Turkish Online Journal of Qualitative Inquiry (TOJQI)
Volume 7, Issue 2, April 2016: 71-96 / Cilt 7, Sayı 2, Nisan 2016: 71-96
DOI: 10.17569/tojqi.96082

Research Article / Araştırma Makalesi

Determining the Reasons of Technostress Experienced by Teachers: A Qualitative Study

Ahmet Naci Çoklar[1], Erkan Efilti[2], Yusuf Levent Şahin[3], Arif Akçay[4]

Abstract

In recent years, especially means of information and communication technologies are intensively tried to be integrated into education period in educational fields. In this period, leadership and teachers who shape the ways to use this technology play an important role. Therefore, teachers are expected to use an intensive amount of technology following the technological investments in education fields required by the ministry in recent years. However, this expectation also brings some negative issues into the agenda. One of them is the stress caused by technology, namely; technostress. Technostress is defined as the price of technology use. The purpose of this study is to determine the reasons leading to technostress experienced by teachers, who are the addressee of an intensive use of technology as a result of an integration process to which they are subjected in this study. For this purpose, qualitative data were collected from 64 teachers, who benefit from technology intensively and themes were prepared using 117 different opinions after the content analysis. According to this, there are five main reasons indicating technostress experienced by teachers: individual problems, technical problems, education oriented problems, health problems and time problem. It was

[1] Doç.Dr., Necmettin Erbakan Üniversitesi, Ahmet Keleşoğlu Eğitim Fakültesi, BÖTE Bölümü, ahmetcoklar@hotmail.com

[2] Yard.Doç.Dr. Necmettin Erbakan Üniversitesi, Ahmet Keleşoğlu Eğitim Fakültesi, Zihin Engelliler Eğitimi Bölümü, eefilti@konya.edu.tr

[3] Yard.Doç.Dr. Anadolu Üniversitesi, Eğitim Fakültesi, BÖTE Bölümü, eefilti@konya.edu.tr

[4] Arş.Gör. Kastamonu Üniversitesi, Eğitim Fakültesi, BÖTE Bölümü, arifakcay@yandex.com

Geliş tarihi / Received: 17.02.2016, Kabul tarihi / Accepted: 16.04.2016

also seen in the study that the distribution of reasons leading to technostress experienced by teachers also differs in terms of gender.

Keywords: *Technostress, ICT, technology integration.*

Öğretmenlerin Teknostres Nedenlerinin Belirlenmesi: Nitel Bir Araştırma

Öz

Son yıllarda eğitime, bilgi ve iletişim teknolojilerinin yoğun bir şekilde entegrasyonu söz konusudur. Bu süreçte liderlik ve kullanım şekline yön veren öğretmenler önemli rol oynamaktadır. Bakanlık tarafından yapılan teknolojik yatırımlar ve eğitim sistemin işleyişinde yoğun teknoloji kullanımı gerekliliği nedeni ile öğretmenlerden yoğun bir teknoloji kullanımı beklenilmektedir. Ancak bu beklenti, öğretmenler açısından birtakım olumsuzluklara yol açabilmektedir. Söz konusu olumsuzluklardan birinin, teknolojiden kaynaklı stres anlamında kullanılan ve teknoloji kullanımının bedeli olarak görülen "teknostres" olduğu söylenebilir. Bu araştırmada, dahil oldukları entegrasyon süreci gereği yoğun teknoloji kullanımı zorunluluğunun muhatabı olan öğretmenlerin teknostres nedenlerini belirlemek amaçlanmıştır. Bu amaçla teknolojiyi yoğun bir şekilde kullanan 64 öğretmenden açık uçlu soru formu ile veri toplanmış, içerik analizi ile elde edilen 117 farklı görüşten temalar oluşturulmuştur. Buna göre öğretmenlerin teknostres nedeni olan beş temel neden ifade edilmiştir; kişisel problemler, teknik problemler, eğitim odaklı problemler, sağlık problemleri ve zaman problemi. Ayrıca öğretmenlerin teknostres nedenleri dağılımlarının cinsiyete göre farklılaştığı da görülmüştür.

Anahtar Sözcükler: *Teknostres, BİT, teknoloji entegrasyonu.*

Introduction

Today, following the swift changes experienced in technological devices, especially in Information and Communication Technologies (ICTs), they bring convenience to our lives and take us under their control. These developments give us some opportunities in business life, but on the other hand they create some disadvantages for employees (Chesley, 2014; Nelson & Kletke, 1990). Nowadays, although the latest developments in business life reduce the larger amount of burden caused by the difficulties of physical tasks, the increased speed of work and less amount of time spent to get prepared increase the burden of psycho-physical tasks (Bayazit Hayta, 2007). The use of ICTs pushes people both to follow new applications and also to obtain new technological tools and their adaptations (Shah, Hassan & Embi, 2011).

In this way, information technologies cause people to be in two minds, which progressively become more interesting and permanent as it affects employees in business life at our present day. On one side, use of technological devices in business life has become an obligation, not an option; on the other hand, it requires a continuous personal and professional development due to fast improvements in technology and their spread. Especially in recent years, the speed in information and communication oriented technology change increases both the problems of technology use in its own nature (power provision, viruses, health problems, etc.) and also the ones on their provision and follow-up. This leads to creation of such terms as 'technostress' (Ragu-Nathan, et al., 2008; Weil & Rosen, 1997).

Technostress as a Problem

Selye (1956), one of the researchers who conduct pioneering studies regarding stress, defines it as a reaction produced by the body itself against any unspecific request directed into the body (Johnstone, 1989). Stress is an issue that causes certain effects on individuals, influencing their interactions with other people. In recent years, some scientists (Brillhart, 2004; Weil & Rosen, 1997) have focused on a new structure called technostress, which is about technology use. Brod (1984) defines technostress as a modern disease, which occurs when someone feels insufficient trying to adapt himself/herself into computer technologies. Basically, technostress refers to all common negative emotions, opinions, behaviors and

attitudes at the times in which employees have to cope with new technologies (Kupersmith, 1998; Weil & Rosen, 1997). Many of the employees, today, suffer from technological advances (Ahmad, Amin & Ismail, 2009).

Technostress is the negative result of computer-oriented technology use, caused by direct or indirect attitudes and opinions of people on their behaviors and psychologies (Tu, Wang & Shu, 2005). The fear of using computer-oriented ICTs leads to a psychological stress and behavioral resistance such as anxiety and hostility (Shu, Tu & Wang, 2011). Salanova, Llorens, Cifre and Nogareda (2007) define technostress as anxiety, mental exhaustion, skepticism and ineffectiveness, caused by inability to focus on the use of ICTs or their future use.

