An Exploration of Turkish Kindergarten Early Career Stage Teachers’ Technology Beliefs and Practices

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An Exploration of Turkish Kindergarten Early Career Stage Teachers’ Technology Beliefs and Practices

by

Ozge Ozel

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy of Curriculum and Instruction with a concentration in Early Childhood Education
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DEDICATION

I dedicate this dissertation to myself. Without my perseverance, focus, intelligence, strength, and independence as an international student in the U.S, this achievement would not have been done. Thank you Özge!
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ABSTRACT

The purpose of this study was to explore Turkish kindergarten early career stage teachers' self-efficacy beliefs towards technology and their technology integration practices in their classrooms by answering: What are self-efficacy beliefs of Turkish kindergarten early career stage teachers towards technology? How do Turkish kindergarten early career teachers integrate technology into their classrooms’ instructions? The study was designed as a qualitative multiple case study and guided by Bandura’s (1986) social cognitive theory and Mishra and Koehler’s (2006) TPACK conceptual framework. I conducted this study in Istanbul, where is the most crowded and metropolitan city in Turkey. The schools were chosen by Ministry of National Education (MoNE) after the permissions were received from IRB and MoNE; and the participants were assigned by the directors of schools based on research criteria. Participants were chosen purposefully, and there were four female kindergarten teachers in their early career stages, which were identified based on Steffy, Wolfe, Pasch and Enz (2000)’ stages: novice teacher and apprentice teacher, teaching five-year old students at technologically well-equipped classrooms, and who had a bachelor’s degree in preschool teaching. Data was collected from three sessions of semi-structured interviews and two sessions of observation based on TIM-O. Data was coded and analyzed based on Technological Pedagogical Content Knowledge (TPACK) to make sense teachers’ technology self-efficacy beliefs towards technology and Technology Integration Matrix (TIM)’s to understand their technology practice into classroom instructions.
CHAPTER ONE: INTRODUCTION AND RATIONALE

“Intelligence is the ability to adapt to change.”

(Stephen Hawking)

Researchers, educators and practitioners have agreed on the significance of preparing students for 21st century which requires critical thinking, problem-solving, communication, collaboration, and creativity and innovation; and these skills can be most effectively taught and learned by integrating technology (Harmes, Welsh, & Winkelman, 2015). Therefore, technology integration has become a key part of education in each level especially in early childhood education (ECE) (Yuksel-Arslan, Yildirim & Robin, 2016).

The increase in integration of educational technology into classroom instruction at all levels has created awareness of stakeholders such as policymakers, administers, educators, students, and parents (Akbulut, Odabasi & Kuzu, 2011). Over the past decade, educators and governments have been under pressure to reform education through technology (Keengwe & Onchwari, 2009). Therefore, technology integration in education from preschool through higher education has become policy focus in many countries (Altun, 2019). Currently, Turkey is one of the countries, where the implementation of educational technology is the central focus (Yuksel-Arslan et al., 2016).

In fact, Turkey has launched one of the world’s largest educational technology projects called The Movement to Enhance Opportunities and Improve Technology
(FATIH) (Pouzevara, Dincer, Kipp, & Sarisik, 2013). “Turkey’s Ministry of National Education (MoNE) [has taken] a unique position on the world stage since the project is nascent and grandiose enough to affect real and lasting change; and, also, it has become a model for a host of other nations looking for effective ways to prepare their children for leading roles in the global knowledge economy” (Pouzevara et al., 2013, p. 3).

The aim of FATIH Project is to “provide interactive whiteboards (IWBs), tablet computers and Internet network infrastructure to all schools of basic education (IWBs for pre-primary and primary levels and IWBs and tablets for lower and upper secondary levels) to enhance and ensure equality of opportunity in education and to improve ICT use in teaching and learning processes in schools” (Pouzevara et al., 2013, p. 6). According to Pouzevara et al. (2013), 40,000 schools and 620,000 classrooms were supposed to equipped with ICT hardware under the scope of FATIH Project across Turkey since 2010. Pouzevara et al. (2013) also stated the aim the project was to provide secondary schools with technological tools, then, continue with other all grade levels between 2011 and 2019. There are five main components created in the FATIH official website:

- “Preparation of the infrastructure for hardware and software that comprises effective procurement, distribution and technical set-up of equipment in schools”;
- “Provision and management of the e-content that entails creating new class materials consistent with ICT-supported instruction”;

• “Effective ICT usage in line with curricula that aims to find new channels of integrating ICT usage with course curricula”;
• “Conscious, reliable and measurable usage of ICT and the Internet that focuses on teaching users of ICT how to use relevant ICT tools with complementary information on the web as well as evaluating how people use ICT”;
• “In-service training to teachers for ICT instruction in classrooms that enables teachers to use ICT tools effectively and appropriately in a classroom environment properly” (p. 6).

Within the scope of FATIH Project, 680,000 teachers were supposed to attend two modules of training. Thirty-hour trainings on technology integration in education and twenty-five-hour trainings on preparatory education has started in 2012 (Pouzezvaria et al., 2013). MoNE stated that more than 120,000 teachers were trained as of April 2013. In addition, 110 distance learning centers, which established by MoNE in eighty-one provinces to facilitate teacher access in the future (Pouzezvaria et al., 2013). Overall, the aim of FATIH was to provide schools, students and teachers with equipment and training to improve ICT use in the classrooms. However, in FATIH Project, technological devices remained as attractive tools instead of becoming interactive learning materials since teachers’ technology usage levels remained lower than expected.

Pouzezvaria et al. (2013) conducted interviews with some of the individuals responsible for teacher training, the results of which showed that “the initial model is to integrate technology into existing lesson plans through multimedia supplementary materials, [but] little guidance was provided on how this is to be achieved” (p. 11).
According to these interviewers, the training has transmitted that a lesson should have 10% technology integration. In addition, the results showed that these trainings were not prepared based on that schools’ visions, capacities and cultures of learning (Pouzevara et al., 2013). Since teachers do not have designated specific learning goals while integrating technology to assess students' learning or enrich student engagement, dropout-reduction, multimedia teaching support, classroom management, access to research, teachers will not successfully integrate technology (Pouzevara et al., 2013).

However, according to Pouzevara et al. (2013), there is no doubt that technology transforms education since educational systems that include ICT produce “more engaged learners who have better attendance and improved behavior; increased and improved collaboration among students; and more student-centered pedagogy through personal devices and personalized content; [increased use] of visual, auditory and kinesthetic learning methods including games and simulations” (p. 9).

Therefore, these findings brought us the statement that teachers at all levels are powerful mediators of technology's impact on students' learning (Blackwell, Lauricella & Vartella, 2014), and Holden and Rada (2011) have noted that actively using technology as an educational tool in classrooms helps to make learning more effective. Therefore, teachers’ attitudes have a major role in the effectiveness of technology use in schools, and confident teachers who are early adopters of technology into instruction can positively affect students' academic achievements.

Even though ICT in early childhood settings has been a target research topic for decades, since technology integration in education plays a crucial role to support and
develop teachers’ professional development and bring up well-educated children; attitudes of early childhood educators towards integrating technology as an educational tool are currently a major topic of research (Altun, 2019; Hoffman, Park, & Lin, 2015; Konca, Ozel, & Zelyurt, 2016; Liu & Pange, 2015; Masoumi, 2015; Nikolopoulou & Gialamas, 2015). Thus, researchers have concentrated on how preschool and kindergarten teachers can actively integrate technology in their classroom settings to enrich active learning in Turkey as well.

However, the latest research in Turkey has reached the same results that found by other researchers which states that kindergarten teachers use technology to prepare their daily plans, but they do not integrate ICT that often in children activities. When they use technology, it is mostly for music activities once or twice a week (Konca, Ozel, & Zelyurt, 2016; Preradović, Lešin & Boras, 2017).

Furthermore, Summak, Baglibel, and Samancioglu (2010) measured the technology readiness of primary school teachers in Turkey, and their results showed that teachers’ technology readiness levels remained low although Gok and Erdogan (2010) said that teachers were proficient in using the Internet for administrative purposes, and divided Turkish teachers’ technology usage into two groups:

1. Educational purpose (inactive): Teachers use technology to prepare their plan, search for different activities online and print examples for each student etc.

2. Education (active): Teachers actively integrate technology while they are teaching such as using smart-board to reinforce an activity.
The major problem with using technology as an educational tool in Turkey is that while teachers have started to integrate technology for administrative educational purposes, they do not actively integrate technology to enrich teaching and learning process (Gok & Erdogan, 2010). According to Holden and Rada (2011), actively using technology as an educational tool in the classrooms is directly related to teacher’s confidence. Therefore, to actively integrate technology in early childhood settings, teachers should be well-prepared, and they should be confident about their technology skills.

**Statement of Issue**

Training of early childhood education teachers dates back to 1927 following the establishment of the Turkish Republic (Ural & Ramazan, 2007). The first *Ana Öğretmen Anaokulu* was opened in Ankara, the capital of Turkey. However, after two years, the school was closed in 1930 (Ozturk, 2001). In 1960, ECE teacher training became a current issue again with the rise of urbanization and participation of women in the workforce (Ural & Ramazan, 2007). Primary Education Legislation stated that only women who graduate from teacher training schools or an equivalent kind of education from foreign countries, and those who graduated from vocational high schools or girls’ educational institutions could teach at a kindergarten after successfully completing a program of seminars (Altun, Sendil, & Sahin, 2011). With this statute, “the process of standardization and institutionalization in the training of ECE teachers had begun” (Altun et al., 2011, p. 484).

In the 1980-1981 academic year, a two-year kindergarten teacher associate degree program and in the 1991-1992 academic year, a 4-year undergraduate program
were opened and implemented (Oktay, 1999). The Council for Higher Education (YÖK) made a decision to increase the number of teaching departments called Early Childhood Education in 1998 (Bekman & Bekman, 2005). Currently, Turkey has fifty-four “Early Childhood Education departments that provide both undergraduate and graduate programs for the development of academicians and the training of the teachers in the field” (Altun et al., 2011, p. 484).

In addition, the Turkish Higher Education Council (YOK) created the Computer Education and Instructional Technology (CEIT) undergraduate program as part of the Teacher Training Reform, integrating technology instruction for both graduate and undergraduate programs into teacher training in 1998 (Gedik, 2017). Research in IT that focused specifically on e-learning and multimedia was conducted in Turkey during last two decades (Alper & Gulbahar, 2009). In fact, Turkey offers graduate students’ governmental scholarships to enroll in IT programs in the United States and Europe to master the most current adaptations in technological improvements in education (Gedik, 2017). These students then return to Turkey to develop IT programs in education based on experiences gained abroad. However, the majority of early childhood teacher education programs do not have a class related to technology integration yet.

NAEYC (2012) claimed Early childhood teachers’ technology integration needs “information and communication technologies such as desktop computers, digital cameras, audio and video recorders, overhead projectors, mobile technologies, and other electronic devices that enhance the teaching and learning process” (as cited in Kelly, 2014, p. 6). Technology integration in early childhood education has been developed with the advancement of computers, mobile technologies, Internet, and
software applications. Yet, even though the expanded technology integration in early childhood education includes computers, tablets, e-books, multi-touch screens, mobile devices, cameras, DVD and music players, audio recorders, electronic toys, games, and analog devices such as tape recorders, VCRs, VHS tapes, record and cassette players, and projectors, having technological devices in hand or in the classroom is not all that affects technology integration (NAEYC, 2012).

In the technology integration process, teachers play a significant role by making decisions about which technology would best enhance students’ learning (Barron, Cayton-Hodges, Bofferding, Copple, Darling-Hammond & Levine, 2011; NAEYC, 2012). Thus, teachers’ roles have expanded to include thoughtful planning, implementation, reflection, and evaluation of decisions to guide the integration of technology into the teaching and learning process (NAEYC, 2012). Since using technology as an educational tool in schools can positively affect students’ academic achievements teachers should able to use technology as an educational tool in the classrooms.

Blackwell, Lauricella, Wartella, Robb and Schomburg (2013) stated that even though some teachers have been using technology in teaching, they could not reach appropriate and effective integration practice levels. Goktas et al. (2013) claimed that the main reason that teachers’ technology integration has not reached the expected level is that there are barriers that teachers do not know how to cope with in Turkey. Therefore, it is important to identify these barriers and to determine how teachers can overcome them.

Once these barriers are known teachers could be trained since increasing the quality of teachers will positively affect students’ achievements. However, because each
teacher is at a different stage in his/her career s/he is integrating technology at different levels and would have different professional needs. Steffy, Wolfe, Pasch, and Enz (2000) stated, “In order to sustain teacher development, administrators must support the growth process by addressing unique needs of teachers operating at different phases” (p. 23). Therefore, for this study, Steffy's et al., (2000) career stages were used to identify teachers’ phases.

On the other hand, teachers have different technology adoption levels based on their experiences, beliefs, attitudes, education, self-efficacy etc., since they are exposed to number of new and innovative technologies regularly from their first year of teaching to their retirements (Metzler, Lund & Gurvitch, 2008). Thus, teachers must decide how to incorporate these innovations into their teaching and learning process (Metzler et al., 2008). Rogers (1995) defines innovation “as an idea, practice, or object that is perceived as new by an individual or other unit of adoption. The perceived newness of the idea for the individual determines his or her reaction to it. If the idea seems new to the individual, it is an innovation” (p. 11), and divided into two-steps process: adoption and diffusion.

According to Rogers (1995), “Adoption occurs when one or more individuals move along a path from first becoming aware of an innovation to the eventual regular usage of that new idea, technology, or practice” (via Metzler et al., 2008, p. 459). Diffusion is identified as an adoption process across a population over time by Rogers (1995). Even though the Turkish Ministry of Education is determined to increase the use of technology throughout the country’s educational systems and is providing both schools and teachers with technological devices; still, a problem persists with the
diffusion of digital innovations into instruction and lack of demonstrated effectiveness in the use of technology because of teachers. Therefore, teachers should be aware of innovations at any time during their career plan since both teachers’ technology adoptions and their career stages play significant roles for using technology as an educational tool in the early childhood classrooms (Izmirli, Izmirli, & Kirmaci, 2017).

Finally, researchers stated that there are several variables that affect teachers’ technology integration in education (Yuksel-Arslan et al., 2016). These variables are significant since teachers’ perceptions for using technology such as their self-efficacy, technology attitudes, computer anxieties etc. can be used to predict to what extent teachers integrate technology into their teaching practices (Aslan & Zhu, 2015). Therefore, teachers’ current perceptions, self-efficacy, and technology integration practices should be considered to explore how their abilities can be developed to increase the quality of their technology usage in education.

**Background of the Researcher**

I am a Turkish who has lived in Turkey until 2010 when I left the country for the United States of America (USA) to pursue my master and doctoral degree. Turkey is a transcontinental country located mainly in Western Asia with a smaller portion on the Balkan Peninsula in the Southeast Europe. Turkey has 7 regions (see Appendix A), and Ankara is the capital of the country. I grew up in the south of Turkey and attended a university which was located in the east part of the country.

In my daily-life, I always use technology for communication, social media, buying tickets for theater, painting class, flights etc., searching a place to visit, and navigation. Especially, as a Ph.D. candidate, I have been living with technology to conduct, analyze
and report my study. To collect and analyze data, I was supposed use technology tools and programs and I did face any problem neither learning the tool and program nor applying them. Therefore, since this research required technology usage, I believe I was well-prepared for using technology to conduct this study and capable complete my both observations and interviews.

In addition, I took courses related to technology during my Ph.D. program. These courses helped me to improve my abilities to learn and use technology as an educational tool for my teaching and learning process. During my education, I was always eager to learn and use new programs during. I helped my colleagues when they struggled with using technology. As a technology learner, I was always curious and eager to new technologies both in my daily life and in my professional teaching and learning experiences to make my life easier and my learning more effective.

On the other hand, as an undergraduate student, unfortunately, I had no opportunity to engage with technological devices during classes or experience how to integrate technology in early childhood classrooms settings in Turkey. Even though I was aware classes were traditional and routinized I did not realize how technology could strongly impact the teaching and learning process until I started teaching at a kindergarten that was not provided with technology.

After that, I was awarded with a scholarship to pursue my master and Ph.D. degree in the United States by the Ministry of National Education. Upon competition of both, I will be working as a faculty member at a selected university in Turkey. My goal is to transfer what I learned during my master and doctoral programs and apply this to my teaching and learning process at the college level in order to prepare pre-service
teachers to improve the quality of education in Turkey. Currently, educators, specialists, educational programmers, teachers and parents pay more attention to technology, and its potential for improved learning and teaching. This inspired me to focus on this study.

For this study, I viewed every aspect of the process from the standpoint of a researcher rather than that of a Turkish kindergarten teacher. I believe that both my short-term teaching experience and my absence from active participation in the Turkish education system for the past seven years could exacerbated this difficult situation. On the other hand, these challenges were also very helpful for me to focus on enhancing my inquiry. I was more attuned while creating a more comfortable environment for teachers to share experiences with technology.

I was captivated by the opportunity to engage in a qualitative research, pilot study in my home country. Even though we share a culture, beliefs and language, I faced some challenges during data collection process. The biggest challenge that I faced was translating the English terms to Turkish since I have learned most of things related to technology integration during my master and doctoral degree in the United States. In addition to that, the experiences I gained from the pilot study, and the methodology classes I took during my masters and doctoral programs has shaped the process of my current study.

Additionally, the recent researchers stated that teachers were not able to use technology due to lack of preparedness which made me realize how critical teachers’ preparation is for integrating technology effectively. Even though the Ministry of National Education offers seminars to teachers to assist them with technology integration, the results have not changed. From my perspective, it was significant to explore teachers’
beliefs towards technology and their technology integration practices to be able to develop the curriculum of both university and seminar programs. Therefore, I hope that the implications of my study will help me to shape my future teaching program for preparing kindergarten teachers who can use technology as an educational tool in early childhood classrooms and motivate further investigation into the technology phenomenon in Turkey.

Overall, for this study, I am bringing different perspectives from my background that would potentially influence the study since I will be the main instrument for obtaining knowledge through interviews and observations. My knowledge of the research topic and methodology; my experiences as an undergraduate student in Turkey; and as a preschool teacher in the Turkish context will be decisive factors in the research process.

**Purpose of the Study**

This study was seeking to explore Turkish kindergarten early career stage teachers' technology beliefs and practices. The aim of the study was to explore Turkish kindergarten early career stage teachers' self-efficacy beliefs and technology integration practices in their classrooms, and to build upon the existing research base to explore whether recent changes in the teacher preparation programs to include technology, have contributed to increased technology integration by kindergarten teachers who are in the early years of the career trajectory. The research questions that guided my study were:

1. What are self-efficacy beliefs of Turkish kindergarten early career stage teachers towards technology?
2. How do Turkish kindergarten early career stage teachers integrate technology into their classrooms’ instructions?

**Research Framework**

**Theoretical Framework: Social Cognitive Theory**

The research should be grounded in a framework to guide the researcher in ensuring that the study is coherent and to concentrate his/her mind on what the study aimed to achieve (Sutton & Austin, 2015). This study’s framework is based on Social Cognitive Theory since it plays a key role in the adoption, initiation, and maintenance of behaviors (Bandura, 1997). Social cognitive theory has become one of the most effective theories in education currently, and a fundamental resource in educational development (Straub, 2009). According to Bandura (2011), self-efficacy creates differentiation on people’s feeling thoughts and actions since behavioral chance can occur by a personal sense of control.

Bandura (1997) stated self-efficacy refers to the “beliefs in one’s capabilities to organize and execute the courses of action required to produce given attainments” (p. 3) and means thoughts about judgments based on beliefs about personal capability. Though similar to self-esteem and self-confidence, they are different concepts. While “self-esteem and self-confidence deal with a more holistic view of one’s capabilities, perceived self-efficacy is an individual’s belief that he or she can complete a specific task given a set of circumstances” today (Straub, 2009, p. 629). Bandura (1997) stated that the development of self-efficacy included mastery experiences, vicarious experiences, verbal persuasion, and psychological and affective states.
In addition, self-efficacy refers to an individual’s judgement of his/her capability to perform actions at the designated level (Guo, Justice, Sawyer & Tompkins, 2011). They also stated that “self-efficacy refers to teachers’ beliefs that they can bring about desirable changes in pupil’s behavior and achievement” (Guo et al. 2011, p. 961). Factors related to teachers’ self-efficacy are; teaching experience and a sense of community and pupil’s engagement (Guo et al. 2011). Early childhood teachers’ self-efficacy beliefs could be used to predict their classrooms’ quality. Therefore, self-efficacy beliefs towards technology has a significant role in technology integration since there is a link between teachers’ self-efficacy beliefs and their technology they use (Bilici, Yamak, Kavak & Guzey, 2013).

Ertmer, Ottenbreit-Leftwich, Sadik, Sendurur and Sendurur (2012) stated, teachers should not only know about technology but also feel confident using that knowledge to facilitate student learning; thus, teachers’ self-efficacy is the key point to explore teachers’ technology adaption levels in early childhood classrooms. In terms of adoption, people’s personal beliefs and judgments about their capability to complete a technology task are related to their computer attitudes, thereby, these beliefs and judgements are also related to people’s future technology use (Compeau, Higgins, & Huff, 1999).

**Conceptual Framework: Technological Pedagogical Content Knowledge (TPACK)**

Conceptual framework helps the researcher guide the research questions to ask, the literature to review, and the methodology to collect and analyze data, and interpret the findings in a qualitative research (Merriam, 2009). Technological Pedagogical Content Knowledge (TPACK) has been accepted as a significant framework to explore
how teachers integrate technology into their classrooms (Baran, Sedefoglu-Bilici, Albayrak-Sari, & Tondeur, 2019). It is a construct to measure teachers’ knowledge and capacity to integrate technology in instruction. It consists of three forms of knowledge: technological knowledge (TK), pedagogical knowledge (PK), and content knowledge (CK) (Abbitt, 2011).

The term of TPACK has been used to identify what teachers should know to effectively use technology as an educational tool in their classrooms (Schmidt, Baran, Thompson, Mishra, Koehler, & Shin, 2009). In addition, “Teachers’ professional knowledge is about course topics, teaching strategies, students’ learning difficulty and assessment methods, and application of technologies to facilitate students’ learning which is related to the framework of TPACK” (Chen & Jang, 2018, p. 2). Teachers’ beliefs regarding their technological pedagogical content knowledge (TPACK) are significant to integrate technology as an educational tool since their beliefs about their ability to integrate technology would be a powerful predictor of their potential technology integration (Bilici et al. 2013).

Therefore, since this study focusses on teachers’ self-efficacy and technology integration practices; it is based on Bandura’s (1997) theory of self-efficacy (socio-cognitive theory) theoretical framework and Mishra and Koehler (2006)’s technological pedagogical content knowledge (TPACK) will be the conceptual framework of this study.

**Importance of the Study**

Early childhood education has been considered one of the most crucial phases in a child’s life and has a history of more than 100 years in Turkey (Er-Sabuncuoglu & Diken, 2010; Sahin & Sak, 2015). According to Education at a Glance (2014), early
childhood education in Turkey is still evolving developments; thus, the Turkish Government is trying to improve the quality of early childhood education, school attendance rate, the number of preschool and kindergarten teachers and quality education in preschool classrooms (Turhan, Koc, Isiksal & Isiksal, 2009).

On the other hand, the information and communication technologies (ICT) influence in almost every field as well as educational environments by constantly changing and evolving in Turkey (Cukurbasi, Isbulan, & Kiyici, 2016). Therefore, to improve the quality of education in early childhood, technology integration has been considered as a fundament to contribute children development in all aspects and getting more attention in recent years (Can-Yasar & Uyanik, 2012).

Previous research stated that the biggest issue about using technology as an educational tool in classrooms is lack of technological devices. However, after through Ministry of National Education began providing various ICT tools under the scope of FATIH project to teachers and students to increase technology integration the feedback claimed teachers' technology integration levels did not meet with expectations (Cukurbasi et al., 2016). Therefore, teachers' sufficiency of using technology has gained prominence and become more significant (Saritepeci, Durak, & Seferoglu, 2016).

Researchers proved that the main problem why teachers' technology integration levels remain very low is due to lack of preparation at the universities and personal attitudes, etc. (Cukurbasi et al., 2016). In-service teachers were trained under the scope of FATIH project to use tools and to actively integrate technology; however, these trainings did not meet teachers' needs since each teacher has different technology integration level. Therefore, the use of technology in classroom activities has not yet
reached the ideal level of integration (Saritepeci et al., 2016). According to Yilmaz (2011), teachers use technology primarily for administrative and personal work with more limited integration into teaching and learning.

Last year, as a researcher, I conducted a pilot study to measure teachers’ technology integration levels in Turkey. I interviewed six teachers who were working as kindergarten teachers in technologically equipped classrooms. I also realized the teachers were not familiar with many technological terms, regardless of the level at which the technology was used in the classrooms and even though they used technology, their technology levels were standing mostly in entry levels.

Since researchers stated teachers play crucial role about using technology as an educational tool in the classrooms and their attitudes and confidence effect their technology integration practice I aimed to explore Turkish kindergarten early career stage teachers’ self-efficacy beliefs about technology and their technology integration practices in their classrooms. I am hopeful that this study will guide both educators and researchers to explore the needs of current pre-service and in-service kindergarten teachers through technology integration in Turkey.

**Definition of Terms**

The following terms were used throughout the study. These definitions were obtained from review of the literature in Chapter Two:

**Technology**

Technology refers to electronic devices and interactive media tools, which are used by teachers and students to enhance
teaching and learning process including preparation and evaluation.

**ICT**

ICT, in this study, relates to “those technologies that are used for accessing, gathering, manipulating and presenting or communicating information. The technologies could include hardware (e.g. computers and other devices); software applications; and connectivity (e.g. access to the Internet, local networking infrastructure, videoconferencing)” (Toomey, 2001, para. 3)

**Self-Efficacy**

The term self-efficacy refers to “people's beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives. Self-efficacy beliefs determine how people feel, think, motivate themselves and behave” (Bandura, 1994, p. 2). In this study, self-efficacy refers to teachers' beliefs in their capabilities to integrate technology into the teaching and learning process.

**TPACK**

Technological Pedagogical Content Knowledge refers to three main components to integrate technology: pedagogy knowledge, technology knowledge, and content knowledge (Mishra & Koehler, 2006).
The Technology Integration Matrix (TIM) “illustrates how teachers can integrate technology to enhance learning by incorporating five interdependent characteristics of meaningful learning environments: active, constructive, goal-directed, authentic, and collaborative. [Also], TIM gives five level of technology integration: entry, adoption, adaption, infusion, transformation, and each of the five creates characteristics of meaningful learning environments” (parag. 1).

Through review of the literature and systematic observation of teachers over time, Steffy, Wolfe, Pasch and Enz (2000) have identified six phases that classroom teachers experience during their careers: novice, apprentice, professional, expert, distinguished, and emeritus.

According to Steffy, Wolfe, Pasch and Enz (2000), early career stages cover novice and apprentice phases which are identified as teachers who have teaching experience less than four years.
FATIH Movement of Enhancing Opportunities and Improving Technology was designed to fund services such as providing hardware broadband internet to all classrooms, providing e-content, establishing platforms for the participation of teachers to information technology, and facilitation of the other activities including project implementation support.

Organization of the Study

This study was organized into nine chapters. Chapter One is the introductory chapter provides the background of the identified problem, purpose, research questions and the importance of the study. In Chapter Two, a review of related literature is expanded under categories; the context of the inquiry, technology and young children, technology and the teacher. It also discusses the theoretical and conceptual framework that are related to this study. Chapter Three explains the methodology for the study and research design, also, describes how data was collected, who the participants are, and how data was coded and analyzed. Chapter Four, Five, Six and Seven will reflect each case and Chapter Eight discusses the findings of cross-case analysis. Finally, Chapter Nine will presents implications and conclusions.

Summary of the Chapter

In this chapter, the overview of the study was presented. It provided an introduction and rationale for this study on perceptions, beliefs, and practices about technology integration among kindergarten teachers in Turkish schools. It also discussed the context of the study as well as a rationale and purpose for this study.
Theoretical framework, Bandura’s socio-cognitive theory, the conceptual framework, TPACK is explained. Finally, it gives definitions of the terminologies that were used in this study. Chapter Two provides the review of relevant literature.
CHAPTER TWO: LITERATURE REVIEW

Introduction

This study was seeking to explore Turkish kindergarten early career stage teachers' technology beliefs and practices. The aim of the study was to explore Turkish kindergarten early career stage teachers’ self-efficacy beliefs and technology integration practices in their classrooms, and to build upon the existing research base to explore whether recent changes in the teacher preparation programs to include technology, have contributed to increased technology integration by kindergarten teachers who are in the early years of the career trajectory. The research questions that guided my study were:

1. What are self-efficacy beliefs of Turkish kindergarten early career stage teachers towards technology?
2. How do Turkish kindergarten early career stage teachers integrate technology into their classrooms’ instructions?

