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THE INVESTIGATION OF TECHNOLOGICAL PEDAGOGICAL AND CONTENT KNOWLEDGE LEVEL BY TURKISH TEACHERS OF ENGLISH

THESIS BY
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ÖZET

TÜRK İNGİLİZCE ÖĞRETMENLERİNİN TEKNOLOJİK PEDAGOJİK VE ALAN BİLGİSİ SEVİYELERİNİN İNCELENMESİ

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Bu çalışmada, Türk İngilizce öğretmenlerinin Teknolojik Pedagojik Alan Bilgisi (TPACK) düzeyleri, öğretmenlerin cinsiyetleri ile Teknolojik Pedagojik Alan Bilgisi düzeyleri arasındaki ilişki ve öğretmenlik deneyimleri ile Teknolojik Pedagojik Alan Bilgisi Düzeyleri arasındaki ilişkilerin araştırılması hedeflenmiştir. Araştırma, Nisan ayının 10'u ve 15'i arasında döneminde Mersin ilinin liselerinde gerçekleştirilmiştir. 33 İngilizce öğretmeni iki bölümden oluşan ve yabancı dil olarak İngilizce için geliştirilen Teknolojik Pedagojik Alan Bilgisi anketini cevaplamıştır. Anketin ilk bölümü katılımcıların genel bilgilerini elde etmek, katılımcıların cinsiyetleri ve öğretmenlik deneyimlerinin Teknolojik Pedagojik Alan Bilgisi arasındaki ilişkiyi araştırmak için kullanılmıştır. Anketin ikinci bölümü katılımcıların Teknolojik Pedagojik Alan Bilgisini ölçmek için kullanılmıştır. Nicel veriler ortalama, sıklık, standart sapma, t-test ve tek yönlü varyans analizi ile incelenmiştir.

Betimleyici istatistik analiz sonuçları, çalışmaya katılan Türk İngilizce öğretmenlerinin yüksek düzeyde Teknolojik Pedagojik Alan Bilgisine sahip olduklarını göstermiştir. Bununla birlikte, t-testi katılımcıların cinsiyetleri ve Teknolojik Pedagojik Alan Bilgisi düzeyleri arasında etkili bir etkileşim olmadığını göstermiştir. Tek Yönlü Varyans Analizi de öğretmenlerin öğretmenlik deneyimleri ve Teknolojik Pedagojik Alan Bilgisi arasında negatif yönlü ilişki olduğunu kanıtlamıştır.

Bu çalışmanın amaçlarıyla ilgili olarak, Türk İngilizce öğretmenlerinin Teknolojik Pedagojik Alan Bilgisi, öğretmenlerin cinsiyetleri ve öğretmenlik deneyimleri ile Teknolojik

Pedagojik Alan Bilgisi düzeyleri arasındaki ilişkinin tam bir resmini elde etmek açısından değerli katkılar sağlamıştır. Son olarak, öğretmenlere, eğitimci öğretmenlere ve eğitsel otoritelere önerilerde bulunulmuştur.

Anahtar Sözcükler: İngilizce Öğretmenleri, Teknolojik Pedagojik Alan Bilgisi, TPACK

ABSTRACT

THE INVESTIGATION OF TECHNOLOGICAL PEDAGOGICAL AND CONTENT KNOWLEDGE LEVEL BY TURKISH TEACHERS OF ENGLISH

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This study aimed to explore the Technological Pedagogical Content Knowledge (TPACK) levels of Turkish EFL teachers and the relationship between gender/experience and TPACK levels of the Turkish EFL teachers. The study was carried out in high schools of Mersin between April 10 and 15. 33 teachers answered to the EFL TPACK questionnaire consisting of two sections. First section of the questionnaire was for gathering general information of the participants and investigating the relationships between gender/experience and TPACK levels of Turkish EFL teachers. Second section of the questionnaire was for detecting the participants' TPACK levels. Quantitative data were analyzed by descriptive statistics including mean, frequency, standard deviation, t-test and One Way ANOVA.

The findings of the descriptive statistics indicated high levels of TPACK of the Turkish EFL teachers. Furthermore, the results of t-test showed the relationship between gender and TPACK was not statistically effective on their TPACK level. One Way ANOVA also proved that there is a negative correlation between the teachers' teaching experience and TPACK levels.

With relation to the aims of this study, valuable contributions were provided in terms of getting a picture Turkish EFL teachers' TPACK levels and the relationships between gender/experience and TPACK levels. Finally, some implications were suggested for teachers, teacher educators and educational authorities.

Key Words: English teachers, Technological Pedagogical Content Knowledge, TPACK

ABBREVIATIONS

PK : Pedagogical Knowledge

TK :Technology Knowledge

CK :Content Knowledge

PCK :Pedagogical Content Knowledge

TPK :Technological Pedagogical Knowledge

TCK :Technological Content Knowledge

TPCK :Technological Pedagogical Content Knowledge

MONE :Ministry of National Education

EFL :English as a Foreign Language

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CHAPTER I

1. INTRODUCTION

This study was an attempt to find out the Technological Pedagogical and Content Knowledge (TPACK) level of the Turkish EFL teachers and the relationship of gender/experience with the TPACK level of the EFL Turkish teachers. This chapter introduces the background and outline of the study consisting of seven major parts: rationale of the study, statement of the problem, aims of the study, research questions, the significance of the study, the limitations of the study and operational definitions.

1.1. Rationale of the study

The new generation is the net generation. The people born between the early 1990s and early 2000s are the ones who are much dependent on the Internet, computers and cell phones (Jukes, & Dosaj, 2005). According to Small and Vorgan (as cited in Min & Siegel, 2011, p.38), today's children are digital natives whereas their parents are digital immigrants. With the introduction of technology in our lives, the new teaching aids has been appearing constantly and this causes a change in the role of schools and educators. The effect of the technology is not perceived only on the students but also on the teachers. The teachers' success has become more dependent on the developments in pedagogy, technology and content areas to have a better carrier (Sahin, 2011). Ritter (2012) emphasizes the greatest impact of technology on the planning of the curriculum and the skills the teachers should have for including technology in their curriculum and lesson planning. However, Koehler and Mishra (2009) find the acquirement of a new skill challenging and state that the new technologies cause the occurrence of some challenges for teachers. One of these challenges is that the teachers are faced with the more usage of technology in their classes that is a very complicated activity for some of them because mostly, they do not have the sufficient information or experience with using technologies for teaching/learning processes. Even though the integration of technology into the classes is a very complicated activity for teachers, Rocha, Mota and Coutinho (2011) clarify that the teachers cannot ignore the changes and innovations happening in the methods and strategies that contribute to the teaching/learning in a more effective way.

What is more, Liu, Yu, Li, Liu and Wen (2014) state that there are plenty of Internet resources for the ones that learn English as a foreign language (EFL) such as chatting with native speakers via MSN or Skype, watching English movies or listening to online news. By the way, Koehler and Mishra (2009) points out that the applicaiton of technology into language teaching emerged a need for an approach to provide a qualified teaching. The emergence of qualifiedteaching with technology depends on three components: content, pedagogy and technology plus the relationships between and among them. These three components are the basis of the framework of TPACK. This means that content and pedagogical knowledge are not sufficient for quality lessons. Language teachers are required to arrange and put quality lessons into practice by applying technology apart from content and pedagogical knowledge.

FATIH project is a very huge project developed by Ministry of National Education (MONE) in Turkey. MONE have some goals to begin such a project. The purpose of this project is mainly to provide ICT equipment to classes in order to support the ICT supported teaching in relation to the goals that take place in the Strategy Document of the Information Society, the Development Report, the Strategy Plan of our Ministry. Moreover, The Policy Report of ICT has clarified all activities of our country and they have been formed with relation to the scope of the e- transformation of Turkey (MEB, 2012) . Considering the scope of this project, it is clear that this project has an impact on the teachers, students and schools. In addition, its aims represent that technology plays a significant role in education and MONE aims to combine technology with learning/teaching processes.

Also, Harris and Hofer (2011) claim that the usage of the technology in the classes is not something questionable from now on. What needs to be questioned is how well the EFL teachers can use it. Therefore, this thesis aims to evaluate the ability of EFL teachers to integrate the knowledge of technology, pedagogy and content in their classes and its relation to their gender/experience of teaching.

1.2. Statement of the problem

In the past, content and pedagogical knowledge were sufficient to be a good teacher. By using these two competences, the teachers could create a good atmosphere of teaching (Mahdum, 2015).With the advent of technology and computers, people have started gathering information through the Internet, online textbooks, online newspapers and even online articles. It has become

one of the indispensable components of people's lives and the impact of the technology has also been seen in the field of education/EFL classes. The schools have started using more interactive instruments in the classes to increase the participation and motivation of the students. (Gertner, 2011, as cited in Hassankiadeh & Hassankiadeh, 2013, p. 49).