There are many studies conducted on technostress. Ahmad and Amin (2012) stated in their studies conducted on librarians that they experience a medium level technostress when describing the experiences of technostress as librarians, who use intensive amount of ICT's in their business life. In this view, intensive use of ICT-oriented technology can be accepted as a reason of technostress. On the other hand, another study conducted with individuals who use ICTs, by Salanova, Llorens and Cifre (2013), indicates a difference between intensive users of technology and occasional users. Therefore, it is seen that the level of technology use affects technostress and occasional users of technology experience less technostress.

Similarly, Shepherd (2004) also examines the connection between the ability to use computers and technostress and states that there is a low level of technostress when the ability to use computers increases. Here it is sensible to expect that the ability to use technology may reduce technostress. In another study conducted by Ayyagari, Grover and Purvis (2011), it is stated that the most dominant reasons of technostress are seen as work load and uncertainty of roles. In the study named 'Investigating Teacher Stress When Using Technology' by Fudail and Mellar (2008), they deal with the stress experienced by teachers when using computer technologies in their classrooms. At the end of the study, they classified the reasons of technostress as time problems related to technology, problems when using technology, technical and social support problems, a need for trainings on basic skills on the use of ICTs and lack of trainings at schools on technology use.

Technological Investments on Education in Turkey and Importance of the Study

Starting from 1970s, there has been a quick change in technology; especially in ICT's and this change has an effect on education systems as in many other fields of countries. Turkey is one of those countries that progressively increase the use of technology in education. Early discussions on the integration of information technologies and education date back to 1970s (Eryilmaz & Salman, 2014), and starting with 1100 computer in 1984 (Karadag, Saglam & Baloglu, 2008; Odabasi, 1998) the use of technology in education is maintained through such projects as Pilot School Project of Computers, Computer Laboratory School Project, Curriculum Laboratory Schools Project, World Link Project, Ministry of National Education of Turkey Internet Access Project and Basic Trainings Project (Eryilmaz & Salman, 2014; Gurcan 2008; Ozdemir & Kilic, 2007). Finally, one of the integration projects of education and technology, organized by Ministry of National Education (MNE) and supported by many other ministries at the same time (Kayaduman, Sarikaya & Seferoglu, 2011), is the Movement to Increase Opportunities and Improve Technology (FATIH Project, 2012).

Since 2010, with FATIH Project that has been taking quick effect, it is planned to provide interactive white boards and Internet network infrastructure for 570.000 classrooms in all pre-school, primary, secondary and high schools (p-12) in order to create equal opportunities in education and teaching and to improve the technology in schools. Besides, this project is consisted of five main components as providing equipment and software infrastructure, providing education e-contents and managing them, using information technologies in educational programs effectively, organizing in-service trainings for teachers and maintaining a continuous use of effective information technologies (FATIH Project, 2012).

Again, this project envisages providing approximately 12 million tablets, 11.136.752 of which for students and 715.000 for teachers (MNE, 2012). Initiated in 2010 and supposed to end within 3+2 years, most part of the project is completed including distribution of smart boards into the classrooms and delivering tablet computers, rushing teachers into a quick process in terms of technology use (Banoglu, Madenoglu, Uysal & Dede, 2014).

In FATIH Project, approximately 600.000 teachers have been trained to adapt them into these new investments. After the trainings, teachers are supposed to use equipment effectively, find appropriate e-contents for the objectives of their courses, prepare suitable portfolios for their

classes and organize their teachings using information technology supported course designs with the materials prepared (Eryilmaz & Salman, 2014). However, it is seen that there are many such problems as in-service trainings for teachers are limited to basic knowledge, including unnecessary details, lasting very short time and not including any practice, therefore being quite inadequate in the senses that it reduces the interest and motivation in technology, this adaptation period will take time, they will be unable to control the class, and lastly older teachers will be unable to use these technologies (Aktas, Gokoglu, Turgut & Karal; 2014; Banoglu, Madenoglu, Genc & Genc, 2013; Kleiman, 2004; Liu, 2011; Pamuk, et al., 2013; Uysal & Dede, 2014). In addition, teachers stated many problems about this application: they would feel inadequate in schools, their working environments would be unhealthy, they would receive no repair or maintaining service in cases of breakdowns, there would be a lot of technical problems, tablets would be out of charge quickly and sometimes even crash, smart boards would have no pens and their touch screens would be too weak, it would not be easy to solve these technical problems in a short time and their software would be very limited, creating new health problems (Cetinkaya & Keser, 2014; Ciftci, Taskaya & Alemdar; 2013; Dursun, et al., 2013; Genc & Genc, 2013; Pamuk, et al., 2013).

The use of technology by teachers has become an obligation, not an option after FATIH Project, which is also an integration process into technology and pushed teachers to use an intensive amount of technology. As stated by Roblyer and Doering (2013), psychological factors of teachers are also important in this technological integration process. However, in addition to lack of trainings offered to teachers in FATIH Project, study results indicate that teachers face too many problems and have concerns. This pressure to use technology more in the classrooms as expressed is very much connected to technostress and it is also emphasized that the psychological aspect of teacher factor plays a crucial role in this technology integration process. In terms of national-scale project in Turkey, this study is important with regards to determine the reasons of technostress experienced by teachers who must use technology and to make people aware of this situation in general. Furthermore, when this technological integration in education is examined in terms of teachers, as a human factor, it is a new psychological aspect that teachers naturally have concerns against this new situation and to form reactions against this newly created psychological object.

Purpose of the Study

The purpose of this study is to determine the reasons of technostress experienced by teachers who must use ICTs due to technological integration process in which they are involved and to group these reasons in terms of their common features and to describe what the effect of gender on technostress is.

Method

Research Model

This study uses qualitative methods in order to determine the reasons of technostress experienced by teachers. Qualitative methodologies can be used to obtain a more naturalistic, contextual and holistic understanding of human behaviors (Todd, Nerlich, McKeown & Clarke, 2004). Case study was used to determine the reasons of technostress experienced by teachers, which has become a social problem for them. Case study, one of the qualitative models used in research methods (Lithcman, 2006), is defined as by Yin (2003): "the distinctive need for case studies arises out of the desire to understand complex social phenomena because the case study method allows researchers to retain the holistic and meaningful characteristics of real-life events".

Participants

There are 64 teachers participating in this study. All teachers are a part of this technology integration process and use the Internet for their computers, smart boards, tablet computers and education purposes. Samples were obtained via maximum variation sampling, which is one of the purposeful sampling methods. Maximum variation sampling aims at capturing and describing central themes or principal outcomes that cut across a great deal of participant or program variation (Patton, 2002). Teachers from different departments were involved in the study as much as possible. Interviews were held with teachers from 16 different departments such as Mathematics, English, Music, Physical Education, Science, Social Science, Chemistry and History. Also, 35 of these teachers are female (54,2%) and 29 of them are male (45,8%).