The purpose of this chapter is to review and illustrate research related to Turkish context, information and communication technology in early childhood, teachers’ technology integration in early childhood classrooms, and the factors that affect teachers' technology usage. In addition, Technological Pedagogical Content Knowledge (TPACK) framework and social cognitive theory are emphasized in this chapter. Through this review, a rationale regarding the potential of teaching and learning process through technology will be expanded. Figure 1 illustrates literature review.
Overview of Early Childhood Education in Turkey

Turkey is a transcontinental country in between Western Asia and Europe, and with a smaller portion on the Balkan Peninsula in Southeastern Europe. The Turkish Republic was established by Mustafa Kemal Ataturk in 1923, and the capital of the country is Ankara. While early childhood education in Turkey had existed since the Republic of Turkey was established, historical roots in early childhood education in Turkey dates back to Ottoman Empire (Celik & Gundogdu, 2007). In Ottoman Empire, there were schools called “sibyan mektepleri” where parents could send their children who were 5-6 years old. In this period, the aim of these schools was only taking care of children and teaching them religion, but not educating them (Celik & Gundogdu, 2007).

In 1912, Ottoman Empire opened first official kindergarten, and then, it spread out through the country. However, there were no Turkish preschool teachers; therefore, the government had to find teachers from different nations. Unfortunately, these
teachers used very old traditional teaching methods (Akyuz, 1996). At that time, the biggest problem of early childhood education was lack of well-prepared Turkish preschool teachers. Thus, they started to prepare preschool teachers who were required to have certification from the Istanbul Teacher School for girls, to speak Turkish fluency, to be an Ottoman Empire citizen, and to have infectious no diseases (Akyuz, 1996).

In 1923, there were 80 kindergartens and 136 preschool teachers when Turkish Republic was established. To prepare preschool teachers, the government opened child development and education program in the vocational schools for girls in 1963 (Taner Derman & Basal, 2010). In 1973, the government decided to give two-year associate degree, in child development, and to provide classrooms with sources (Oktay, 1999). In 1980, universities created a pre-school teaching program for four-years education to prepare teachers to educate children from birth to 6 years old.

However, at that time, early childhood education was seen as only childcare by both parents and teachers (Celik & Gundogdu, 2007). Mothers who are working had to leave their children in the care of teachers. After 2000, Ministry of Education started to emphasize the importance of early childhood education, and both teachers and parents became more aware. In 2009, Ministry of Education encouraged parents to send their children who were 60-72 months old to kindergarten by showing them the importance of accessing early childhood education.

Celik et al. (2011) said that educational priority given early childhood education has been increasing in Turkey. The government has been investigating children’s cognitive and social development. Of course, there are some limitations such as lack of
materials at schools, but as a whole, teachers, parents and school districts are aware of the significance of early childhood education. Although there is much investment in children development, early childhood education and kindergartens, the biggest limitation is still teacher preparation.

At the 14th National Educational Council, it was stated that the goals of early childhood education are to provide children who are 0-77 months old with a rich stimulant environment suitable for their developmental level and individual characteristics, while supporting their physical, mental, emotional and social development. It is a training process that prepares them for primary education (Kuru-Turasli, 2007). Ministry of National Education (2013) defined the aims of early childhood education:

- To help children to develop their attachment to national, moral, ethical, cultural and human values.
- To develop their basic habits of physical, mental, emotional and social well-being.
- To prepare a common and equal environment for raising children from low socio-economic conditions and families.
- To ensure that children speak Turkish properly and accurately.

The Ministry of National Education is trying to improve the quality of early childhood education with the creation of different projects, however, not all are successful. For instance, kindergarten is not mandatory yet. While parents could send their children, who are 60-72 months old to kindergarten, after 2012, the system changed, and age was limited to 48-66 months of age. Children who are older than 66
months are admitted into first grade. However, parents who think that their children are too young to start elementary education, could obtain a medical doctor’s report to show their children are not developmentally capable to attend first grade yet. Unfortunately, these reports cause problems in children’s future academic and work lives because the reports prove that those children’s development delayed and are not at the expected level. Currently, there are four types of early childhood education in Turkey.

![Diagram showing four types of kindergartens in Turkey](image)

**Figure 2. Illustration of four types of kindergartens in Turkey.**

While the aim of kindergartens is preparing children for elementary schools, developing their cognitive, social and motor skills, improving their Turkish language abilities and creating a common area for children who are coming from different socio-economic status. Day care centers are only taking care of children. On the other hand, while kindergartens at the elementary schools may have not enough materials other private kindergartens and daycare centers are provided with enriched environments (Gol-Guven, 2009). There were 5,430 preschools, 2,196 of which are public and 3,234 are private in Turkey (MoNE, 2013). In 2016, while the number of early childhood institutions raised 27,793 the number of classrooms increased 58,265. In addition to
that, demographic information, which is given by MEB (2016) about early childhood education such as number of institutions, classrooms, teachers, students are shown below.

Table 1. 2015-2016 Academic Year Schooling Rate

<table>
<thead>
<tr>
<th>Gender</th>
<th>3-year-old (born in 2012)</th>
<th>4-year-old (born in 2011)</th>
<th>5-year-old (born in 2010)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>11.74</td>
<td>33.56</td>
<td>67.17</td>
</tr>
<tr>
<td>Male</td>
<td>11.67</td>
<td>33.62</td>
<td>62.42</td>
</tr>
<tr>
<td>Total</td>
<td>11.81</td>
<td>33.50</td>
<td>66.91</td>
</tr>
</tbody>
</table>

Table 2. Schooling Rate in Preschool Education Institutions

<table>
<thead>
<tr>
<th>Academic Year</th>
<th>Schooling Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1985-1986</td>
<td>4.1</td>
</tr>
<tr>
<td>1990-1991</td>
<td>4.9</td>
</tr>
<tr>
<td>1995-1996</td>
<td>7.6</td>
</tr>
<tr>
<td>2000-2001</td>
<td>10.3</td>
</tr>
<tr>
<td>2005-2006</td>
<td>19.9</td>
</tr>
<tr>
<td>2010-2011</td>
<td>43.1</td>
</tr>
<tr>
<td>2015-2016</td>
<td>49.27</td>
</tr>
</tbody>
</table>

Table 3. Number of Early Childhood Teachers and Students in 2015-2016

<table>
<thead>
<tr>
<th>Number of Students</th>
<th>Number of Teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>575,757</td>
</tr>
<tr>
<td>Male</td>
<td>633,349</td>
</tr>
<tr>
<td>Total</td>
<td>1,209,106</td>
</tr>
</tbody>
</table>
The number of students was 5,880 when the Turkish Republic was established, and it increased 1,209,106 within this 93-year. Also, the number of early childhood institutions, classrooms, rate of schooling increased in this period.

Table 4. Numerical Developments in ECE by Academic Years (1923-2006)

<table>
<thead>
<tr>
<th>Academic Year</th>
<th>Number of School</th>
<th>Number of Students</th>
<th>Number of Teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1923-1924</td>
<td>80</td>
<td>5,880</td>
<td>136</td>
</tr>
<tr>
<td>1940-1941</td>
<td>51</td>
<td>1,690</td>
<td>60</td>
</tr>
<tr>
<td>1943-1944</td>
<td>49</td>
<td>1,604</td>
<td>63</td>
</tr>
<tr>
<td>1950-1951</td>
<td>52</td>
<td>1,760</td>
<td>71</td>
</tr>
<tr>
<td>1963-1964</td>
<td>146</td>
<td>4,767</td>
<td>180</td>
</tr>
<tr>
<td>1970-1971</td>
<td>413</td>
<td>10,714</td>
<td>743</td>
</tr>
<tr>
<td>1980-1981</td>
<td>2,007</td>
<td>43,545</td>
<td>2,874</td>
</tr>
<tr>
<td>1990-1991</td>
<td>3,625</td>
<td>113,388</td>
<td>6,624</td>
</tr>
<tr>
<td>1997-1998</td>
<td>7,532</td>
<td>181,450</td>
<td>10,186</td>
</tr>
<tr>
<td>1998-1999</td>
<td>7,976</td>
<td>207,319</td>
<td>11,825</td>
</tr>
<tr>
<td>2000-2001</td>
<td>9,249</td>
<td>258,706</td>
<td>16,825</td>
</tr>
<tr>
<td>2001-2002</td>
<td>9,643</td>
<td>289,066</td>
<td>18,149</td>
</tr>
<tr>
<td>2002-2003</td>
<td>11,314</td>
<td>320,038</td>
<td>18,921</td>
</tr>
<tr>
<td>2004-2005</td>
<td>16,016</td>
<td>434,771</td>
<td>22,030</td>
</tr>
<tr>
<td>2005-2006</td>
<td>18,539</td>
<td>550,146</td>
<td>20,910</td>
</tr>
<tr>
<td>2015-2016</td>
<td>27,793</td>
<td>1,209,106</td>
<td>72,228</td>
</tr>
</tbody>
</table>
This table shows that early childhood education is increasing significantly in Turkey year by year. The numbers of early childhood teachers increased to 90,311 (72,228 at public schools and 18,083 at private schools) in 2017-2018 academic year.

On the other hand, Bekman and Gürlesel (2005) analyzed early childhood education in Turkey to create a report. To that report, they claimed that accessibility of early childhood education centers exists more in big cities and in the west part of Turkey. Small cities and other parts are at risk for early education. Their reports showed that there are five limitations of early education in Turkey:

1. “Institution based model of early education as the common practice, but inadequacy of other alternative models like home-based and community-based models”;

2. “Early childhood education services more for the purpose of preparing children for elementary education, but not for early intervention or risk elimination”;

3. “Non-standardized practices of early childhood education centers and also non-standardized teacher qualifications working under the control of MoNE”;

4. “Centralized curriculum unresponsive to the needs of children at particular regions of the country”;


**Turkish Early Childhood Curriculum**

The first attempt to develop early childhood curriculum in Turkey was in 1952, and later on, curriculum was systematically developed in 1989, 1994, 2002, and lastly
Learning outcomes that 37-60-month old children should attain were divided into four categories; body and movement development, intellectual development, social and emotional development, and language development in the 1989 early childhood curriculum (Alisinanoglu & Bay, 2007). In 1994, the curriculum was separately prepared for 0-36-month, 37-60 month, 61-72-month-old children (Dusek, 2008). This curriculum had the objective-subject relationship for 37-60 month and 61-72 month, and subject analysis tables to guide teachers.

The 2002-curriculum was prepared to support children’s cognitive, language, psychomotor, socio-emotional and self-care development. The aim of this curriculum was not only teaching the knowledge but also guiding the learn skills associated with search, investigation and try-out (MEB, 2002). That means, early childhood curriculum evolved in 2000’s with the main emphasis on general themes and concepts (Kandir, 2001; Temel, 2005). The most recent early childhood curriculum was developed in 2006 while giving more emphasis on communication, problem solving, entrepreneurship, environmental consciousness and creativity, rather than behavioral objectives, based on recommendations from teachers, principals, experts and academicians (MEB, 2006). This curriculum was designed as child-centered and gives more attention for process rather than outcome while the old one was designed as a content-centered form (MEB, 2006).

There are differences between the 2002 curriculum and 2006 curriculum. First of all, objectives for language development are addressed separately from those for cognitive development in the latest program. Second, the new curriculum has new
objectives and competencies of development such as expression of the self, listening skills, reading materials, and expanding vocabulary. Furthermore, the latest curriculum points out the developmental milestones of children, grouping them as 36-48, 48-60, and 60-72 months rather than grouping 36-60 and 60-72 as in older curriculum. This helps to concentrate on a more sensitive approach toward developmental differences during different periods of early childhood.

In addition, several objectives and competencies "such as preparing graphs and reading them, using measurement, finding the relationship between parts and a whole, and developing a pattern and finding relationships in it", were added to the cognitive development part of the new curriculum to enhance children’s higher level thinking skills (Cobanoglu, 2011, p. 13). Finally, one of the significant changes in the new curriculum is devoted to teachers. To increase quality in early childhood education, new curriculum requires teachers who have mastered courses in professional ethics, "behavior management, child creativity, responsibility, sensitivity for the environment, respect for diversity, inclusive education, the learning process of the children, and arrangement of the learning environment" (Cobanoglu, 2011, p. 13).

Although designing an appropriate curriculum is very significant for better quality education, teachers play a key role while adapting, applying or totally ignoring a curriculum as Van den Akker and Kuiper (1993) stated, “curriculum and instructional gatekeepers who filter proposals from outside through their own beliefs and routines in teaching, their perception of students, and their view on the organizational feasibility of the suggestions" (p. 301). Applying a curriculum does not mean only to be read by
teachers but more about to be understood, evaluated and adapted based on teachers’ influence of their individual context and professional identity (Drake & Sherin, 2006).

Unfortunately, there are other negative factors such as crowded classroom size, “lack of understanding of new curriculum, ineffective and inadequate in-service training of the teachers, [limited instructional time], lack of educational materials and equipment, [ambiguity] in terms of process-oriented assessment and evaluation means, insufficient technology” (Cobanoglu, 2011, p. 20). In addition to that, teachers who are resistance to change and parents’ negative attitudes towards school, education and curriculum that affect teachers while they are applying curriculum appropriately in Turkey (Bulut, 2007; Çınar, Teyfur, & Teyfur, 2006; Ekiz, 2003; Karadağ, 2007; Karakuş & Kösa, 2009; Kay & Halat, 2009; Kayıkçı & Sabancı, 2009; Bakar, Keles & Koçakoğlu, 2009; Kırkgöz, 2007; Korkmaz, 2006, 2008; Sert, 2008; Koksal & Yaman, 2009; Yapıçı & Demirdelen, 2007; Yıldırım, 2008).

However, the Ministry of National Education has been working to eliminate these limitations and to increase the quality of early childhood education in Turkey. For instance, a few years ago they limited the number of students in the classrooms to twenty-five. Once the number of students exceeds twenty-five, the school district has to open a new classroom. In addition, they provide the same materials to each kindergarten classroom throughout the country. Private pre-schools and kindergarten are supposed to prove their credentials to get permission from MoNE to operate.

Clement and Samara (2002) said that technology cannot be appropriate and not contribute to children’s learning without engaging curriculum and learning experience developed by teachers. Thus, it is significant to focus on how technology can improve
children’s development rather than discussing whether it is beneficial or not, because recent researches showed that technology helps children to improve their cognitive, social, and linguistic abilities. For instance, Mac Naughton & Williams (2008) claimed that using technology helps children gain experience for demonstrating certain skills such as literacy and numeracy. Therefore, it is significant to provide teaching and learning process with technology-enriched curriculum.

“The Turkish MoNE 2013 ECE curriculum is prepared taking into consideration the necessity of appropriate learning environments including whole child, family, school, and community contexts” (Ataturk et. al., 2012 p. 19). Since all schools are not provided with technological tools by Ministry of National Education, the curriculum is not enriched with technology yet. Therefore, teachers are still expected to modify curriculum to integrate technology to enrich their teaching and learning process based on their opportunities. However, since technology integration level did not reach the expected levels, they should focus on teacher training and update the curriculum (Akturk, Demircan, Senyurt, & Cetin, 2017).

Teacher Preparation for Early Childhood Education in Turkey

To catch up with 21st century’s innovations, teachers should integrate technology in the early childhood classrooms because technology is considered as an integral part of providing high-quality education (Ertmer et al., 2012). Thus, teacher education programs have an important role in training preservice teachers to integrate technology in education, and these programs should be enabling preservice teachers to gain technology rich experiences throughout all aspects of training (Aslan & Zhu, 2015).
In addition, previously, researchers claimed that the biggest challenge to integrate technology as an educational tool is lack of devices; however, after the Ministry of National Education started providing schools with technological devices, the results showed that teachers were unprepared to integrate technology in the classrooms (Yilmaz, 2011). According to (Izmirli et al., 2017), since technology is changing every day and technological tools are needed to be changed frequently it would not be appropriate to just investing money to provide education with technological tools. Therefore, once the results of FATIH project and the findings of recent research are considered the significance of teacher preparation to effectively integrate technology in education has arisen.

The education system in Turkey is centralized, meaning that it is centrally directed, controlled and generally funded by Ministry of National Education (Erdiller-Akin, 2013). Thus, each kindergarten teacher should take an examination after she graduates from the universities. Then, teachers are assigned based on their examinations’ score by Ministry of National Education. Since teachers are assigned by Ministry of National Education and not chosen by school districts based on their needs it is very significant that all teachers should be well-prepared to integrate technology in their classrooms.

Currently, there are 198 universities in Turkey and 54 of them offer bachelor’s degrees in early childhood education (pre-school teaching) in Turkey (Taner Derman & Basal, 2010). All universities give similar classes such as child psychology, child anatomy, math education, music education, drama, special education, English, children’s literature, history, science education and play etc. Students must complete
internships of at least four semesters. Pre-service teachers were taking technology
courses, but they only learn how to use basic Microsoft programs such as world,
PowerPoint, etc. However, universities have started to offer more technology-enriched
courses recently. For instance, the classes which are offered by Marmara University for
preschool teaching program are shown in the following table.

Table 5. Program Study of Marmara University Preschool Teaching Program

<table>
<thead>
<tr>
<th>Name of the Class</th>
<th>Semester of the Class</th>
<th>Context of the Class</th>
</tr>
</thead>
</table>
Early childhood educators and practitioners have become more aware that technology is developmentally appropriate for young children and they are more concerned with how they can effectively use technology to facilitate children’s learning process (Wang & Hoot, 2006). In addition, the NAEYC (2009) position statement stressed that supporting teacher training is an essential element of making the best use of technology. Therefore, pre-service teachers should be well-prepared and trained to increase effective technology integration by providing with appropriate knowledge and skills in early childhood education (Baran, Canbazoglu-Bilici, Albayrak-Sari, & Tondeur, 2019). As it is shown in the table, universities started to offer courses for early childhood preservice teachers to be well-prepared for using technology as an educational tool in their classrooms in Turkey.

**Teachers’ Career Stages**

Through review of the literature and systematic observation of teachers over time Steffy, Wolfe, Pasch, and Enz (2000) have identified six phases that ranked classroom teachers’ experience during their careers: novice, apprentice, professional, expert, distinguished, and emeritus. Teachers are taking this path in developing and maintaining professional growth. Steffy et al., (2000) state that “The strength of this
model is its focus on the process of how one continues to grow and become a more competent career teacher along the continuum (p. 5).

1. **Novice Teacher**: “The novice phase begins when preservice students first encounter practicum experiences as part of their teacher education program and continues through student teaching and the intern experience” (p. 6). These teachers are usually hesitant, unsure. They will need “skill introduction and development catalyst for movement: reflection on practice and increased confidence; completion of teacher preparation program” (p. 6).

2. **Apprentice Teacher**: “The apprentice phase begins for most teachers when they receive responsibility for planning and delivering instruction on their own” (p. 6). They are beginning their second to third years of teaching and are energetic, enthusiastic, idealistic, eager and passionate about students' success, they often leave the profession. Citing: avoidance of withdrawal, critical reflection, experiences of renewal and growth.

3. **Professional Teachers**: Growth in self-confidence because of positive student feedback. “Students view professional teachers as patient, kind, understanding and helpful” (p. 7). These teachers seek opportunities to observe others, to work collaboratively, and seek help from peers. They “recognize the value in observation, reflection, and interaction but struggle to find time to partake in those activities” (p. 7).

4. **Expert Teacher**: “Expert teachers anticipate student responses modifying and adjusting instruction to promote growth. Teachers at this level competently support, facilitate, and nature growth and development of all students,
regardless of their backgrounds or ability levels. Students feel safe in the environment of mutual respect these teachers create” (p. 8). This cycle can last for a lifetime.

5. Distinguished Teacher: These teachers’ “impact extends beyond the walls of the classroom to the local, state, and national levels” (p. 9).

6. Emeritus: These teachers “retired from classroom teaching but [continue] to contribute to the profession. [They] take new roles in other realms of education beyond the classroom” (p. 10). “The transition to emeritus status involves identifying new ways to serve others. Through consultation, volunteerism, mentoring, and service activities with professional groups, these teachers are strong advocates and lobbyists for teachers” (p.10).

Yilmaz, Tomris, and Kurt (2016) stated there is no relationship between Turkish kindergarten teachers’ career stage and their self-efficacy beliefs towards technology. However, Yuksel-Arslan et al. (2016) stressed that each teacher is at a different career stage in her teaching and learning process, and this affects her technology adoption level because her self-efficacy could be influenced by her career stage. Each career stage has different features; therefore, it is significant to determine teachers’ career stages and explore their adoption level based on their career stages.

**Information and Communication Technology in Early Childhood**

Technology has become a part of people’s lives in education as well as in other fields in the 21st century. However, some researchers still argue about the positive and negative impact of technology on children’s development. Despite these arguments about engaging technology at early ages, the National Association for the Education of
Young Children (NAEYC) (2012), stated that technology and interactive media can support and enhance children’s learning and their social relationships when used wisely by adults and children.

Even though one of the major arguments against integrating technology in early childhood years is that technology causes more isolated and anti-social children, recent researchers proved that technology helps children to work collaboratively and to become more social person as Bers and Kazakoff (2012) stated that computers help children improve their social interactions by facilitating positive peer interaction. In fact, technology is one of the best beneficial tools that encourages students to engage with technology and with their fellow pupils to fosters children’s understanding of themselves and others’ in their classrooms (Kirkwood, Shulsky, & Willis, 2014).

On the other hand, unfortunately, when technology is used as a term in education, most people consider it as a play tool such as a computer or cellphone. However, technology should not be limited to these devices or seen as a play tool. Technology has a broad range of options including computers, multi-touch screens, tablets, mobile devices, interactive whiteboards, cameras, DVD and music players, audio and video recorders, electronic toys, e-book readers, games, and older analogue devices such as VCRs, VHS tapes, tape recorders, light tables, microscopes and projectors (NAEYC, 2012), and each option gives students and teachers numerous opportunities to enhance the teaching and learning process.

Technology plays a role in the development and growth of a preschool aged child (NAEYC, 2012). Integrating technology tools into instruction actively supports the task of teaching and learning by providing different opportunities that allow students to
construct their own knowledge and enhance meaningful learning in kindergarten classrooms (Yilmaz, 2011). However, just equipping classrooms with technological devices to enhance student learning does not result in positive educational experiences, because technology is beneficial to children learning only if used appropriately.

In addition, Parikh and Shillady (2012) claimed that technology is an effective tool to support learning and children’s development when it is used intentionally and appropriately just like any other educational tool. However, using technology can only be beneficial when early childhood educators use it within the framework of developmentally appropriate practice (DAP) to provide teaching objects for individual students; for instance, students can use technology to expand their knowledge in hands-on, engaging and empowering ways (NAEYC, 2009).

McKenney and Vogt (2009) wrote a literature on early childhood education and Information and Communication Technology (ICT). They stressed that technology integration can become effective only when teachers integrate technology based on the pedagogically appropriate manner. McKenney and Vogt (2009) also claimed teachers have significant roles in providing and improving children’s experiences with computers and integrate technology into the naturalistic learning environment.

On the other hand, most countries including Turkey have been increasing technology usage in early childhood classrooms, and creating new projects under this supervision (Kurt, 2013). There is a new period that began in Turkey with the Catching the Era in Education in 2000 Project. “In this characteristic period underpinning the preparation for the new century, information technologies were used in order to
actualize transformation in the field of education. For this reason, work in this period was directed toward generalizing the use of information technologies, primarily in primary education toward integrating them into the system (MEB, 2002; MEB, 2004 via Yilmaz, 2011).

Kurt (2010) said that “In Turkey, like many other countries in the world, the implementation of educational technology is the central focus right now” (p.68), and Turkey is developing this new approach for education specialists based on UNESCO standards. Akbulut, Odabasi and Kuzu (2011) claim UNESCO’s ICT integration includes:

1. Content and Pedagogy (Teaching-Learning Methods and ICT in the Curriculum)
2. Collaboration and Networking (Professional Developments and Learning Communities)
3. Technical Issues (Infrastructure, Ease of Use, Access and Technical Assistance)

On the other hand, there are a variety of uses for technology in education, and numerous studies have been conducted on its usefulness. The results of studies showed that teachers’ attitudes have a major role in the effectiveness of technology in schools. Using technology as educational tool in schools can positively affect students’ academic achievements if teachers are able to use technology as an educational tool in the classrooms. Holden and Rada (2011) stated that actively using technology as educational tool in the classrooms helps to make learning more effective, but technology integration requires many different factors to reach desired achievements such as teacher’s confidence.
Furthermore, according to Roblyer and Edwards (2000), “Integrating educational technology refers to the process of determining which electronic tools and which methods for implementing them are appropriate for given classroom situations and problems” (p. 8). Merely, integrating educational technology is a process that requires technological, pedagogical, and content knowledge and appropriately usage. Thus, teachers play a key role in integrating educational technology in early childhood classrooms.

**Teachers’ Technology Integration in Early Childhood Classrooms**

**TPACK Framework**

To explore the teachers’ pedagogical practices with technology I will use a technological conceptual framework to guide the analysis of teachers’ technology integration level. Mishra and Koehler (2006) defined a framework called TPACK (Technological Pedagogical and Content Knowledge) for understanding teacher knowledge required for effective technology integration (Schmidt, Baran, Thompson, Mishra, Koehler & Shin, 2009). Koehler and Mishra (2009) stated that “Many teachers earned degrees at a time when educational technology was at a very different stage of development than it is today” (p. 60). Thus, it is very possible that they cannot conceive themselves sufficiently prepared for technology integration and consider technology valuable and relevant to teaching and learning process.

In addition, learning a new task using technology integration can be challenging for teachers since they have to fit this into a busy schedule and do not have adequate training for the new task; and it can be beneficial only when they are consistent with teachers’ current pedagogical beliefs (Ertmer, 2005). Finally, even though teachers use
technology in diverse of teaching and learning context, they are offered a one-size-fits-all approach. To stare down these issues, the TPACK approach was designed based on three components of the main point of good teaching with technology: content, pedagogy, and technology, in addition to the relationships among and between them (Mishra and Koehler, 2009).

On the other hand, recent research has proved that self-efficacy influenced teachers’ attitudes towards technology integration (Anderson & Maninger, 2007; Teo, 2009). Banas and York (2014) stated that the best way to measure teachers’ technology integration self-efficacy is via the TPACK framework. Thus, TPACK framework will be used in this study to examine teachers’ self-efficacy towards technology integration. According to Harris, Mishra and Koehler (2009) TPACK is a framework that:

emphasizes the connections among technologies, curriculum content, and specific pedagogical approaches, demonstrating how teachers’ understandings of technology, pedagogy, and content can interact with one another to produce effective discipline-based teaching. (p. 396).
What Is TPACK?

Mishra and Koehler (2006) developed TPACK framework based on Shulman's conception of pedagogical content knowledge (PCK) by clearly using the component of technological knowledge into the model (Graham, 2011). The framework consists of three main categories: pedagogical knowledge (PK), content knowledge (CK), and technological knowledge (TK); and four combining categories: pedagogical content knowledge (PCK), technological pedagogical knowledge (TPK), technological content knowledge (TCK), and technological pedagogical content knowledge (TPCK) (Angeli & Valanides, 2005; Graham, 2011; Graham, Burgoyne, Cantrell, Smith, Clair & Harris,
In the TPACK framework of Koehler and Mishra (2006), PK represents “deep knowledge about the processes and practices or methods of teaching and learning and how it encompasses, among other things, overall educational purposes, values, and aims” while CK is the knowledge about the context that will be taught by teachers (p. 1026). TK refers to the knowledge about several technologies that range from low-tech to high-tech. PCK represents teaching content by blending it with pedagogical methods. TCK is the knowledge of teachers to find out how representations can be created for specific context by technology. TPK is the knowledge of teachers to see how various technologies can be effectively integrated in teaching. TPACK represents the knowledge that is required for teachers to use technology into their teaching practices in any content area. Teaching with new technology can be complicated, thus the TPACK framework recommends content, pedagogy, technology, and teaching and learning context play roles; and effective technology integration into teaching practices need blending and applying all of these components (Koehler & Mishra 2009).

Technology usage as an educational tool, the most significant key components has become the preparation of teachers to improve plans for education and educational reform efforts (Angeli & Valanides, 2009; Davis & Falba, 2002; Dawson, Pringle, & Adams, 2003; ISTE, 2002; NCATE, 1997; Thompson, Schmidt, & Davis, 2003). Even though many efforts have been made to prepare teachers use technology as an educational tool, they still need to improve their skills to successfully use technology in the classrooms (Angeli & Valanides, 2009; Koehler, Mishra, & Yayla, 2007).
There are numerous reasons, such as being taught isolation from a subject-specific context and not being prepared to combine pedagogical connections and particular content, why teachers are not well-prepared to use technology as educational tool. However, the most significant limitation is lack of theory and conceptual frameworks to acquaint with the research in the area of technology use in teaching (Angeli & Valanides, 2009; Angeli & Valanides, 2005; Angeli, 2005; Koehler & Mishra, 2008; Mishra & Koehler, 2006; Niess, 2005; Wilson, 2003). Thus, Shulman (1986) thought that teaching education did not cover the content of the lessons and introduced PCK, which “identifies the distinctive bodies of knowledge for teaching” by blending content, pedagogy and knowledge (p. 8). In spite of this, he did not include technology and its relationship to these components. For this reason, Mishra and Koehler’s (2006) framework developed TPACK to combine technology with content and pedagogy.