Koehler and Mishra (2008) emphasizes that teachers have a vital role in teaching with technology. They possess the power for appropriate or inappropriate integration of technology in teaching. Moreover, Alimirzaee and Ashraf (2016) point out that it is a must for teachers to integrate technology in their Pedagogical Content Knowledge to create a successful teaching atmosphere and learning experiences among students. At this point, the foreign language teachers need to enhance their teaching by the help of effective ways and should be investigated to understand what kind of knowledge they have in order to integrate technology into the curriculum.

To sum up, the development of technology has become a significant part of EFL teachers' professional career. Since the application of technology is necessary in EFL classes, the knowledge content, pedagogy and technology should be interacted with the teachers' professional careers (Koehler & Mishra, 2008). The basis of effective teaching is blending various types of knowledge and thus the teachers need to develop their technological pedagogical and content knowledge in order to provide a successful teaching environment for the students of net generation.

1.3. Aims of the study

Technology is changing both the way of teaching and learning. What needs to be done to use the technology effectively is providing the interaction of technological, pedagogical and content knowledge. That is to say, technology cannot create an effective teaching/learning environment by itself. It also requires efficient understanding of content and pedagogy (Dilworth, et al., 2012).

In 1999, Ertmer divided the barriers affecting the teachers' technology usage into two categories. First barriers were the external ones such as training, hardware and software while the second barriers were the internal ones such as teachers' confidence, beliefs and perceived value of technology during the learning/teaching process (Ertmer, et al., 2012). Also, in his study, Akbaba (2006) finds out that teachers are not even willing to set up an e-mail address and

interested in using technology in their classes. This causes the lack of technology integration in the classes.

As it is understood, teachers' role in integration of technology in the classes is something critical but they have some external and internal barriers not to apply technology in the classes. Therefore, this study has three objectives. The first one is to find out the Turkish EFL teachers' TPACK levels, the second is to investigate the relationship between gender and TPACK, and the last one is to seek the connection between experience and TPACK.

1.4. Research Questions

1. What is the Technology Pedagogy and Content Knowledge (TPACK) of the Turkish EFL teachers?

2. What is the relationship between gender and TPACK?

3. What is the relationship between teaching experience and TPACK?

1.5. The significance of the study

Considering the impact of technology in every part of our lives, it has also gained great importance in the field of education. As one aim of this study is to find out the TPACK level of EFL teachers, the result of this analysis will help teachers to be aware of their TPACK level and education planners will be able to understand what needs to be done to improve the TPACK level of the teachers. Also, the analysis about the relationship of the TPACK with the gender and experience will clarify if they have an effect on the usage of technology in the class. These findings will be useful for teachers, education planners and MONE to realize to what extent these factors are effective and what precautions should be taken to put away the negative aspects of these factors.

Moreover, with the results of this study, the TPACK level of the teachers and the inadequate components of TPACK with the teachers will be clear. By this way, the ways to develop the inadequate components will be found to increase the effectiveness of technology and create a qualified teaching atmosphere.

1.6. Limitations of the study

The findings of this study for sure have some limitations. At first, the data for this study was collected from a group of male and female teachers who have been working for various years at different schools. Since the study was applied to a restricted number of teachers and only in a city, the findings may not be associated with findings in a larger group of educators, or be generalized to all Turkish EFL teachers.

1.7. Operational definitions

1.7.1. Technological Pedagogical Content Knowledge

The knowledge of TPACK refers to combination of technology, content and pedagogy. Therefore, it is associated with the teachers' knowledge about the subject they teach, how they teach the content and their capacity to use and choose the most appropriate technology for effective teaching.

CHAPTER II

2. REVIEW OF LITERATURE

2.1. Introduction

As mentioned before, this study was conducted to figure out the TPACK level of the Turkish EFL teachers and the relationship of the gender/experience with their TPACK level. This chapter includes reviews of related literature. The review of relevant literature covers the following main aspects; What is technology?, Technological Pedagogical Content Knowledge TPACK) ,Content Knowledge (CK), Pedagogical Knowledge (PK), Technological Knowledge (PK), Technological Content Knowledge (TCK), Technological Pedagogical Knowledge (TPK), Pedagogical Content Knowledge (PCK), EFL teachers' Challenges and Studies on TPACK.

2.2. What is technology?

Technology symbolizes the working procedures and constant progress. The most common representation of 'technology' is perhaps the things that are emerged by people such as refrigerators, eyeglasses, atom bombs, pianos, aspirin, and on and on (Kline, 1985). Furthermore, Mishra and Koehler (2009) define technology as the whole new staff that becomes visible by people after they were born. And what needs to be done is the right choice of these tools by the educators as each of these tools has their own potentials and problems.

Cox (2008) defines the technology with the help of two categories: transparent technologies and emerging technologies. Transparent technologies are the books, chalks, pencils, etc. used in the classrooms whereas emerging technologies refer to the new technologies (typically digital technologies) used in the learning environments. Accordingly, emerging technologies are the applied tools in the four components of TPACK: TK, TPK, TCK and TPACK.

Godwin-Jones (2015) gives importance to the presence of technology in the classes and states that the language teachers are in a different world know due to the role of networked computers in everyday life as it brings different people together from the various regions of the world. For that reason, the teachers should be knowledgeable in terms of using the technologies in the classes. They also should be aware of the new technologies via conferences, media reports

or workshops. By this way, it would be easier for them to integrate technologies and they would not feel the lack of knowledge in using the technology.

2.3. Technology Integration in Education

The use of computers in education has caused a very significant change. The teachers shifted from drill and practice to a more integrated approach. The technology has started playing an important role in the classes but most of the teachers are not certain with the meaning of technology integration (Dias, 1999).Morton (1996) argues that technology integration does not admit computers only as tools. Computer technology is not like the other tools such as blackboards or overhead projectors that require little or no training. Moreover, it does not mean taking the students to language labs for 40 minutes or a reward station for students that finished their assignments. On the contrary, technology integration emerges when it is a part of the daily activities that take place in the classroom. On the other hand, Liu, et all., (2014) point out that today's method to teach English is Communicative Language Teaching and the success of this method come true with the integration of technology in the classes. Morton (1996) states that technology integration occurs in the classes where teachers are facilitators and the teaching is student-based.

2.4. Technological Pedagogical Content Knowledge (TPACK)

TPACK means gathering three components together; technology, pedagogy and content (Dilworth, et all.,2012). It has become very important for educators with the emergence of new technologies. Previously, technology was being learnt separately for technology integration but recently the combination of technology with content and pedagogy is focus of interest (Baran, et all., 2011). Koehler and Mishra (2009) emphasize that TPACK is a professional knowledge. The complexity of it cannot be ignored and oversimplified. Moreover, they emphasized the difficulty of teaching with technology, as it requires continually creating, maintaining and re-establishing.

In addition, Archambault and Barnett (2010) emphasize that the notion of TPACK is becoming widely present and popular among the researchers recently. As a result of this, they attempt to figure out the relationship between and among the components of TPACK. Indeed, it

goes back to 1980s.Shulman's (1986) notion of pedagogical content knowledge was the basis of TPACK framework, at first termed as TPCK, developed by Mishra and Koehler (2006).

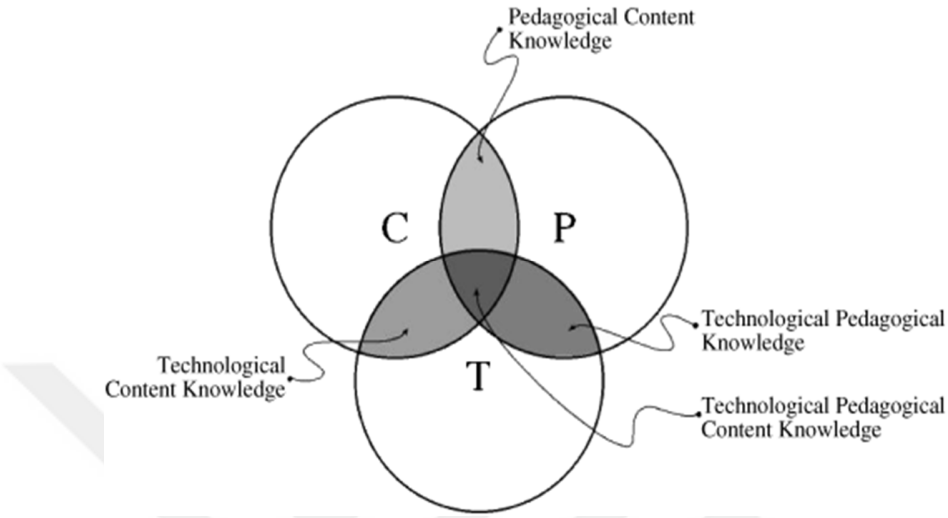

Figure 1. The initial model of TPCK (Mishra and Koehler, 2006).