Data Collection

In order to gather data on the reasons of technostress experienced by teachers, open-ended question form was used (Technostress Level Determination Form for Teachers). "Open-ended questions" or "open-ended survey" is one of the techniques used to collect qualitative data (Creswell, 2005; Patton, 2002). In this method, participants were required to give responses to the questions as in interviews. However, these responses are not given loudly, but in written form (Creswell, 2005; Gay, Mills & Airasian, 2006). There are three sections in this data collection tool. The first section includes an information form about this study, second section includes personal information while third section includes the reasons of technostress that teachers often face when teaching. There are three questions asked in this study to determine the levels of technostress. The first question asks, 'What technological reasons cause you to have technostress in your professional life as a teacher?'; the second question asks 'What problems do your colleagues, other than you, have when using technology?'; and the third questions asks, 'Which negative effects do you think technology has in teaching profession?'. In this way, responses from all sorts of ideas were tried to be obtained.

The open-ended question form is, first of all, checked by Turkish teachers in order to have a better understandability, and then the form is pre-filled by three different teachers to test its understandability. Official permits are obtained from Provincial Directorate of National Education, then school managers and teachers, as this is a volunteer-based research. These forms, reproduced in adequate numbers, are applied in 12 different schools by the researchers.
Data Analysis

The program NVivo 8 was used to analyze the data obtained from open-ended question forms and to create a model for this case. In this view, first of all, teachers' responses were transferred into the computer environment and then used in NVivo program. Content analysis is used to analyze the data, which is one of the analysis methods for qualitative data. Content analysis is used to make an analysis, creating unspecified themes and subthemes if any on a theoretical basis (Creswell, 2005; Lichtman, 2006; Patton, 2002). This study utilizes content analysis method as there is no theoretical framework for the reasons of technostress experienced by teachers. For a better content analysis, necessary steps were meticulously followed from processing data collected from teachers into the indexes, creating codes using these indexes, creating themes from these codes, defining the themes by organizing them and

interpreting the findings obtained through these themes (Creswell, 2005). When creating themes, responses given were checked to see if they were consistent with the analysis, had more than one theme or more and finally analyses were conducted. The most important issue when analyzing qualitative data is the reliability of data. In order to increase the reliability, the codings by two researchers were compared after data were coded, themes were created and defined. The reliability of this study was calculated as 79%, using the formula stated by Miles and Huberman (1994, pp.64) as Consensus / (Dissidence + Consensus) * 100. Besides, the results of analysis and findings were corrected by three of 64 teachers who participated in this study in order to reach validity.

Findings

Responses given by teachers who participated in this study and intensively use technology as required by their own projects involved were analyzed. First of all, codes were created in the analysis process. In this process, a consistent process was followed for content analysis; codes were defined, then from codes to subthemes and from subthemes to main themes (Creswell, 2005). 117 different opinions in total were gathered from 64 teachers. These 117 opinions, obtained from teachers, were grouped in terms of their common characteristics on the reasons of technostress and collected under 23 subthemes in total. Similarly, these 23 subthemes were also grouped in terms of their common characteristics on the reasons of technostress and collected under 5 main themes. These five main themes, indicating the reasons of technostress experienced by teachers are given with subthemes and codes in Table 1.

Table 1
Codes, Subthemes and Themes of Teachers on the Reasons of Technostress

Main Themes	Sub-Themes	Codes	
		f	%
Individual Problems	Not being able to use	17	14,5
	Lack of Education	10	8,5
	Foreign Language Problem	3	2,6
	Financial Problem (Not being able to afford)	10	8,5
	Incuriosity	3	2,6
	Sub-Theme Total Codes	43	36,7
Technical Problems	Software Supply	4	3,4
	Connection Problem	8	6,8

Main Themes	Sub-Themes	Codes	
		f	%
	Requirement for Continuous Updating	4	3,4
	Security	5	4,3
	Content	1	0,9
	Electric Need	2	1,7
	Noise pollution	2	1,7
	Poor Quality Instruments	2	1,7
	Frequently crashing	10	8,5
	Unavailability of Technical Support	4	3,4
	Unable to Meet Needs	1	0,9
	Sub-Theme Total Codes	43	36,7
Education-Oriented Problems	Supply of Technology	16	13,7
	Negative Changes for Students	3	2,6
	Change of teaching approach	2	1,7
	Sub-Theme Total Codes	21	18
Health Problems	Eye Problems	2	1,7
	Addiction	2	1,7
	Headache	1	0,9
	Sub-Theme Total Codes	5	4,3
Time Problem	Time-Stealing	5	4,3
	Sub-Theme Total Codes	5	4,3
	Number of Total Codes	117	100,0

As seen in Table 1, two themes having the highest number of codes have 43 sub-themes (36,7%) indicating that teachers often experience technostress because of individual and technical problems. However, although these 43 themes that cause technical problem-oriented technostress had 11 sub-themes from having internet connection problems to not having adequate technical support, the individual problems-oriented reasons of technostress had five sub-themes from not being able to use to not knowing a foreign language. Therefore, it is possible to claim that technical problem-oriented reasons of technostress had more details and reasons although individual problem-oriented reasons of technostress is more common.

Another sub-dimension of technostress, based on education-oriented problems, involves the classroom-based reasons of technostress and as it can be seen it is the third most important source of technostress coded frequently by teachers with 21 codes (18%). Teachers stated that they experienced stress because the technology they wanted to use was not provided in their

teaching environments and another reason of stress they stated is that there are negative changes in student behaviors and in teaching insights.

The last two reasons of technostress include five codes for each, which is a health and time problem (4.3%). The codes about health involve such sub-themes as headache, addiction and eye problems. On the other hand, time problems involve the sub-theme that technology steals people's time and this causes technostress.

The themes indicating the reasons of technostress experienced by teachers are given below with sample expressions (Table 2).