Most researchers assert that any positive change in any components of TPCK will automatically increases development in TPCK (Hughes, 2008; Koehler et al., 2007). However, Angeli and Valanides (2009) conducted a number of empirical researches and found that growth in the related construct does not automatically cause growth in TPACK. They stated that:

In particular, in-service teachers, who had extensive teaching experience and knowledge of several computer programs, but were not specifically trained how to teach with computers, did not perform significantly better on designing computer-mediated lessons for their students than other teachers who had less teaching experience, good computing skills, but no specific training in the educational uses of computers as well (Valanides & Angeli, 2008b). However,
after specific training in how to teach with computers, teachers with stronger pedagogical skills and better knowledge about the content and learners outperformed other teachers with less knowledge in those areas (Valanides & Angeli, 2008c). (Angeli & Valanides, 2009 p. 158).

They also added that each component has impact on the evolvement of TPACK even though they do not affect TPACK automatically.

**TPACK in Turkish Context**

In order to improve teaching skills, both pre-service and in-service teachers should accept that technological knowledge has significant impact on the teaching and learning process, and they should be able to apply this knowledge (Erdemir, Bakirci & Erduran, 2009). In addition, teachers should be aware of how to benefit from technology to prepare for class, to teach, and enrich students’ learning (Lee & Hollebrands, 2008). Technological pedagogical content knowledge (TPACK) is used in Turkey to measure teachers’ technology integration level. For instance, Sancar-Tokmak, Yavuz-Konokman and Yanpar-Yelken (2013) conducted research to investigate pre-service kindergarten teachers’ self-confidence on their technological pedagogical content knowledge (TPACK). They collect the data from 154 students through the “Technological, Pedagogical, and Content Knowledge Self-Confidence” scale developed by Graham, Burgoyne, Cantrell, Smith, and Harris (2009), which was translated into Turkish by Timur and Taşar (2011). Their results showed that their TPACK was high and did not vary based on their gender and grade level.

In addition, Gomleksiz and Fidan (2013) did a research to explore pre-service elementary teachers’ perception level of their TPACK and self-efficacy. They used same
scale to collect data from 628 pre-service teachers. In both research, researchers explained TPACK as:

- Content Knowledge (CK): The context that will be taught by the teacher
- Pedagogical Knowledge (PK): The knowledge of appropriate approach to teach a specific content.
- Technological Knowledge (TK): The knowledge of using standard and digital technological tools.

The Turkish educational system already adopted the term of TPACK and used it in their practice and research. Dikemn and Demirer (2016) did a research to investigate studies about TPACK conducted in Turkey from 2009 to 2013. The results indicated that TPACK related studies in Turkey increased by year.

**Factors Affecting Teachers’ Technology Integration**

Technology integration is playing a crucial role in education, and the investments in technology in education has become a big trend around the world (Preradović, Lešin & Boras, 2017). Since technology integration in the classrooms has become significant, teachers should integrate technology as their routine to combine these investments to enhance students’ learning (Kurt, 2013). “Technology integration refers to using computers to support traditional or prevailing methods of teaching, for example learning ‘from’ the computer through tutorials, drill and practice, simulations and hypermedia applications” (Mahat, Jamsandekar, & Nalavade, 2012, p. 94).

While countries have given more attention to technology usage for educational purpose in early childhood classrooms, educators and specialists have worked on projects about how to develop and increase this usage by teachers (Cure & Ozdener,
In Turkey, researchers stated that teachers’ positive attitudes toward technology integration and the use of technology as an educational tool in the classrooms has increased (Akkoyunlu, 2002; Aral, Butun Ayhan, Unlu, Erdogan & Unal, 2006; Cagiltay & Cakiroglu, 2001, Celik & Bindak, 2005; Cure & Ozdener, 2008; Goktas, Yildirim & Yildirim, 2008; Seferoglu, Akbiyik & Bulut, 2008). However, Blackwell, Lauricella, Wartella, Robb, and Schomburg (2013) stated that even though some teachers have used technology for the purpose of teaching, they could not reach an appropriate and effective integration practice level.

Goktas, Gedik and Baydas (2013) claimed that the main reason teachers’ technology integration has not reached that expected level is that there are barriers that they do not know how to cope with. Therefore, it is important to determine these barriers and to find out how teachers can overcome them. Also, researchers claimed that there are several factors that affect teachers’ technology integration. These areas are significant since teachers’ attitudes towards using technology such as their self-efficacy, can be used to predict to what extent teachers use technology as an educational tool in their classrooms (Aslan and Zhu, 2015). Therefore, teachers’ current perceptions, self-efficacy, and technology integration practices should be examined to explore how they can improve their abilities and increase the quality of their technology usage for education.

Keengwe and Onchwari (2009) stated that teachers have been facing multiple challenges while they are using technology as an educational tool in their classrooms because, although technology tools could enrich students’ learning, this depends on teachers’ usage. Ertmer (1999) discovered two types of barriers which cause lack and
ineffective use of technology. First-order extrinsic barriers: time to learn and use technology, lack of access to technology, training and support and professional development negatively affect teachers’ technology usage. Second-order intrinsic barrier creates limitation on teachers’ technology integration because of their beliefs, perceived values of technology for students learning, and teachers’ comfort with technology.

On the other hand, Ertmer et al. (2012) stated that second-order intrinsic barriers are arguably more significant for teachers’ adoption and use of technology rather than first-order barriers even though Liu and Pange (2015) asserted that second-order barriers were perceived as the least main barriers. In 2007, Hew and Brush did an in-depth research (48 empirical studies) to analyze the integration barriers, which were documented in between 1995 and 2006, and found that three most significant barriers were: resources, teachers’ knowledge and skills, teachers’ attitudes and beliefs impacting teachers’ technology integration.

**Equipment and Resources**

Technology integration in education directly related to equipment and resources, thus without sufficient technology equipment, educators could find little opportunity to integrate technology into their teaching practices. Even though during the last decade, it could be the most significant barrier for teachers, now, most classes and teachers were provided with technological equipment. However, Plumb and Kautz (2015) said that teachers still complain about lack of technology tools as a barrier in the literature.

In Turkey, Ministry of National Education (MoNe) was supported the use of technology in education since the computer was introduced to schools in 1984. They
have been designing many projects to improve the quality of technology usage in education. The recent project called FATIH (The Movement to Increase Opportunities and Technology) was designed to promote efficient technology usage at schools (MoNE, 2011a). The strategic plan of Ministry of National Education for 2010-2014 was to promote technology integration in education. They stated that “integration of educational system and technology, support by means of development, provision of sustainable development by measurement and evaluation, and the reconstruction of education based on a student-centered and project-oriented system” (MoNE, 2011b).

Under this project, in seventeen provinces, fifty-two schools were provided with smart boards, computers, and tablets for each student and teacher as a pilot phase. While this pilot phase had only high-schools, primary and elementary schools including kindergartens will be also provided. The goal of the Ministry of National Education is providing all schools in the country with technological devices: smart boards, Internet access, multi-functional printers, and documented cameras (MoNE, 2011).

Additionally, some of kindergartens at schools were equipped with technological devices by schools’ districts. Since most educators are aware of the significance of technology integration in education, they support early childhood classrooms and teachers. To do that, they generally use schools’ funds or ask donations from parents in Turkey. In addition to this, private and independent early childhood classrooms are all equipped with technological devices by their directors.

**Teachers’ Technology Knowledge and Skills**

Technology and the education system cannot be separated (Gok & Erdogan, 2010). Technology has a significant role in improving education, thus educators need to
integrate technology and education (Akkoyunlu, 2002). All teachers, educators, researchers, in fact individuals should be able to access, use and create new and updated information. In addition, informational technology is changing dramatically because of the development of internet (Isman & Eskicumali, 2001).

However, recent researchers addressed that equipping classrooms, teachers, and students with technological devices is not enough to integrate technology at the desired level. NAEYC (2009) stressed that technology usage must be “appropriate” and “effective” in early childhood classrooms. Aslan and Zhu (2015) also found that just having technology competence does not conclude technology integration and pedagogical knowledge. They claimed that pedagogical knowledge is also required to use technology as an educational tool in the classrooms as well as pedagogical knowledge.

In addition, Plumb and Kautz (2015) said that teachers’ technology knowledge and skills, and technology-supported pedagogical knowledge and skills are significant barriers to technology usage in classrooms. Edwards (2005) argues that, “Unless early childhood educators have an appropriate understanding of how the technology works, they will be unable to effectively integrate the computer into the learning environment provided for young children” (p.4). Thus, teachers should have understanding and pedagogical knowledge to integrate technology as an educational tool in early childhood classrooms.

On the other hand, Yilmaz (2011) stated that the Turkish Education System has increased in the use the technologies by teachers, as in other countries, but the level of
integration of technology in classroom activities is not adequate. Kurt (2013) classified teachers’ use of technology into two groups: educational and non-educational including:

1. Administrative Use
2. Teaching Technology: Students learn about the knowledge related to technology, especially computers
3. Non-educational Use
4. Instructional Preparation
5. Teacher-Directed Instructional Delivery
6. Student Homework Preparation
7. Instructional Assessment

Although Yilmaz (2011) stated that there is an increase in using technology by teachers in the classrooms, Kurt (2013) claimed that teachers did not reach the expected level. When the uses of technology listed above are revised, deficiency can be seen clearly. Unfortunately, teachers are not integrating technology in the classrooms actively. They just use it to access knowledge, prepare for classroom, and assess the assignments etc.

Furthermore, Summak, Baglibel, and Samancioglu (2010) measured the technology readiness of the primary school teachers in Turkey, and the results of this study showed that teachers’ technology readiness level is not high. Gok and Erdogan (2010) claimed that teachers are able to use technology especially using the internet for educational purposes. However, there are two different methods of using technology for education: for educational purpose (inactive), for education (active). The problem in
Turkey is that teachers have started to use integrate technology for educational purposes, but they do not engage it with curriculum.

When recent research is revised it is clearly seen that technology integration in education has been developed by Ministry of National Education. However, when the state of technology in Turkey and teachers’ readiness were considered, the results indicated that even though teachers use technology for educational purposes such as preparing for classroom activities or assessment, they do not integrate technology as much as they are supposed to (Kurt, 2013).

Wood et al. (2008) stressed that teachers’ lack of knowledge and skills are main factors that influence their technology integration level. Thus, teachers should learn and be prepared to integrate technology in a way that is developmentally appropriate for early childhood classrooms. Even though technology related courses, Computer I, Computer II, and Instructional Design and Material Design were added to curriculum of all pre-service teachers’ education programs, the feedback of FATIH Project showed that teachers are not well-prepared to use technology appropriately and effectively as an educational tool in the classrooms. Thus, MoNE (2006) created a list for teachers to ensure their competency skills, and it “reflects fundamental concepts, knowledge, skills, and attitudes that teachers should possess when applying ICT in educational settings” (Goktas, Yildirim, & Yildirim, 2009, p. 278). After that, pre-service programs’ curriculum was changed to prepare teachers to be more qualified technology users.

**Teachers’ Training to Integrate Technology**

According to Pamuk and Peker (2009), one of the most significant drawbacks for teachers to integrate technology into instruction is identified as inadequate training in
how to use technology as an educational tool. In this respect, teacher education programs have a significant role in training pre-service teachers to use technology as an educational tool. According to Kurt (2010), focusing on educational technology is one of the biggest concerns in teacher education in Turkey. Since most kindergarten teachers were not prepared to use technology in the classrooms, they are facing challenges to integrate technology in their teaching and learning process. Thus, in addition to taking classes about technology integration, pre-service teachers should be provided with opportunities in order to expand their content and pedagogical knowledge delivery.

Without adequate training, early childhood educators will not be able to improve their confidence, skills and knowledge, which required to effectively use technology into their teaching and learning practices. Lack of training in technology integration is one of the most common barriers identified by many studies (Blackwell et al., 2013). Wood et al., (2008), additionally explored issues concerned with the quality or content of training, and they stated effectively technology usage and appropriately technology integration into teaching practice have become potential barriers for educators who do not have sufficient training.

Akbulut, Odabasi and Kuzu (2011) said that teachers need to develop new strategies to integrate technology in the classrooms because, they claim, that the majority of teachers were not prepared for educational technology at the universities, thus, most of them were not able to include technology in the classroom activities. Kurt (2013) supports this idea by stating that from the teachers’ responses, it appears that teachers do not feel that they are ready to use technology.
In Turkey, early childhood pre-service teachers do internships during their first year at the universities. Initially, they are supposed to observe in-service teachers, then, during their third and fourth years, they are given a chance to practice their knowledge. However, this causes limitations for pre-service teachers to master their technology integration since each school and classroom is not equipped with technological devices. Thus, these teachers may not find that chance to develop their abilities and skills for using technology.

To conclude, teachers should be trained to use technology as an educational tool in early childhood classrooms. To do that, teachers should not only be able to transfer skills and knowledge into classrooms, but also be able to handle technology integration, which requires that their technology integration training should have education and pedagogy elements (Lawson & Comber, 2000).

**Teachers’ Beliefs and Attitudes Towards Technology**

The existing literature stressed that teachers’ attitudes and beliefs are identified as a major barrier to technology integration. (Plumb & Kautz, 2015). According to Lindahl and Folkesson (2012) and Cakir and Yildirim (2009), teachers claimed that their lack of technology usage is related to their negative attitude towards it. When teachers have negative beliefs and attitudes towards technology integration, this negatively affects their technology integration in their teaching and learning process.

Teachers’ beliefs about technology integration are considered in three parts; self-efficacy beliefs about technology integration, pedagogical beliefs about technology integration, and beliefs about the perceived value of technology for student learning; by Miller and her colleagues (Miller et al., 2003). These parts are interrelated and the main
predictors of teachers’ technology integration level in teaching and learning process (Bebell & Kay, 2010; Miranda, & Russel, 2012).

In addition to that, Aslan and Zhu (2015) also found that teachers’ perceptions towards use of technology such as their self-efficacy and technology attitudes can be used to understand to what extent teachers incorporate technology into their teaching and learning practice. Therefore, pre-service teachers’ perceptions towards technology usage in teacher education have become very significant in determining the sufficiency of teacher education programs’ about preparing teachers to learn and use technology abilities in their programs (Aslan & Zhu, 2015). After they graduate, these teachers should not only be able to designate how they use technology in their teaching and learning process and their lesson plans, but, also, to apply these technologies to enhance student centered strategies (MoNE, 2009c as cited in Aslan & Zhu, 2015).

Lindahland-Folkesson (2012) also claimed preschool teachers’ attitudes affect their technology integration. Teachers’ technology adoption process was distributed into two groups. Teachers in one group embrace the technology while the second group of teachers who felt the technology threatens their traditional beliefs and to incorporate technology integration into education, the second group of teachers preferred to keep their traditional teaching methods and reject the use of technology in their teaching and learning process. In addition, according to Plumb and Kautz (2015), teachers’ lack of confidence in using technology may cause a significant barrier to technology integration. This affects teachers’ attitudes toward using technology since teachers’ confidence shapes their attitudes towards using technology in education (Blackwell et al., 2014).
Researchers proved that first-order and second-order barriers play key roles in early childhood teachers’ technology integration. Wood, Specht, Willoughby, and Mueller (2008) found that teachers showed “both positive and negative attitudes [toward using technology in] their classrooms, with the main barriers being personal comfort with technology, physical resources, financial resources, and current teaching philosophy” (as cited in Blackwell et al., 2014, p. 312). In addition to that, they claimed teachers worry about children’s access, experience, skills with technology, and parent support while they use technology (Wood et al., 2008). There is lack of evidence about how first- and second-order barriers have impact on early childhood educators’ adoption and their technology integration.

To overcome these barriers the NAEYC position statement can be adopted to develop appropriate methods of technology integration for educational purpose. There are three aspects in this position statement, which could help teachers to improve their abilities, skills and confidence towards using technology in early childhood classrooms (Blackwell et al., 2013). First, early childhood teachers should be provided with more targeted professional development for developmentally appropriate technology integration, which could ensure that educators use technology into their teaching practice more effectively. Second, early childhood teachers should be provided with a technology policy that describes how they can involve technology into their curriculum to meet the developmental needs of their students. Third, early childhood educators’ attitudes should be shifted to embrace the positive potential of technology to affect and augment children’s learning (Blackwell et al., 2013).
Social Cognitive Theory

Social cognitive theory is defined as a “theoretical framework for analyzing human motivation, thought, and action” that “embraces an interact model of causation in which behavior, cognition and other personal factors, and environmental influences all operate as interacting determinants that influence each other bidirectionally” (Bandura, 1986, p.11). According to Bandura’s Social Cognitive Theory (1986), people’s self-efficacy is one of the most significant factors that affects people’s learning, because if people has a high level of self-efficacy about their abilities to solve problems they might face, it would increase their learning.

Especially in recent years, it has been seen that there are increasing efforts to reveal the personal views of teachers about whether they can overcome the problems they face in certain situations (Yilmaz et al., 2016). Thus, teachers’ self-efficacy beliefs are focused to explore their performances in that field that are tried to be revealed. Teachers’ technology integration is one of these fields, and there is significant research based on the social cognitive theory perspective, which stated that self-efficacy is the key predictor in exploring teachers’ technology integration level as an educational tool in the classrooms (Abbitt, 2011; Abbitt & Klett, 2007; Albion, 2001; Banas & York, 2014; Brinkerhoff, 2006; Compeau, Higgins & Huff, 1999; Holden & Rada (2011); Kavanoz, Yuksel & Ozcan, 2015; Lee & Tsai (2010); Lin & Huang, 2008; Hsu, 2016; Shu, Tu & Wang, 2011; Straub, 2009; Wang, Ertmer & Newby, 2004).

There are different factors that affect teachers’ technology integration process as mentioned above. However, the most significant and the best predictor of technology
usage as an educational tool in the teaching and learning process are teachers’ beliefs; thus, understanding the limitations and effects on teachers’ capabilities to use technology into classrooms, and exploring teachers’ current beliefs, practices, and barriers to use technology should be the first step (Hsu, 2016). He also added that teachers’ self-efficacy beliefs about technology integration play a key role in their technology usage.

Self-Efficacy

Self-efficacy is defined as one’s “beliefs in one’s capabilities to organize and execute the courses of action required to produce given attainments” by Bandura (1997, p. 3). According to Bandura (1986) although people’s self-efficacy affects their decisions and behaviors there are impacts on self-efficacy beliefs; mastery experiences, vicarious experiences, and social persuasions. Bandura (1986) stated that since there is a very strong relationship between teachers’ self-efficacy and their choice behavior, motivation and persistence, assessing teachers’ self-efficacy is very significant (Krause, 2017). Since self-efficacy is the initial inception of Bandura’s social cognitive theory, and this study concentrates on exploring teachers’ technology integration level, social cognitive theory is chosen as a theoretical framework for this study.
Bandura (1986) stated vicarious learning experience is used to show teachers’ self-efficacy for technology in their teaching and is a powerful source of self-efficacy information. Vicarious learning experience is described as observing the performances of others since self-efficacy beliefs are influenced by observing the behavior of others. However, vicarious experiences usually have weak impacts on self-efficacy expectancy (Bandura, 1997).

Furthermore, mastery experiences are the most powerful sources of self-efficacy information since people can control their environments (Bandura, 1997). Finally, verbal persuasion is defined as what others say about what they believe for people’s accomplishments. Verbal persuasion is influenced by expertness, trustworthiness, and attractiveness of the source; and it is seen as a source of self-efficacy (Bandura, 1997). These three components constitute self-efficacy.
Self-Efficacy about Technology Integration

Teachers’ self-efficacy to use technology has a positive impact on technology integration process (Wang et al., 2004) since teachers need to believe that they can integrate technology well since they have knowledge about how to use technology (Corkin, Ekmekci, White & Fisher, 2016). This belief is called as technology integration (TI) self-efficacy (Albion, 1999; Corkin et al., 2016; Wang et al., 2004), and it is related to TPACK. Lai (2008) stated that if people have high level self-efficacy, then they would be successful in using technology; however, if people have low level self-efficacy, then they would have difficulty using technology purposefully on their own.

In addition, Albion (2001) stated that self-efficacy directly impacts teachers’ perceptions of technology integration, and the most significant indicator of self-efficacy for technology integration is the frequency of teachers’ technology usage. Improvement in self-efficacy increases classroom technology integration (Clark, 2000). The research that was done by Fordham and Vannata (2005) also proves that teachers with high level self-efficacy are using technology more efficiently.


1. Technological concepts and operations: There are many types of technology, and teachers are required to understand and use them. They are also expected to adapt to rapidly changing technology.

2. Planning and designing experiences with learning environments: Teachers should create technology-enriched learning environments based on students’
developmental level and their needs to be able to teach individually. In addition, teachers are expected to catch up new innovations related to technology to enrich their learning environments.

3. Teaching, learning and curriculum: Teachers should be able to design an appropriate curriculum by using technology, and to use technology to enrich students’ learning experiences. Also, they are expected to increase students’ higher-level thinking and creativity skills by using technology to offer them different opportunities to use those skills.

4. Measurement and evaluation: Teachers should use different measurement and evaluation techniques while using technology to enrich their teaching and learning process.

5. Efficacy and occupational applications: Teachers should follow professional development in all subjects of general, professional and content knowledge. Teachers should be lifelong learners and promote students’ learning by integrating technology.

6. Social, ethical, legal, and humanistic issues: Teachers should be aware that using technology requires responsibilities and respect to human rights. They need to inform the students about this consciousness and teach students how to use technology safely and ethically by giving students equal opportunities to utilize technology.

**Self-Efficacy and TPACK**

Abbitt (2011) investigated the relationship between self-efficacy beliefs about technology and TPACK. He stated that “although knowledge of technology is
necessary, it is not enough if teachers do not also feel confident using that knowledge to facilitate student learning” from Ertmer and Ottenbreit-Leftwich (2010, p. 261) to emphasize the significance of self-efficacy in using technology. The questions that guided Abbitt were: “How are self-efficacy beliefs about technology integration related to the components of the TPACK model?; To what extent are measures of perceived knowledge in the TPACK domains able to predict self-efficacy beliefs about technology integration?; How does the predictive relationship among perceived knowledge in the TPACK domains and self-efficacy beliefs change over time?” (Abbitt, 2011, p. 135).

Abbitt (2011) said that Bandura’s theory of self-efficacy recommends that increasing teacher knowledge could reveal increased self-efficacy beliefs. This automatically causes an increase in technology integration in the classroom, and this technology is based on knowledge of pedagogy and content. This means that teachers’ knowledge in TPACK leads to their beliefs about their abilities to teach using technology. In addition, Sahin, Akturk and Scmidt (2009) and Haight (2011) found out a positive relationship between TPACK and self-efficacy. As a result of this study, Abbitt (2011) found that while self-efficacy can be used as a predictor of teachers’ technology integration level, knowledge in TPACK domains could be predictive of self-efficacy beliefs about technology integration, too. In addition, he claimed that knowledge in TPACK constructs teachers’ self-efficacy beliefs.

Based on social cognitive theory, people’s behaviors are shaped by inner forces and environment. Their own motivation, behavior and developments contribute to people’s function. Thus, people are characterized based on their capabilities to achieve. This study may influence in-service teachers to evaluate their technology integration
level, and guide specialists to prepare pre-service teachers for teaching in a technology-
enriched classroom.

**Technology Integration Matrix**

Identifying teachers’ integration stages is significant because while improving the
quality of teachers’ technology use necessary policies can be introduced (Comber,
in developing countries, ICT in educational field was introduced later than developed
countries, and this causes variations on the levels of access to and integration of ICT by
teachers between developing and developed countries. In the United States, The
Technology Integration Matrix (TIM) framework was created to evaluate technology
integration level by Florida Center for Instructional Technology based at the University
of South Florida’s College of Education in 2006 (Welsh, Harmes & Winkelman, 2011).

The framework consists of five interdependent characteristics of meaningful
learning environments: active, constructive, goal directed, authentic, and collaborative;
and includes five levels of technology integration: entry, adoption, adaptation, infusion,
and transformation. Each environment and technology integration level are explained in
detail by TIM. This could be used as a great guide to enhance learning with technology.

Although TIM was created in the United States it can be used in any other
country to evaluate teachers’ integration level or to illustrate to teachers how technology
enhance student learning. In this study, TIM will be used as a framework to analyze
teachers’ technology integration level. Evaluation of teachers’ technology integration is
a complex task since TIM covers descriptors for student activity, teacher activity, and
the goal of each level of technology integration (Welsh et al., 2011). Therefore, both
interview and observation will be used to collect data to be able to analyze both
teachers’ and students’ activities in the technology-enriched environment.

Table 6. Technology Integration Matrix

<table>
<thead>
<tr>
<th>Technology Integration Matrix</th>
<th>Entry</th>
<th>Adoption</th>
<th>Adaption</th>
<th>Infusion</th>
<th>Transformation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active</td>
<td></td>
<td>The teacher begins to use technology tools to deliver curriculum content to students.</td>
<td>The teacher directs students in the conventional and procedural use of technology tools.</td>
<td>The teacher facilitates students in exploring and independently using technology tools.</td>
<td>The teacher provides the learning context and the students choose the technology tools to achieve the outcome.</td>
</tr>
<tr>
<td>Collaborative</td>
<td></td>
<td>Information passively received</td>
<td>Conventional, procedural use of tools</td>
<td>Conventional independent use of tools; some student choice and exploration</td>
<td>Choice of tools and regular, self-directed use</td>
</tr>
<tr>
<td>Constructive</td>
<td></td>
<td>Individual student use of tools</td>
<td>Collaborative use of tools in conventional ways</td>
<td>Collaborative use of tools; some student choice and exploration</td>
<td>Choice of tools and regular use for collaboration</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Information delivered to students</td>
<td>Guided, conventional use for building knowledge</td>
<td>Independent use for building knowledge; some student choice and exploration</td>
<td>Choice and regular use for building knowledge</td>
</tr>
</tbody>
</table>
(Table 6 continued)

<table>
<thead>
<tr>
<th>Goal-Directed</th>
<th>Directions given; step-by-step task monitoring</th>
<th>Conventional and procedural use of tools to plan or monitor</th>
<th>Purposeful use of tools to plan and monitor; some student choice and exploration</th>
<th>Flexible and seamless use of tools to plan and monitor</th>
<th>Extensive and higher order use of tools to plan and monitor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students use technology tools to set goals, plan activities, monitor progress, and evaluate results rather than simply completing assignments without reflection.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Rogers’ Diffusion of Innovation Theory**

Since technology changes rapidly, teachers are required to adopt new innovation often. Rogers (1962) described a theory called Diffusion of Innovation (DIO) and characterized people based on their likelihood to adopt technology. Rogers (2003) identified Diffusion on Innovation as “an idea, practice, or object that is perceived as new by an individual or other unit of adoption” (p. 12). He stated that there are “five types of adopters: innovators, early adopters, early majority, late majority, and laggards” (p. 12). While innovators are well-educated, eager to take risk and motivated to change, laggards are typically focused on traditions and very resistant to change (Rogers, 2003). Late majority adopters are in need of encouragements and are very slow to adopt new innovations. Lastly, while early adopters utilize the data given by the innovators to determine their own adoption, the majority take advantage of early the innovation before the average individual (Rogers, 2003).
In addition, Rogers (2003) divided diffusion of innovation at the individual level into “the five stages: knowledge, persuasion, decision, implementation and confirmation”; and “five characteristics of innovations: relative advantage, compatibility, complexity, trialability, and observability” (p. 13). Robinson (2009) explained each component of innovations:

1. “Relative advantage is the degree to which is an innovation is perceived as better than the idea”,
2. “Compatibility is the degree to which is an innovation is perceived as being consistent with values, past experiences, and needs of potential adopters”;
3. “Simplicity is the degree to which is an innovation is perceived as difficult to understand and use”;
4. “Trialability is the degree to which is an innovation can be experimented with on a limited basis”;

Figure 5. Rogers’ Diffusion of Innovation Theory:
5. “Observability is the degree to which is an innovation can be easier to adopt with visible results” (as cited in Jurison, 2000, p. 4).