This framework includes three knowledge domains: technological, pedagogical and content knowledge. The content knowledge is associated with the teachers' knowledge about the subject they teach, the pedagogical knowledge refers to how teachers teach the content and technological knowledge is related to the teachers' capacity to use and choose the most appropriate technology for effective teaching. Over time, the version of TPCK acronym changed to TPACK. With adding "A" to the acronym, this updated version became a useful theoretical framework for both teachers and researchers due to its better representation of three knowledge domains. This updated version is shown in the figure 2. (Thompson and Mishra, 2007).

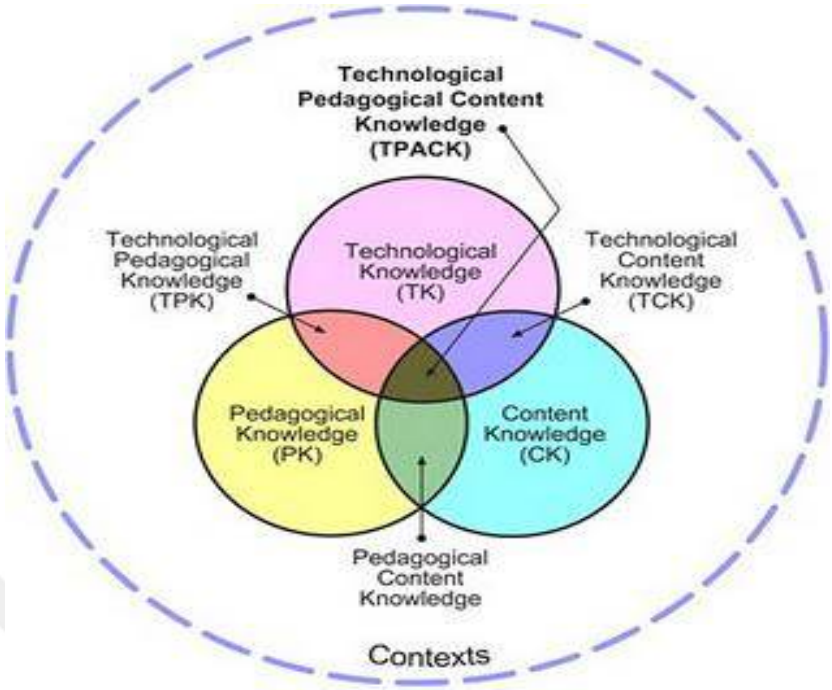

Figure 2. TPACK framework (Koehler & Mishra, 2008).

This figure demonstrates the concept of TPACK in a graphic and intersects the knowledge of teachers in three components. Koehler and Mishra (2006, 2008) state the three intersections of knowledge as:

- PCK refers to the competence to teach some curricula content;
- TCK is related to the ability to choose the most efficient technological resources to communicate some curricula content;
- TPK is associated with knowing how to use those resources in the process of teaching/learning.

The researcher, Sahin (2011) points out the value of integration of three components of TPACK in his study. Also, the necessity and great importance of applying technology integration for a successful teaching was focused on by Liu, et all. (2014). Besides being vital for successful teaching, it is also crucial in terms of the new millennium's method, Communicative Language Teaching. According to this method, English is for communicative purpose and technology

might be helpful in reaching this purpose (Nunan and Carter, 2001). Liu (2011) investigates the way in which universities integrate technology into English learning and finds out that five universities use English learning websites as platforms so as to ask questions or teach/learn strategies for English learning.

On the other hand, Niess, Sadri and Lee (2007) observed in-service teachers over 3 years period and propose developmental progression in TPACK as five levels: recognizing, accepting, adapting, exploring and advancing.

- *Recognizing*: In this level, the teachers have the ability to use the technology, know the conjunction of content and technology but they do not combine the technology and content for teaching/learning.
- *Accepting*: This is the level in which the teachers are in favor or against teaching content via proper technology.
- *Adapting*: The teachers participate in activities that cause adopting or rejecting for teaching content with a proper technology.
- *Exploring*: The level where teachers admit teaching content with an appropriate technology.
- *Advancing*: This is the level where teachers rearrange the curricula and assess the results of integrating content with an appropriate technology.

2.5. Content Knowledge (CK)

TPACK is composed of various types of knowledge and Content Knowledge is one of them. CK is related to the subject that is to be taught and learned. It is vital for the teachers as every subject includes different content. As a result of this, the teachers should have excessive knowledge of the subjects they teach (Koehler & Mishra, 2008). Shulman (1986) also points out that apart from the deep knowledge of the subjects the teachers teach, they also should know the concepts, theories and procedures in their fields as the content to be taught differ according to the age level and subject matter.

In addition, Gardner (2006) argues that the teachers, who do not have these understandings, can misguide the students about the content knowledge they aim to learn. Also,

Gardner (2006) regards the teaching of disciplines very significant as this process helps the developing of the knowledge (facts, concepts & relationships), methods (knowledge creation & validation processes), purpose (reasons why the disciplines exist) and representation (genres & symbol systems).

Mahdum (2015) seeks TPACK levels of high schools teachers in Pekanbaru. The study points out that the world is stepping forward to technology era and what needs to be done is to keep up with technological changes. The teachers stand at the center of implementing these changes in the classes. Based on the data obtained from this study, teachers show sufficient knowledge in terms of English that is crucial as the more they are competent, the better they can teach. Öz (2015) also investigates the TPACK of pre-service EFL teachers in Turkey. Nearly all the participants rate themselves positively and descriptive statistics indicate that the teachers have the linguistic knowledge of English.

2.6. Pedagogical Knowledge (PK)

PK is a component of TPACK, which is associated with the methods/techniques applied in the classroom, the nature of the students and strategies for assessing the students' understanding. The teachers that have the PK are capable of understanding how the students compose the knowledge and acquire skills (Koehler & Mishra, 2008).Mishne (2012) emphasizes that the presence of some certain strategies such as classroom management and evaluation of the students are beneficial for the teachers in terms of integrating the technology. Furthermore, PK is not only beneficial for the students. It also helps teachers to assess teaching performance.

In order to emerge a successful teaching and learning environment, pedagogical decisions made by teachers depend on the knowledge of their content area. For example, Geography teachers take national geography standards into consideration while preparing curriculum and instructions (Doering, et all., 2009).

In the study of Öz (2015), which is related to the TPACK levels of the teachers, the applied survey reveals that 84% of the participants were sharing the idea of having sufficient pedagogical knowledge. The participants' mean scores were higher than 4 that is a sign of their agreement on the items of the questionnaire.

2.7. Technological Knowledge (TK)

Technology Literacy of the National Research Council (NRC, 1999) proposed the definition of the TK as the fluency of information technology (FITness). According to this definition, people equipped with this knowledge has the ability to understand the information technology broadly, use it in their everyday lives and adapt to the changes in information technology (as cited in Koehler & Mishra, 2008, p.15).

On the other hand, according to some researchers (Angeli & Valanides, 2009; Archambault & Barnett, 2010; Archambault & Crippen, 2009) this knowledge refers to the digital literacy. Mishra and Koehler (2006) state their view of the digital literacy in TPACK context as the knowledge of computer systems, the ability to use the standard software and stay up to date with the changing technologies.

2.8. Technological Content Knowledge

Technological changes have affected the developing technological tools for educational purposes and the selection of technologies has changed the content to be taught. Likewise, the decisions on the content can block the types of technologies to be used. At this point, it is clear that technology and content both influence and constrain each other. What the teachers need is not only the deep understanding of the subject they teach but they also must be aware of the technologies related to the subject to be taught. The choice of the suitable technologies suiting to the subject will help the learning in a better way -or vice versa (Koehler and Mishra, 2008).

2.9. Technological Pedagogical Knowledge (TPK)

TPK means the impact of used technologies on teaching/learning. The whiteboard, which has been used for a very long time, is a good example for this impact. The whiteboard in the classroom influences the placement of other tools such as chairs and tables and accordingly this affects the nature of teaching/learning and interaction between teachers /students. Also, the teachers seem the only owner of the whiteboards. The students do not have the right to use them until the teachers let them. But the teachers may change this situation with their pedagogical knowledge. For instance, they can help students to be more active in using the whiteboards by providing them activities in which the students can use the whiteboards. As it is understood, TPK

requires the effective search of technology not for improving the students' learning and understanding (Koehler and Mishra, 2008).