Table 2
Sample Expressions of Teachers on the Reasons of Technostress

Main Themes	Sub-Themes	Samples of Teacher Expressions
Individual Problems	Not being able to use	"In general, I don't understand such electronic devices as computers…" (Female – pre-school teacher)
	Lack of Education	"…The trainings on technology are quite inadequate. So, we have problems as teachers…" (Female – Music teacher)
	Foreign Language Problem	"Sometimes, it prompts in English and I don't understand anything. I need to know what it is. This makes me anxious…" (Male, Mathematics teacher)
	Financial Problem (not being able to afford)	"…Both the software and equipment require an update continuously. That requires money." (Male, Primary School Teacher)
	Incuriosity	"Computers and Internet is not my cup of tea. I am not interested but I have to use them…" (Male, History)
Technical Problems	Software Supply	"…Computers require new programs all the time. I don't know how to do it…" (Female, Primary School Teacher)
	Connection Problem	"Slow connections or not having a connection at all makes me tired…" (Male – English Teacher)
	Requirement for Continuous Updating	"Office programs and operating systems require updates all the time. And anti-virus programs are another problem…" (Male, Sports Teacher)
	Security	"…If somebody sees what I write and my information is stolen on the Internet, it bothers me sometimes…" (Female, Music Teacher)
	Content	"Sometimes, Internet can be very slow or you can even get disconnected. It drives me crazy…" (Male, Mathematics Teacher)

Main Themes	Sub-Themes	Samples of Teacher Expressions
	Electric need	"There is no use using digital technologies if there is no power. And electricity bill is extra." (Female, Science Teacher)
	Noise pollution	"…Sometimes, it makes too much noise, fan works too loudly…" (Female, Social Sciences Teacher)
	Poor Quality Instruments	"…The quality of devices may be of poor quality. There is a projection in our classroom, but we can't see anything." (Female, Pre-School Teacher)
	Frequently crashing	"Technology is damaged very easily. It is very risky when I decide to use it…" (Female, Primary School Teacher)
	Unavailability of Technical Support	"It may sometimes be crashed. We ask the ones who know something about computers and that is limited. It is very moody…" (Female, Chemistry)
	Unable to Meet Needs	"This technology does not meet our needs. Even in very critical moments…" (Male, Arts Teacher)
Education-Oriented Problems	Supply of Technology	"Unfortunately classrooms are not well equipped in terms of technology." (Female – Science Teacher)
	Negative Changes for Students	"Students use their mobile phones in classrooms. I am afraid that one day I will be posted." (Male – Turkish teacher)
	Change of teaching approach	"The classrooms used to be easier to control in the past. I had to wait next to the computers all the time. It is hard to manage classrooms." (Male, Mathematics Teacher).
Health Problems	Eye Problems	"…I think health is a reason for stress. My eyes get dry; I have to use my glasses." (Male, Physics Teacher)
	Addiction	"I feel like I have to use social networks and do something on the internet all the time. Everybody has a mobile phone. Everyone is the same." (Female, English teacher)
	Headache	"… I don't use it very often. If I use it for a long time, it gives me headache and I feel disturbed." (Male, Social Sciences Teacher)
Time Problem	Time-Stealing	"…It disturbs me when I notice that I have spent two hours in front of the computer doing nothing. I can spend my time more efficiently but this has become my habit." (Male, Mathematics Teacher)

On the other hand, Shepherd (2004) and Conner (2012) state that gender is an important factor that affects the level of technostress. Using these findings, it is thought that the reasons of technostress experienced by teachers could make a significant difference; therefore, the reasons of technostress experienced by male and female teachers are compared (Table 3).

Table 3
Distribution of the Reasons of Technostress Experienced by Teachers in Terms of Gender

Themes	Male (n=35)		Female (n=29)		Total (n=64)	
	f	%	f	%	f	%
Individual Problems	20	37,7	23	35,9	43	36,7
Technical Problems	11	20,8	32	50,0	43	36,7
Education-Oriented Problems	14	26,4	7	11,0	21	18,0
Health Problems	3	5,6	2	3,1	5	4,3
Time Problem	5	9,4	0	0	5	4,3
Total	53	100	64	100	117	100

When Table 3 is examined, it is seen that the technostress reasons of male and female teachers differ. For female teachers, the technostress reasons involve technical problems (50%), individual problems (35.9%), education-oriented problems (11%) and health problems (3,1%). In addition, time is not problem for female teachers to cause technostress. For male teachers, the technostress reasons involve individual problems (37,7%), technical problems (20,8%), education-oriented problems (26,4%), time problems (9,4%) and health problems (5,6%). The technostress reasons and priorities indicate significant changes for male and female teachers.

Conclusions and Discussion

There are many models about the integration of technology into educational environments and teachers play an important role to realize this integration process in a successful way (Harris & Hoffer, 2011; Koehler & Mishra, 2005; ; Paraskeva, Bouta & Papagianna, 2008; Roblyer & Doering, 2013). Teachers have a significant role for students to be a leader to use the technology and guide them with different visions in this integration process (Finger, Russell, Jamieson-Proctor & Russell, 2007; Paraskeva, Bouta & Papagianna, 2008). Therefore, individual characteristics of teachers (attitudes, levels of knowledge, anxiety, etc.) are also among the most important parameters of this technology integration process (Imhof, Vollmeyer & Beierlein, 2007; Roblyer & Doering, 2013) One of the individual characteristics of these people on technology use is technostress (Ahmad & Amin, 2012; Ayyagari, Grover & Purvis, 2011; Fudail & Mellar, 2008; Shepherd, 2004).

Other reasons of technostress, studied on individuals who work in different work groups, are work load and uncertainty of roles (Ayyagari, Grover & Purvis, 2011), experience, age, monitoring pressure during use and general climate (Brod, 1982) in the organization or working environment, quick changes in technology and related transformations (Enis, 2005), information overload, underwork and routine jobs, job insecurity and demotivation and uncertainty about job roles (Harper, 2000). Enis (2005) states that there are six basic reasons of technostress and those are quick changes, lack of education, increasing workload, lack of standards in jobs, nature of technology and role changes in jobs. Champion (1988), one of the pioneering names in this field, states that there are two basic reasons for technostress, environmental reasons (inappropriate working or other environment conditions, inappropriate lighting, lack of safety precautions taken for devices, adaptability of devices and their noise, etc.) and social reasons (conflicting interests caused by technology use, power struggles, job and role changes, anxiety of losing a job, work divisions and hierarchical changes). However, there is no study conducted to examine the technostress reasons of teachers that have an important role in the integration process and who have a leading role especially in educational fields. In this study, technostress reasons of teachers are examined, who are a part of the technology integration process, therefore using the technology in their classrooms. As a result of the study, technostress reasons of teachers were collected under five main headings (Figure 1).