To prepare students for the new digital world, teachers have the most significant responsibilities (Yuksel-Arslan et al., 2016). Educators are challenged to prepare teachers for integrating innovations into teaching (Davis et al., 2010). To improve teachers’ perception of technology adoption, Rogers’ Diffusion of Innovations model can be used since Rogers (2003) said that people’s perception of innovation is related to being a problem solver, a risk taker, and being open to new things. Thus, it is crucial to find out the innovativeness profiles. Parashos and Messer (2006), stated that innovation could be used for technology. Teachers’ technology adoption process is not a sudden act, as Rogers (2003) stated, “this is a process through which an individual passes from gaining initial knowledge of an innovation, to forming an attitude toward the innovation, to making a decision to adopt or reject, to implementation of the new idea, and to confirmation of this decision” (p.172). His theory should be considered for this study.

Gaps in the Literature

Even though researchers have focused on technology integration in education more during last decade, there is still need for research based on technology for children’s learning in the early ages. Also, there is research that evaluates teachers’ readiness, thoughts, and practices about using technology in early childhood classrooms in Turkey, but there is no research on the use of TPACK in early childhood education. Although early childhood teachers’ attitudes towards technology integration has been searched, there is no research about what current in-service teachers’
technology integration level are and how they can improve their abilities to enhance teaching and learning.

**Summary of the Chapter**

In this chapter, a visual illustration of main points of the literature is included. The relationship between child development and technology, technology integration in early childhood education; technology integration in early childhood education in Turkey, and the facts and barriers that affect teachers’ technology adaption and integration process into their teaching and learning process; were explained and supported with existing related literature.

Base on existing literature, TPACK framework contributes to teachers’ effective technology integration into the classroom teaching and learning process. In addition, knowledge in TPACK and self-efficacy could be used as a strong predictor to evaluate teachers’ technology integration levels. There are two main barriers that impact teachers’ technology usage in the classrooms. They are first-order extrinsic barriers which prevent teachers’ technology integration because of lack of access to technology, time to learn and use technology, training and support and professional development; and second-order intrinsic barrier creates limitations on teachers’ technology integration due to teaching beliefs, comfort with technology, and perceived values of technology for students learning.

Finally, the most common barriers: lack of sources, lack of training and teachers attitudes toward technology were expanded and explained in this chapter. To evaluate teachers’ technology adoption level, The Technology Integration Matrix (TIM) is the best tool and its potential used was explained.
CHAPTER THREE: METHODOLOGY

Introduction

This chapter presents the methods that were employed to achieve the purpose of the study. It includes the research design, data source, participants and site, data collection procedure and instruments for data collection. This chapter also discusses data analysis as well as ethical considerations.

The issues in this dissertation are related to Turkish early career stage kindergarten teachers’ self-efficacy beliefs towards using technology and their technology integration practices. This chapter presents the study design of the qualitative multiple case research and I will specifically define participant selection, research settings, data collection, data analysis methods and procedure in this chapter.

This study is seeking to explore Turkish kindergarten early career stage teachers’ technology beliefs and practices. The aim of the study was to explore Turkish kindergarten early career stage teachers’ self-efficacy beliefs and technology integration practices in their classrooms, and to build upon the existing research base to explore whether recent changes in the teacher preparation programs to include technology, have contributed to increased technology integration by kindergarten teachers who are in the early years of the career trajectory. The research questions that guided my study were:

1. What are self-efficacy beliefs of Turkish kindergarten early career stage teachers towards technology?
2. How do Turkish kindergarten early career stage teachers integrate technology into their classrooms’ instructions?

Rationale for Research Design

Qualitative research has been defined by different researchers over the years. While Merriam (2009) defines it as a way to describe, understand and multiple realities that are context specific, Denzin and Lincoln (2005) stated that “qualitative research is a situated activity that locates the observer in the world” (p. 3). Van Maanen (1979) likened qualitative research to an umbrella that covers an array of interpretive techniques to describe, decode, translate and conclude with the meaning instead of the frequency. Qualitative research also was defined as a systemic collection, organization, and interpretation of textual material, which comes from a conversation by Malterud (2001). In summary, qualitative research helps the researcher to understand the meaning that people have constructed and explore how these people make sense of their world and experiences they have in the world. Since this study seeks to explore teachers’ technology integration levels based on their experience, this study was designed as a qualitative research.

To dates, the majority of research has been conducted quantitatively and used surveys to measure teachers’ technology integration process and their attitudes towards technology (Akbulut, Odabasi & Kuzu, 2011; Aslan & Zhu, 2015; Blackwell, Lauricella, Wartella, Robb & Schomburg, 2013; Inan & Lowther, 2009; Karen, Hansen, Danby, Zaki, Grant, Houen, Davidson & Given, 2015; Kayode & Olaronke, 2014; Liu & Pange, 2014; Yucel, Acun, Tarman & Mete, 2010; Yurt & Kalburan, 2010). However, since this study is seeking to explore teachers’ self-efficacy beliefs towards using technology and
technology integration in their classrooms, there is a need of observing what happens in teachers' classrooms rather than to rely on solely upon their responses in formal interviews or questionnaires as Hammersley (2012) stated.

In addition, according to Denzin and Lincoln (2005), to bring an in-depth understanding of human behavior, attitudes and their reasons, the most useful method is the qualitative research method, which is used for many different academic disciplines, especially in the social sciences. Therefore, to be able understand what is happening in their classrooms, to observe how they integrate technology, to listen to their perspectives of using technology as an educational tool in the classrooms, and to conclude with meaningful results qualitative research design was used in this study.

Furthermore, Stake (1994) stated that case study is not a methodological choice, which is defined by the method of inquires; it is a choice of the object to be studied, which is defined by interest in individual cases. He further explained that case study is “a representative qualitative inquiry with strong naturalistic, holistic, cultural and phenomenological interest” (p. 236). Stake (2005) and Yin (2003) emphasized that qualitative case study is developed to explore a real case in a real-life context. They also stated that case study allows researcher for a rich portrayal of unique cases. Since I intend to explore teachers' self-efficacy beliefs about technology and their experience about using technology as an educational tool in their classrooms, I applied case study design for this study.

Case study is grouped in three parts: intrinsic case study, instrumental case study, and collective case study (Stake 1995). While intrinsic and instrumental case studies are singular, collective represents a multiple case study. Collective case study
requires more than one case to help the researcher to have better understanding and more accurate theorizing (Stake 2005).

In addition, Yin (2003) pointed out that case-study research can include both single and multiple case studies. However, multiple case studies are generally regarded as more robust than single case studies since it allows researchers to explore analyze the phenomenon in several settings. According to Gustafsson, (2017) there are differences between single and multiple case studies:

1. The researcher can study multiple cases to explore the differences and similarities between the cases (Baxter & Jack, 2008; Stake, 1995).
2. The researcher can analyze the data both within each case and across cases (Yin, 2003).
3. The researcher can conclude with either contrasting results for expecting reasons or similar results in multiple case studies (Yin, 2003), and this gives an opportunity to the researcher to clarify whether the findings are valuable or not (Eisenhardt, 1991).

Stake (2006) stated multiple case study gives the researcher a chance to have a very rich descriptive data and in-depth interpretive analysis of each case as well as a cross-case analysis, which gives substantive and interpretive assertions. Since I sought to explore Turkish kindergarten teachers’ self-efficacy beliefs towards using technology and their technology integration practices, I used more than one study to explore their experiences of using technology. In addition, I relied upon the following major conceptual responsibilities of qualitative case researchers from Stake (1994):

1. I bounded the cases and conceptualized the object of study
2. I selected and emphasized phenomena, themes, and issues
3. I sought patterns of data to develop the issues
4. I triangulated key observations bases for interpretation
5. I selected alternative interpretations to pursue
6. I developed assertions and generalizations about the cases

Stake (2005) also “recommended using four to ten cases for a multiple case study design to provide enough information on the unique interaction between the case and its system without providing overwhelming amounts of distinctive qualities, thereby limiting comparisons” (as cited in Ottenbreit-Leftwich, Glazewki, Newby, & Ertmer 2010, p. 1324). Thus, four kindergarten teachers working in two different schools that are technologically well-equipped in Istanbul, which is the most crowded and diverse city in Tukey were included for this study. Each teacher and her classroom represent a case, so there were four cases in this study. All of participants were females to prevent gender effects on the technology adaption process, since the majority of kindergarten teachers are female in Turkey. This allowed me to generalize the findings.

The purpose of this study was to explore Turkish kindergarten early career stage teachers’ self-efficacy beliefs towards technology and their technology integration practices in their classrooms. To understand teachers’ self-efficacy towards technology and their technology integration practices, I employed multiple case study to explore multiple settings and to understand this in its real context (Cousin, 2005).

**Role of Researcher**

Behind the theory, method, and methodology of a qualitative research there is a researcher speaking from a specific class, gender, racial, cultural, and ethnic
community perspective (Denzin & Lincoln, 2000). As a qualitative researcher I was aware that I played the key role to gain knowledge from participants and I prepared myself to have a moral responsibility for integrity, senility and commitment to moral issues (McCaslin & Scott, 2003; Kvale & Brinkmann, 2009). In addition, Orb, Eisenhauer and Wynaden (2001) said that “The personal interaction between researchers and participants is crucial in data gathering by keeping in mind the research focus and being clear about the role of researchers” (p. 94); thus, I was aware of I was playing a very significant role while gathering data in this study.

Furthermore, I was also aware of that I had to be persistent, indomitable, creative, disciplined, and diligent as a researcher while conducting my research. To prepare my role, I took two qualitative research courses in my program of study and conducted a pilot study. This pilot study helped me to experience what kinds of problems I could face during conducting the research, how I should prepare for the data collection process, and how I could get permission from both IRB and Ministry of Education. In addition to that, it helped me to learn how to analyze data and protect loss of knowledge.

While my knowledge of the research topic, methodology and ethical considerations helped me to be more professional during obtaining knowledge my background and funds of knowledge helped participants to be more comfortable in sharing their experience with technology. In addition, since I have been studying in the United States and not been an active participant in the Turkish education system for 8 years, I could find a chance to concentrate on my inquiry which helped me to be more attuned to the participants’ experiences.
On the other hand, even though Ministry of National Education is trying to improve technology integration in the classrooms and created different projects to provide classrooms, teachers, and students with technological devices I am also aware that majority of public kindergarten classrooms have not been provided with technological devices. However, since one of the major limitations to integrate technology is lack of devices and I needed to explore teachers’ self-efficacy beliefs towards technology and their technology integration practices, I conducted this study with kindergarten teachers who were currently working at technologically well-equipped classrooms. Hereby, the teachers’ experiences guided me to understand current in-service kindergarten teachers’ self-efficacy beliefs and technology integration practices in Turkish kindergarten classrooms, and I am hoping that the findings and implications of my study will guide other researchers and educators.

**Research Framework**

Individual’s technology adoption process and state has been searching for a long time across multiple disciplines, and it affects business, schools and everyday life (Straub, 2009). To explore Turkish kindergarten early career stage self-efficacy beliefs towards technology and their technology integration practices, this multiple case study focused on teachers’ perceptions, beliefs and practices towards technology. To explain people’s changes of behavior and adoption process, Bandura’s (1986) social cognitive theory would best fit to guide this research.

According to social cognitive theory, if a person believes to solve a problem s/he will become more confident and inclined to do so; thus, self-efficacy is related to person’s control of that action (Luszczynkska & Schwarzer, 2005). This guided me to
explore teachers’ self-efficacy about using technology as an educational tool in early childhood classroom settings to seek an answer of the research questions: What are self-efficacy beliefs of Turkish early career stage teachers towards technology? What are the levels of Turkish kindergarten early career stage teachers’ technology adoption?

In addition, to measure teachers’ knowledge and capacity to integrate technology in instruction TPACK (Mishra & Koehler, 2006) would best fit as a conceptual framework since it gives chance to the researcher to see teachers’ potential technology use by exploring their technological knowledge (TK), pedagogical knowledge (PK), and content knowledge (CK) and the relationships among these knowledge. Both interview questions and classroom observations revealed the participants’ self-efficacy and technology integration levels based on social cognitive self-efficacy beliefs and TPACK framework.

To measure teachers’ technology adoption levels, interview questions were developed being guided by TPACK and TIM. I sought to find teachers’ technological, pedagogical and content knowledge based on their answers and what I observed. In addition, I applied these categories while coding and analyzing collected data.

**Data Sources**

**Interviews**

Interviewing is defined as a basic mode of inquiry and recounting narratives of experience that people have been made sense of (Seidman, 2013). He further added that interviewing is based on an interest in understanding the actual experience of other people. Josselson (2014) stated that “the aim of interviewing is to document people’s experience, self-understanding, and working models of the world they live in, so that we
may later attempt to make meaning of these phenomena at levels of analysis beyond simple descriptions of what we heard” (p. 2). Since the aim is exploring teacher’s self-efficacy towards technology and their technology integration practices through their teaching experience interviewing was used as a data collection tool.

The interview for this study was designed as semi structured and open-ended, because “semi-structured interviews can make better use of the knowledge-producing potentials of dialogues by allowing much more leeway for following up on whatever angles are deemed important by the interviewee” (Brinkmann, 2013, p. 17). In addition, it helped me become visible as a knowledge-producing participant in the process rather than just asking framed questions while staying on the focused conversation related to topic. The interview consisted of two parts: demographic information and the participant’s response. The questions were open-ended about career stages and technology adoption and close-ended about demographic information. The questions allowed teachers to explain their teaching methods and attitudes towards integrating technology.

It is very significant to prepare for the interviews as a researcher. Kvale and Brinkmann (2009) stated that the researcher should conduct interviews based on the knowledge that is related to the topic and the interpersonal relation of the interview context. For the interviews, as a researcher, I took Rubin and Ruin’s (2005) recommendations into consideration.

1. I was aware that I feel and how I act could impact the quality of the interview; thus, I was very careful about my feelings and behaviors.
2. I understood and accommodated my own personality.
3. I prevented making strong statements during interview that could affect the responses.

4. I was aware that my strong feelings and biases could distort what I was hearing; thus, I listened only as a professional researcher.

Shkedi (2005) stated that there are no appropriate numbers of interviews for each participant since it is based on the purpose and the extent of each study. He recommended conducting two interviews with each participant for a study that has multiple participants. To obtain better understanding of teachers’ experience and beliefs, I hold three session interviews with each participant. In addition, since there were multiple data collection methods; interviews and observations during three-session interviews would be adequate for this qualitative multiple case study.

The sequence of the data collection was interview, then, observation for each participant. Once the initial interview that includes demographic information and rapport building was completed, it was followed by first-session observation with all participants. Then, I started the second session of data collection with the same sequence: second-session interview that focused on TPACK and self-efficacy beliefs towards technology, then second session observation. Finally, a third interview was conducted. During interviews, I asked questions about both teachers’ self-efficacy beliefs towards using technology and their experiences about technology practices as it shown in the table 7. (For all interview questions, please see Appendix F)
<table>
<thead>
<tr>
<th>Research Questions</th>
<th>Example of Interview Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>RQ 1</td>
<td>- During my observation I saw different technological tools in your classroom such as interactive white board, so I was wondering how you keep up with new technologies.</td>
</tr>
<tr>
<td></td>
<td>- During my observation, I have noticed that you use technology for ______. So, I was wondering that what skills and knowledge you find important while using technology for this activity.</td>
</tr>
<tr>
<td></td>
<td>- In our first interview, you described yourself as a _____ technology user. So, what about as a technology learner? How would you describe yourself as a technology learner?</td>
</tr>
<tr>
<td></td>
<td>- How did you make decision about using technology in this activity? What was your preference to work individually or collaboratively? Why?</td>
</tr>
<tr>
<td></td>
<td>- During my observation, I have noticed that you have different level of students who have various funds of knowledge. How did you diversify technological activities for different teaching activities and different level of students?</td>
</tr>
<tr>
<td></td>
<td>- I could find chance to observe that you used technology for ______ in your classroom. Could you please give me more detail about this lesson/activity in which you used technology with your students? What would you like to teach in this class? What was the reason you integrate technology to deliver this content?</td>
</tr>
</tbody>
</table>

Finally, I only repeated the question and gave instructions and/or clarifications if necessary. During the pilot study I conducted last year, participants had difficulty in understanding the meaning of the key term, and I had to “modify questions to match the knowledge and interests of the interviewees” (Rubin & Rubin, 2005, p. 15) even though we were speaking in same language. Therefore, I modified questions, when necessary, for clarity.
Observations

Although interviews are used as a primary source of information in a multiple case study, it is desirable to gain information stemming from mainly observations (Shkedi, 2005). Seidman (2013) said that if the researcher is looking at how students behave in the classroom, then, participant observation might be best method of inquiry. Also, observation should be used as a data collection tool when we consider participants who may not be willing to help the researcher. Therefore, as a form of triangulation of data, I also used observation to collect data, and observed the participants’ classrooms to explore teachers’ technology integrations into their classrooms’ instructions. Hereby, observation helped me to understand ongoing process and identify teachers’ individual behaviors, attitudes, and interactions towards students and technology.

Skedi (2005) stated “the observer should be objective and use tools such as a checklist of categories to help him/her focus the observation through the angle of theoretical hypotheses” (p. 68); thus, I used the question-based version of lesson observation tool (TIM-O), which is based on Technology Integration Matrix (TIM) to describe the lesson. TIM levels are specifically described based on technology integration level and environment including teachers’ and students’ behaviors. Also, since it was used to identify teachers’ technology integration level, TIM’s observation tool would be best fit to observe participants’ classroom for this study. The TIM-O is designed to guide principals, teachers, and researchers to identify the integration level of the classroom. It provides a series of questions to provide the observer with
consistent results, and to increase the efficacy of the observation. Since classrooms are varied and complex it allowed me careful consideration of what I was observing.

To be able to understand teachers’ self-efficacy and technology integration practices, observation was the great tool for data collection to support what the interviews showed. Angrosino, (2007) stated that “Observation is the act of perceiving the activities and interrelationships of people in the field setting through the five senses of the researcher” (p.37), and I was aware of how much my responsibility plays a key role during observation. Thus, I prepared very well and mastered the Technology Integration Matrix, which I used to analyze my data to discover each teachers’ technology adoption level.

To prepare for the observations, I first mastered the Technology Integration Matrix and explored each level. Then, I watched the Technology Integration Matrix grade level index (K-2) and practiced for observing teachers’ technology integration. After I watched each video of the classrooms, I attempted to guess technology integration level of that classroom. I watched all of the videos and repeated it until I found correct level. Since I conducted a pilot study, and analyzed the findings based on TIM last year, I mastered on TIM’s five levels of technology integration: entry, adoption, adaptation, infusion, and transformation. Thus, I was able to find the technology integration level of the example video often on my first attempt mostly.

In addition, Merriam (1998) stated that, “Where to begin looking depends on the research question, but where to focus or stop action cannot be determined ahead of time” (p.97). Therefore, after I prepared very well, and mastered the TIM to be able determine what I was looking for and focusing on I gave pseudonyms to teachers and
used them for both TIM-O tools and interview transcripts to protect teachers’ identities. On the tool itself, teachers’ names did not exist.

Shkedi (2005) stated that “the researcher should decide on the boundaries of time and space” (p.72) and suggested to limit researchers to two observation units for each case. I observed each teacher’s class twice, each identified as an observation unit, for one school day, which varied for each school in Turkey. Observation time was chosen by the participant. The sequence of the data collection was first-session interview and then first observation; second-session interview, then second observation; and, finally, third-session interview for each participant. I followed this alignment for each participant and for each session of data collection.

Finally, Shkedi (2005) stated that the observer should have knowledge about what s/he is going to observe; for instance, to observe teachers, the researcher should be familiar with their world. Since I worked as a kindergarten teacher in Turkey and studied as a Ph.D. candidate in early childhood education in the United States, I was able to observe Turkish kindergarten teachers’ technology adoption levels appropriately. In addition, the researcher should have knowledge about the main regularities of the cultural objectives (Shkedi, 2005). Since, I speak the same language, Turkish, and share the same culture I was able to observe them more faithfully and shorten the time for orientation to the observed site.

Bernard (1994) stated that rapport should be built with the participant by learning their culture to make them feel secure. He also said that “the most important thing you can do to stop being a freak is to speak the language of the people you’re studying-and speak it well” (Bernard, 1994, p.145). Since I speak the same language and share a
similar culture with participants, it helped me to prevent missing data and to build rapport. While observing the participants' classrooms, I followed researchers’ suggestions.

- I became familiar with the setting before data collection started;
- I was “honest, but not too technical or detailed, in explaining to participants what he/she is doing” (Taylor & Bogdan, 1984 p. 52).
- I paid “attention, shifting from a ‘wide’ to a ‘narrow’ angle perspective, focusing on a single person, activity, interaction, then returning to a view of the overall situation”;
- I looked for keywords “in conversations to trigger later recollection of the conversation content”;
- I concentrated “on the first and last remarks of a conversation, as these are most easily remembered”;
- “During breaks in the action, to mentally replay remarks and the scene one has observed” (Merriam, 1998 p.53).
- I listened “carefully to conversations, to remember as many verbatim conversations, nonverbal expressions, and gestures as possible”;
- I assisted “in seeing events with 'new eyes', turn detailed jottings into extensive field notes, including spatial maps and interaction maps”;
- I looked “carefully to seek out new insights” (Dewalt & Dewalt, 2002 p. 54).

**Site and Participants Selection**

For this study, first the permission was received from Ministry of National Education in Turkey by explaining the aim of the study and providing the research questions. Then, the schools were assigned by MoNE. Once the director of school
received the letter from MoNE, s/he assigned the teachers to be participants for this study. The study was conducted in Istanbul.

Merriam (2009) stated that selection of participants in a qualitative research could be based on probability or nonprobability sampling. The difference between these sampling methods is that probability sampling gives the researcher a chance to generalize the results. “Purposeful sampling is based on the assumption that the investigator wants to discover, understand, and gain insight and therefore must select a sample from which the most can be learned” (Merriam, 2009, p. 77). Since, sought to explore teachers’ technology integration states and wished to generalize the results; I limited the features of the participants. The requirements of the participants in this study were:

1. The school or schools were public to prevent the different conditions between private and public schools.
2. The classrooms were technologically well-equipped to prevent lack of equipment which is considered one the most significant barriers to the use technology in teaching and learning processes.
3. The participants had a bachelor’s degree in pre-school teaching program.
4. The participants were female to prevent gender effect on technology integration.
5. The participants were kindergarten teachers teaching five-year-old students.
6. The participants were in their early career stages of their careers.

DePaulo (2000) stated that a key point when conducting qualitative research is that the sample must only be big enough to assure that collected data mentions most or all of the perceptions that might be important, and as interview was used for data
collection, it gave me the chance for in-depth conversation. Thus, four participants were enough for this study.

**Procedure**

Even though I received the permission to conduct my study in Turkey, since the system had been changed, they asked me to reapply in person to get a new permission. While I applied to District National Educational Directorate and got permission in one day for my pilot study, this time, they asked me to apply with Turkish version of proposal and interview protocol to obtain the permission from both Ministry of National Education and Istanbul Governor. Once I received the permission from Istanbul, I completed my application and received the permission from IRB, which took almost two months.

Then, I asked the list of the schools that have been provided with the technological tools from Istanbul National Education Directorate. However, I was told FATIH Project stopped providing classrooms with technological equipment and neither kindergartens nor elementary classrooms have technological tools. Then, I explained I conducted a pilot study and there were public schools where kindergartens have smartboards and other technological equipment. After that, they had to call FATIH department and gave me the list of the schools, which may have teachers who were recently assigned. Then, I was able to visit the schools.

To be able to enter each school, I showed my permission from Istanbul National Education Directorate and Istanbul Governor to the security. Then, security guided me to the director of the school. Once I met with the directors of the schools and they checked my documents I explained them what my project was and what the process was going to be. To ensure the classrooms are provided with the technological tools are
required for my study, I asked them to confirm the kindergartens met with my study’s criteria and their permission to conduct the study at the schools. While one director said the classrooms were provided with the technological devices by Ministry of National Education under the scope of FATIH Project, two directors said technological tools purchased by the school management used money from the school’s fund coming from parents.

Only one of the schools’ directors said he would be glad to contribute to my research and happy if I could give him suggestions to improve the classrooms settings and teaching and learning process. The second school’s director said I was supposed to talk to the teachers and if they agreed, then I could conduct the study. The third school’s director told me that they do not choose to use technology as a school, therefore, it was not a good option to conduct the study at that school, but the teacher was eager to participate after I explained the study.

On the other hand, since the schools must ask each student’s parent permission for video recording, and the government is very sensitive about recording voice and videos of both teachers and students, I was not be able to record video during my observations and I had to ask the participant to get permission for voice recording for each session interview. After I let them know the criteria of my participants, they gave me the name of the teacher/s who met the criteria and the direction to go to the kindergartens. Even though there were numbers of kindergarten teachers working at these schools, only five of kindergarten teachers met with the requirements of the study.

Once I introduced myself and talked informally to participants, and I explained my study and the process of data collection in detail. Then, I gave them a copy of the
consent form and let them know they could find information and contact details on it (See Appendix D). Then, I stated I could give them time to think about being a part of my study or not and make decision. After they listened to me, read the consent form and discuss questions and concerns, they said they would be happy to be a part of the study and agreed to participate. Then, we both signed the consent forms; while I held one of them, I gave the second one to the participants to keep the information and process of the data collection. Finally, we set up a date and time to start the data collection process with the first-session interview.

Before starting each session of interviews, I reminded them of their rights and asked again if they wanted to continue to participate in this study. I also asked their permission to record their voices each time. The directors of the schools assigned a room for interviews at each school. At the end of first and second interview we set up a time for the observations. Once I finished each interview, I transcribed it and prepared for my observation. Then, after each observation, I revised my observation notes to prepare the following interview protocols. The participants received the transcripts of the previous interviews once I visited the classroom for observation. At the end of the last interviews, we set up a time to give them third-session interview transcripts for member check.

For each session observation, I arrived at the classroom fifteen minutes before schools started. After getting permission from the teacher, I got a student chair and sat in the corner across from teacher’s desk and chair, as it can be seen on the figure 6, to be able to see every student and the teacher during activities in the classroom. Before I started my first-session observation, the participants introduced me to the students.
Then, I observed the participants all day. Even though schools’ hours varied I found chance to observe the participants classrooms for at least 6-class period (40 minutes classes and 10 minutes breaks).

During my observations, I took notes detailing the instructional activities as well as technology-enriched teaching practices and attended to the roles of the teacher and students in the classroom (i.e., who made decisions about how and when to use technology, who controlled the technology, and who could access the technology). Additionally, I used the Technology Integration Matrix question-based observation tool to guide my data collection. Since the schools did not have wireless Internet and network connections and the TIM-O tool is designed to be completed online, I completed the TIM-O tool for each session at the end of each observation day. This also helped me to ensure that I did not miss any interactions while observing and allowed me to include more detail in my data collection.

![Figure 6. The Visualization of the Classroom Observation](image)

For this study, data were collected from five participants who met the inclusion criteria. However, my analysis focused on four of the five teachers that I observed. I
excluded one teacher who repeatedly requested that I leave the classroom in the middle of each observation when she encountered difficulties with the technology. Since the data reflected an incomplete picture of her practices and given the participant’s stated discomfort in being observed teaching, I opted to discard data from her classroom to ensure the integrity of the data collection process as well as respect the rights of the teacher as a research participant.

**Analysis and Interpretation**

Stake (2006) stated teasing out themes of an individual case before making assertion across cases is significant. Therefore, each of the four cases was analyzed individually first, and the results were translated into English to prevent missing any significant information. Then, I did a comparative analysis across the cases in order to emphasize the relevance and difference across the cases as Stake (2006) recommended. Figure 7 demonstrates my multiple case analysis process.

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**Figure 7. Multiple Case Analysis**

Once I obtained all data from sources coming from transcripts of audio recordings of teachers’ interviews and classrooms’ observation documents, I organized
and contained them on my computer as well as my USF Box account by creating a file folder for each participant. After I listened the records and read the transcripts numerous times to make sure I did not miss any teachers’ nuanced expressions and deleted irrelevant text from transcripts, I started analyzing with a first cycle coding to create a code book. I followed Saldana’s (2009) suggestions for coding and analyzing data.