2.10. Pedagogical Content Knowledge (PCK)

The requirements for a good teaching are the various teaching strategies, previous knowledge of the students and the tendency to find out different ways for solving the same problem. PCK is consistent with these necessities. It provides the connection between the curriculum, assessment and pedagogy (Koehler and Mishra, 2008).

Niess (2011) states the domains that affected PCK as subject matter, curriculum, learners, pedagogy and schools. And as it is seen in the figure 3, there are connecting lines, which represents the five domains of PCK.

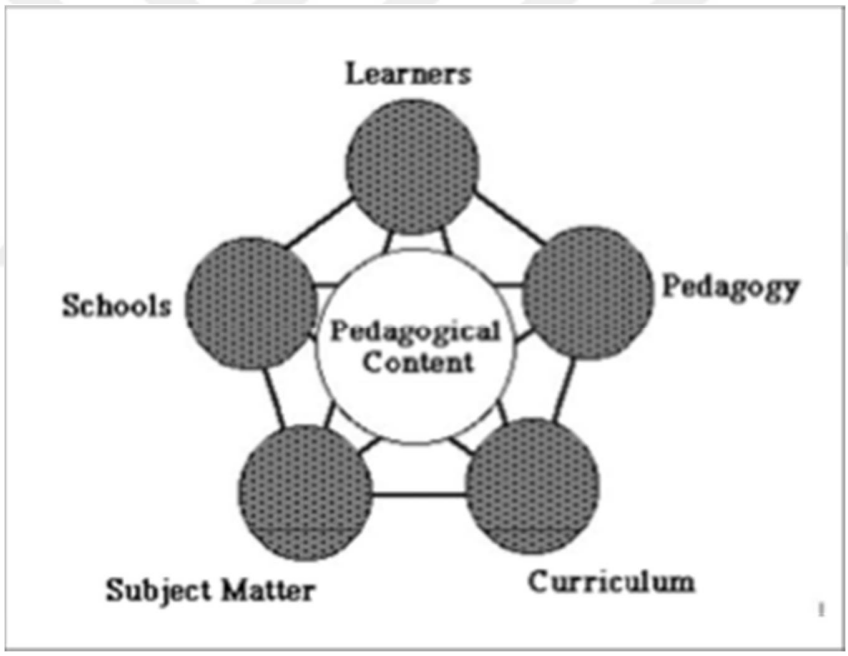

Figure 3. PCK and the relationship and interaction of multiple knowledge domains (Niess, 2011)

2.11. EFL Teachers' Challenges

The TPACK framework requires teachers to combine the components of the TPACK framework instead of interpreting these components in isolation. However, it seems like a game. For sure, the teachers should know the rules of this game. They need to have a deep understanding of the rules which to bend, break and leave alone. This comes true through the

training and practice of all TPACK components and providing the interaction of them with each other (Mishra and Koehler, 2009). The presence of technology is not something to be ignored from now on so the urge to integrate the technology in the classes is essential. Especially with the economic globalization, this issue becomes more urgent for the learners to have a better future career. Although technology is very urgent and important for the students, the integration of it is hard for the teachers for some reasons (Liu, et all., 2014).

To start with, the teachers must be skillful in using the technology to provide lesson plans supported with language learning software and Internet resources. This also requires the ability to cope with the complicated relationships among technology, content and pedagogy (Harris, Mishra & Koehler, 2009). Also, when teachers start to use technology in the classes, they need to reconsider about how to apply their skills and knowledge such as illustrations, examples, and explanations for the comprehension and access of the knowledge more easily (Shulman, 1986, p.9).

Another difficulty the teachers have is the combination of the old technology and new technology. In his study, Liu (2011) conducted a survey to 36 university EFL instructors in Chinese universities and found out that the students are mostly in computer lab and this causes the lack of interaction between students and instructors. Therefore, what needs to be done is providing a good balance between the new and old technology. The good balance is not the only point that should be considered as an important part of integration technology, also there should be eager teachers to provide this balance. In fact, most of the teachers are dependent on the old way of teaching they have established for a long time (Somekh, 2008).

Apart from teachers' inadequate willingness to balance the old and new technology, their inadequate knowledge about the technology is another factor that affects the usage of it. They feel the hesitation to use the technology in the classes, as the students are better than them in using it. At this point, the teachers fall behind the students and start to have conflicting feelings on the usage of the technology (Greenhow & Robelia, 2009). To avoid from this situation, the teachers should be competent technologically to create an environment rich in technological knowledge.

2.12. Studies on TPACK

In the last few years, there has been many studies to explore the concept of TPACK in educational institutions. The concept of TPACK becomes so popular that Dikmen and Demirer (2016) investigate the studies about TPACK between the years 2009 and 2013. They found out that the studies related to TPACK are not only from the field of EFL. Most of them are from the other fields of science and mathematics. However, most of the studies focus on the pre-service teachers whereas fewer take in-service teachers into consideration.

The study of Ritter (2012) investigates the impact of TPACK of secondary educators on decision-making process for integrating the technology into the planning process of educators. The researcher applies to semi-structured interviews in person so as to understand educators' TPACK affecting use of technology in lesson decision- making. At the end of the research, it was found that the educators that are familiar with the use of a specific technology affect the score of educator's TPACK and accordingly the planning of the curriculum.

One of the studies conducted in the field of mathematics was Landry's (2010). In this research, the goal was to develop a survey for mathematic teachers' TPACK. According to the results of the study, it can be stated that the participants of the study were eager to integrate technology into their classes.

The study carried out by Jang and Tsai (2013) was in the field of science. Its purpose was to examine the effect of science teachers' TPACK on some factors. They aimed to explore the relationship between gender/teaching experience and TPACK levels of science teachers. Regarding the results of the study, there were statistical differences according to gender and teaching experience. Male science teachers rated their TPACK levels higher than female ones and less experienced science teachers rated their TK higher than more experienced science teachers.

Nordin's (2014) put an emphasis on the pre-service teachers' TPACK to integrate ICT in teaching/learning. The study demonstrates how pre-service teachers' ICT and TPACK lead to an increase in their teaching competencies and also supports the importance of teaching experience in developing teaching competencies with ICT and TPACK.

Harris and Hofer's (2011) study is on the social studies teachers' TPACK and effect of it on the instructional planning. The findings of the study revealed that TPACK based learning activities lead to the use of more strategic and various technologies, a change in instructional planning and better standards for technology integration.

CHAPTER III

3. METHODOLOGY

3.1. Introduction

The current study has three aims: The first one is to find out the Turkish EFL teachers' technological, pedagogical and content knowledge (TPACK) level, the second and third ones are to seek the relationship between gender/teaching experience and TPACK. In this chapter, there are six main components of research methodology: research design, participants, instruments, reliability of TPACK questionnaire, data collection and data analysis.

3.2. Research Design

This study is a survey-based one and its aims are to find out the TPACK level of the Turkish EFL teachers and explain the relationships between gender/experience and TPACK levels of the Turkish EFL teachers.Williams (2011) points out that the descriptive research is a research method that investigates the situation and is based on the observations or seeks the correlation between two or more phenomena. Creswell (2002) also states that descriptive research tries to clarify the present conditions, differences or relationships and it attempts to examine a phenomenon that occurs at a specific place and time.

Also, descriptive research method includes correlational research model and it is selected for this study. Picciano (2004) mentions about the content of the correlational research and explains that in this research model, the collected data is for understanding whether the relationship exists and if yes, to what extent it exists between the variables.

3.3. Participants

This study was carried out at High Schools in Mersin, between April 10 and 15 in 2016. Some of the Anatolian High Schools that have Interactive Whiteboards within the scope of FATIH project were chosen. A total of 33 EFL teachers were given the questionnaire that consisting of two sections. The researcher collected all of the data. All of the schools were state schools and the necessary permission from the Local Educational Authorities was taken

(see Appendix B). All of the EFL teachers in these 10 high schools were given the questionnaires and all of the participants answered the questions.

The 33 participants of the study were Turkish EFL teachers in state High Schools that are equipped with the Interactive Whiteboards in the scope of the FATIH project. The participant group is consisting of different experience groups, but most of the teachers are between 6-10 years of experience group.

