teleworkers' technostress and its influence on job satisfaction. *Internet Research*.
- [34] Ninaus, K., Diehl, S., Terlutter, R., Chan, K., & Huang, A. (2015). Benefits and stressors – Perceived effects of ICT use on employee health and work stress: An exploratory study from Austria and Hong Kong. *International Journal of Qualitative Studies on Health and Well-being*, 10(1), 28838.
- [35] Brown, R., Duck, J., & Jimmieson, N. (2014). E-mail in the workplace: The role of stress appraisals and normative response pressure in the relationship between e-mail stressors and employee strain. *International Journal of Stress Management*, 21(4), 325.
- [36] Al-Fudail, M., & Mellar, H. (2008). Investigating teacher stress when using technology. *Computers & Education*.
- [37] Özgür, H. (2020). Relationships between teachers' technostress, technological pedagogical content knowledge (TPACK), school support and demographic variables: A structural equation modeling. *Computers in Human Behavior*, 112, 106468.
- [38] Bandura, A. (1986). Social foundations of thought and action. Englewood Cliffs, NJ, 1986, 23-28]
- [39] Bandura, A. (1997). The anatomy of stages of change. *American journal of health promotion: AJHP*, 12(1), 8-1.
- [40] Compeau, D. R., & Higgins, C. A. (1995). Computer self-efficacy: Development of a measure and initial test. *MIS quarterly*, 189-21.
- [41] Blonder, R., Jonatan, M., Bar-Dov, Z., Benny, N., Rap, S., & Sakhnini, S. (2013). Can You Tube it? Providing chemistry teachers with technological tools and enhancing their self-efficacy beliefs. *Chemistry Education Research and Practice*, 14(3), 269-285.
- [42] Yesilyurt, E., Ulas, A. H., & Akan, D. (2016). Teacher self-efficacy, academic self-efficacy, and computer self-efficacy as predictors of attitude toward applying computer-supported education. *Computers in Human Behavior*, 64, 591-601.
- [43] Paul, N., & Glassman, M. (2017). Relationship between internet self-efficacy and internet anxiety: A nuanced approach to understanding the connection. *Australasian Journal of Educational Technology*, 33(4).
- [44] Shu, Q., Tu, Q., & Wang, K. (2011). The impact of computer self-efficacy and technology dependence on computer-related technostress: A social cognitive theory perspective. *International Journal of Human-Computer Interaction*, 27(10), 923-939.
- [45] Lopez-Vargas, O., Duarte-Sua'ez, L., & Iba'nez-Iba'nez, J. (2017). Teacher's computer self-efficacy and its relationship with cognitive style and TPACK. *Improving Schools*, 20(3), 264-277
- [46] Semiz, K., & Ince, M. L. (2012). Pre-service physical education teachers' technological pedagogical content knowledge, technology integration self-efficacy and instructional technology outcome expectations. *Australasian Journal of Educational Technology*, 28(7).
- [47] Shulman, L.S. (1986). Those Who Understand: Knowledge Growth in Teaching. *Educational Researcher*, 15, 14-4.
- [48] Pineida, F. O. (2011). Competencies for the 21st century: integrating ICT to life, school and economic development. *Procedia-Social and Behavioral Sciences*, 28, 54-57.
- [49] Koehler, M. J., & Mishra, P. (2005). What happens when teachers design educational technology? The development of technological pedagogical content knowledge. *Journal of Educational Computing Research*, 32(2), 131-152.
- [50] Schmidt, D. A., Baran, E., Thompson, A. D., Mishra, P., Koehler, M. J., & Shin, T. S. (2009). Technological pedagogical content knowledge (TPACK) the development and validation of an assessment instrument for preservice teachers. *Journal of research on Technology in Education*, 42(2), 123-149.
- [51] Blackwell, C. K., Lauricella, A. R., & Wartella, E. (2016). The influence of TPACK contextual factors on early childhood educators' tablet computer use. *Computers & Education*, 98, 57-69.
- [52] Koh, J. H. L., Chai, C. S., & Lim, W. Y. (2017). Teacher professional development for TPACK-21CL: Effects on teacher ICT integration and student outcomes. *Journal of Educational Computing Research*, 55(2), 172-196.
- [53] Joo, Y. J., Lim, K. Y., & Kim, N. H. (2016). The effects of secondary teachers' technostress on the intention to use technology in South Korea. *Computers & Education*, 95, 114-122.
- [54] Drossel, K., Eickelmann, B., & Gerick, J. (2017). Predictors of teachers' use of ICT in school—the relevance of school characteristics, teachers' attitudes and teacher collaboration. *Education and Information Technologies*, 22(2), 551-573.
- [55] Eickelmann, B., Gerick, J., & Koop, C. (2017). ICT use in mathematics lessons and the mathematics achievement of secondary school students by international comparison: Which role do school level factors play?. *Education and Information Technologies*, 22(4), 1527-1551.
- [56] Inan, F. A., & Lowther, D. L. (2010). Factors affecting technology integration in K-12 classrooms: A path model. *Educational Technology Research and Development*, 58(2), 137-154.

- [57] Brown, S. A., Dennis, A. R., & Venkatesh, V. (2010). Predicting collaboration technology use: Integrating technology adoption and collaboration research. *Journal of Management Information Systems*, 27(2), 9-54.
- [58] Weber, D. M., & Kauffman, R. J. (2011). What drives global ICT adoption? Analysis and research directions. *Electronic commerce research and applications*, 10(6), 683-701.
- [59] Brown, J. D., & Rodgers, T. S. (2002). *Doing second language research*. New York: Oxford University Press.



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