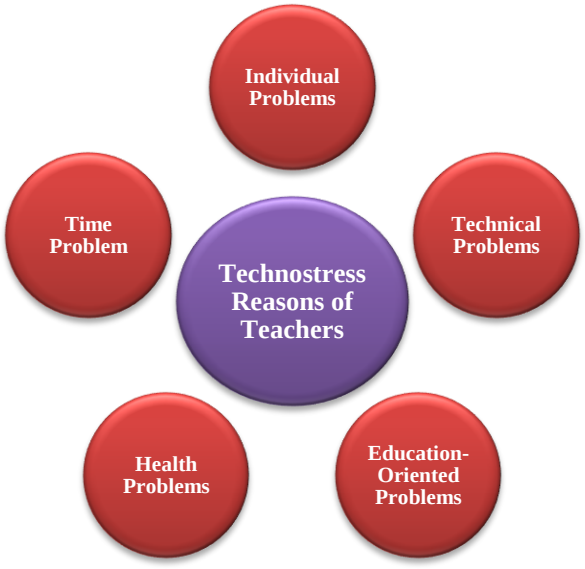

Figure 1. Technostress reasons of teachers

Figure 1 indicates the responses given by teachers to the questions why they have technostress. Teachers have reported 117 different responses as technostress reasons, these responses accepted as codes were transformed into sub-themes in terms of their common characteristics and these sub-themes into main themes. According to this, among the most important reasons of technostress as expressed by teachers, there are respectively technical problems, individual problems, education-oriented problems, health problems and time problems.

The reasons of technostress expressed by teachers have different names than the ones, which are described as technostress reasons in the literature. Moreover, the reasons of technostress obtained from this study are technical problems (Champion 1988; Enis 2005; Fudail & Mellar, 2008; Ragu-Nathan et al., 2008), individual problems (Champion 1988; Enis 2005; Harper, 2000; Tu, Wang and Shu, 2005;), health problems (Enis, 2005; Champion 1988; Brod, 1982) and time problems (Ayyagari, Grover & Purvis, 2011; Harper, 2000). Another problem, described as education-oriented problem, can be evaluated under the reasons of technostress about work place in the literature and, in this view; it has similarities with several literatures (Ahmad & Amin, 2012; Ayyagari, Fudail & Mellar, 2008; Brod, 1984; Champion, 1988; Enis, 2005; Grover & Purvis, 2011; Harper, 2000). There are such expressions as workload, job safety, social reasons and general climate of the environment in many of these studies. From this point of view, it is possible to say that technostress reasons of teachers have similarities with all other reasons in the literature. Besides, Fudail and Mellar (2008) express in their study that technostress reasons of teachers are that technology requires time, problems when using this technology, problem of technical and social support, a need for training in terms of basic ICT use and lack of education at schools in terms of technology use. In this respect, it is significant that the findings of both studies correspond to each other. The results of the study, in which the problems experienced in technology integration process of FATIH Project are examined, also support the findings of this study. The problems stated in many other studies (Cetinkaya & Keser, 2014; Ciftci, Taskaya & Alemdar; 2013; Dursun, et al., 2013; Genc & Genc, 2013; Pamuk, et al., 2013) are also present among the technostress reasons. Individual problems include some issues such as self-efficacy, attitude and economic situation on the use of technology. Robby and Doering (2013) specially emphasizes that individual characteristic is one of the most important factor in technology integration process. From this perspective, it can be said that technostress should be considered in the technology integration.

On the other hand, gender is a significant factor that affects the reasons of technostress experienced by teachers and its order of importance (Figure 2).

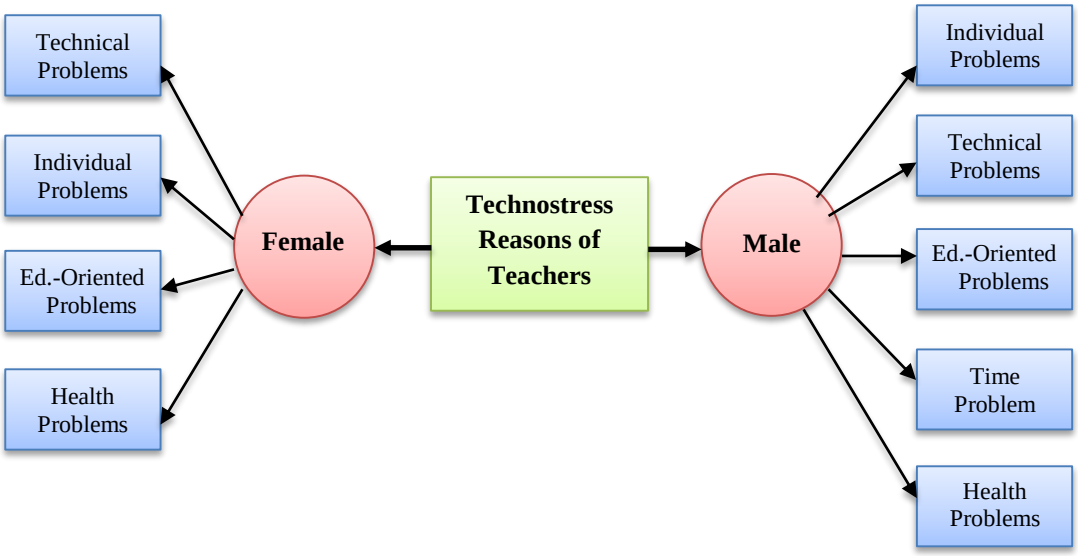

Figure 2. Technostress reasons of male and female teachers

The reasons of technostress vary across male and female teachers. It is also significant that although female teachers express that their most common reasons for technostress are the technical problems that involve the need for technical support, source of software and connection problems, male teachers state that their most common reasons for technostress are the individual reasons that involve financial problems and foreign language problems. On the other hand, technostress reasons of male teachers are more in ratio than female teachers in terms of education-oriented problems. Finally, male teachers stated that they had stress as technology wasted their time and female teachers did not regard this as a reason for technostress.

Shepherd (2004) argues that gender is a significant factor that affects the level of technostress and points out computer skills as an effective factor. Similarly, it is stated in many studies that computer skills are affected from gender factor and the purpose and objectives of males and females change in terms of use (Cotten, Shank & Anderson, 2014; Harris, Straker & Pollock, 2013; Muscanell & Guadagno, 2012; Norshidah, Nor & Ramlah, 2012). Joiner et.al. (2012) state that gender is an important factor in their study that involves computer anxiety, and this resulted from internet skills, which is the technology of our present day. Busch (1995) points out that there is a difference in terms of social experiences and purposes of use in order to

explain the gender differences for attitudes towards computers. These studies indicate that the differences in the reasons of technostress may result from computer skills, internet skills, social experiences and different purposes of use in terms of gender.

On the other hand, Bauer and Kenton (2005) state that teachers are one of the important factors in this successful integration process of technology and also many of the aspects described as reasons of technostress are essential for teachers in this process. Oncu, Delialioglu and Brown (2008) emphasize on this essentiality and state~~s~~ that the interaction between teachers is one of the most important factors that affect the integration process. Therefore, it is possible to expect that technostress will be positively affected if and when the interaction between teachers is maintained. Hence, interactions among teachers can be established and teachers can be trained. Conner (2012) suggests the importance of sleep and relaxing, the balance in work place, data backup, being careful about quick changes of new technologies and their acquisition and offering trainings organized together with other staff in institutions. Shepherd (2004) emphasizes the connection between computer skills and technostress. In this view, new experimental studies can be conducted to determine and reduce the levels of technostress experienced by teachers and to describe the efficiency of these trainings.