The other schools such as Primary schools, Secondary Schools and Private Schools in Mersin where technology has been used for some time were not selected and the teachers in those schools were not taken into the participant group of the study so as to attain a participant group consisting of EFL teachers from the same level of educational institutions.

There were general questions in the first part of the questionnaire. In the following table the distribution of the participants according to their gender and teaching experience can be seen.

Table 1.

The demographic information of the participants

		Number	Percentage %
Gender	Male	13	39.4
	Female	20	60.6
Experience	1-5 years	7	21.2
	6-10 years	13	39.4
	11-15 years	11	33.3
	16-20 years	0	0
	21years- above	2	6.1

The first part of the participants' demographic characteristics gives information about the gender of the participants. The number of the female participants with the percentage of 60.6 is more than the male participants whose percentage is 39.4. The teaching experience of the participants is the second question of the questionnaire and the most populated experience group comprises of the participants whose teaching experience is between the years of 6-10.

3.4. Instruments

In this study, the participants were informed that all the personal data would be kept strictly confidential in the reports at first so that their volunteer involvement in the questionnaire would be clear. Later, they were asked to answer the questions in the questionnaire that consists of two sections (See Appendix A). In the first section, there were general questions. These questions were about the teachers' teaching experience and gender. This section was especially

for the second and third research questions by which the relationship of gender/experience with the TPACK level of the teachers investigated. The other section of the questionnaire was to obtain the TPACK levels of the Turkish EFL teachers (See Appendix A). This questionnaire was taken from Bostancıoğlu and permission was taken from the researcher via e-mail to use this ELT TPACK questionnaire in the study. This questionnaire particularly aims to measure the technology, pedagogy and content knowledge of EFL teachers. Moreover, this questionnaire consists of six parts and each of these parts tries to get information about the certain knowledge types. Those are: technology, content, pedagogical content, technological content, technological pedagogical and technological pedagogical content knowledge. There are 50 questions in this questionnaire and all participants are asked to answer all questions in order to analyze the data got from them.

3.5. Reliability and Validity of TPACK Questionnaire

This questionnaire is particularly developed by Bostancıoğlu to assess the TPACK level of the teachers. The questionnaire will reflect the Turkish EFL teachers' current levels of technological, pedagogical and content knowledge and help them identify the components they need to develop. Moreover, by analyzing the related review of the literature emerged 76 questionnaire items and CALL experts validated 65 of them. Exploratory factor analysis of the EFL teacher' answers to the questionnaire created six factors of knowledge (50 in total) in which PK and PCK is seen as one factor. The concurrent analysis suggested that the questionnaire is sensitive enough to tell the difference between native/non-native teachers and the different use of technology. Moreover, Cronbach's alpha reliability analysis was applied to assess the reliability of the questionnaire developed by Bostancıoğlu and internal consistency results demonstrated that The reliability of the six factors in the ELT- TPACK questionnaire varied between .81 and .89. As a result, it was clear that the EFL- TPACK questionnaire is a valid and reliable tool and is sensitive enough to distinguish between different groups of EFL teachers (Bostancıoğlu, 2014).

3.6. Data Collection

At first, the permission was taken from the Local Educational Authorities to apply the questionnaires in the high schools (Appendix B). After getting the necessary permissions, the

schools and teachers were informed about the content and aims of the study. The participants of the study were promised that their responses, accordingly the data they provided would be confidential.

The questionnaire was conducted at high schools in Mersin between April 10 and 15. Since there were many questions in the questionnaire, it was hard to get in contact with all teachers face to face. In some cases, the questionnaires were given to the head of the EFL teachers and asked for their help to distribute them. After three days, the questionnaires were started to be collected and the data collection process ended on 17th of April. In fact, the number of the volunteers participating in the questionnaire was not as expected because more questionnaire were distributed to be answered.

3.7. Data Analysis

This study is based on the quantitative data, which is gathered via Statistical Packages for the Social Sciences (SPSS). The data was collected via the TPACK questionnaire consisting of two sections. To find answers for the research questions in the study, statistical techniques were applied. The first section was about the personal information of the participants and the second section was about the components of TPACK. For these sections, the data related to gender, teaching experience, knowledge about the components of TPACK were employed. T-test, One Way ANOVA, descriptive statistics such as mean score, highest score, lowest score, frequencies, percentages and standard deviation were also employed for the TPACK questionnaire. As for explaining the relationship between research questions and related instruments in detail;

Research question 1: What is the Technology Pedagogy and Content Knowledge (TPACK) of the Turkish EFL teachers?

The second section of the TPACK Questionnaire was applied to find out the TPACK knowledge of the Turkish EFL teachers. Descriptive statistics such as mean score, highest score, lowest score, frequencies, percentages and standard deviation were used for explaining the results of this research question.

Research question 2: What is the relationship between gender and TPACK?

The first section of the TPACK questionnaire was applied to answer this research question. T-test was implemented to figure out the relationships between the variables. The t-test was used to determine the relationship between the gender of participants and TPACK level.

Research question 3: What is the relationship between teaching experience and TPACK?

To find the results related to this research question the first section of the TPACK questionnaire was applied. One Way ANOVA was used to determine whether there are any significant differences between the participants having various teaching experience and their TPACK level.

CHAPTER IV

4. RESULTS AND DISCUSSION

4.1. Introduction

This chapter provides the findings and analyses of the study. The following sections present the findings relevant to three research questions.

4.2. The TPACK Level of EFL Teachers

Research question 1 was to find out the Turkish EFL teachers' knowledge about technology, pedagogy and content (TPACK). The study was carried out at High Schools in Mersin, Turkey by applying the TPACK questionnaire taken from Bostancıoğlu (2014).

To answer research question 1, the data collected via the questionnaire from various high schools were examined on the basis of components of TPACK. The Table 2 indicates the analysis of TPACK components in terms of mean score, standard deviation and highest/lowest scores.

Table 2.

Analysis of the Scores of the TPACK Components

TPACK Components	M	Highest Score	Lowest Score	SD
TK	4.31	5.00	2.82	0.082
CK	4.22	5.00	2.67	0.103
PCK	4.20	5.00	2.92	0.083
TCK	4.23	5.00	2.57	0.098
TPK	4.21	5.00	2.43	0.106
TPCK	4.32	5.00	3.00	0.091

TK: Technology Knowledge
CK: Content Knowledge
PCK: Pedagogical Content Knowledge
TCK: Technological Content Knowledge
TPK: Technological Pedagogical Knowledge
M: Mean Score
TPCK: Technological Pedagogical Content Knowledge
SD: Standard Deviation

With the examination, the descriptive statistics revealed that the participants have scores ranging between 2,43 and 5,00. From the results, it was found that TPACK has the highest mean score whereas the lowest is coming from the PCK. The lowest mean score (4.20) of PCK indicates that the participants admit themselves not to be efficient enough for this component of the questionnaire. In fact, the mean score is not low but it is not as high as the mean score (4.32) of TPACK. The mean score of the participants also shows that they consider themselves incapable of combining pedagogy and content effectively when compared to the other components. Following the PCK, TPK is on the second rank component with the 4.21 mean score. This analyzed component refers to the teachers' abilities in selecting the appropriate technologies for different activities, engaging students in learning via authentic resources/digital

technologies and using technologies for promoting learning experiences of students. Even if the mean score is low, it still indicates the high levels of TPK for the participants. Another component of the questionnaire is CK with the 4.22 mean score as seen in the Table 2. This component of the questionnaire is related to the teachers' abilities and proficiencies such as writing, speaking, reading and listening skills in their own field. In fact, this component is the basis for the other components and very significant for the teachers. The results of the questionnaire explain that this component has the third least score but even so, the teachers have the high level of knowledge in their own field TCK of the participants also revealed to be high since it has 4.23 mean score. This component of the questionnaire is associated with the teachers' knowledge in their field and combining this knowledge with the digital technologies to create a better learning/teaching atmosphere. TK is the component that has second highest mean score (4.31). This result shows that teachers are able to use the technologies effectively. The reason for this might be frequent use of technologies in their lives. The final component of the questionnaire is TPACK. The questions in TPCK part of the questionnaire represent the ability of teachers to combine pedagogy, technology and content knowledge for a better learning environment. With its highest mean score (4.32), it indicates that the participants consider themselves more competent for the Technological Pedagogical Content Knowledge component when compared to the others.

The descriptive statistics of the EFL TPACK questionnaire demonstrated that the participants have competence and high level of self-perception to create a better learning environment. Also, the findings of the study concur with the study of Öz (2015) whose study was about the assessment of Turkish EFL teachers' pedagogical, content and technological knowledge. According to the results of the study conducted by Öz, %80 of the participants perceive themselves competent in providing efficiency of integrating technology, pedagogy and content into the education programs.The findings of the study are in parallel to another study conducted by Kurt, Mishra and Kocoglu (2013). In their studies they found out that the participants have high level of confidence in selecting appropriate technologies and integrating TPACK's components.