Saldana (2009) stated “Descriptive Coding is appropriate for virtually all qualitative studies…and studies with a wide variety of data forms e.g., interview transcripts...” (p.71). Therefore, I revised all transcripts and applied descriptive coding, which summarizes in a word or short phrase the basic topic of a text of qualitative data (Saldana, 2009) to create a code book. Then, to reorganize and reanalyze data coded through first cycle method, I completed the second cycle coding and created the themes as it shown in the Table 8.
<table>
<thead>
<tr>
<th>First Cycle Coding</th>
<th>Second Cycle Coding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographic</td>
<td>Participant (pseudonym)</td>
</tr>
<tr>
<td>Technological tools</td>
<td>Age</td>
</tr>
<tr>
<td>Daily-life technologies</td>
<td>Graduation Date</td>
</tr>
<tr>
<td>Teachers’ attitudes towards technology</td>
<td>Current Degree</td>
</tr>
<tr>
<td>Teachers’ technology knowledge</td>
<td>Years of Experience</td>
</tr>
<tr>
<td>Teachers’ readiness to use technology</td>
<td></td>
</tr>
<tr>
<td>Teachers’ feelings to use technology</td>
<td>Self-Efficacy Beliefs</td>
</tr>
<tr>
<td>Technological sources for teaching</td>
<td>Towards using technology</td>
</tr>
<tr>
<td>Technology usage to prepare a lesson</td>
<td>Towards learning technology</td>
</tr>
<tr>
<td>Technology usage to deliver a lesson</td>
<td>Technology Integration</td>
</tr>
<tr>
<td>Limitations to use technology</td>
<td>Preparation</td>
</tr>
<tr>
<td>Feelings about technology</td>
<td>Implementation</td>
</tr>
<tr>
<td>Technology usage to differentiate a lesson</td>
<td>o Teacher’s Role</td>
</tr>
<tr>
<td>Technology’s impact on learning</td>
<td>o Students’ Role</td>
</tr>
<tr>
<td>Technology’s impact on teaching</td>
<td>▪ Engagement</td>
</tr>
<tr>
<td>Advantages of technology usage</td>
<td>▪ Participation</td>
</tr>
<tr>
<td>Disadvantages of technology usage</td>
<td>▪ Collaboration</td>
</tr>
<tr>
<td>Technology’s impact on academic achievement</td>
<td>o Students’ Learning</td>
</tr>
<tr>
<td>Technology’s impact on social-emotional development</td>
<td>▪ Embody</td>
</tr>
<tr>
<td>Children’s attitudes towards technology</td>
<td>▪ Visualization</td>
</tr>
<tr>
<td>Children’s engagement with technology (individually/collaborative)</td>
<td>▪ Permanent</td>
</tr>
<tr>
<td>Modifying curriculum based on technology</td>
<td>▪ Empathy</td>
</tr>
<tr>
<td>Barriers for teachers</td>
<td>▪ Transferable</td>
</tr>
<tr>
<td>Barriers for students</td>
<td>Assessment</td>
</tr>
<tr>
<td>Frequency of technology usage</td>
<td>Barriers</td>
</tr>
<tr>
<td>Teachers’ preparation to use technology</td>
<td>Limitation (Accessing Source)</td>
</tr>
<tr>
<td>Others’ expectations to use technology</td>
<td>Technological Issues (Internet connection)</td>
</tr>
<tr>
<td>Why choose to use technology</td>
<td>Time Limit</td>
</tr>
<tr>
<td>How to choose technology</td>
<td>Students’ Attitudes</td>
</tr>
<tr>
<td></td>
<td>School Climate</td>
</tr>
</tbody>
</table>
(Table 8 continued)

- Teachers’ role during technology integration
- Students’ role during technology integration
- Teachers’ philosophy about using technology
- Difficulties to use technology for teachers
- Difficulties to use technology for students
- Using technology for evaluation
- Solving technological problems
- How to make decision about technology
- Teacher as a technology user
- Teacher as a technology learner
- Learning/Adopting new technologies
- Beliefs about FATIH
- Teaching with technology

**Credibility**

To ensure that the study covers what is actually intended and findings was congruent with reality, the researcher should establish trustworthiness in the study (Merriam, 2009). Credibility is one of the most significant parts of trustworthiness of a study (Janesick, 2011; Rubin & Rubin, 2005). Triangulation gives researcher chance to compare and cross-checks consistency information derived at different times from different methods (Patton, 1996). Since data was collected from two different methods: interview and observation, this helped me to do cross-referencing from different data and increased the credibility of the research in this study.

In addition, another significant factor to ensure credibility is member checking (Merriam, 2009). According to Mertler (2012), member checking defined as “sharing of interview transcripts, analytical thoughts and drafts with participants to make sure the study reflects the participants and their ideas accurately” (p. 74). Thus, after interviews
were transcribed by the researcher, they were given to the participants in order to ask them whether there was anything they would like to add or remove to ensure credibility. Then, whatever they wanted was added and/or removed from interview’s findings as Stakes (1995) recommended.

**Ethical Considerations**

For this study, the permission was sought from Institutional Review Board (IRB) at the University of South Florida as the data was collected from human beings (See Appendix B). This research included only interview and observation. This was considered to be minimal risk. That means that the risks associated with this study are the same as what you face every day. There are no known additional risks to those who take part in this study. In addition, since the data was collected from kindergarten teachers who are currently working in Turkey, another permission was received from Directorate of National Education before interviews start (See Appendix C).

Before starting data collection, I provided the participants with the Turkish version of informed consent form and assured that there is no risk in this study, and they have a right to withdraw from the study any time they want without any penalty. In addition, during the data collection process, I was always treated the participants not only fairly but also with care, openness and respect by following Rubin and Rubin’s (2005) identified ethical responsibilities.

1. I showed my respect with my behaviors towards to interviewee.
2. I reminded interviewee that whatever she said is valuable for me and I used in the study.
3. I protected confidentially.
4. I sent them transcribed data to give chance them to see before I prepare final report for clarifying and accuracy purposes.

5. I did not pressure interviewees to respond to specific questions, which can cause stress and impact results.

Furthermore, during observation, I was very careful about not interrupting class, and not allow teachers’ behavior to be influenced from my behaviors. In addition, I was only person who know the identities of the participants. Once data collection ended, I hold all of the data in my personal computer, which has password to turn on and is used only personally, then uploaded to my USF Box account. I gave a pseudonym to each teacher to protect their identities. I will delete all data from my personal computer once I graduated from University of South Florida and left all data at the university as IRB required. I established clear procedures to reduce risk and maximize confidentiality based on Fritz’s (2008) recommendations.

1. I ensured that my field notes and transcripts do not include personal identifiers of the participants.

2. I kept raw and processed data on my password protected personal laptop.

3. I shared data with only people who are part of my doctoral committee.

4. I established clear chain of custody procedures to ensure that data was not diverted or lost.

5. I conducted regular audits of myself and my committee to ensure compliance.
Summary of the Chapter

In this chapter, the design of the study, research framework, role of the researcher, data collection methods, procedure and data analysis were explained. Also, credibility and ethical responsibilities are discussed.

This study is designed as a multiple case study since Yin (2003) stated it is more robust than single study and gives a chance to the researcher for exploring differences between cases, and this makes the results more generalizable. There are four cases in this study and data was collected from interviews and observations. First data coded and analyzed for each case, then a cross-case analysis was conducted. After that, the results were translated into English to prevent loss of meaning.

In chapters 4, 5, 6, and 7, the four individual teacher cases will be explained. Chapters will start with an introduction, teachers’ daily life technology usage and settings of their classrooms, then, teachers’ self-efficacy beliefs towards using technology and their technology practice in their classrooms will be discussed. In Chapter 8, the single cases will be followed by the cross-case analysis. Chapter 9 will present implications and conclusions.
CHAPTER FOUR: ÖNGÜL TEACHER

Introduction

Who is Öngül?

Öngül is a kindergarten teacher who has been teaching for four years. This is her third year at this school. She earned her Bachelors’ degree in preschool teaching from Marmara University in 2015. Öngül is currently planning to apply for master's degree in early childhood education program in Istanbul. Since her grades were very high, she was able to transfer to another more prestigious university, giving her the opportunity to take classes in two different universities.

Öngül was my first participant and expressed interest in joining the study more enthusiastically than the other teachers. She was eager to share her experience in detail and asked questions about the study which helped me feel more comfortable while conducting my study. I gave the pseudonym ‘Öngül’, which means pioneer in Turkish, since she was my first participant and described herself as a pioneer in using technology while completing her assignments at the university. In addition, she mentioned her colleagues asked her to help when they have problem related to technology. She helps her colleagues find a specific video, shows them how to use smart-boards for different activities, and solves basic issues related to technology. Therefore, this pseudonym is most appropriate.

In her daily-life, Öngül uses technology almost everywhere; shopping, buying flight tickets, sending and receiving mails, taking personal notes etc. She stated that “I
went to museum last week and realized they had a QR code to access explanations of the items. Once I saw the codes, I opened my cell phone and read the information”.

Also, she claims she uses technology at home too but in more limited fashion. While she is cooking in the kitchen, she watches her infant daughter on a camera to take care of her. However, she defines herself as ‘technophobic’ since she does not feel comfortable while exploring newer devices, and claims she integrates technology while teaching more than at home

In my daily life, I do not use technology at home except in my kitchen and I always ask my husband if something should be done by using technology. However, when it comes to education, in my teaching and learning process, I can see the difference when I use technology, and it is more efficient. I am more satisfied; inner satisfaction; about what I taught when I integrated technology.

This school is her second school, and her previous classroom did not have any technological equipment. She had to buy a speaker and use her own cell phone to open songs for children. Therefore, she did not have chance to practice technology integration. However, she said she did not face major challenges while using technology after she was assigned to this school because her limited familiarity made her willing to improve her skills integrating technology. She defined technology as the easiest thing to learn and said

Have you ever read an operating manual for a Television or have you ever seen a person who read a manual to learn how to drive his new car? It is very easy to learn by trial and error. Technology is easy to both learn and use as long as you eliminate harmful content. For instance, when I was assigned to this school,
there was a smart-board and I did not get any training to use it. I called the person who was taking care of technological issues and asked him to teach me how to turn it on and off. He gave me a pen, and gave me the directions, which took only minutes. Then, I explored it on my own.

Öngül’s Classroom Setting

Öngül’s kindergarten is in a public elementary school located in the Anatolian side of Istanbul which offers education from Kindergarten to 4th grade. The community of the school is mostly high income. The school has 950 students and 34 teachers in total, four kindergartens and four preschool teachers specifically. The building has 4 floors, colored window frames, and a wide garden is carpeted and lined ground and equipped for football, basketball and volleyball. The walls of the school have colored drawings with cartoon characters, and there are a few trees in front of the walls on the corners. There is only one entrance to the school’s garden and one entrance to the building, and there is a security in front of the entrance door of the garden to check who people who want to visit the school.

There are four kindergartens located in the right side of the first floor, and isolated with a door from the main aisle other students and teachers use. All kindergartens are secured in this special aisle and have their own place. They use same garden and same dining hall with other students but at different times. The school day begins at 9:00 a.m., continues six class sessions of forty minutes each, and ends at 2:25 p.m. Kindergarten students have different school hours, from 8:45 a.m. until 2:45 p.m. Kindergarten teachers do not have to follow the 40 minutes class sessions and they are allowed to decide the length of each class period.
In addition to that, there is a club option for parents who pay to leave their children at the school until 5:05 p.m. Since most mothers are working almost every kindergarten student is at the school from 8:45 a.m. to 5:05 p.m. Teachers are given the option to stay for the club with a supplemental salary or leave when the normal schools hours end. The school also provides students with special teachers for dancing, drama and English class during these club hours. Each kindergarten is assigned teacher assistant who does not have any special certificate and does not contribute to the teaching and learning process. They help to take care of children’s daily needs such as going potty or setting the tables.

Öngül’s classroom was the smallest kindergarten in this school, but it was well-organized. She took advantage of each part of the classroom and created valuable centers. Also, the classroom was enriched with the technological devices. Once I entered the classroom, I saw the interactive smart-board on my left side, teacher’s table and desk in the corner and in front of the windows, and students’ desks on the right side. The walls were covered many visual, attractive and informative pictures such as numbers, seasons etc. In front of the walls, students’ desks were located, where are most of the classroom. Students have cabinets where only kindergarten students; their teachers and parents have access. There were only a few cabinets to store materials for activities in the classroom. Students’ activities were displayed on the board in the aisle to allow parents to see the children’s work. There are files to keep students’ previous activities in front of Wall 1.
In Öngül’s classroom, there is an interactive whiteboard, a projector, a printer and a scanner, a microphone, and an audio system. A copy machine and laminate machine are shared. Currently, Öngül has 20 students, students are not allowed to use any of these technological devices by themselves. Students are asked to use smart-board only during activities.
Öngül’s Self-Efficacy Beliefs Towards Technology

Self-Efficacy Beliefs towards Using Technology

Öngül claimed “I use technology for almost every activity. I can show a video about a new topic. To their attention and market, the knowledge”. She also stated people need to improve themselves to keep up with new innovations in technology, and she gave an example;

Some people consider themselves as good technology users since they are able to use social media, but they are not. Some people are coding. I believe it is also related to age; for instance, my mother cannot use even this phone. Therefore, I feel confident about my current technology usage, but just for today.

Öngül stated technology is both useful and harmful based on how it is used. Too often, parents give tablets to children to silence them, meaning they use technology as a muffler with no control over what children are watching and/or learning. She also stated that the tablets given by MoNE under the scope of the project, have become a play tool since teachers were not aware of how they could use them as an educational tool.

Öngül stated technology makes everything easier and more effective. For instance, while she was reading a book or doing an activity on the textbook in her previous school, which did not have any technological devices, she had to turn the book around students to show the pages of the book and she claimed this method interruptive and awkward. Now, she uses the projector while she is reading books or guiding activities, and this makes the activity or story more visual and thereby more effective.
Öngül also stated using technology is not difficult and added knowing how to use technology is the power. She added “For instance, MoNE distributed tablets to the high school students under the scope of FATIH project, and students played games all day at school. So, is FATIH unsuccessful? No, it is not.” Then, she stressed most teachers are not aware of how to use technology effectively and appropriately. She also stated technology should make teaching and learning cheaper and easier since it helps teachers save time and materials. Therefore, according to her, technology is not powerful; knowing how to use technology effectively makes technology powerful. Furthermore, Öngül identified her technology integration level as a four of five, and said that

I do use technology every day and in different activities. There is the Education Information Network (EBA) which is the only web-site schools can access in Turkey, but I never limited myself with these sources. If I cannot find quality material on EBA I do a search and download it to my computer. Then, I bring this to the classroom to show my students. I never limited myself with deprivations. I had a classroom without any technological devices in my previous schools. I did not have a smart-board, a computer, a projector. In fact, I did not have an audio system, but I bought a cheap and basic speaker, and increased the limit of the internet on my cell phone. Then, I opened music and created different activities with it. I did not say I do not have anything and stuck with the old traditional method. If you really want to do something you can do it. Limits cannot restrict you. Therefore, I consider my technology comfort at a good level.
Finally, according to what she said, Öngül is able to use different kinds of technologies and combine them. For instance, when she wants to do an activity has colorful visualization since she does not have color printer, she scans it and converts the page to an activity on her laptop via Microsoft Paint. Then, she projects it to the interactive whiteboard to use.

Overall, as a technology user, both in her daily-life and teaching and learning process she is willing to use technology and shows positive attitudes towards technology. She is aware of how technology affects her life and teaching practice, and she is willing to utilize technology to make her daily-life easier and her job more effective.

**Self-Efficacy Beliefs towards Learning Technology**

Öngül claimed she was not prepared to use technology at the university, and added she was struggling in her previous school because it was not technologically well-equipped. Therefore, she does not feel well-educated and/or well-prepared to use technology as an educational tool in the classrooms. However, she believes that these draw-backs forced her to employ her creativity in using technology. In addition, she stated she never attended the seminars under the scope of the FATIH project which were given by Ministry of National Education since she thinks they are not beneficial. She claimed she could not make any comment about the content of the seminars, but she felt they are worthless by looking at her colleagues’ experiences who attended. She also considered these seminars as a waste of time and a waste of money since teachers could not utilize them. She said she did not enroll in any of technological courses either.
However, she stated she is eager and able to adopt new technologies easily. She gave an example from her experience by saying “The first school, which is also a public school in different city to which I was assigned, did not have any technological tools, so when I started teaching at this school, even though I did not get any training in the use of the interactive whiteboard, I was able to learn it easily.” Then, Öngül added the lack of opportunities at the previous school have helped her to improve her abilities to use technology since she had to make an effort to learn new technology.

Now, she stated she is trying to improve her technologic abilities by exploring. If she has a technological problem, she tries to fix it first. If she cannot solve it, then she asks for a repairman. She said she could see the benefits on students’ learning when technology used. Öngül stated she is using technology when she needs it, and that she is using technology every day for most activities.

Overall, as a technology learner, she is aware that technology is changing rapidly, and she needs to improve herself stay current with new innovations. She is also willing to solve the issues related to technology by herself.

Öngül’s Practice of Technology Integration

Observation Day 1

On my first-session observation day, the topic was Ataturk’s life. After she opened a music on the computer to let the children know free play time was over, which usually takes 45 minutes between 10:00 a.m. to 10:45 a.m. after they had breakfast, children started to put their toys back at 10:45 a.m. Then, the students went back to their chairs and Öngül started to talk about Ataturk, who he is, his family, and his achievements. After she got students’ input, she showed a video about Ataturk’s
personal life, which was found on EBA that took 11.27. During the video, while some of students commented, Öngül sat on her chair and replied to the students’ comments. The majority of students focused on the video while a few students were looking around.

Once the video ended, she asked questions about his life and got the answers. After that, she opened another video related to Ataturk, also found on EBA was 9.41 minutes long. This video showed what Ataturk did and how he established the country. Then, again, she asked questions about the video while she was walked around the classroom replied students’ comments and questions. Next, she gave the hands-on activity, which was cutting and painting an Ataturk’s portrait to create a rosette. While students were working this, she played Ataturk’s favorite songs. Since the songs were old, students were not able to join in singing. The teacher was singing sometimes and making comments about the song. For instance, “I love this song” and “Have you heard about this song?” “Do you know what this word means?” Then, Öngül replayed the songs encouraging them to learn the song and sing.

Once students completed their hands-on activity, they formed a circle while singing a song at 12:00 p.m. Then, Öngül showed them Ataturk’s sculptures on the smart-board and asked students to view them. As students watched the photos, they made comments about the photos of his sculptures by saying “I saw this one before” “I know that one” “This one is in Ankara”. After that, she opened a song (pop music) and they started to dance. Once she stopped playing the music, students were supposed to impersonate one of the sculptures. Öngül looked at each student’s shape and made comments and asked them to think about their next sculptures. Öngül repeated this
activity four times, during which she was walking around and controlling the music on the laptop, and students were dancing. All students were engaged.

After this activity, Öngül read a story book called ‘Ataturk and Child’ at 12:20 p.m. and showed the illustrations by rising up the book. Then, she asked students to draw a picture for Ataturk at 12:35 p.m. During the activity, she asked questions about Ataturk’s favorite color, food, activity and got students’ predictions. She said she does not know the answers and curious about them. Finally, she googled the answers on the laptop (smartboard was opened, and I was able to see on the screen) and provided students with the answers.

At 1:00 p.m. they left for lunch, then come back at 1:30 p.m. They had rest time until 2:00 p.m. They demonstrated their objects, which they brought from their home, then, left for mid-afternoon breakfast at 2:30 p.m. Activities followed during which Öngül did not use any technological tools. After that, both Öngül and I left the classroom since students had English class with another teacher (English teacher) for their club hours.

On Öngül’s first-session observation day, Öngül used technology to deliver curriculum content to students. She showed a video about the content, and student watched it. Öngül was the only person who could access the technology and controlled the technology during all activities. Also, only Öngül decided about how and when to use the technology as well as which technology she used. The setting allowed Öngül to present content to all students.

On the other hand, students were passively received information from the teacher via technology by watching video about Ataturk. During all technology-enriched activities, students primarily worked alone. Since students did not have direct access to
the technology, collaboration with using technology did not occur. They did not have any input on the decision-making process about which technology tool and how it could be used.

Based on the given information, the report of Öngül's first-session technology integration level based on Technology Integration Matrix Observation tool have been showed below.

Table 9. The Report of Öngül's First-Session Observation

<table>
<thead>
<tr>
<th>Entry</th>
<th>Adoption</th>
<th>Adaptation</th>
<th>Infusion</th>
<th>Transformation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information passively received</td>
<td>Conventional, procedural use of tools</td>
<td>Conventional independent use of tools; some student choice and exploration</td>
<td>Choice of tools and regular, self-directed use</td>
<td>Extensive and unconventional use of tools</td>
</tr>
<tr>
<td>Individual student use of tools</td>
<td>Collaborative use of tools in conventional ways</td>
<td>Collaborative use of tools; some student choice and exploration</td>
<td>Choice of tools and regular use for collaboration</td>
<td>Collaboration with peers and outside resources in ways not possible without technology</td>
</tr>
</tbody>
</table>
(Table 9 continued)

<table>
<thead>
<tr>
<th>Information delivered to students</th>
<th>Guided, conventional use for building knowledge</th>
<th>Independent use for building knowledge; some student choice and exploration</th>
<th>Choice and regular use for building knowledge</th>
<th>Extensive and unconventional use of technology tools to build knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use unrelated to the world outside of the instructional setting</td>
<td>Guided use in activities with some meaningful context</td>
<td>Independent use in activities connected to students' lives; some student choice and exploration</td>
<td>Choice of tools and regular use in meaningful activities</td>
<td>Innovative use for higher order learning activities in a local or global context</td>
</tr>
<tr>
<td>Directions given, step-by-step task monitoring</td>
<td>Conventional and procedural use of tools to plan or monitor</td>
<td>Purposeful use of tools to plan and monitor; some student choice and exploration</td>
<td>Flexible and seamless use of tools to plan and monitor</td>
<td>Extensive and higher order use of tools to plan and monitor</td>
</tr>
</tbody>
</table>

Note. Adopted from Florida Center for Instructional Technology (FCIT): The Technology Integration Matrix (3rd edition), by College of Education, University of South Florida, retrieved from https://fcit.usf.edu/matrix/matrix/ Copyright 2019 by FCIT.

Debriefing 1

I asked Öngül about her goals for this activity. She claimed children's intangible concepts should be developed, and it could take longer time if they are not provided with enriching materials. Technology creates many opportunities to help children about concretizing the concepts. She mentioned she wanted to teach about Atatürk’s life, wars, and how he established the country, however, it is very difficult to imagine these
concepts for young children. Therefore, Öngül decided to support the class with a video about Ataturk’s life and music. She stated when an activity appeals to more than one sense, then the information is more permanent. She also said

Once children see Ataturk on the video, listen what he wanted to achieve from his voice they could feel him, more than just listening to me, and completing the activity I prepared for them; and understand his life. I do remember this from my childhood. When I learned Ataturk in the class it did not make sense to me, but once I heard his voice, I could feel his personality and imagine him. I believe this is one of the best opportunities which technology gives us. To utilize it we should aware of what we need to enhance the activity on the daily plan.

Öngül stressed she uses using technology every day preparing, applying and evaluating lessons. During preparing her daily plan, she decides which technological tool she needs to use for the content since the curriculum, used by all of kindergarten teachers around the country and prepared by Ministry of National Education does not include technology because all classrooms are not similarly equipped. For this activity, she stated

I prepared my unit plans two weeks in advance, but I do not prepare my daily-plan. Unfortunately, I cannot since I do not have time to do it. When I looked at the plan, I can easily decide what to use for each activity. For instance, you cannot use technology exclusively, but you can integrate technology for each lesson.

Furthermore, Öngül stated she chose to use technology for this activity since technology is comfortable for her. She thinks students can comprehend easily when she
integrates technology since they forget whatever they hear easier than that which they hear and see. She also stated it is very significant to use technology in this activity since they can hear Ataturk’s voice and observe his appearance in addition to learning about his revolutions. She said that

During ‘The Hat Act’, Ataturk was wearing a beautiful hat while he explained the law looked very charismatic. For, ‘Attire Revolution’, he did not dress like an Ottoman Empyrean. He always dressed in modern clothing and was very handsome. Another example is the video explaining how his teachers gave Ataturk his second name, ‘Kemal’. I could deliver all of this information with a 10-minute video and I believe learning would be very permanent.

Öngül stated used her own childhood learning experience to be able to understand how her students learn easily and what makes their learning more permanent. She gave an example by saying

In this activity, students were very engaged since I remembered it from my childhood that when I heard Ataturk’s voice first time, I was so impressed. Then, I started to listen to his favorite music and was able to connect what I listened to with his personality.

She believes that using technology makes learning more effective for this activity.

Öngül mentioned technology increases students’ participations. She gave an example from another class to provide her statement:

Yesterday our topic was dental health, and I explained why we should brush our teeth and they listened to me. Then, I opened an animation about a dinosaur who does not brush his teeth and has tooth decay. Once they saw him, they started to
talk about why and how they should brush their teeth. If not, they have to go to the dentist, and it could be painful. Then, they started asking questions of each other about how they are brushing their teeth and how long it usually takes. This is a great example of using technology for learning.

In addition to that, Öngül stated she is trying to use technology to enhance her teaching experience. She said using technology makes the topic more attractive and more permanent for students. She gave an example from her previous experience by saying, “If I were the only one talking about dental health and saying that everybody should brush their teeth to protect them, they may not understand it as well as they saw in the video”. Illustrating the significance of dental health via video helped children to understand it and made their knowledge more permanent. Furthermore, she provided her statement with another example from her experience,

The first year I was assigned here, I had a student who was four or five years old. She was a little bit childish, and had just come from Pre-K. She was always jumping on the chairs and I was worried since it was too dangerous. Also, when other students saw her, they wanted to do the same thing. I tried to warn her many times and let her know that it was very dangerous, and she could get injured. I do not know how many times I told her: ‘Duru please do not jump’; however, she kept jumping. Then, I searched and found a song called three monkeys; ‘Three monkeys jumped on the bed. One of them fell down and hit his head. Then, mommy monkey came to take him to the doctor. Doctor told him don’t jump again!’ After she watched this video, she never jumped again.
She ended her experience with an explanation and said “This is the power of technology. If I kept warning her, she probably would not stop jumping, and other students could join her. However, after she listened the song, she did realize it was dangerous and stopped jumping.”

In addition, Öngül stated while using technology, she could use different teaching strategies at the same time. For instance, technology gives students a chance to see what they are learning, and this makes their learning more permanent. Another significant point she mentioned is giving immediate feedback to students during the activity. She gave an example from a program and said,

In some applications, the computer gives instruction to the students. If a student does not perform the instruction the computer gives a warning by showing a cross. In this way, they can learn that a cross means they made a mistake and need to correct it.

Finally, when I asked Öngül what kinds of working types she prefers in this activity while using technology; Öngül stated technology is suitable to teach group of students by saying:

I mean students can learn from a video and I can notice immediately if they do not learn. Then, I can show the video again and again without spending extra time and energy. You can create subtitles. Even though they can use technology individually during some kinds of activities, I usually do not prefer it since, in early childhood, once a child come to smart-board to play individually, others can feel left out. Sometimes, they become bored easily either, thus, I do prefer to use technology for individual usage.
Observation Day 2

On the second day, the topic was children’s rights. Öngül welcomed students and talked to them about how they are, what they did in the evening etc. Then, they left for breakfast at 9:30 a.m. and came back at 10:00 a.m. Once they came to the classroom, they moved the tables to the back of the classroom to create space. The difference between the first-session and second-session free play time was students’ interaction with each other. They had more interaction on the second day. They were talking more, touching each other and participating in group games. After she opened a music on the computer and let children know the free play time ends, which usually takes forty-five minutes between 10:00 a.m. to 10:45 a.m. after they had breakfast, children pulled their desks and chairs back. After free play time, students played with puzzle while Öngül prepared the activity on the laptop. She found a photo of children from different nations around the world and asked her assistant to copy it at 11:20 a.m.

Then, students put their puzzles back and came back to their chairs. Öngül tried to show a video about children rights on EBA, but the system did not allow her to open it at 11:30 a.m. She said the Internet connection was very slow and took much time to open the video. After six minutes, she was able to open the video which took 8.41 minutes. During this video, a few students were talking irrelevantly, and Öngül was trying to find another video on her cellphone. Once the video ended, she asked if they want to watch one more. Two students did not want. Then, she showed another video, which took 7.24 minutes. The audio system did not work, and she had to use the laptop’s voice to show it. In this video, two puppets were talking about children rights. However, since they had a very heavy accent, and students asked each other about
what puppets said. Then, Öngül explained she just found the video and skimmed it, so she did not realize puppets’ language was not easily understood and appropriate for children.

Öngül showed the photo, which she found on the internet for the activity and asked some questions of the students about the photo 11:50 a.m. After, she got comments from students, she showed another video about children’s right, which took 7.18 minutes, then, she gave the activity to students. While children were working on their activities, she asked “Do you want to watch another video?” All students said “Yes!” except two of them again. She opened the video but because of the Internet problem it stopped and did not work again.

Then, she asked questions about their rights, and opened a song related to topic. While students were working on their hands-on activities Öngül replayed the song again and encouraged students to sing the song. Once they tried to sing the song, they asked Öngül to replay the song again. During fourth time, Öngül did not join singing and students gave up singing and got bored. Once they finished their activities Öngül collected them to display. At 12:40 a.m., Öngül and I left from the classroom since their Drama teacher arrived. After the class, students were going to have lunch and have English and dance class.

On Öngül’s second-session observation day, Öngül used technology to deliver curriculum content to students. She showed a video about the content; children’s right, and student watched it. Öngül was the only person who could access the technology and controlled technology during all activities. Also, Öngül decided about how and when
to use the technology as well as which technology she used. The setting allowed Öngül to present content to all students.