Acknowledgement

The present study was based on a part of a scientific research project funded by The Scientific and Technological Research Council of Turkey (TUBITAK) – number 114K032 – called ‘Determination of Technostress Levels of Teachers Focusing on FATIH Project” and also it was presented in International Institute of Social and Economic Sciences (IESS 2015) conference.

References

Ahmad, U. N. U., & Amin, S. M. (2012). The dimensions of technostress among academic librarians. *Procedia – Social and Behavioral Sciences, 65,* 266-271.

Ahmad, U. N. U., Amin, S. M., & Ismail, W. K. W. (2009). The impact of technostress on organizational commitment among Malaysian academic librarians. *Singapore Journal of Library & Information Management, 38,* 103-123.

Aktaş, İ., Gökoğlu, S., Turgut, Y. E. & Karal, H. (2014). Teacher's opinions about FATIH Project: Awareness, foresight and expectations. *Necatibey Faculty of Education Electronic Journal of Science and Mathematics Education, 8*(1), 257-286.

Ayyagari, R., Grover, V., & Purvis, R. (2011). Technostress: Technological antecedents and implications. *MIS Quarterly, 35*(4), 831-858.

Banoglu, K., Madenoglu, C., Uysal, Ş. & Dede, A. (2014). An investigation of teachers' perceptions of the implementation of the FATIH Project (Eskisehir Province Case). *Journal of Educational Science Researches, 4*(1), 39-58.

Bauer, J. & Kenton, J. (2005). Toward Technology Integration in the Schools: Why It Isn't Happening. *Journal of Technology and Teacher Education, 13*(4), 519-546.

Bayazıt Hayta, A. (2007). The effect of the working environment conditions to management fertility. *Journal of Commerce & Tourism Education Faculty, 1,* 21-41.

Brillhart, P. E. (2004). Technostress in the workplace managing stress in the electronic workplace. *Journal of American Academy of Business, 5*(1), 302–307.

Brod, C. (1984). Technostress: The human cost of the computer revolution. Reading, MA: Addison-Wesley.

Busch, T. (1995). Gender differences in self –efficacy and attitudes toward computers. *Journal of Educational Computing Research, 12,* 147–58.

Champion, S. (1988).Technostress: Technology's toll, *School Library Journal,* 1988, 48-51.

Chesley, N. (2014). Information and communication technology use, work intensification and employee strain and distress. *Work, Employment & Society, 28,* 589-610.

Conner, M. (2012). Technostress. A sign of the times. *American Fitness, 30*(4), 58–60.

Cotten, S. R., Shank, D. B., & Anderson, W. A. (2014). Gender, technology use and ownership, and media-based multitasking among middle school students. *Computers in Human Behavior, 35,* 99-106.

Creswell, J. W. (2005). *Educational research: planning, conducting, and evaluating quantitative and qualitative research* (2nd ed.). New Jersey, N.J.: Pearson Merrill Prentice Hall.

Cetinkaya, L. & Keser, H. (2014). Problems faced by teachers and students in terms of using tablet PCs and suggested solutions related to these problems. *Anadolu Journal of Educational Sciences International, 4*(1), 13-34.

Dursun, Ö. Ö., Kuzu, A., Kurt, A. A., Gullupinar, F. & Gultekin, M. (2013). Views of school administrators' on FATIH projects pilot implementation process. *Trakya University Journal of Education, 3*(1), 100-113.

Enis, L.A. (2005). Much of what I found out about technostress and librarians. *Computers in Librarians.* September, 10-12.

Eryılmaz, S. & Salman, Ş. (2014). Teachers and students who participate in FATIH project expectations from the project and perceptions of information technology usage. *Electronic Journal of Occupational Improvement and Research, 2*(1), 46-63.

FATIH Project. (2012). *Proje hakkında (About the project).* Milli Eğitim Bakanlığı (Republic of Turkey Ministry of National Education). Retrieved 07 April, 2015 from http://fatihprojesi.meb.gov.tr/tr/icerikincele.php?id=6.

Finger, G., Russell, G., Jamieson-Proctor, R., & Russell, N. (2007). *Transforming learning with ICT: Making it happen.* Australia: Pearson Education.

Fudail, M., & Mellar, H. (2008). Investigating teacher stress when using technology. *Computers and education, 51*, 1103-1110.

Gay, L. R., Mills, G. E. & Airasian, P. (2006). *Educational research: competencies for analysis and applications* (8th ed). New Jersey, NJ: Pearson.

Genc, M. & Genc, T. (2013). Monitoring the skills of teachers' vocational development by themselves; Fatih project sample. *Ahi Evran Üniversitesi Eğitim Fakültesi Dergisi, 14*(2), 61-78.

Gurcan, H. (2008). *A model for the evaluation of it competencies of students at Bahcesehir science and technology high school* (Unpublised Master Thesis). Bahcesehir Universtiy Graduate School of Natural Sciences, Istanbul, Retrieved 11 July, 2015 from http://libris.bahcesehir.edu.tr/dosyalar/Tez/071503.pdf

Harper, S. (2000). *Managing technostress in UK libraries: A realistic guide*. Ariadne. Retrieved 18 February, 2015 from http://www.ariadne.ac.uk/issue25/technostress.

Harris, C.,Straker, L. & Pollock, C. (2013). The influence of age, gender and other information technology use on young people's computer use at school and home. Work: *A Journal of Prevention, Assessment and Rehabilitation. 44*(1), 61-71.

Harris, J.B. & Hofer, M.J. (2011). Technological pedagogical content knowledge (TPACK) in action: A descriptive study of secondary teachers' curriculum-based, technology-related instructional planning. *Journal of Research on Technology in Education*, *43*(3), 211-229.

Imhof, M., Vollmeyer, R., & Beierlein, C. (2007). Computer use and the gender gap: The issue of access, use, motivation, and performance. *Computers in Human Behavior, 23*, 2823-2837.

Johnstone, M. (1989*). Stress in Teaching: An Overwiew of Research*.Edinburgh: SCRE.

Joiner, R., Gavin, J., Brosnan, M., Cromby, J. Gregory, H., Guiller, J. Maras, P. & Moon, A. (2012). Gender, internet experience, internet identification, and internet anxiety: a ten-year follow up. *Cyberpsychology, Behavior, and Social Networking, 15*(7), 370-372. doi:10.1089/cyber.2012.0033.

Karadag, E., Saglam H. & Baloglu, N. (2008). Computer supportive education (CSE): a research about attitude of primary school administrators. *The Journal of International Social Research, 1*(3), 251-266.