The overall analysis of the TPACK questionnaire was also provided to demonstrate the overall TPACK levels of the participants. Table 3illustrates the number of the participants, mean

score, highest score, lowest score and standard deviation of the questionnaire including all components.

Table 3.

The analysis of Overall TPACK Questions

	N	Highest Score	Lowest Score	M	SD
TPACK	**33**	**4.66**	**3.14**	**4.25**	**0.058**

N: Number M: Mean Score SD: Standard Deviation

Depending on the descriptive statistics of the Table 3, it is seen that the mean score of EFL teachers' TPACK is 4,25, the highest score is 4,66, the lowest score is 3,14 and the standard deviation is 0,058. It can be inferred that high levels of agreement indicate that the participants have a high level of TPACK and accordingly self-confidence for providing a better learning/teaching environment via TPACK.

This finding correlates with some studies in the literature such as Jang and Tsai (2013) and Öz (2015). In these studies, the results of the studies indicate that the teachers rated their TPACK levels positively and most of the participants are good at integrating the components of TPACK to teach lessons appropriately.

Apart from the results of the analyzed components of TPACK questionnaire and the analysis of overall TPACK questions, the questions of TPCK including some properties of each component were analyzed in terms of frequencies, percentages, mean score and standard deviation in detail as seen in Table 4.

Table 4.

Analysis of TPACK Questions

	SD		D		NI		A		SA		M	STD
	f	%	f	%	f	%	f	%	f	%		
Q1	-	-	-	-	3	9.1	15	45.5	15	45.5	4.36	0.65
Q2	-	-	-	-	4	12.1	17	51.5	12	36.4	4.24	0.66
Q3	-	-	1	3.0	3	9.1	12	36.4	17	51.5	4.36	0.78
Q4	-	-	1	3.0	2	6.1	16	48.5	14	42.4	4.30	0.72
Q5	-	-	-	-	5	15.2	15	45.5	13	39.4	4.24	0.70
Q6	-	-	-	-	4	12.1	13	39.4	16	48.5	4.36	0.69
Q7	-	-	-	-	5	15.2	10	30.3	18	54.5	4.39	0.74

F: Frequency — SD: Strongly disagree

D: Disagree — NI: No idea

A: Agree — SA: Strongly agree

STD: Standard Deviation — Mean: Means calculated

Q1: I can use a range of technologies that enable students to become active participants.

Q2: I can use a range of technologies to help students pursue their individual curiosities.

Q3: I can use technology effectively to communicate relevant information to students and peers.

Q4: I can facilitate intercultural understanding by using technology to engage students with different cultures.

Q5: I can select technologies to use in my classroom that enhance what I teach, how I teach, and what students learn.

Q6: I can provide equitable access to digital language learning tools and resources.

Q7: I can teach lessons that appropriately combine English linguistic concepts, technologies, and teaching approaches.

The seventh question of the questionnaire is the one with the highest mean score (4.39). This result indicates that most of the participants consider that they are able to teach the lessons by combining English linguistic concepts, technologies and teaching approaches. Also, the percentages of agree (30.3) and strongly agree (54.5) for the seventh question demonstrates that most of the teachers perceive themselves competent enough to integrate technology, pedagogy and content. Moreover, the equal mean scores (4.36) of the first, third and sixth questions show that the participants of the study feel themselves being capable of using various technologies, relating them to provide the necessary information and supplying digital technologies and resources for the active participation of the students in the lessons. The fourth question of the TPACK questionnaire is another high competency with its 4.30 mean score. 30 out of 33 participants consider that they have the ability to introduce different cultures with the help of technologies. Another equal but least mean score comes from the second and fifth questions. As seen in the analysis of the second question, 29 out of 33 participants admit that they are able to use different technologies in order to make the students go after their individual curiosities. The analysis of the fifth question indicates that 28 out of 33 participants believe that they can decide on appropriate technologies with relation to the subjects they teach, the way they teach and what the students learn.

4.3. The Relationship between Gender and TPACK

Research question 2 was to find out whether there is a relationship between gender/experience of the teachers and their TPACK level.

T-test was used to figure out the relationship between gender of the teachers and their TPACK level. Table 5 indicates the correlation of the relationship between gender of the participants and their TPACK level.

Table 5.

The relationship between gender and TPACK

TPACK Components	Gender	N	M	SD	p
TK	Male	13	48.8	4.33	0.24
	Female	20	46.6	5.63	
CK	Male	13	25.84	3.71	0.53
	Female	20	25.05	3.50	
PCK	Male	13	52.53	5.04	0.08
	Female	20	49.05	5.89	
TCK	Male	13	30.76	2.91	0.80
	Female	20	28.90	4.43	
TPK	Male	13	31.23	3.24	0.06
	Female	20	28.35	4.55	
TPCK	Male	13	31.92	2.46	0.04
	Female	20	29.20	3.98	

TK: Technology Knowledge — CK: Content Knowledge

PCK: Pedagogical Content Knowledge — TCK: Technological Content Knowledge

TPK: Technological Pedagogical Knowledge — TPCK: Technological Pedagogical Content Knowledge

M: Mean Score — SD: Standard Deviation

N: Number — p: p value

As seen in the Table 5, the distribution of percentages in terms of gender is appropriate for examining the impact of gender on TPACK. According to the results of the questionnaire, there is not a significant relationship between the gender and technological knowledge, content knowledge, pedagogical content knowledge, technological content knowledge and technological pedagogical knowledge since the p value of these components is greater than ".05". However, the male teachers rated higher mean scores in these components of TPACK. When it comes to

the component of technological pedagogical content knowledge of TPACK, participants indicated statistical significance as the p value for this component is smaller than ".05". This finding revealed that there is a significant difference between gender and technological pedagogical content knowledge of TPACK questionnaire. The findings also showed that males scored higher than females according to gender.

Jang and Tsai (2013) are among the researchers that investigated the relationship between gender and TPACK and they reached that male teachers tended to rate their technological knowledge significantly higher than female teachers whereas Öz (2015) found out that females received higher scores in the components of pedagogical content knowledge and technological pedagogical knowledge.

4.4. The relationship between teaching experience and TPACK

Research question 3 was to find out whether there is a relationship between teaching experience of the teachers and their TPACK level.

One Way ANOVA was used to determine the relationship between the teaching experience and TPACK level of the participants. Table 6 shows the distribution of participants according to their teaching experience.

Table 6.

The distribution of participants according to their teaching experiences.

Teaching Experience	**N**	**%**
1-5 Years	7	21.2
6-10 Years	13	39.4
11-15 Years	11	33.3
16-20 Years	-	-
21+ Years	2	6.1

N: Number %: Percentage

Depending on the descriptive statistics of Table 6, it is clear that the biggest percentage of the participants have experience between 6 and 10 years (%39.4) whereas the least have more

than 21 years of experience. The second largest group has the experience between 11 and 15 years. Moreover, The group whose experience is between 1 and 5 years has the percentage of 21.2. And there are no participants that have teaching experience between the years of 16-20 years. The answers of the participants were analyzed in order to find out whether there is statistically difference among the groups and the results were revealed in the Table 7.

Table 7.

The analysis of the relationship between teaching experience and TPACK level

TPACK Components	Teaching Experience	N	M	SD	P
TK	1-5 years	7	46.14	4.09	0.239
	6-10 years	13	47.46	4.21	
	11-15 years	11	49.45	6.47	
	21+above	2	42.0	4.24	
CK	1-5 years	7	25.0	3.10	0.426
	6-10 years	13	24.38	3.64	
	11-15 years	11	26.27	3.84	
	21+above	2	28.0	1.41	
PCK	1-5 years	7	50.57	4.79	0.611
	6-10 years	13	50.69	5.63	
	11-15 years	11	51.0	5.93	
	21+above	2	45.0	11.31	
TCK	1-5 years	7	28.8	4.63	0.369
	6-10 years	13	30.61	2.75	
	11-15 years	11	29.72	3.46	
	21+above	2	25.50	10.60	
TPK	1-5 years	7	28.0	3.41	0.680
	6-10 years	13	30.3	4.87	
	11-15 years	11	29.7	4.29	
	21+above	2	28.0	4.24	
TPCK	1-5 years	7	30.0	3.05	0.255
	6-10 years	13	31.0	2.64	
	11-15 years	11	28.9	4.84	
	21+above	2	34.0	3.67	

TK: Technology Knowledge CK: Content Knowledge

PCK: Pedagogical Content Knowledge TCK: Technological Content Knowledge

TPK: Technological Pedagogical Knowledge M: Mean Score

TPCK: Technological Pedagogical Content Knowledge SD: Standard Deviation

N: Number p: p value

With relation to the statistical analysis of the relationship between teaching experience and TPACK, the findings show that there is not a statistically significant relationship between the teaching experience of the participants and their TPACK levels because p value of the components are all greater than ".05". As most of the participants of this study have teaching experience between the 6-10 and 11-15 years, they are more acquainted with the technology. The participants having teaching experiences between these years are probably the ones that were in touch with technologies during their education at universities. The more exposure to the technologies provides more competent users and accordingly teachers for the future.