On the other hand, students were passively received information from the teacher via technology by watching video about Ataturk. During all technology-enriched activities, students primarily worked alone. Since students did not have direct access to the technology, collaboration with using technology did not occur. They did not have any input on the decision-making process about which technology tool and how it could be used.

Based on the given information, the report of Öngül's second-session technology integration level based on Technology Integration Matrix Observation tool have been showed below.

Table 10. The Report of Öngül's Second-Session Observation

<table>
<thead>
<tr>
<th>Entry</th>
<th>Adoption</th>
<th>Adaptation</th>
<th>Infusion</th>
<th>Transformation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information received passively</td>
<td>Conventional, procedural use of tools</td>
<td>Conventional independent use of tools; some student choice and exploration</td>
<td>Choice of tools and regular, self-directed use</td>
<td>Extensive and unconventional use of tools</td>
</tr>
</tbody>
</table>
(Table 10 continued)

<table>
<thead>
<tr>
<th>Constructive</th>
<th>Authentic</th>
<th>Goal-Directed</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Information delivered to students</strong></td>
<td><strong>Use unrelated to the world outside of the instructional setting</strong></td>
<td><strong>Directions given, step-by-step task monitoring</strong></td>
</tr>
<tr>
<td>Individual student use of tools</td>
<td>Collaborative use of tools</td>
<td>Collaborative use of tools; some student choice and exploration</td>
</tr>
<tr>
<td>Collaborative use of tools in conventional ways</td>
<td>Collaborative use of tools; some student choice and exploration</td>
<td>Choice of tools and regular use for collaboration</td>
</tr>
<tr>
<td>Choice of tools and regular use for collaboration</td>
<td>Collaboration with peers and outside resources in ways not possible without technology</td>
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Overall, according to the interviews and observations, which are nearly similar for both session observations, Öngül mostly uses technology to prepare and deliver
curriculum. During both session observations, students were watching an instructional video. Teacher is the only one who is actively using technology and directs the activity and students are not allowed to use the tools independently. During activities, students are receiving the information passively and individually, instead of working collaboratively. Sometimes, they could collaborate without using technology tools. The setting was arranged for direct instruction and individual seat work.

**Debriefing 2**

Öngül stated her previous class was successful since the effects of using technology in the classroom embodied intangible concepts, and said

Our topic was related to children rights, and but what children’s rights means. The term of children’s rights is not intangible. There were animations, in fact, one of them was making drawings. We watched the animations and completed an activity related to children’s rights. I believe using technology helped them to embody children rights.

In addition to that, Öngül claimed technology helps her to make this class more successful, and she feels like technology is her third hand and stated that

When I observed the students while I am using technology for an activity, I have noticed students apprehended the context easier and faster. People may forget whatever they hear, but when they see a video and hear voice; then, knowledge could retain more. Of course, it is best to do whatever you learn since when people do not forget what they do. Therefore, I use technology to reinforce students’ learning.
Another significant point of her technology usage she claimed is media. She stated she can deliver curriculum to all students via a video much easier and faster. Also, if any student does not understand the content, she is able to find out easily, and she can turn back and show the video again. She stated, 

If I explained what I already taught again other students get bored easily, since it is very difficult for them to concentrate on content for a long time. However, students can watch the same video more than one time, and nobody gets bored. In addition, doing an activity on the smart-board takes a shorter time than completing an activity by hand. 

Furthermore, she said that technology helps her students to develop empathy and it is very significant for learning. She gave examples how watching a video helped students to understand dental health is significant, and another video to stop one of students’ unwanted behavior. According to her, just delivering curriculum by talking to students would not work as much as when they can see the context on the related videos and develop empathy. She claimed developing empathy plays key role not only for academic achievement but also for social behaviors. 

For instance, I have a serious illness, and I had a challenging time. After I found people via technology and realized I was not alone I felt much better. This could be helpful for my students. They can see other children on the videos and realize they are not alone and feel more comfortable about anything they have. 

Technology also helps us to build our social learning. 

When I asked question about how she prepared for this class and decided to integrate technology she said she frequently uses technology for her teaching process
at school, and for activities as well as preparation. She supported her statement with an example:

I can open the books on the whiteboard interactively. For example, there was a book study page, ‘sinking and submerged in the water’. We examine the topic both on the book page and on the interactive whiteboard. There was a game for the topic, and I asked each student to come and complete the game. In the game, objects are sinking and floating in the water, hanging from a rope. There are scissors, which can be controlled by students. Before they cut the rope, I asked the student if was sinking or floating. After they answered the question, they cut it and saw the result. Then, she explained why the object was sinking since it was heavier than water or floating since it was lighter than water.

Öngül also stated while she is preparing her activities, she searches on the Internet, especially foreign ones such as ‘crazy hair’, and thinks what she could do on that specific activity to reinforce what she teaches. Then, she takes pictures of the activity and pastes it on word. After that, she prints, copies, and hands it out to students. She also added, if she finds an activity she cannot copy, then she puts it on the scanner and shows it on the screen. In this way, she creates an interactive activity.

She provided her statement with another example:

I was supposed to teach about volcanos, what the lava is and how it explodes. When children do not see it, they cannot envision it. Therefore, I picked a documentary written at their level and let them watch it. Then, they were able to understand volcanos.
Unfortunately, she admitted there are some challenges using technology. For instance, the limitation of access to websites during this class. Öngül said all teachers access only the Ministry of National Education’s website and can use sources from there. However, she stated the sources are not enough nor are they sufficiently varied in this website. For this class, she tried to open a video about children’s right, but she could not open it since the system did not allow her to access other websites except EBA (Education Information Network) which was created by the Ministry of National Education. Therefore, she prefers to find a video related to the topic and download it at home, then, she brings to the classrooms. She claimed this method also has limits and said that

Sometimes, when I do not have enough time, I just skim the video because of time limit, and if I see it is related to the topic and appropriate for her students’ level, I download the video. However, when I watched whole video in class, I noticed something is not age appropriate. I would prefer to access YouTube in class to review the videos in detail.

She claimed once she had technological problem, it directly affects her teaching process because while she was trying to solve the problem students could get bored and lose their motivations.

Öngül stated some students are exposed technology more than enough at home. These kinds of students expect to watch cartoons or play a game each time, thus, when she opened a video related to class, they become distracted. Some students who never had chance to engage with technology can be a problem because they are locked on the screen and lose their attention.
Finally, she stated she could create a learning environment for each student despite different levels of knowledge. While she is using technology to deliver the content she starts from the lowest level and includes different levels to complete the activity.

It is much easier to find different levels of videos to show them. There are students aged from four to six years old in my classroom, and I have to consider all of them. Teaching one thing to these students at the same time would be much easier while using technology. While I am choosing a video to reinforce a content, I usually start with a kindergarten video, then I am keeping increasing the grades such as first grade video and second grade video. In fact, sometimes, I choose fourth grade video if I have gifted student/s.

According to the interviews and observations, which are nearly similar for both session observations, Öngül mostly uses technology to prepare and deliver curriculum. During both session observations, students were watching an instructional video. The teacher is the only one who is actively using technology and directs the activity. Students are not allowed to use the tools independently. During activities, students are receiving the information passively and individually, instead of working collaboratively. Sometimes, they collaborate without using technology tools. The setting was arranged for direct instruction and individual seat work.

**Barriers**

Öngül stated she is facing some problems during technology integration. The biggest problem she mentioned is the Internet. Internet connection is often too slow. During my second-session observation, I witnessed this issue when she had to wait to
open a video related to the topic. She mentioned when she faced Internet problems students could not concentrate on the video once she was able to open it since their attention is lost.

Another issue she mentioned is the limitation of access. She claimed she could only access EBA. She does not access other websites, and since EBA has been still develop the website, she cannot find adequate sources. During my second-session observation, she could not find what she was looking for and she had to search for a video on her cellphone.

Finally, Öngül claimed students’ attitudes may create a barrier too. While some students have technology at home some of them do not. Therefore, their attitudes towards technology are not always similar. For instance, if a student has ample screen time at home he expects to be entertained when she shows a video. Once they see it is related to class, the video does not grab his attention, unfortunately. It is same for the child who does not have technology at home. These children cannot focus on the class since they become stuck on the technology itself.
CHAPTER FIVE: UZEL TEACHER

Introduction

Who is Uzel?

Uzel earned her Bachelors’ degree in preschool teaching from Dokuz Eylul University in 2016. She has been teaching for three years, and this is her third year in this school. Uzel is pursuing her master’s degree in early childhood education at a university in Istanbul, and already completed her coursework. Currently, she is working on her master thesis. Once she graduated from the university she was assigned to this school, so this is the only school she has worked. Since her husband is working and living in another city, she is planning to change her school once she earns her Uzel’s degree.

Even though her director was not eager to contribute to the study, she showed her willingness and agreed to be a part of my study by saying “I am also working on my thesis and I know how the process is challenging”. In addition to that, both during interviews and observations, she tried to help me by ensuring that I could gain appropriate answers and obtain adequate data. I gave her ‘Uzel’, which means master and capable in Turkish, as a pseudonym since she is a master student, and very good at technology integration. She is innovative, trying new innovations related to technology. Therefore, I believe this pseudonym would be the best fit for her.

In her daily-life, Uzel uses technology especially while she is working on her thesis. She uses navigation and defines it as a ‘rescuer’ for driving in Istanbul. She uses
this in Aydin, too, a very small city since she trusts navigation and knows she can find
the place she is going. In addition, she buys flight tickets online twice a month since her
husband lives in another city, and shops online. She stated

Online shopping is very good. I usually order books online. In fact, I just bought
some books over the weekend. It makes shopping easier since I could not find all
books in stores, and, also, they are cheaper on the Internet. There are some
used books, which are no longer published and do not exist in stores. I ordered
some of these books yesterday. Walking in the stores would be more fun, but I
do not have time to do it. Therefore, online shopping is more useful for me.

Other than that, Uzel is mostly using social media after school, watching TV on
the weekends and playing games during her free times. She stated she uses her
cellphone very often at the school because she takes photos and records videos of
children to share with their parents. Finally, Uzel always uses the Internet when she
needs to learn. She said that, “I do not know if it is positive or negative, but I have to use
Internet to learn instead of skimming books since I can reach the information easier and
faster.”.

**Uzel’s Classroom Setting**

Uzel’s kindergarten is in a public elementary school which offers education from
K to 4, located in the Anatolian side of Istanbul. The community of the school is mostly
high income. The school has certifications of ISO 9001, ‘white flag’ and is a nutrition
friendly school. It includes 1,417 students and 61 teachers in total, six kindergartens
and six preschool teachers specifically. The building has beige colored 3 floors, and
brick colored columned. The garden is narrower than first school and does not have
carpet on it. The ground is lined courts for football, basketball and volleyball. The walls of the school are also brick colored and has iron sticks on it. There are a few trees in front of the entrance wall. There is only one entrance to the school’s garden and one entrance to the building, and there is security in front of the entrance door of the garden to check all visitors.

There are six kindergartens located in the basement, and isolated with a door from the main entrance. All kindergartens are secured in a special aisle and have their own dining hall, kitchen, and restrooms. They use the same garden with other students at different hours. The school begins at 9:00 a.m., continues six class sessions with 40 minutes, and ends at 2:20 p.m. Kindergarten students are welcomed at 8:45 a.m. in the morning and leave at 2:30 p.m. Kindergarten teachers do not have to follow the 40 minutes class sessions and they are allowed to decide the length of each class period.

In addition to that, there is a club option for parents who want to pay extra and leave their children at the school until 4:10 p.m. from Monday through Thursday. On Fridays, this school does not have club hours for kindergartens. Since most of mothers work, almost every kindergarten student is at the school from 8:45 a.m. to 4:10 p.m. Teachers are given options to stay for the club with an extra payment or leave when the normal schools hours end. The school also provides students with special teachers for dancing, drama and English class during club hours. Also, each kindergarten has a teacher assistant who does not have any special certificate and does not contribute to the teaching and learning process. They help to take care of the children’s daily needs such as going potty or setting the tables.
Uzel’s classroom was enriched with the technological devices. Once I entered the classroom, I saw the interactive smart-board on my right side, teacher’s table and desk in the corner and in front of the windows, and students’ desks on the left side. There were cabinets where the teacher keeps the materials and students’ portfolios under the smart-board, and two panels where students’ activities are displayed on the right and left sides of the smart-board. On the second wall, there were two panels, and shoes cabinets for children in front of the door. On the third wall, there were two panels which were covered with numbers and pictures of objects. Fourth wall was all structured windows and had cabinets which have classroom materials and students’ personal items in front of the windows. Students’ desks were located in the middle of the classroom with other students’ cabinets.
Figure 9. Walls of Uzel's Classroom

In Uzel's classroom, there is an interactive whiteboard, a projector, a printer, a scanner, and audio, and there is a shared copy machine in the kindergartens' aisle. Currently, Uzel has 22 students, and according to what she said, students are not allowed to use any of these technological devices by themselves. Only during activities, students are asked to use smart-board. During my observation, I have also noticed that students do not have access to technological tools by themselves. However, during my
both session observations I have witnessed that students were able to use technology during the activities under their teacher’s supervision.

**Uzel’s Self-Efficacy Beliefs Towards Technology**

**Self-Efficacy Beliefs towards Using Technology**

Uzel stressed she uses technology every single day for preparation, instruction and evaluation. She stated the curriculum which is given by Ministry of National Education does not have a technology piece since the majority of schools in Turkey do not have any technological devices. Therefore, she must modify the curriculum in creating her daily-plan by adding technology. She stated she is used to integrating technology into her daily-plan since it has become her standard routine. She said, “I try to use technology at the highest level since I do have it and it makes my job easier.”

In addition, Uzel said “I definitely use technology everyday while playing games, and showing videos related to education, as I mentioned already.” She identified her technology usage level as good when she compares it with most people and said her colleagues consult her when they have issues related to technology. She believes this is because of her young age since, people’s age affects their technology usage levels. She also stated,

I wish I could be a much better technology user to finish my work faster. For instance, I spend all day to prepare a video and at the end of the day, I create a normal video but not the best one. Therefore, I want to improve myself.

**Self-Efficacy Beliefs towards Learning Technology**

Uzel claimed she was not prepared to integrate technology at the university. She stated
I wish I could learn how to use technology in the classrooms and utilize my knowledge to teach my students right now. My technology education included classes at the university only for exams. I did memorize the information they gave us and took the exams for the grades, but I did not get anything for practice. For instance, there was a program called ‘Tsubasa’ in our Computer 2 class. We were supposed to draw a person playing with a ball in the program. We did create it. Think about it. You draw a person and this person can control the ball. It could be an amazing program for preschool children who would love it, but it was not sufficient, and I could not learn this because of a lack of a computer.

Then, she added “If I need to identify my education at the university level, was not good. However, I could say my personal education, which I gained from my husband, my experience and peer education is very good”.

In addition, Uzel stated she has noticed how much technology integration is significant once she started to teach and how much her education was inadequate at the university level. She also gave an example from her husband’s education by saying “I would like to improve my abilities about technology, but I have not done anything yet since my husband is very good at technology. He is a public relations specialist and he learned these skills at the university very well. He had classes related to technology and media, and he is interested in technology. Therefore, I usually ask for his help. This also helped me to understand how much learning to use technology at the university plays a key role in my job and I wish I could learn more because I could utilize it.
Finally, she said “our major inadequately prepares pre-service teachers for technology integration, and we, as preschool teachers, should have more technology enriched classes, especially related to Media”.

According to Uzel, to be able to integrate technology, teachers should be familiar with the computer first, especially at her current school. She stated there are some teachers who never open the projector. In fact, some of teachers asked to have the smart-boards removed from the classrooms, saying they do not need them. She stressed her feelings by saying “I could not even imagine other schools’ technology usage once I heard these sentences from the teachers at this school, which is technologically well-equipped.”

Furthermore, she claimed she is in need of learning new things related to technology. She said,

I am willing to attend if Ministry of National Education opens a computer course since I really want to learn how to use some specific programs because they make life easier. For instance, I was working on my thesis, and spent five hours to complete a table on Saturday. I asked my husband for help, and on Sunday, I created four tables in an hour. Knowing how to do it makes everything easier. This is an example from my personal life, but I do need for the school also. I want to create a worksheet; I may do it faster than some of teachers, but I want to do it within ten minutes not an hour. Also, I want to garnish the worksheet that my students like, instead of creating a simple one to grab students’ attention. If I could learn specific programs, I could create more attractive worksheets in a shorter time.
She said there are seminars two weeks before each academic semester starts and two weeks after each academic semester ends. During these seminars, teachers just sitting, talking and eating but there is nothing related to education. She points out it could be much better if they could learn new things related to computer and technology during these seminars. However, she stressed these courses should be noncompulsory because once any course becomes mandatory by the Ministry of National Education no one eagerly attends. According to Uzel, the Ministry of National Education needs to predicate these courses upon willingness.

She defined herself as a good technology user and learner by saying “I am learning easily when I need to. I mean, if I need to learn, I learn easier, faster and want to learn more”. She gave an example from her experience “Once I was assigned to this school, the director of the school asked me if I could use a smart-board and I was timid. However, after a very short time, I noticed I did not face any problem while learning and using this technology.” She believes the director asked this question since some teachers are not able to use this technology.

On the other hand, she claimed technology usage relates to age, and added she dominates technology because she is young, but older teachers have problems learning and using technology. She feels her technology usage is very good, but she cannot define it as wonderful and added,

Nobody can define the level of technology usage as wonderful, but I use technology as much as it needs to be. For instance, when I need a worksheet related to a selected topic; if I find it online, I use it, but if I cannot find it, I can create one based on the requirements of the specific topic. I do not create
everything because it takes too much time, so I prefer to create a new one when I cannot find a worksheet related to content.

Overall, Uzel demonstrates positive attitudes towards using and learning technology. Even though she does not feel she was well-prepaid at the university, she is making an effort to learn and use technology in her both daily life and professional life.

**Uzel’s Practice of Technology Integration**

**Observation Day 1**

On my first-session observation day, the topic was Ataturk. Once students arrived at the class, Uzel gave students free play time at 9:00 a.m. Students picked toys, Legos, puzzles and brought them to their desks to play. At 9:50 a.m., Uzel opened five-minute time keeper on Class Dojo and let children know they have five minutes to muster and prepare for breakfast. Then, they left for breakfast at 10:00 a.m. Once they came back to the classroom they sit on their chairs and Uzel started to talk about the day, month and the season we are in and picked a student to stick the day on the calendar, which was hanged on the wall 1 at 10:30 a.m. Then, Uzel asked questions about weather forecast and got their answers. After Uzel talked about forecast, she mentioned about Ataturk, his life and asked students to stand up. She took their chairs and designed them in front of Wall 2 with her assistant while students were standing.

Once she finished organizing chairs, she placed students on and near chairs. On that day, each student was wearing a T-shirt, which had Ataturk’s portrait holding a clove. Then, Uzel played an Ataturk song on the smart-board and students started to sing. Uzel was standing in front of the Wall 4 and recording video and taking pictures of students. They repeated the song four times to make sure every student joined. Once
Uzel completed the activity, she shared it with parents by using WeTransfer and Class Dojo.

At 11:00 a.m., students assembled in a U line in front of the smart-board. Uzel opened an Augmented Reality application called Anitkabir AG, which creates Atatürk’s phantom. Uzel took each child’s photo with Atatürk by using this app. Then, she created a video to share with parents. While students were standing in front of the smart-board and looking at the phantom they were talking each other, asking questions and making comments about Atatürk. Without any exception, all students looked, curious, excited, and engaged including Uzel. In fact, once she finished photographing the students, she asked her assistant to take her photo. Next, Uzel took all of students to the garden to leave their cloves on the Atatürk effigy, placed in front of all schools in Turkey.
Students returned the class, sat down, Uzel handed out their books at 11:15 a.m. Then, she opened ‘Laidburg’ application on the smart-board to reflect the page of the book. Before they began working on the book, Uzel opened a noise detector on Class Dojo and let students know to be quiet. Uzel gave the directions to students on the smartboard, then gave them time to complete that page. While they were working on the next pages, Uzel walked around checking, and giving them feedback (if she found it well-done, she gave a star on that page). During the activity, students were involved. Uzel picked a student to come to the smart-board and choose the biggest balloon and others printed it. This was repeated for the smallest balloon. Then, Uzel opened Class Dojo, on which each student has a special character and gave students who were quiet and helped others extra points. The aim of class was to achieve 200 points and win the reward. Students were warning each other to be silent during the activity.

Once they finished working on the books, Uzel’s assistant collected the books, and Uzel asked students to come to in front of the smart-board at 12:15 p.m. Then, she opened a video song called, ‘A Ram Sam Sam’ on the smart-board, and asked students to repeat the movements. Three students did not join dancing and Uzel encouraged them by saying “Come here and dance with your friends”. Once they finished this song, Uzel opened another one and played move and freeze. They were dancing while the song was playing and once it stopped, they froze. During this song, two students did not join dancing.

After that, Uzel opened ‘Meatball Launcher’ activity and asked each student to come to the smart-board. Program was giving the direction by saying “I want one
meatball” and showing the number. Students were supposed to count the correct number of meatballs to add to the plate. Once they finished counting, they were supposed to push the ‘Ready Ring’. Then, Uzel asked all students to count together. During this activity, all students were eager to be picked to complete the activity. None of students looked bored or uninterested.

Between 12:45 p.m. and 1:15 p.m., Uzel and students had lunch. After lunch, they sit down, and Uzel gave the students hands-on activities which required cutting and painting an Ataturk picture at 1:15 p.m. Then, Uzel opened Ataturk’s favorite song, which includes Ataturk’s photos. During the activity, two students’ activities were torn, and Uzel immediately printed out new ones. At 1:45 p.m., they finished the activity and brought their chairs in front of the smart-board to continue the Meatball Launcher game. Later, Uzel opened a cartoon called episode 33 of ‘Dear Siblings’ which took 10.38 minutes, and then, episode 34 which took 10.42 minutes. Cartoons were retrieved from Uzel’s laptop, which she downloaded from You Tube at home. Students were making comments while they were watching the cartoons, and Uzel was sitting on her chair. At 2.30 pm, Uzel and I left the classroom since students had English class.

On Uzel’s first-session observation day, Uzel controlled all the type of technology and how they were used. She paced the students through programs on the smart-board. She gave chances to use smart-board for completing activities such as counting meatballs, while she controlled the technology. Also, Uzel gave the directions step by step via technology by reflecting from projector to the smart-board while students worked on their books. Uzel was the only person who controlled technology during all
activities. Also, Uzel decided about how and when to use the technology as well as which technology she used. Overall, Uzel strongly regulated the activities.

On the other hand, students used technology in conventional ways during activities, which were closely directed by Uzel. During all technology-enriched activities, students primarily worked alone. The students had limited and regulated access to the technology. However, since the technology was regulated by Uzel, collaboration with using technology did not occur. They did not have any input on the decision-making process about which technology tool and how it could be used as well.

The reports of her technology integration level based on Technology Integration Matrix Observation tool have been showed below.

**Table 11. The Results of Uzel’s First-Session Observation**

<table>
<thead>
<tr>
<th>Entry</th>
<th>Adoption</th>
<th>Adaptation</th>
<th>Infusion</th>
<th>Transformation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information passively received</td>
<td>Conventional, procedural use of tools</td>
<td>Conventional independent use of tools; some student choice and exploration</td>
<td>Choice of tools and regular, self-directed use</td>
<td>Extensive and unconventional use of tools</td>
</tr>
<tr>
<td>Individual student use of tools</td>
<td>Collaborative use of tools in conventional ways</td>
<td>Collaborative use of tools; some student choice and exploration</td>
<td>Choice of tools and regular use for collaboration</td>
<td>Collaboration with peers and outside resources in ways not possible without technology</td>
</tr>
<tr>
<td>Constructive</td>
<td>Information delivered to students</td>
<td>Guided, conventional use for building knowledge</td>
<td>Independent use for building knowledge; some student choice and exploration</td>
<td>Choice and regular use for building knowledge</td>
</tr>
<tr>
<td>--------------</td>
<td>----------------------------------</td>
<td>-----------------------------------------------</td>
<td>--------------------------------------------------------------------------------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>Authentic</td>
<td>Use unrelated to the world outside of the instructional setting</td>
<td>Guided use in activities with some meaningful context</td>
<td>Independent use in activities connected to students’ lives; some student choice and exploration</td>
<td>Choice of tools and regular use in meaningful activities</td>
</tr>
<tr>
<td>Goal-Directed</td>
<td>Directions given, step-by-step task monitoring</td>
<td>Conventional and procedural use of tools to plan or monitor</td>
<td>Purposeful use of tools to plan and monitor; some student choice and exploration</td>
<td>Flexible and seamless use of tools to plan and monitor</td>
</tr>
</tbody>
</table>

Note. *Adopted from Florida Center for Instructional Technology (FCIT): The Technology Integration Matrix (3rd edition), by College of Education, University of South Florida, retrieved from https://fcit.usf.edu/matrix/matrix/* Copyright 2019 by FCIT.

Debriefing 1

When Uzel was asked why she decided to include technology for this class, she stated technology helps students to be more motivated by saying

When I record a video while they are singing a song, they take it seriously more than usual. On that day, I recorded videos all day while they were singing the
Ataturk song, they memorized it faster than usual and they were aware of the significance of the topic.

In addition, she said once her students watched themselves on the video, they become more motivated. Also, she claimed these photos and videos could be very good memories for them and their parents. She thinks technology contributes to children’s motivation.

She stressed that using technology for this activity increased the effects on students’ learning by saying,

I said Ali Riza Bey is Ataturk’s father and Zubeyde Hanim is his mother. They are always exposed to my voice; therefore, they do not listen to me very carefully. However, when I open a video, talking about Ataturk’s family, they pay attention and listen very carefully. The video is more beneficial for students since it has both audio and visual effects on their learning. Even though I showed a picture of his family and explained it, I do not feel that I can grab their attention as much as a video could. Thus, when the audio system does not work, I feel deficient.

Furthermore, she stated technology helps children to embody what they learned. For instance, for this activity, seeing Ataturk’s pictures excited them and said,

When I mentioned Ataturk the first time, I was so surprised since some of students did not even know who Ataturk is. Some of them knew him and loved Ataturk, but others did not have any clue about him. Once they saw a picture of Ataturk, riding on a swig or pulling an oar on a boat they could imagine Ataturk and love him since they were able to understand his life and his personality.
Another point Uzel made is that Class-Dojo helps students’ self-learning and measures their noise level. Once opened, they start to be silent and warn each other. When they make noise, Uzel reduces their points; and they become silent Uzel increases their points. Once they reach 200 points, as a class, they earn a reward. Therefore, if a student makes noise others are warning him to keep him silent.

Uzel mentioned the students’ role during technology integration and stated that she often prefers to use technology individually instead of working collaboratively. She stated individual work is better for both her and the children. She used the example of:

The game, which requires counting the meatballs. If they play it as a group only a few students who are faster can go and touch the answer, and others may not have chance to play the game. I do love activities, which are done together since it increases collaboration, but individual work helps me to measure each student’s knowledge. If they play as a group, I cannot understand who knows numbers since each time, only certain students answer the questions and others who cannot count do not play. Therefore, to be able to measure and assess what children learn I prefer individual activities while integrating technology.

When Uzel was asked if she diversifies her technology usage for students who have different levels, she said,

I create different levels of an activity. However, when I integrate technology, I do not differentiate it since technology can grab all students’ attention. There are two students who have special needs, and I do not feel that I need to create different activities for these two children. On the other hand, if they need special help either I or Aysun help them. I do not have any gifted students.
Uzel stated she could not find anything on EBA to prepare an activity till last year. According to Uzel, the most difficult part of using technology for this video is the preparation part. She said,

The most difficult part of using technology in this activity is preparation specifically finding a video related to topic, since I might have to find one on YouTube and other web-sites. There are numerous videos but most of them are not age appropriate. Finding one I need for a specific content is much more difficult for applying technology and evaluation. I wish I could create everything myself, however, I do not have time. I can create a slide show about Ataturk since I know that I will use it all year and next year too. However, once the topic is teeth health, I cannot prepare one since I do not have time to prepare a source for each topic.

She stressed the most difficult part of using technology for students during an activity is when they are so excited, they cannot wait for their line such as during the meatball game. In addition, she claimed sometimes, students wanted to do the activity more than once and, since there is limited time, it could be difficult for them to understand they can do it only once.

Observation Day 2

On my second-session observation day, students had free play time in between 9:00 a.m. and 9:50 a.m. Five minutes before, Uzel opened a song and asked students to gather their toys. Then, they left classroom for breakfast and came back at 10:20 a.m. Once they sat down, class president fed classroom’s fishes and put a star on the
day. After that, Uzel started to talk about the day, the month and the season, they were in. Finally, she finished her daily-routine by talking about forecast.