Kayaduman, H., Sarıkaya, M. & Seferoğlu, S. S. (2011). Investigation of "Increasing opportunities and improvement of technology" project in terms of teacher competencies *Akademik Bilişim Konferansı (Academical Information Conference)*, Inonu University, Turkey. Retrieved 24 April, 2015 from http://yunus.hacettepe.edu.tr/~sadi/yayin/AB11_Kayaduman-Sirakaya-Seferoglu_FATIH-Projesi- OgretmenYeterlik.pdf.

Kleiman, G. M. (2004). Myths and realities about technology in K-12 schools: Five years later. *Contemporary Issues in Technology and Teacher Education, 4*(2), 248-253.

Koehler, M.J. ve 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.

Kupersmith, J. (1998). Technostress in the bionic library. In LaGuradia, C. (Ed.). *Recreating the Academic Library: Breaking Virtual Ground*. New York, NY: Neal-Schuman.

Lithcman, M. (2006). *Qualitative research in education. A user's guide.* London: Sage Publications.

Liu, S. H. (2011). Factors related to pedagogical beliefs of teachers and technology integration. *Computers & Education, 56*(2), 1012–1022.

Miles, M.B., & Huberman, A.M. (1994). *Qualitative data analysis: An expanded sourcebook. (2nd ed.).* Thousand Oaks, CA: SAGE Publications.

Ministry of National Education-MNE. (2012). *Fatih projesi beklenti kağıdı - tablet bilgisayar (Fatih project expectation paper – Tablet computer)*. Retrieved 13 May, 2015 from http://fatihprojesi.meb.gov.tr/upload/fatih_Projesi_Tablet_PC_Beklenti_Kagidi.pdf.

Muscanell, N. L., & Guadagno, N. E. (2012). Make new friends or keep the old: Gender and personality differences in social networking use. *Computers in Human Behavior, 28*(1), 107–112.

Nelson, D.L., & Kletke, M.G. (1990). Individual adjustment during technological innovation: A research framework. *Behavior and Information Technology*, *9*(4), 257–271.

Norshidah M., Nor, A. & Ramlah H. (2012) Computer use ethics among university students and staffs: The influence of gender, religious work value and organizational level, *Campus-Wide Information Systems, 29*(5), 328 – 343.

Odabasi, F. (1998). Bilgisayar destekli eğitim [Computer aided education]. In Y. Hoşcan (Ed.), *Bilgisayar [Computer] (pp.* 133-147). Eskişehir: Anadolu University Open Education Faculty Publishes.

Oncu, S., Delialioglu, O. & Brown, C.A. (2008). Critical Components for Technology Integration: How Do Instructors Make Decisions?. *Journal of Computers in Mathematics and Science Teaching, 27*(1), 19-46.

Ozdemir, S. & Kilic, E.(2007). Integrating information and communication technologies in the Turkish primary school system. *British Journal of Educational Technology, 38*(5), 907-916.

Pamuk, S., Çakır, R., Ergun, M., Yılmaz, H. B. & Ayas, C. (2013). The use of tablet pc and interactive board from the perspectives of teachers and students: evaluation of the FATİH project. *Educational Sciences: Theory & Practise, 13*(3), 1799-1822.

Paraskeva, F., Bouta, H., & Papagianna, A. (2008).Individual characteristics and computer self-efficacy in secondary education teachers to integrate technology in educational practice. *Computers& Education, 50*(3), 1084-1091.

Patton, M. Q. (2002). *Qualitative research and evaluation methods* (3rd ed). Thousand Oaks, CA: Sage.

Ragu-Nathan, T.S., Tarafdar, M., Ragu-Nathan, B., & Tu, Q. (2008). The consequences of technostress for end users in organizations: Conceptual development and empirical validation. *Information Systems Research*, *19*(4), 417–433.

Roblyer, M.D., & Doering, A.H. (2013). *Integrating educational technology into teaching* (6th Ed.). Boston, MA: Pearson.

Salanova, M., Llorens, S., & Cifre, E. (2013). The dark side of technologies: Technostress among users of informations and communication technologies. *International Journal of Psychology*, *48*(3), 422-436.

Salanova, M., Llorens, S., Cifre, E., & Nogareda, C. (2007). El tecnoestre´s: Concepto, medida y prevencio´n. *Nota Te´ cnica de Prevencio´ n*, 730. Madrid: INSHT.

Selye, H. (1956). *The stress of life*. New York, NY: McGraw-Hill

Shah, M. M., Hassan, R., & Embi, R. (2011). Computer anxiety: Data analysis. *Procedia - Social and Behavioral Sciences*, *67*, 275-286.

Shepherd, S. S. G. (2004). Relationships between computer skills and technostress: How does this affect me?. *Proceedings of the 2004 ASCUE Conference*, Myrtle Beach, South Carolina.

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.

Todd, Z., Nerlich, B., McKeown, S., & Clarke, D. (2004). *Mixing methods in psychology: An introduction.* London: Routledge.

Tu, Q., Wang, K. L., & Shu, Q. (2005). Computer-related technostress in China. *Communications of the ACM*, *48*(4), 77–81.

Weil, M., & Rosen, L. (1997). *TechnoStress: Coping with Technology @work @home @play*. New York, NY: J. Wiley.

Yin, R. K. (2003). *Case study research: Design and methods (3rd ed.).* Thousand Oaks, CA: Sage.

Genişletilmiş Öz

Son yıllarda bazı bilim insanları (Brillhart, 2004; Weil ve Rosen, 1997) teknoloji kullanımı ile ilgili teknostres denilen yeni bir yapı üzerine odaklanmışlardır. Temelde teknostres çalışanların yeni teknolojilerle başa çıkması gereken zaman içerisinde, vücudunda hissettiği kaygı gibi genel olumsuz duygu, düşünce, davranış ve tutumlardır (Kupersmith, 1998; Weil ve Rosen, 1997). Teknolojinin sürekli ilerlemesi ile birlikte bir sürü çalışan teknostresden muzdarip olmuşlardır (Ahmad, Amin ve Ismail, 2009). Bu alanlardan biri de eğitim ve mesleki anlamda da öğretmenlik mesleği olmuştur.