What is more, the mean scores of the components express the various results. In terms of TK, the novice teachers (1-5 years) and the other two experience groups (6-10 years and 11-15 years) rate themselves higher than the experienced teachers (21 years + above) whereas the experienced teachers (21 years+above) rate their content knowledge (CK) higher than the other three groups (1-5 years/6-10 years and 11-15 years). As mentioned before, the new generation is the net generation and the higher rating of three groups (1-5 years/6-10 years and 11-15 years) in terms of technological knowledge supports this statement. The young teachers are more eager to learn about technologies and integrate them into their teaching while the experienced ones are more dependent on the traditional teaching strategies. On the other hand, the high rating of experienced teachers (21 years+above) in terms of content knowledge indicates that the more years they teach, the more knowledge they have in their own field whereas the less experienced teachers for sure need more opportunities and time to develop their content knowledge. Also the mean scores of the technological TCK support the former interpretation because the highest mean score comes from the group whose teaching experience is between 6 and 10 years while the lowest is the experienced group (21 + above). This finding indicates that the passing years in teaching help teachers develop their content knowledge and integrate technologies with it while the technology still constitutes a pitfall for the experienced teachers (21 years + above). The mean score of TPK shows parallelism with the interpretations above. The novice teachers (1-5 years) and the experienced teachers (21 + above) have the same mean score (28,0). This indicates that the novice teachers will accumulate this knowledge with the help of their experiences and the technology is a challenge for dependent teachers. For this component, the highest mean score goes to the group having 6-10 years of teaching experience that supports the

necessity of being young to be good at technology and years to learn how to teach. When it comes to the pedagogical content knowledge (PCK), it is seen that the group whose experience is between 11 and 15 years has the highest mean score while the experienced teachers (21 years + above) have the lowest mean score. In fact, this finding contrasts with the previous interpretations because the passing years bring higher level of content and pedagogical knowledge. But even so, the highest mean score still refers to the group whose experience is between the years of 11 and 15. Another interpretation that can be made from the percentages is the mean score of Technological Pedagogical Content Knowledge. The highest mean score comes from the experienced group (21 + above), which is not very surprising. Although technology is a challenge for the teachers, they are not totally far away from the technological tools.

CHAPTER V

5. CONCLUSION

5.1. Introduction

As mentioned in Chapter 1, the new generation is net generation. As a result of this, technological teaching/learning tools have become very important sources for the teachers and students. For sure, a qualified teaching refers to gathering technological, pedagogical and content knowledge together. In that regard, the current study aimed to investigate the TPACK level of Turkish EFL teachers and the relationship between gender/teaching experience and TPACK levels of the teachers. In this chapter, firstly, the summary of the study was presented and it was followed by implications for English language teaching and further research.

5.2. Summary of the Study

The current study was an attempt to shed light on what were the TPACK levels of the Turkish EFL teachers and whether there was a relationship between their TPACK levels and gender/teaching experience. For this purpose, An EFL TPACK questionnaire was conducted to 33 English teachers that are working in high schools in Mersin. The questionnaire was consisting of two sections. First section was for the general information about the participants whereas the second section that was developed by Bostancıoğlu (2014) was for the TPACK levels of the participants.

As for the first research question, which is "What is the Technology Pedagogy and Content Knowledge (TPACK) of the Turkish EFL teachers?" the results indicated that the Turkish EFL teachers have high levels of TPACK. They have the self-confidence and admit themselves competent enough in integrating technology, pedagogy and content knowledge for a better learning teaching environment. The findings of this research question are in line with Mahdum's (2015) study. The study discusses the TPACK levels of high school English teachers in Indonesia. According to the results of the constructed survey, the TPACK levels of English teachers are in "good" category, which implies that they have been able to integrating technology, content and pedagogy so as to achieve better teaching and learning. Also, Öz (2015)

and Jang & Tsai (2013) are among the researchers who investigated the TPACK level of the English teachers and concluded that the teachers indicated highly developed knowledge of TPACK.

On the other hand, Köse (2016) finds out a different a consequence. In the research, the researcher investigates the perceptions of English Language Instructors' TPACK within the context of teaching EFL. The study was conducted to 127 language instructors and they did not consider that they are competent enough in integrating technology, content and pedagogy. That's why they rated their TPACK levels low.

The second research question of the study is related to the relationship between gender and TPACK.On the basis of outcomes about the relationship between gender and TPACK, it was found that there was not a meaningful relationship between gender and TPACK level of teachers. Males rated higher that females for all components of TPACK and significant difference was only observed for the TPCK, the component of TPACK. This outcome of the study concurs with the studies of Öz (2015) in terms of including significance difference in some components or absence of significance difference in the others. The results of Öz's (2015) study showed that some components of TPACK had significant differences such as TK and PK while no significant difference observed between the groups regarding the other components. Meanwhile, the study of Jang & Tsai (2013) is different from the study of Öz (2015). Jang & Tsai (2013) state that science teachers indicated statistical difference in overall TPACK according to the gender.

When it comes to the third research question, which is related to the relationship between teaching experience and TPACK levels of the teachers, the study clarifies that there is not a statistically significant relationship between the teaching experience of the participants and their TPACK levels. In fact, there was a negative relationship between teaching experience and TPACK levels of the teachers. In other words, the more experienced teachers were the ones who got lower scores from the TPACK components including technology whereas the less experienced ones got higher scores. The results of the study show parallelism with the studies of Deniz (2007) and Jang & Tsai (2013). These studies report that the experienced teachers are not prone to use of technology in the classes. However, the study of Öz (2015) is in conflict with the results of the present study. It indicates a positive relationship between teaching experience and

TPACK levels of the teachers.

In conclusion, the findings of the study demonstrate that Turkish EFL teachers' TPACK level is high and the relationship between gender and TPACK was not statistically meaningful. In addition, the teaching experience and TPACK were found to be in a negative correlation.

5.3. Implications for English Language Teaching

The current study has aimed to reveal the Turkish EFL teachers' TPACK levels and what extent the relationship exists between gender/teaching experience and TPACK based on the results of the survey. First of all, this study may be a beneficial source for teachers to be aware of the importance and impact of TPACK on English language teaching. The teachers will have an idea about the TPACK levels' of some teachers and may assess their TPACK levels via this survey. Furthermore, the teachers will be able to understand what kind of relationship there is between gender/teaching experience and TPACK levels of the teachers.

MONE might realize the role of technologies in English language teaching, give more importance to the existence of technologies at educational institutions such as universities/schools and equip the classes with technological tools. Also, teacher educators may reconstruct their educational programs in order to develop teachers equipped with knowledge of technology and the ability to integrate the components of TPACK. They would find ways to develop this ability so as to increase the efficiency of technologies at schools. When the teachers are educated in this way, they can understand the dynamism of the classes easily for making appropriate choices while teaching. What is more, the experienced teachers are less prone to use technologies in the classes. At this point, MONE may arrange in-service training programs for teachers to improve their TPACK levels and make them feel more confident.

5.4. Further Research

This study was carried out at high schools in Mersin. The study was restricted to only one city in Turkey and carried out with a small number of participants so it does not provide a clear picture of Turkish EFL teachers' TPACK levels. For that reason, the outcomes of the study cannot be generalized to all Turkish EFL teachers. Further research could be directed toward involving more participants and various cities to collect data.Also, more data collecting techniques could be employed such as observations and interviews since it would be beneficial to observe the participants in classroom settings and get information in detail by interviews.

On the other hand, this study was applied to in-service teachers whereas there are some studies with pre-service teachers in the literature. More studies can be applied to in-service teachers to have more data and suggestions.