At 10:30 a.m., Uzel handed out the books and projected the page students would be working on from the smart-board. Once students started talking, she immediately opened noise detector on Class Dojo. Uzel gave directions for each page and asked students to complete them. While they were working on the pages, Uzel walked around and gave feedback about previous pages. During the activity, one of students was making noise, so she opened his character on Class Dojo and decreased his point.

Once they finished working on the books, Uzel asked students to come in front of the smart-board and opened the ‘Move and Freeze’ song at 11:20 a.m. They danced and froze based on song’s direction. One of students did not want to join dancing and sat on Uzel’s lap while she controlled the song on her laptop. Then, they brought their apple, which they brought from home and sat down. Uzel gave a toothpick to each student, asked them to ream out the apples for the upcoming science experiment and align in front of the windows at 11:30 a.m.

Then, Uzel told students they were going to watch something, and students sat down enthusiastically at 11:45 a.m. She opened a video called ‘Gurbuz and Elif Teeth Health’ which was created by the Ministry of Health and took 4.23 minutes. Students warned each other to be silent and started to watch video. The video explained the significance of oral health and general information about teeth. Once the video ended, Uzel discussed the video, asked questions and got students’ answers. Then, Uzel handed out a paper activity, which had some foods. First, students painted the foods and cut them. After that, Uzel gave them one happy and one unhappy tooth picture and
asked students to place healthy foods with the happy teeth, and unhealthy foods with the unhappy teeth.

They left from the classroom for lunch at 12:50 p.m. and came back at 1:20 p.m. Uzel mentioned there was a student who never finished his meal, ate everything today and she took a picture of him with the plate and shared this with his parents. Once students came back to the classroom and sit down, Uzel talked about what they ate, if they were healthy, how they should protect their teeth and listened students’ comments. Then, she opened another video about teeth health which took 6.41 minutes on EBA.

Once the video ended, they talked about the video and Uzel discussed drinks’ effects on teeth. She asked students “Do you like to drink coke?” and got answers. Then, she said they would conduct an experiment to see which drinks healthy and which drinks are not healthy for their teeth. She brought five glass jars and put an egg each, then added coke, sprite, vinegar, milk and water in the jars. Uzel said they would wait for one day and will see the results tomorrow. After they shared their thoughts and summarized what they talked about teeth health, Uzel and I left the classroom at 2:00 p.m. since they had English class with another teacher.

On Uzel’s second-session observation day, she used technology to deliver curriculum content to students. She showed a video about the content, and student watched it. Uzel was the only person who could access the technology and controlled technology during all activities. Also, Uzel decided about how and when to use the technology as well as which technology she used. The setting allowed Uzel to present content to all students.
On the other hand, students were passively received information from the teacher via technology by watching video about oral health. During all technology-enriched activities, students primarily worked alone. Since students did not have direct access to the technology, collaboration with using technology did not occur. They did not have any input on the decision-making process about which technology tool and how it could be used.

Table 12. The Results of Uzel's Second-Session Observation

<table>
<thead>
<tr>
<th>Entry</th>
<th>Adoption</th>
<th>Adaptation</th>
<th>Infusion</th>
<th>Transformation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active</td>
<td>Information passively received</td>
<td>Conventional, procedural use of tools</td>
<td>Conventional independent use of tools; some student choice and exploration</td>
<td>Choice of tools and regular, self-directed use</td>
</tr>
<tr>
<td>Collaborative</td>
<td>Individual student use of tools</td>
<td>Collaborative use of tools in conventional ways</td>
<td>Collaborative use of tools; some student choice and exploration</td>
<td>Choice of tools and regular use for collaboration</td>
</tr>
</tbody>
</table>
(Table 12 continued)

<table>
<thead>
<tr>
<th>Constructive</th>
<th>Information delivered to students</th>
<th>Guided, conventional use for building knowledge</th>
<th>Independent use for building knowledge; some student choice and exploration</th>
<th>Choice and regular use for building knowledge</th>
<th>Extensive and unconventional use of technology tools to build knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Authentic</td>
<td>Use unrelated to the world outside of the instructional setting</td>
<td>Guided use in activities with some meaningful context</td>
<td>Independent use in activities connected to students’ lives; some student choice and exploration</td>
<td>Choice of tools and regular use in meaningful activities</td>
<td>Innovative use for higher order learning activities in a local or global context</td>
</tr>
<tr>
<td>Goal-Directed</td>
<td>Directions given, step-by-step task monitoring</td>
<td>Conventional and procedural use of tools to plan or monitor</td>
<td>Purposeful use of tools to plan and monitor; some student choice and exploration</td>
<td>Flexible and seamless use of tools to plan and monitor</td>
<td>Extensive and higher order use of tools to plan and monitor</td>
</tr>
</tbody>
</table>

Note. Adopted from Florida Center for Instructional Technology (FCIT): The Technology Integration Matrix (3rd edition), by College of Education, University of South Florida, retrieved from https://fcit.usf.edu/matrix/matrix/ Copyright 2019 by FCIT.

Overall, students were directly using technology even though they were using the tool individually. Uzel was controlling and choosing the technology. Students were able to use their prior knowledge (numbers) while using technology and completing new tasks during Meatball Launcher game. The setting was arranged for direct instruction and individual seat work. The students had limited and regulated access to the technological tools during my first-session observation. During my second-session observation, students were receiving information from technology by watching an instructional video.
Uzel was the only one who was using technology to delivery of the lecture. The setting was arranged for direct instruction and individual seat work.

Debriefing 2

When Uzel was asked how she decided to integrate technology for this class, she claimed she knew how students learn easier and better. She mentioned technology has become a part of her teaching method and if her smart-board was not working she would ask her colleagues’ permission to go their class to show the video to students. She said that “For me, technology is essential for this activity”.

She prepares her daily-plan using Microsoft Word. Last year, for this activity, she said “I was copying and sending it to parents, however, now I keep only one copy for myself since I can share it via WhatsApp to prevent wasting time and money”. In addition, she stated she was using their book’s CD to teach songs, but after a short time, she stopped using it. She claimed she can find everything she needs online, which is much easier and faster for her. Also, since these songs have a visual show, they can become more attractive and enjoyable for her students. Finally, she stated “I can also utilize these songs’ videos to learn dance steps to teach my students. Therefore, using Internet has become more beneficial for my teaching activities.”

In addition, Uzel stated she did not have any difficulties while she was integrating technology for this class since she had all sources at hand from previous years. She added she is mostly using videos from last year since she already knew they are appropriate. If she does not have material, she searches online to find an appropriate video for their age and level since some of videos have latent or heavy content. For instance, sometimes, she found a video which had alcohol, cigarettes or inappropriate
words. Therefore, she is very careful about choosing a video and eliminates these kinds of harmful videos. While choosing technology, she pays attention to the content, and watches all videos carefully before she shows anything to her students. She stated

I usually prefer to show the video before we move on to the hands-on activity, but, sometimes, I asked them to complete the activity before showing them the video since I want them to find the topic and the points of the topic.

For evaluation, Uzel uses online applications to measure students’ learning. She provided her statement by saying

There are lots of web-sites, but I do not remember the names of them. For instance, ‘PBS Kids’ is to assess numbers. I taught numbers and I can assess their knowledge by using this web-site. After I teach, I can also assess their addition and subtraction levels. As you know, we cannot give them a test to measure what they learned. Therefore, playing games on these web-sites is a great tool to assess their knowledge.

Also, Uzel claimed technology makes students’ learning easier and more enjoyable. Uzel said “When one of my students goes to a place, he can bring photos and show them. As you know, no one can go everywhere but technology brings everything to them”.

**Barriers**

Uzel mentioned she has had two different obstacles affecting her technology integration in to her teaching and learning process. First, she stated that Internet connection is often very slow which directly affects her teaching since she cannot open noise detector when she cannot access the Internet. In addition, while she is opening a
video or program, students have to wait because of Internet speed, and they get bored and lose their attention. Internet speed is a significant barrier for her.

Another barrier she claimed is the limitation of access to websites. She stated, For instance, I want to access a website such as You Tube but they are banned by Ministry of National Education. Therefore, I have to download the videos at home and bring them to the school. I mean, yes, there should be a control but the person who is using the laptop is a teacher. They can give a password to teachers to access all websites. In the morning, I was so nervous since I could not find the flash disk in my handbag. If I could access the Internet, I would find it online; but I cannot since there is no access.
CHAPTER SIX: BERNA TEACHER

Introduction

Who is Berna?

Berna earned her Bachelors’ degree in preschool teaching from Marmara University in 2015. She has been teaching for three years, and this is her second year in this school. Initially, she was assigned to a village school in Adana, which did not have any technological tools in the classrooms, where she worked for one year. Then, she was assigned to this school, which is technologically well-equipped.

Berna works at the same school with Uzel and, even though her director was not eager to contribute to the study, she showed her willingness and agreed to be a part of my study. When I explained my study in detail she said, “I love internet and live with it”. During our interviews and my observations, she mentioned she does everything online since she has to work all day at school and wants to spend her time with her baby girl. She stated she has to meet her needs such as shopping for clothes, groceries, and tickets online. I believe ‘Berna’, which means connected in Turkish, is the right pseudonym for her.

In her daily-life, Berna often uses technology to talk to parents, and her husband who is in the army; searching for new activities for her students; social media and shopping. She stated “I always carry my hard drive with me since it has all of my information. You know, since our daily plan is flexible, we may need anything at any time. Therefore, I always keep it in my handbag”.

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Berna’s Classroom Setting

Berna’s kindergarten is in a public elementary school which offers education from K to 4 and located in the Anatolian side of Istanbul. This community is a high-income place. The school has certifications of ISO 9001, ‘white flag’ and is a nutrition friendly school. It includes 1,417 students and 61 teachers in total, six kindergartens and six preschool teachers specifically. The building has beige colored 3 floors, and brick colored columned. The garden is narrower than first school and does not have carpet on it. The ground is lined courts for football, basketball and volleyball. The walls of the school are also brick colored and has iron sticks on it. There are a few trees in front of the entrance wall. There is only one entrance to the school’s garden and one entrance to the building, and there is a security in front of the entrance door of the garden to check people who want to visit the school.

There are six kindergartens located in the basement, and isolated with a door from the main aisle where all students and teachers can access. All kindergartens are secured in a special aisle and have their own dining hall, kitchen, and restrooms. However, they are using same garden with other students at different hours. While the normal day of this school hours begins at 9:00 a.m., continues six class sessions with forty minutes, and ends at 2:20 p.m. kindergarten students have different school hours. Students are welcomed at 8:45 a.m. in the morning and ends 2:30 p.m. Kindergarten teachers do not have to follow the forty minutes class sessions and they are allowed to decide the length of each class period.

In addition to that, there is a club option for parents who want to pay extra and leave their children at the school until 4:10 p.m. from Monday through Thursday. On
Fridays, this school does not have club hours for kindergartens. Since most of mothers are working almost every kindergarten student is at the school from 8:45 a.m. to 4:10 p.m. Teachers are given options to stay for the club with an extra payment or leave when the normal schools hours end. The school also provides students with special teachers for dancing, drama and English class for these club hours either. Also, each kindergarten has a teacher assistant who does not have any special certificate and does not contribute to teaching and learning process. They are only helping to take care of children daily needs such as going potty and setting the tables.

Berna’s classroom was enriched with the technological devices. Once I entered the classroom, I saw an interactive smart-board on my right side, teacher’s table and desk in the corner and in front of the windows, and students’ desks on the left side. There were cabinets where the teacher keeps the materials and students’ portfolios under the smart-board, and two panels where students’ activities are displayed on the right and left sides of the smart-board. On the second wall, there were two panels, and shoes cabinets for children in front of the door. On the third wall, there were two panels which were covered with numbers and pictures of objects. Fourth wall was all structured windows and had cabinets which have classroom materials and students’ personal items in front of the windows. In front of the windows, students' works were displayed. Students’ desks were located in the middle of the classroom with other students’ cabinets.
In Berna’s classroom, there is an interactive whiteboard, a projector, a printer, a scanner, and audio system in her classroom, and a copy machine in the kindergartens’ aisle. Currently, Berna has twenty-one students, and according to what she said, students are not allowed to use any of these technological devices by themselves. Only during activities, are students asked to use the smart-board under her supervision. She
said that “Students can absolutely access the smart-board during activities. For instance, in some programs, students are required to mark by touching and choosing the correct answer among multiple choices. Other technological tools are under my control”.

**Berna’s Self-Efficacy Beliefs Towards Technology**

**Self-Efficacy Beliefs towards Using Technology**

Berna stressed she uses technology every day at school and in her daily-life, and she defined herself as a good technology user but not she is not addicted saying, “I use technology as much as it is required; not more, not less”. In addition, she believes her abilities to use technology stands at a high level.

She added she was always eager to use technology in Adana. She said the school in Adana did not have any technological tools not even a TV, speakers or copy machine. You know how much a copy machine is significant for our classroom. I had only eleven students and thought I could prepare activities and teach without a speaker, but I could not. It was completely wasted time. I immediately bought a speaker and basic copy machine and used my personal laptop and cellphone’s Internet, which was completely fine to me and I afforded all of these expenses by asking my parents to contribute. For me, it was significant to teach effectively, and without technology it is not possible. Now, I believe I did a great job in Adana.

She identified her technology usage at the good level but believes she still needs to improve her abilities. She stated
Yes, I am using technology, but I want to do more. For instance, the activity related to space and the world; I could provide students with more enriched materials I created myself such as an animation about space or an activity, which has a rocket that aims to find the numbers etc. When I tried to find an activity, program and/or game I cannot find one. I would like to create an activity and combine it with other topics. If the topic is space and I am teaching number six in Math, I should be able to create an activity for my students based on their levels. However, I cannot do this right now, but, at least, I do have an idea.

Finally, she mentioned how she started to use smart-board once she was assigned to this school. She said everyone needs to use technology since students should meet with technology as early as possible. Once she was assigned to this school, she immediately discovered and started to use technology to improve her teaching.

**Self-Efficacy Beliefs towards Learning Technology**

Berna mentioned she was well-prepared to use technology at the university and she is utilizing the information she obtained from college. She stated,

I cannot remember the name of the class, but we learned many beneficial things about content. For instance, we created stories, videos and animations. In fact, some of our friends were very professional and the outcomes were of very high quality. Even though I created something at the basic level I learned a lot. In addition, we learned many programs such as Moviemaker, Word and Excel.
She could create videos, animations and activities with audio, but she feels she still needs to improve her abilities. She said she would certainly go to a technology course to learn how to create these things better.

Berna defined herself as a curious about technology and she easily learns it. She stated

I do not know if I am good or bad about using technology, but I am very curious about learning to use technology. When I am curious, I learn easier and faster. I make an effort when I face a problem related to technology. In fact, my husband always tells me ‘You will never give up right?’ because although I try everything, I cannot always solve the problem.

Berna added along with being curious towards learning technology, teachers should have basic knowledge first. It is not enough to know how to turn on and off a computer any more. She claimed

Some teachers who are older are not curious and do not learn how to use technology. Even us, we are behind the teachers who graduated recently. I know some teachers who are not eager to use technology and assert they can affectively teach without technology. I do wonder how they can create an activity for children who have different levels of knowledge.

Overall, Berna is very optimistic about learning and using technology. She claimed she was well-prepared to integrate technology at the college level and, currently, is using technology in both her daily-life and teaching and learning process very well. Also, according to her responses, she is trying to improve her abilities to integrate technology in the classroom.
Berna’s Practice of Technology Integration

Observation Day 1

On my first-session observation day, the topic was our five sense organs. Once students arrived at the class, Uzel gave students free play time at 9:00 a.m. Students picked toys, Legos, puzzles and started to play. While some of them were playing on their desk some of them were sitting on the floor. While they were playing Berna said “Now, we are going to watch a video” and opened a video from her hard drive called, Five Senses, that took 5.45 minutes. Before she started the video, students were excited and warned each other to be silent and to watch the video. During watching the video, all students stopped playing and focused on the video; and Berna was standing near the smart-board while students were staying their play place. Once the video ended, Berna talked about the five senses and asked questions. After she got answers from her students, she explained what they would do after breakfast. At 10:00 a.m., after they put their toys back, Berna and the students left the classroom for breakfast and came back at 10:30 a.m.

Once the students returned, Berna showed five senses’ mock-ups. She showed each mock-up and asked questions “What are our eyes for?”, “What do we see?”, “Close your eyes.” “What do you see now?” She repeated all these procedures for each sense. Once they finished it, Berna placed students into groups of five and handed out the mock-ups to each group. Then, she opened same video stopping the video to ask questions about the senses. The group who has the correct mock-up raised it to answer the question.
After that Berna opened another video about recognizing our senses, that was found on EBA, which lasted for 3.23 minutes and was prepared for 3rd grade. Once the video ended, Berna asked questions about the video and got answers again. Then, Berna handed out the books and asked students to open to the page related to five senses. She explained what students were supposed to and while they were working, Berna walked around to check their answers.

For the art activity, Berna gave them a blank face and asked them to paint the face and hair their own hair and eye colors. Then, she handed out eyes, noises, lips, and ears and asked students to stick them on the faces. During this activity, the teacher’s assistant noticed that some eyes and ears were missing, so Berna immediately printed out new ones and then asked her assistant to copy them based on the number needed. Once they finished their activity, Berna took them and gave her assistant to display them.

Then, Berna asked students to come in front of the smart-board and opened a music activity. Both Berna and the students started to dance. At 12:00 p.m., Berna and I left the classroom since students had special class with another teacher between 12:00 p.m. and 12:30 p.m. Then students had their lunch until 1:00 p.m. Once they came back to the classroom at 1 pm, students sit down, and assistant teacher read a story by showing the pages of the book.

Berna handed out the books again and asked students to open the page related to the number two. She gave the direction verbally and students completed the activities at 1:15 p.m. At 2:00 p.m., they went to another room, which was very big and had only
sports materials to play dodgeball. At 2:30 p.m., they came back to the classroom.

Then, Berna and I left the classroom since students’ club hours started.

On Berna’s first-session observation day, she used technology to deliver curriculum content to students. She showed a video about the content, and student watched it. Berna was the only person who could access the technology and controlled technology during all activities. Also, Berna decided about how and when to use the technology as well as which technology she used. The setting allowed Berna to present content to all students.

On the other hand, students were passively received information from the teacher via technology by watching video about five senses. During all technology-enriched activities, students primarily worked alone. Since students did not have direct access to the technology, collaboration with using technology did not occur. They did not have any input on the decision-making process about which technology tool and how it could be used.

The report of Berna’s technology integration level based on Technology Integration Matrix Observation tool have been showed below.
Table 13. The Report of Berna’s First-Session Observation

<table>
<thead>
<tr>
<th>Entry</th>
<th>Adoption</th>
<th>Adaptation</th>
<th>Infusion</th>
<th>Transformation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active</td>
<td>Conventional, procedural use of tools</td>
<td>Conventional independent use of tools; some student choice and exploration</td>
<td>Choice of tools and regular, self-directed use</td>
<td>Extensive and unconventional use of tools</td>
</tr>
<tr>
<td>Individual student use of tools</td>
<td>Collaborative use of tools in conventional ways</td>
<td>Collaborative use of tools; some student choice and exploration</td>
<td>Choice of tools and regular use for collaboration</td>
<td>Collaboration with peers and outside resources in ways not possible without technology</td>
</tr>
<tr>
<td>Constructive</td>
<td>Guided, conventional use for building knowledge</td>
<td>Independent use for building knowledge; some student choice and exploration</td>
<td>Choice and regular use for building knowledge</td>
<td>Extensive and unconventional use of technology tools to build knowledge</td>
</tr>
</tbody>
</table>
(Table 13 continued)

<table>
<thead>
<tr>
<th>Authentic</th>
<th>Use unrelated to the world outside of the instructional setting</th>
<th>Guided use in activities with some meaningful context</th>
<th>Independent use in activities connected to students' lives; some student choice and exploration</th>
<th>Choice of tools and regular use in meaningful activities</th>
<th>Innovative use for higher order learning activities in a local or global context</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goal-Directed</td>
<td>Directions given, step-by-step task monitoring</td>
<td>Conventional and procedural use of tools to plan or monitor</td>
<td>Purposeful use of tools to plan and monitor; some student choice and exploration</td>
<td>Flexible and seamless use of tools to plan and monitor</td>
<td>Extensive and higher order use of tools to plan and monitor</td>
</tr>
</tbody>
</table>

Note. Adopted from Florida Center for Instructional Technology (FCIT): The Technology Integration Matrix (3rd edition), by College of Education, University of South Florida, retrieved from https://fcit.usf.edu/matrix/matrix/ Copyright 2019 by FCIT.

Debriefing 1

When Berna was asked why she decided to use technology for this class, she stated “I used technology for introducing the topic. When students watch a video before I teach the topic, they become more active and pay more attention. While I deliver the topic, they recall their previous knowledge from the video”.

In addition, she mentioned once she shows them an animation about the topic, students' learning become more enjoyable, permanent and easier. She explained her aim to integrate technology for this class

I was going to teach the five sense organs and needed to give ongoing information about what they are and how students can be aware of them. Instead of just talking about what the topic is I want to grab their attention first. So, I used
the video as a hook to prepare them for the class, then I provided them with other materials.

She claimed while she was preparing her plan, she thought she needed a good attention-grabbing start and decided to use video for this class.

On the other hand, Berna said

There is a curriculum which is given by the Ministry of National Education, that any teacher can strictly follow. Hence, they mentioned ‘feasibility’ and ‘flexibility’ for the curriculum. For instance, we do have technology in our classrooms that most of school do not have. I only added little notes on it by saying ‘This animation was watched on the smart-board.

In addition to that, Berna mentioned she always decides which technology and content she will use for the class except their cinema hours. Each week, they have cinema hour and as a group they decide what they will watch. Berna stated technology usage was very significant for this class since technology addressed students’ learning in both the visual and auditory realms. She said if she did not use technology and just talked about five senses their learning might not be permanent. She gave an example

For instance, the day after your observation, we had an activity, which required from students to choose the sense organ by giving a picture such as smelling a cake on smart-board. In this case, students had chance to hear, see and do whatever they learned.

Berna pointed out when she uses technology to deliver curriculum students’ participation increases and they become more engaged. She stated,
While I talk about a topic some students obviously do not listen to me, but when I open anything on the smart-board and provide them with the visual material all of them focus on the smart-board and pay attention to what the video is about. When they see something in the video, it simulates their previous knowledge and experience and they share with me and their peers. They become more actively engaged.

On the other hand, she stressed some students; especially those diagnosed distractibility or ADHD; attention can decrease while she is using technology. She said that “While I open the smart-board they think that I am busy, and they can do whatever they want and started to behave off-task”. She also claimed other students do not have any problem or lack of attention while she is integrating technology in the classroom.

Berna stated she usually integrates technology for individual activities, but sometimes, activities required group working. However, once she introduced the five sense organs in class and activities, each student completed all of the activities, including technology enriched ones, alone.

Once she asked how she diversifies technology enriched activities based on different students’ levels, she mentioned she provides students with different activities, and videos that not only address students’ levels but also increases the amount of stimulation for all students. She added “I always try to show more than one video, which is appropriate to each student’s developmental level”.

In addition, Berna mentioned the effects of technology usage on students’ learning by saying, “I believe their learning becomes more permanent and they can
transfer what they learned in the class to their daily-life. I know because I get positive feedback from their parents”. She gave an example from this class

For instance, the day after they watched the video about five sense organs, their parents told me students went to home, and asked their parents to close their eyes and ears, then let them know what they saw and heard. Also, while we are talking about another topic, they said we learned this before. Actually, these are the proofs that they are learning and transferring their knowledge to their daily-life.

She also claimed technology helps children to develop their socio-emotional skills. She gave an example of this class by saying

In this activity, while they were learning what our five sense organs and how we use them, they could understand how people who cannot see or hear anything feel and live. I believe it is very significant since students can access the information anytime but learning to understand others is more difficult.

Finally, for this class, Berna stated there was no difficulty for students, but in general, some students may have difficulties if their parents have low socio-economic status. Since they do not have any experience with technology, they do not know anything and once she opened an activity, they do not know what they supposed to do while some other students know how to use technology better than she does. However, she claimed they can learn to use technology very fast. On the other hand, she claimed she did not have any challenging while she was preparing and applying this class.
**Observation Day 2**

On my second-session observation day, the topic was diabetes and obesity. Once students arrived at the class, Uzel gave students free play time at 9:00 a.m. Students picked toys, Legos, puzzles and started to play. While some students played on their desk some of them were sat on the floor. At 10:00 a.m., students left the toys back and sit down. Berna opened a video called, ‘SGK Diabetes and Obesity’, which took 10.50 minutes. She said she downloaded it from YouTube and uploaded it on her hard driver at home. The video talked about why children should not eat sweet foods. During the video, students were focused. Once the video ended children wanted to watch it again by saying “One more time”. After they watched the video one more time Berna asked questions related to topic and got answers.

Students left from the classroom at 10:30 a.m. for breakfast and came back at 11:00 a.m. They sat down and Berna handed out blue rectangle cardboards. She asked students to cut the worlds which were drawn on the cardboards. Then, Berna handed out green cardboards and asked students to cut the circles drawn on them. Finally, she gave direction students to glue them to create their own worlds. While students were working on their activities, Berna was working on the laptop to find and copy a penguin for one of her future activities. At 11:10 a.m., students left the classroom for their dance class with another teacher and came back at 11:55 a.m. and continued their activities. Once they finished their activities, Berna collected students’ handouts, and gave her assistant at 12:05 p.m.

Then, Berna asked students to come in front of the classroom and opened a music video. Students started to dance and repeat the movements on the video. Berna
opened a song related to sky and rockets and they sang it all together. Students were very active and engaged, and all students were attending both singing and dancing. Berna was singing and dancing with them. They left the classroom at 12:30 p.m. and came back to the classroom at 1:00 p.m.

Next, students sat down and the assistant teacher who read a story about planets by showing the pages to students. Once she finished reading Berna said it was cinema hour. Berna opened a cartoon from her hard drive lasting 10.23 minutes. Students were carefully watching the cartoon and Berna was working on her laptop. Once the cartoon ended students asked for one more and she opened another one which took 11.39 minutes. She opened two more cartoons from same serial and all students watched them without getting bored. Then, at 2:00 p.m., Berna and I left the classroom since students had English class with another teacher.

On Berna’s second-session observation day, she used technology to deliver curriculum content to students. She showed a video about the content, and student watched it. Berna was the only person who could access the technology and controlled technology during all activities. Also, Berna decided about how and when to use the technology as well as which technology she used. The setting allowed Berna to present content to all students.

On the other hand, students were passively received information from the teacher via technology by watching video about diabetes and obesity. During all technology-enriched activities, students primarily worked alone. Since students did not have direct access to the technology, collaboration with using technology did not occur.
They did not have any input on the decision-making process about which technology tool and how it could be used.

Table 14. The Report of Berna’s Second-Session Observation

<table>
<thead>
<tr>
<th>Entry</th>
<th>Adoption</th>
<th>Adaptation</th>
<th>Infusion</th>
<th>Transformation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information passively received</td>
<td>Conventional, procedural use of tools</td>
<td>Conventional independent use of tools; some student choice and exploration</td>
<td>Choice of tools and regular, self-directed use</td>
<td>Extensive and unconventional use of tools</td>
</tr>
<tr>
<td>Individual student use of tools</td>
<td>Collaborative use of tools in conventional ways</td>
<td>Collaborative use of tools; some student choice and exploration</td>
<td>Choice of tools and regular use for collaboration</td>
<td>Collaboration with peers and outside resources in ways not possible without technology</td>
</tr>
<tr>
<td>Information delivered to students</td>
<td>Guided, conventional use for building knowledge</td>
<td>Independent use for building knowledge; some student choice and exploration</td>
<td>Choice and regular use for building knowledge</td>
<td>Extensive and unconventional use of technology tools to build knowledge</td>
</tr>
</tbody>
</table>
Overall, according to the interviews and observations, which are nearly similar for both session observations, Berna mostly uses technology to prepare and deliver curriculum. During both session observations, students were watching an instructional video. Teacher is the only one who is actively using technology and directs the activity and students are not allowed to use the tools independently. During activities, students are receiving the information passively and individually, instead of working collaboratively. Sometimes, they could collaborate without using technology tools. However, the setting was arranged for direct instruction and individual seat work.

**Debriefing 2**

Berna stressed she is satisfied with the outcome of this class, and believes technology enriches her class. According to Berna, providing students with only hands-
on activities would not be adequate to teach a topic. Therefore, she chose to use technology to reinforce hands-on activities for this class. She gave an example from another class she taught.