Aynı zamanda bir teknoloji entegrasyon süreci olan FATİH projesi ile öğretmenlerin teknoloji kullanımlar bir seçenek yerine zorunluluk haline gelmiştir ve öğretmenler yoğun bir teknoloji kullanım sürecine girmektedirler. Roblyer ve Doering (2013) tarafından ifade edildiği gibi teknoloji entegrasyon sürecinde öğretmenlerin psikolojik faktörleri de önemlidir. Buna karşın, yapılan araştırma sonuçları FATIH projesinde öğretmenlere verilen eğitimlerin yetersiz olmasının yanı sıra öğretmenlerin çok sayıda problemle karşı karşıya kaldıkları ve endişe taşıdıklarını göstermektedir. İfade edilen yoğun teknoloji kullanım baskısı teknostres ile ilişkilidir ve teknoloji entegrasyon sürecinde öğretmen faktörünün psikolojik boyutunun da önemli olduğunu vurgulamaktadır. Araştırma Türkiye'deki ulusal düzeyde bir projeden yola çıkarak genel anlamda teknolojiyi kullanmak zorunda kalan öğretmenlerin teknostres nedenlerini belirleme ve duyurma açısından önemlidir.

Araştırmanın Amacı

Araştırmanın amacı içinde bulundukları teknoloji entegrasyon süreci nedeniyle bilgi ve iletişim teknolojilerini kullanmak zorunda kalan öğretmenlerin teknostres nedenlerini belirlemek, bu nedenleri ortak özellikleri açısından gruplandırmak ve cinsiyetin teknostres nedenleri üzerindeki etkisini belirlemektir.

Yöntem

Öğretmenlerin teknostres nedenlerini belirlemek amacıyla yapılan bu araştırmada nitel yöntem kullanılmıştır. Sosyal bir sorun haline dönüşen öğretmenlerin teknostres nedenlerini belirlemek amacı ile durum deseni kullanılmıştır. Araştırmaya 64 öğretmen katılmıştır.

Öğretmenlerin tamamı teknoloji entegrasyon sürecinin bir parçası olup, bilgisayar, akıllı tahta, tablet bilgisayar ve eğitim amaçlı internet kullanmaktadırlar. Araştırma kapsamında amaçlı örnekleme yöntemlerinden maksimum çeşitlilik örnekleme yöntemi ile örneklem alınmıştır. Bu amaçla mümkün olduğu kadar farklı branşlardan öğretmen araştırmaya dahil edilmiştir. Matematik, İngilizce, Müzik, Beden Eğitimi, Fen Bilimleri, Sosyal Bilgiler, Kimya, Tarih gibi 16 farklı branştan öğretmen ile görüşme yapılmıştır. Öğretmenlerden yaşadıkları teknostres nedenlerine yönelik görüş alabilmek amacıyla açık-uçlu soru formundan yararlanılmıştır. Açık uçlu soru formundan elde edilen verilerin analizi ve ortaya çıkan durumun modellenmesi için NVivo 8 programı kullanılmıştır. Bu kapsamda öncelikli olarak öğretmenlerin verdiği yanıtlar bilgisayar ortamına aktarılmış, sonrasında ise NVivo programının içerisine alınmıştır. Verilerin analizinde nitel veri analiz yöntemlerinden içerik analizi yöntemi kullanılmıştır.

Bulgu ve Sonuçlar

Araştırmaya katılan ve dahil oldukları proje gereği yoğun teknoloji kullanım süreci içerisinde olan öğretmenlerin vermiş olduğu yanıtlar analiz edilmiştir. Analiz sürecinde öncelikli olarak kodlar çıkarılmıştır. Analiz sürecinde, içerik analizi yöntemine uygun bir süreç izlenmiş, önce kodlar belirlenmiş, kodlardan alt temalar, alt temalardan da ana temalar oluşturulmuştur (Creswell, 2005). 64 öğretmenin toplam 117 farklı görüş bildirilmiştir. Öğretmenlerden elde edilen 117 görüş, teknostres nedenleri ortak özellikleri bakımından gruplandırılmış ve toplam 23 alt tema altında toplanmıştır. Benzer şekilde 23 alt tema da yine ortak özellikleri açısından gruplanarak teknostres nedenleri olarak ifade edilebilecek 5 ana tema oluşturulmuştur. Buna göre öğretmenlerin en çok ifade ettikleri teknostres nedenleri sırası ile teknik problemler, kişisel problemler, eğitim odaklı problemler, sağlık problemleri ve zaman problemleri oluşturmaktadır.

Öğretmenlerin ifade ettikleri teknostres nedenleri literatürde ifade edilen teknostres nedenleri arasında farklı isimlendirmeler ile yer bulmaktadır. Ayrıca araştırma kapsamında elde edilen teknostres nedenleri olan teknik problemler (Champion 1988; Enis 2005; Fudail & Mellar, 2008; Ragu-Nathan vd., 2008) kişisel problemler (Champion 1988; Enis 2005; Harper, 2000; Tu, Wang ve Shu, 2005;), sağlık problemleri (Brod, 1982; Champion 1988; Enis, 2005) ve zaman problemidir (Ayyagari, Grover ve Purvis, 2011; Harper, 2000). Bir diğer sorun olan eğitim odaklı problemler ise literatürdeki iş ortamı ile ilgili teknostres nedenleri altında değerlendirilebilir ve bu yönü ile de çok sayıda literatür ile benzerlik göstermektedir (Ahmad

& Amin, 2012; Ayyagari, Grover & Purvis, 2011; Brod, 1984; Champion, 1988; Enis, 2005; Fudail & Mellar, 2008; Harper, 2000;). Bu araştırmaların çoğunda iş yükü, iş güvenliği, sosyal nedenler, ortamdaki genel iklim şeklinde ifadeler yer almaktadır. Bu açıdan öğretmenlerin teknostres nedenlerinin literatürdeki tüm nedenler ile benzerlik gösterdiği söylenebilir. Ayrıca Fudail ve Mellar (2008) araştırmasında öğretmenlerin teknostres nedenlerini teknolojinin zaman alması, teknoloji kullanımı esnasındaki sorunlar, teknik ve sosyal destek sorunu, temel ICT kullanımı konusunda eğitim ihtiyacı ve okullarda teknoloji kullanımı konusundaki eğitim eksiliği şeklinde ifade etmiştir. Diğer yandan cinsiyet öğretmenlerin teknostres nedenlerini ve önem sırasını etkileyen bir faktördür. Kadınlar için teknik destek gereksinimi, yazılım kaynağı, bağlantı sorunu gibi sorunları içeren teknik problemler en çok ifade edilen teknostres nedeni olarak ifade edilirken, erkekler için finansal sorunlar, yabancı dil sorunu gibi sorunları içeren kişisel problemler en çok ifade edilen teknostres nedeni olarak dikkati çekmektedir. Buna karşın eğitim odaklı sorunlar açısından erkek öğretmenlerin teknostres nedenleri kadın öğretmenlerden daha fazla orana sahiptir. Nihai olarak teknolojinin zaman çalması açısından erkek öğretmenler stres yaşadığını belirtirken, kadın öğretmenler bunu bir teknostres nedeni olarak görmemişlerdir.