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7. APPENDICES

7.1. Appendix A: The TPACK Questionnaire

Dear participant,

This study conducted in Master of Arts (MA) Teaching English Language Teaching Program at Cag University. It aims to investigate the TPACK level of Turkish EFL teachers and the relationship of gender/experience with their TPACK level in EFL classrooms. You can be sure that all the personal data provided from questionnaire will be kept strictly confidential in my reports. Thank you in advance for your help and contribution.

Kemal DELEN

English Teacher

Department of English Language Education

Section I: General Information

1. Gender: Male ☐ Female ☐

2. Years of teaching experience:

1-5 years ☐ 6-10 years ☐ 11-15 years ☐ 15-20 years ☐ 21- above ☐

Section II: Technological Pedagogical Content Knowledge (EFL-TPACK) Questionnaire

For the following items, please circle the answers that best show your opinion.

1= Strongly disagree 2= Disagree 3= No idea 4= Agree 5= Strongly agree

	Technology Knowledge					
1	I know how to save data into/from a digital device (i.e. flash disk, USB stick, CD)	**1**	**2**	**3**	**4**	**5**
2	I know how to play audio and video files on my computer.	**1**	**2**	**3**	**4**	**5**
3	I know how to use computer mediated communication (CMC) technologies (e.g. email, chat)	**1**	**2**	**3**	**4**	**5**
4	I know how to record video files (i.e. using a video camera)	**1**	**2**	**3**	**4**	**5**
5	I know how to create images on my computer (i.e. using Windows Paint)	**1**	**2**	**3**	**4**	**5**
6	I know how to record audio files (i.e. using a dictaphone)	**1**	**2**	**3**	**4**	**5**
7	I know about basic computer hardware (i.e. CD-Rom, mother-board, RAM) and their functions.	**1**	**2**	**3**	**4**	**5**
8	I know how to use generic office applications (i.e. Word, Powerpoint, Excel)	**1**	**2**	**3**	**4**	**5**
9	I know how to edit images on my computer (i.e. using Photoshop)	**1**	**2**	**3**	**4**	**5**
10	I know how to use electronic / online dictionaries	**1**	**2**	**3**	**4**	**5**
11	I know how to use web 2.0 technologies (e.g. blogs, social networks, and wikis)	**1**	**2**	**3**	**4**	**5**
	Content Knowledge					
1	I can monitor my own writing for accuracy	**1**	**2**	**3**	**4**	**5**
2	I can comprehend English speech accurately	**1**	**2**	**3**	**4**	**5**
3	I can monitor my own speech for accuracy	**1**	**2**	**3**	**4**	**5**
4	I can comprehend English texts accurately	**1**	**2**	**3**	**4**	**5**
5	I am familiar with the culture(s) of target language communities	**1**	**2**	**3**	**4**	**5**
6	I am familiar with the differences between spoken and written English	**1**	**2**	**3**	**4**	**5**

	Pedagogical Content Knowledge					
1	I can assess student learning in multiple ways	**1**	**2**	**3**	**4**	**5**
2	I can select teaching materials appropriate to the needs of learners	**1**	**2**	**3**	**4**	**5**
3	I can choose an appropriate approach to teach learners (i.e.communicative approach, direct method)	**1**	**2**	**3**	**4**	**5**
4	I can adapt my teaching style to different learners	**1**	**2**	**3**	**4**	**5**
5	I can facilitate learning through individual, partner, group, and wholeclass activities	**1**	**2**	**3**	**4**	**5**
6	I can plan when and how to use the target language, including meta-language I may need in the classroom	**1**	**2**	**3**	**4**	**5**
7	I can keep students on task	**1**	**2**	**3**	**4**	**5**
8	I can identify linguistic problems experienced by learners (i.e.phonological, lexical or grammatical problems)	**1**	**2**	**3**	**4**	**5**
9	I can design language courses around the requirements of the curriculum	**1**	**2**	**3**	**4**	**5**
10	I can facilitate learning by creating a comfortable environment in which learners are willing to take risks	**1**	**2**	**3**	**4**	**5**
11	I can react supportively to learners' interaction	**1**	**2**	**3**	**4**	**5**
12	I am aware of the contextual factors that could inhibit/promote English teaching	**1**	**2**	**3**	**4**	**5**
	Technological Content Knowledge					
1	I know about technologies that I can use to teach English language grammar	**1**	**2**	**3**	**4**	**5**
2	I know about technologies that I can use to teach reading in English	**1**	**2**	**3**	**4**	**5**
3	I know about technologies that I can use to teach writing in English	**1**	**2**	**3**	**4**	**5**
4	I know about technologies that I can use to teach English vocabulary	**1**	**2**	**3**	**4**	**5**
5	I know about technologies that I can use to teach pronunciation of English words	**1**	**2**	**3**	**4**	**5**
6	I know about technologies that I can use to teach listening in English	**1**	**2**	**3**	**4**	**5**
7	I know about technologies that I can use to teach about the differences	**1**	**2**	**3**	**4**	**5**

	between cultures					
	Technological Pedagogical Knowledge					
1	I can adapt the use of the technologies that I am learning about to different teaching activities	**1**	**2**	**3**	**4**	**5**
2	I can choose technologies that enhance students' learning for a lesson.	**1**	**2**	**3**	**4**	**5**
3	I can choose technologies that enhance the teaching approaches for a lesson	**1**	**2**	**3**	**4**	**5**
4	I can design, using technology, relevant learning experiences to promote student learning	**1**	**2**	**3**	**4**	**5**
5	I think critically about how to use technology in my classroom	**1**	**2**	**3**	**4**	**5**
6	I can engage students in solving authentic problems using digital technologies and resources	**1**	**2**	**3**	**4**	**5**
7	I can choose technologies to be used in assessment	**1**	**2**	**3**	**4**	**5**
	Technological Pedagogical Content Knowledge					
1	I can use a range of technologies that enable students to become active participants	**1**	**2**	**3**	**4**	**5**
2	I can use a range of technologies to help students pursue their individual curiosities	**1**	**2**	**3**	**4**	**5**
3	I can use technology effectively to communicate relevant information to students and peers	**1**	**2**	**3**	**4**	**5**
4	I can facilitate intercultural understanding by using technology to engage students with different cultures	**1**	**2**	**3**	**4**	**5**
5	I can select technologies to use in my classroom that enhance what I teach, how I teach, and what students learn	**1**	**2**	**3**	**4**	**5**
6	I can provide equitable access to digital language learning tools and resources	**1**	**2**	**3**	**4**	**5**
7	I can teach lessons that appropriately combine English linguistic concepts, technologies, and teaching approaches	**1**	**2**	**3**	**4**	**5**

7.2. Appendix B: Local Educational Authorities' permission

T.C.
TOROSLAR KAYMAKAMLIĞI
İlçe Milli Eğitim Müdürlüğü

Sayı : 19071600-605-E.4163671 13.04.2016
Konu: Kemal DELEN Anket
Uygulama Talebi

TELEFON ZİNCİRİ

.....MÜDÜRLÜĞÜNE
TOROSLAR

İlgi : a)İl Milli Eğitim Müdürlüğünün 12/04/2016 tarih ve 4122912 sayılı yazısı.
b)Valilik Makamının 11/04/2016 tarih ve 4091160 sayılı yazısı.

İlçemize bağlı Cemile Hamdi Ongun Mesleki ve Teknik Anadolu Lisesi öğretmeni Kemal DELEN'in "İngilizce Öğretmenlerinin TPACK (Teknolojik Pedagojik Alan Bilgisi Düzeylerinin Cinsiyet ve Deneyim Değişkenlerine Göre İncelenmesi" konulu tez çalışmasına veri toplamak üzere anket uygulama izin talebi incelenmiştir.

Cemile Hamdi Ongun Mesleki ve Teknik Anadolu Lisesi öğretmeni Kemal DELEN'in söz konusu anket uygulama çalışmasını 2015-2016 eğitim öğretim döneminde ilçemizde bulunan ortaokul ve liselerde görevli ingilizce öğretmenlerine gönüllük esasına dayalı olarak ve eğitim öğretimi aksatmadan (Mühürlü ve onaylı soruları kullanarak) uygulaması, uygulama sonucunda hazırlanacak raporun basılı ve dijital ortamda Müdürlüğümüze vermek şartı ile uygun görüldüğüne ilişkin Valilik Makamının ilgi (b) oluru ve imzalı mühürlü anket soruları yazımız ekinde gönderilmiştir.

Bilgilerinizi ve gereğini rica ederim.

Mehmet BADAS
İlçe Milli Eğitim Müdürü

Eki:
Yazı Örneği (6 Sayfa)

Dağıtım:
Müdürlüğümüze Bağlı Ortaokul ve Lise
Müdürlüklerine

Güvenli Elektronik İmzalı
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