On Friday, our topic was space and our world. For this class, I mentioned the topic, then, I picked students to dramatize the world and the sun. During the weekend, I spent some time on preparation and on Monday, I showed them a video about the space and planets. Before the video, I checked what they knew about the topic and after the video, I asked questions to see what they learned. On Tuesday, we made a rocket mock-up, and each student was an astronaut. Then, each student drove the rocket and sang the music called the sky and travel in the space while other students were pretending to be other planets and the sun. As you see in this activity, activities should support each other, and technology is an essential part because you cannot just tell students there is a space and we are living on a planet without showing them a video.

She was asked what made this class successful, she said, again, it was because she enriched the class with different types of activities using technology. She claimed much of the technology she used for this class was individual, and neither Berna nor students had any problem applying what was learned.

In addition, she stated technology impacts students’ learning and gave example from her previous experience to support her statement by saying;

Technology helps students to become more equipped learners. For instance, when I compare the education in this school to the school in Adana, I could see a huge achievement gap between them since I could not support students with
different resources as much as I can at this school. Even though I used my own technological tools it was not adequate. For instance, when I showed a video all students were trying to look at the laptop screen, which was only 15 inches. I never could show a video on a big screen in Adana. At this school, students can see, hear, touch and explore everything by using technology and there are different levels of options for activities.

Finally, Berna stressed for this activity, she has all required knowledge and preparation and she achieved her aim and was successful. She believes students concentrated on the activity and were excited to complete it. Neither students nor the teacher faced any problem in applying learning.

**Barriers**

Berna was very optimistic about technology and did not mention any barrier affecting her technology usage. Even though she does not have access to websites; including You Tube; except EBA, she does not consider it as a barrier, because she claimed she could easily find and download whatever she needs at home and upload into her flash drive to use in the classroom. In addition to that, she stated there are some web-sites, which are enriched with materials and she asks, each year, for passwords from her friends and parents to access one of these paid web-sites, which can be accessed from the school’s computers since they were created for education and protected for use in the classroom. Furthermore, she does not mention she is having difficulties.
CHAPTER SEVEN: LEMIS TEACHER

Introduction

Who is Lemis?

Lemis earned her Bachelors’ degree in preschool teaching from Marmara University in 2018. She was assigned to this school and started to teach this year. This is her first school and first year in teaching. Even though Ministry of National Education did not open teaching position in Istanbul since 2013; she was able to be assigned to this school in her first year because she has no sight in one eye.

When I visited to school’s director to get permission for conducting my study, the director told me even though the classrooms were provided with technological tools, they, as a school, do not usually use technology. Therefore, I was told it would not be good fit to choose a teacher in this school. However, I repeated it would be enough to have a well-equipped classroom to be a participant. Then, the director called the teacher to explain the study and I gave the details. The teacher said, “I do not prefer to use technology in my classroom. In this case, if you still want me to be a part of this study, I would be glad to help you” and then, agreed to participate to this study. Since she does not use technology, adding that students should touch and feel to explore while they are learning I gave her ‘Lemis’, which means touching and handling in Turkish as a pseudonym.

In her daily-life, Lemis mentioned she uses technology. For instance, at home she uses machines in her kitchen, laundry and TV. Other than that, she stated she uses
her cellphone, mostly, since she thinks her cellphone meets all her needs such as TV, computer, information, family and friends contact, preparation of curriculum, note taking, and photography.

She stressed she uses technology only when she needs to, and she needs to use technology to keep pace with other people since she lives in a big city. She said she does not believe she needs to adapt technology, but she feels she has to do it since she is living in a technological age. According to Lemis, only computer programmers and researchers have to adopt technology, but other people do not have to and said “People do not adopt technology, technology penetrates people’s lives”.

**Lemis’s Classroom Setting**

Lemis’s kindergarten is in a public elementary school which offers education from K to 4 and located in the Anatolian side of Istanbul. The community is mostly middle income. The school includes 1,248 students and 56 teachers in total, three kindergartens and six preschool teachers specifically. The building has coral colored 4 floors, and brick colored roof. The garden is wide and made of pavement and the ground was lined courts for football, basketball and volleyball. The walls of the school are white colored and there are trees in front of the walls. There is only one entrance to the school’s garden and one entrance to the building, and there is a security in front of the entrance door of the garden to check people who want to visit the school.

There are three kindergartens located on the first floor on the right side, and isolated with a door from the main aisle where all students and teachers can access. All kindergartens are secured in a special aisle and have their own dining hall, kitchen, and restrooms. However, they are using same garden with other students at different hours.
In this school, pupils attend school either in the mornings or in the afternoons because of the crowded population. Morning shift hours begins at 8:00 a.m., continues six class sessions with forty minutes, and ends at 12:50 p.m. while afternoon shift starts at 13:05 p.m., continues six class sessions with forty minutes, and ends 17:55 p.m. Kindergarten students have different school hours. Students are welcomed at 1:15 p.m. in the morning and ends 17:50 p.m. Also, kindergarten teachers do not follow the forty minutes class sessions and they are allowed to decide the length of each class period.

This participant teaches in the afternoon shift and does not have an assistant teacher. There are pre-service teachers who come in three days a week for their internships. There is only one woman who is working in the kindergartens who helps organize students’ breakfast and stays in the kitchen. Each teacher shares her classroom with another teacher who is working the other shift.

Lemis’s classroom was enriched with the technological devices. Once I entered the classroom, I saw the interactive smart-board on my left side, teacher’s table and desk in the corner and in front of the windows, and students’ desks on the right side. There were cabinets where the teacher keeps the materials and students’ portfolios under the smart-board. Second wall was all structured windows and there are a few shelves, which was used for the materials such as toys, Legos, etc. under the windows. On the third wall, there are a few pictures of shapes and numbers, and students’ cabinet in front of the wall. Fourth wall was mostly blank and in front of the wall, there are students’ cabinets either. On the left side, close to the corner, there are some puppets. Students’ desks were located on the right side of the classroom and u-shaped lined up.
In Lemis’s classroom, there is an interactive whiteboard, a projector, a printer, a scanner, and audio system, and a copy machine in the kindergartens aisle. Currently, Lemis has 21 students, and according to what she said, students are not allowed to use any of these technological devices by themselves. During my observation, I have also noticed that students do not have access to technological tools. In addition to that, the
cabinets under the smart-board are too wide and students cannot easily use the smart-board since there is no enough space for them to touch it.

**Lemis’ Self-Efficacy Beliefs Towards Technology**

**Self-Efficacy Beliefs towards Using Technology**

Lemis claimed she does not feel comfortable using technology, and stated she is just using technology such as social media, WhatsApp, and other web-sites just to adapt. She is identified herself as a general google user. Other than that, she is not using technology. She said “I never use the smart-board. There is one in my classroom, but it just occupies space. That’s it”.

In addition, she stated she does not think she needs to use technology in the classroom since she believes children should touch, explore and learn not just sit and watch the smart-board. Therefore, she is trying to not use technology in her teaching and learning process. She brings old forms of technological tools such as cell-phones to the classrooms and gives students a chance to touch them. She said that “I believe students can learn more while they are touching an old cellphone, which is not working instead of watching a new and modern smart-board”.

She gave an example how she is using technology in her classroom by saying I do not use technological tools in the classroom that much. I have a thirty years old popcorn popper at home, and I bring it to the classroom. We are trying to see how it works. Also, I have a very old camera, which takes black and white photos, and I am trying to show them how technology differs during time by comparing cameras, while musical instruments have not changed. I do not use
technological tools, but I do introduce them to students. Also, I do use printer and copy machine.

On the other hand, she believes using technology is related to school district and stated

The school has to be well-equipped, comprehensive and wider to use and I believe that technology is used as much as it could be at this school. In another school climate, we could integrate technology more than we do here, but conditions dictate the use of technology. I believe we are using technology adequately and we have priorities, which should be considered before technology. It is not my priority right now since children who are in their exploring period cannot perceive the world by just watching and seeing.

Finally, she claimed she is using technology in the classroom to watch videos, listen to music and to explore the old tools, however, she stated even though she is twenty-three years old, she still needs to touch and feel to learn. Whatever she watched on TV she could forget but once she touches something she never forgets. She stated that “Touching should be more significant for children since they are excellent learners and always open to learn new things”. She gave an example by saying

If I showed them a video about the seasons, they will only see some colors and movements in the video based on the quality of video, but when I take them out to explore the season, they will see everything that the nature gives them.

She believes that she does not need to use technology to enrich her teaching and learning process.
Self-Efficacy Beliefs towards Learning Technology

Lemis stated she took classes related to technology at the university, including Microsoft Office programs such as Word, Excel, and PowerPoint. In another class, she learned how to make videos, cartoons, and animations by using programs. She said she learned everything she would need, and she successfully passed these classes. However, she mentioned she is not able to apply what she learned, stating,

I was not prepared, well, to use technology at the university. I mean, it was adequate, but my level was not enough. I can use Word and Excel programs right now, but I cannot use Moviemaker even though I did at the university. I do only remember the name of the program currently. Yes, I agree with the teaching philosophy, which teaches students to learn by exploring, but the teacher should be the guide. My professors forced us to learn programs and create videos, but they did not show us how to do it. Therefore, I could not say the instructor taught it so I could do it. For instance, when I prepare an activity and ask students to complete it, I display an example of the completed activity to show students what they are going to do. I know creativity is significant, but in some activities, students should see the steps of completing the activity. Therefore, since my instructors did not show us the steps of completing the programs, I could not learn it.

In addition, she mentioned she was supposed to use technology at the specific classes related to technology and in other classes, their professors did not combine technology. She stressed “In music education class, we only played the flute. I wish the
instructor at the university used technology to enrich the class and encouraged us to learn technology”.

On the other hand, she stated “I do not feel I missed many things since I could not learn how to use technology. However, I feel the deficiency of other things I did not learn; for instance, I wish I could learn 20 fingerplay instead of 10”. She pointed out she does need games, songs, activities more than technological tools since children will see a video once and play with technological game once and that is it. Then, they will be saturated with that tool since their creativity will not grow. However, once they are provided with hands-on activities, they will not get bored easily and will develop their abilities.

Lemis claimed she did not attend any technological courses or seminars, and she does not feel ready to use technology in the classroom. She said early childhood teachers do not need to learn how to use technology because, according to Lemis, they do not need to use technology to enrich the teaching and learning process. If she needs anything related to technology, then, she could ask her friends to help her.

She can use technology to prepare her activities at the basic level. She stated that, “For instance, if another teacher who can use technology better to draw objects on the computer, I could copy and paste from another source, but at least, I could prepare the activity on the computer”. Finally, she stated “I am not a good student of technology learning, and I do not have any desire to learn anything related to technology. There was not any opportunity to learn technology and I did not create any opportunity either”.

Once Lemis’ self-efficacy beliefs towards teaching and learning are considered, her self-efficacy beliefs towards using and learning technology in early children
education represent a critical perspective that aligns with her pedagogical philosophy. She asserts that technology is developmentally inappropriate for young children and does not enrich their learning in any way. Therefore, she contends that she does not need to learn technology, because from her critical perspective, children should not be exposed to technology during their early ages. Based on the results of both observations and interviews, Lemis intentionally limits the use of technology and does not seek out expansion of her teaching skills for integrating technology because of her critical perspective toward technology integration in early childhood classrooms.

Lemis’s Practice of Technology Integration

Observation Day 1

Once students arrived, Lemis gave them time for free-play. Student chose toys and brought to their desks. At 2:10 p.m., Lemis played a song and asked students to put the toys back. While they gathered toys, they sang the song either. Once students sat down Lemis drew numbers on blackboard, she used only the left side of the board, and asked students to repeat the numbers at 2:15 p.m. Then, she found riddles about numbers on her cellphone and asked students. After students gave answer, Lemis talked about that numbers and connected with the number of objects in the classroom.

For the art activity, she handed out drawn caterpillar and circles, which have numbers on them at 2:50 p.m. Lemis asked students to stick numbers in turn and paint the caterpillars. For this activity, she could not prepare caterpillars since she forgot the materials at the school. Therefore, she asked students to wait and talked to between each other while she prepared the activity till 2:30 p.m. Then, she cut circles and
caterpillars, and students talked. Once they finished their activities, Lemis collected them, and left on her desk. At 3:15 p.m., students left the classroom for the breakfast.

Once they came back to the classroom, they met in front of the smart-board and became a circle. She sang a song and students danced at 3:45 p.m. Then, she got a tambourine to sing another song and students danced again. Lemis paired students to play not to laugh game. For the game, Lemis did not move the desks and chairs and the place was narrow for children. Therefore, children had limited space to move and dance.

At 4:15 p.m., students were asked to sit down, and Lemis handed out an activity, which had lines and numbers one through ten on a page. Then, Lemis asked students to draw objects on for each line based on the number. To show the activity and give directions, Lemis just lifted up the paper and explained where and how many objects students should draw. While students worked on the activity, Lemis walked around and checked students' works. Once students finished working on the activities, Lemis gathered all of the activities.

At 4:30 p.m., students wore their boots and coats and turned back to their chairs. Lemis sang a song about numbers and students join singing. At 4:50 p.m., Lemis asked students to come in front of the smart-board and played a video song on the computer called, 'Gangnam Style'. Student played move and freeze. All students joined dancing and they played until 5:50 p.m. Then, parents came to pick up their children.

On Lemis' first-session observation day, she used technology to access information by finding riddles to ask students and playing music for students to dance.
Lemis was the only person who could access the technology and controlled technology during all activities. Also, Berna decided about how and when to use the technology as well as which technology she used. The setting was different since she did not use a smart-board. She only used the projector once she wants to reflect the video of the song.

On the other hand, students did not receive information from the teacher via technology by watching video and or other technology-enriched activity. Also, students were not allowed to access the technology. Since students did not have direct access to the technology, collaboration with using technology did not occur. Hereby, they did not have any input on the decision-making process about which technology tool and how it could be used.

The report of Lemis’s technology integration level based on Technology Integration Matrix Observation tool have been showed below.
<table>
<thead>
<tr>
<th>Entry</th>
<th>Adoption</th>
<th>Adaptation</th>
<th>Infusion</th>
<th>Transformation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active</td>
<td>Information passively received</td>
<td>Conventional, procedural use of tools</td>
<td>Conventional independent use of tools; some student choice and exploration</td>
<td>Choice of tools and regular, self-directed use</td>
</tr>
<tr>
<td>Collaborative</td>
<td>Individual student use of tools</td>
<td>Collaborative use of tools in conventional ways</td>
<td>Collaborative use of tools; some student choice and exploration</td>
<td>Choice of tools and regular use for collaboration</td>
</tr>
<tr>
<td>Constructive</td>
<td>Information delivered to students</td>
<td>Guided, conventional use for building knowledge</td>
<td>Independent use for building knowledge; some student choice and exploration</td>
<td>Choice and regular use for building knowledge</td>
</tr>
</tbody>
</table>
(Table 15 continued)

<table>
<thead>
<tr>
<th>Use unrelated to the world outside of the instructional setting</th>
<th>Guided use in activities with some meaningful context</th>
<th>Independent use in activities connected to students' lives; some student choice and exploration</th>
<th>Choice of tools and regular use in meaningful activities</th>
<th>Innovative use for higher order learning activities in a local or global context</th>
</tr>
</thead>
<tbody>
<tr>
<td>Directions given, step-by-step task monitoring</td>
<td>Conventional and procedural use of tools to plan or monitor</td>
<td>Purposeful use of tools to plan and monitor; some student choice and exploration</td>
<td>Flexible and seamless use of tools to plan and monitor</td>
<td>Extensive and higher order use of tools to plan and monitor</td>
</tr>
</tbody>
</table>

Note. *Adopted from Florida Center for Instructional Technology (FCIT): The Technology Integration Matrix (3rd edition), by College of Education, University of South Florida, retrieved from [https://fcit.usf.edu/matrix/matrix/](https://fcit.usf.edu/matrix/matrix/ Copyright 2019 by FCIT.)*

**Debriefing 1**

Lemis stated to prepare a daily-plan is the most significant part of effective teaching in early childhood. She said the curriculum, which is given by Ministry of National Education does not include any technology since all schools are not provided with technological devices. She mentioned if she plans to use technology she decides during her daily-plan preparation section. For the first-session observation day, she claimed she used technology only to print and copy the hands-on activity.

In addition to that, she did not use any other technology such as showing videos or playing games on the smart-board. She stated,
I did not use technology for this class since I do not like to use it. When I utilize technology, I use it for cinema hours, to introduce a new concept, diversify activities with visual reinforcements. But on that day, I was not in need of technology to teach except for using the printer and copy machine. On the other hand, I used the internet to find riddles about numbers.

Once Lemis was asked why she did not integrate other technological tools, she mentioned her aim was to teach numbers on that day and she said to teach numbers it is better to practice verbally and complete hands-on activities. She also stated

I do not want to say technology is significant and reinforce learning, therefore I am always using technology because I am not. People say they do integrate technology and support the idea that technology is very significant for teaching, but whatever they say may not same as whatever they do.

Then she added

If you asked me if I feel I missed something, yes, I did, but not because I did not use technology, because I could not spend time to play outside. I believe it is more significant for children to play and we could not do it on that day.

Furthermore, once Lemis was asked about students' participations for this class, she claimed even though educational videos could be beneficial to provide students with visual reinforcements students could only watch the video. Therefore, she wanted to include a drama on that day, but she claimed she did not have time to do it. She stated

When we include drama, I explain the roles to students, then they communicate and share the roles, they act their roles, and then, they make comments about it.
In this case, they become more social, engaged and work collaboratively. Also, all schools do not have technology and I do not think technology is very significant. It can be good to make our work easier, but it does not live. However, other activities, such as drama, live. We cannot address all children’s attention with technology by watching a video, but we could grab all students’ attention by giving them a chance to perform a role, which they could utilize from their previous experiences, and they will use this experience as lifelong learning.

In addition to that, she stated technology does not help her to diversify the activity based on students’ different levels. According to Lemis, technology cannot be diversified since there would not be adequate time. She gave an example by saying “Can you show five different videos to teach a topic? Of course, not, but I can prepare five different hands-on activities to give students at the same time without wasting money”.

Finally, Lemis mentioned she said she did not need to use technology to assess students’ learning for this class because she has been teaching numbers for a long time and she knows students’ level by looking their hands-on activities. She stated she does not find it appropriate to use technology to assess students’ learning since using one tool would not be appropriate for all children. She stated she is assessing and evaluating students’ learning based on their learning process and since each student’s level is different, each student should be assessed and evaluated individually.

**Observation Day 2**

On the second-session observation day the topic was dental health. At 1:15 p.m., after Lemis welcomed the students and they sat down, a guest speaker, a dentist, came
to the classroom and started talking about dental health. He had small rough model of teeth and toothbrush. First, he talked about general information about teeth and provided students with information about how they could protect their teeth. Then, he showed how to brush their teeth by using the small rough models. During his explanation, he was asking questions to students about what they know about their teeth and got their answers. Students were very excited and focused on what he was saying. They were mostly engaged in this activity.

Once the doctor left, Lemis gave students time for free-play at 1:50 p.m. Students picked toys and turned back to their chairs and played with their toys. Some students took their pencil cases and drawing books. While students played games, Lemis cut cardboards to prepare next activity. Then, Lemis asked students to put their toys and stuffs back. After she controlled the layout of the placed toys, she asked students to come into line for breakfast at 2:30 p.m.

At 3:00 p.m., students came back to the classroom and sat down. Lemis started to talk about dental health and asked questions about what they learned from the dentist and their previous classes. After she listened students’ responses and comments, she went out to summon two nurses from the community clinic. First, they gave a brief information about dental health and let students know what fluoride treatment is and how it works on their teeth. Then, both nurses started to call students and to apply the treatment one by one. During this, they spoke to students about their teeth. Students were excited about the treatment and eager to get it.

After nurses left from the classroom at 3.30 pm, Lemis demonstrated what students should do when sneeze. Then, she mentioned what they should do while they
are sneezing. She claimed they should cover their mouths since they could spread their bacteria by sneezing. She showed a face figure with its mouth cut out and got a spray with tinsel. After that, she sprayed it to each student’s face from the opened mouth. Once she finished spraying it on all students, she asked how they felt and how they should behave while they sneeze. Finally, she handed out a copy of a face, hand and one tissue to each child. Then, she asked students to cut the hands and faces, and stick the hand with the tissue on the mouth. All students seemed to be engaged and completed their activities without exception.

Once students finished their activities Classis gathered them display. She started to sing another song related to teeth at 4:00 p.m. Then, she started to talk about dental health again and how students brush their teeth. After she listened students’ responses and comments, she gave students another activity paper, which had teeth and a toothbrush on it. She gave the directions to students by lifting up the activity paper. She said students need to cut and paint teeth and toothbrush. While students were working on their hands-on activities Lemis was talking about what they should eat to protect their teeth and what they should not eat. Students were also making comments about what Lemis mentioned by saying, “I do not eat chocolate”, “We can drink milk, it is healthy”.

After students finished their activities and Lemis gathered them and asked students to wear their coats and boots. Once students sat down, Lemis sang a song and students joined singing. A few students were not joining the song and looking around. At the end of the day, parents picked their children up at 5:50 p.m.

On Lemis’ second-session observation day, she did not use any technology in the classroom. She delivered curriculum by talking and conducting an experiment. She
also utilized from a guest speaker to explain the content. Even though she was able to access technology she preferred to use it during neither delivering curriculum nor play a song.

On the other hand, students did not receive information from the teacher via technology by watching video and or other technology-enriched activity. Also, students were not allowed to access the technology. Since students did not have direct access to the technology, collaboration with using technology did not occur. Hereby, they did not have any input on the decision-making process about which technology tool and how it could be used.

Table 16. The Report of Lemis’ Second-Session Observation

<table>
<thead>
<tr>
<th>Active</th>
<th>Entry</th>
<th>Adoption</th>
<th>Adaptation</th>
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<tbody>
<tr>
<td>Information passively received</td>
<td>Conventional, procedural use of tools</td>
<td>Conventional independent use of tools; some student choice and exploration</td>
<td>Choice of tools and regular, self-directed use</td>
<td>Extensive and unconventional use of tools</td>
<td></td>
</tr>
<tr>
<td>Goal-Directed</td>
<td>Authentic</td>
<td>Constructive</td>
<td>Collaborative</td>
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</tr>
<tr>
<td>Directions given, step-by-step task monitoring</td>
<td>Use unrelated to the world outside of the instructional setting</td>
<td>Information delivered to students</td>
<td>Individual student use of tools</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conventional and procedural use of tools to plan or monitor</td>
<td>Independent use in activities with some meaningful context</td>
<td>Guided, conventional use for building knowledge</td>
<td>Collaborative use of tools in conventional ways</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Purposeful use of tools to plan and monitor; some student choice and exploration</td>
<td>Independent use in activities connected to students’ lives; some student choice and exploration</td>
<td>Independent use for building knowledge; some student choice and exploration</td>
<td>Collaborative use of tools; some student choice and exploration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flexible and seamless use of tools to plan and monitor</td>
<td>Choice of tools and regular use for building knowledge</td>
<td>Choice and regular use for building knowledge</td>
<td>Choice of tools and regular use for collaboration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extensive and higher order use of tools to plan and monitor</td>
<td>Innovative use for higher order learning activities in a local or global context</td>
<td>Extensive and unconventional use of technology tools to build knowledge</td>
<td>Collaboration with peers and outside resources in ways not possible without technology</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Adopted from Florida Center for Instructional Technology (FCIT): The Technology Integration Matrix (3rd edition), by College of Education, University of South Florida, retrieved from https://fcit.usf.edu/matrix/matrix/ Copyright 2019 by FCIT.

According to the interviews and observations, which are nearly similar for both session observations, Lemis mostly uses technology to prepare curriculum. During both
session observations, students were only listening to music and dance. Teacher is the only one who is actively using technology and students are not allowed to use the tools independently. During activities, students were not provided with technological activities, which require working collaboratively. The setting was arranged for direct instruction and individual seat work and smart-board was not in use for the teacher either.

**Debriefing 2**

Once Lemis was asked how she prepared her lesson plan and why she does not want to use technology to teach the topic she said, “Normally I was going to teach dental health last week, but since nurses were coming on that day I decided to postpone it”. She mentioned she always decides how she will be teaching the topic while she is preparing lesson plan. For this class, since there was a guest speaker and nurses and they would be talking about dental health, and students would be exploring the topic she did not include technology in her daily plan.

In addition, Lemis explained why she did not prefer to integrate technology to teach this topic and said

On that day, we had a guest speaker and he had small rough models of teeth and a toothbrush. In this case, students were able to touch and explore them. If I showed a video, they would only see whatever in the video and could forget it. However, since they were able to touch them, they will never forget. Showing videos does not teach anything, it only reinforces what you taught already.

Another point she stressed is she could not use technology for this topic to assess students’ learning since each child’s technological knowledge is different, and this affects the results. She gave an example by saying
If I were using a technological tool to evaluate, the student who knows how to use the tool would do better than other who is not familiar with the tool. Some children are exposed to technology at home much more than others. Therefore, I could not distinguish if these students are smart or they are watching TV or playing games too much. I could not identify a child as smart, if this child knows more than what he is supposed to learn.

In addition, Lemis stated technology has negative effects on socio-emotional development. Since children are eager to spend much time to play online games and watching videos, cartoons, and animations they become a virtual person. They relate to characters in the games and cannot adapt to real-life. After some time, they lose socio-emotional abilities such as sharing, understanding others, having empathy, and helping people. They transform into merciless, strict and inconsiderate persons. She said “You can teach students the names of all dogs’ genus by showing them a video but how can you teach a student to help a dog by using technology? It is not possible”.

Finally, Lemis stated the most difficult part of using technology for her is students’ attention is difficult to hold since they can concentrate on a video, cartoon or animation for a short time. Also, she said while some students do not like to watch a video some of them do not like to listen to music or dance. Therefore, she does not provide students with a technological activity, which all students would not like to attend. However, she stated another activity such as the one she prepared to teach dental health is attractive to all students.
Barriers

Lemis stated she does not use technology and one of the reasons she cited is the school climate. According to her, the school climate directly affects teachers’ technology integration and since her school does not require and encourage the teachers, she does not use technology to enrich her teaching and learning process. She mentioned she uses technology infrequently.

In addition, Lemis mentioned since all students’ interests are different, technology usage would be difficult for her. Since some students do not like video while others do not like to listen to music, she is having difficulties in choosing and applying technology in her classroom. However, she does not face this problem while she is preparing other types of activities. She is not eager to use technology.

Finally, she stated technology is not necessary for early childhood education since students need to touch and explore while they are learning. She mentioned technology only gives students the opportunity to see and watch and reinforce what they already learned. Also, technology cannot be an appropriate tool for her to assess her students because, according to her, since each child’s attitude towards technology is different, evaluation would not be valid by using technology.
CHAPTER EIGHT: DISCUSSION

Introduction

Chapter eight presents the discussions of the findings from the four participants. The purpose of this study was to explore Turkish kindergarten early career stage teachers’ beliefs towards technology and their technology integration practices in their classrooms. The relevance of the study was to explore Turkish early career kindergarten teachers’ self-efficacy beliefs towards technology and their technology integration practice. This chapter discusses the cross-case analysis to answer research questions:

1. What are self-efficacy beliefs of Turkish kindergarten early career stage teachers towards technology?
2. How do Turkish kindergarten early career stage teachers integrate technology into their classrooms’ instructions?

After finishing my analysis for each case, I completed cross-case analysis in two parts; first one was for teachers’ self-efficacy beliefs towards technology and second one was for teachers’ technology integration. Through my first-session cross-case analysis, four primary themes emerged: perceptions of technology knowledge and skills, willingness to use technology, technology skills preparedness and willingness to learn technology. These themes relate to my first research question: What are self-efficacy beliefs of Turkish kindergarten early career stage teachers towards technology?

Through my second-session cross-case analysis, three primary themes emerged:
effectiveness of teachers’ technology integration, affordances of technology for students’ learning and barriers of technology integration. These themes relate to my second research question: How do Turkish kindergarten early career stage teachers integrate technology into their classrooms’ instructions?

**Teachers’ Self-Efficacy Beliefs Toward Technology**

![Diagram showing First-Session Cross-Case Analysis with subcategories: Teachers as Technology User (Perceptions of Technology Knowledge and Skills, Willingness to Use Technology), Teachers as Technology Learner (Technology Skills Preparedness, Willingness to Learn Technology).]

Figure 13. First-Session Cross-Case Analysis to Answer Research Question 1

**Teachers’ Perceptions of their Technology Knowledge and Skills**

Malik, Rohendi and Widiaty (2018) stated technological knowledge of TPACK is related to teacher knowledge of technology, which is commonly used in daily life. In daily life, all participants use technology for different aims and with varied frequency. Öngül uses technology almost everywhere; shopping, buying flight tickets, sending and receiving mails, taking personal notes, taking care of her infant. Uzel utilizes technology to buy flight tickets, communication, shopping, and social media. Berna often uses...
technology to talk to parents, and her husband who is in the army; searching for new activities for her students; social media and shopping. On the other hand, Lemis uses technology only when she needs to, and claimed she needs to use technology to keep pace with other people since she lives in a big city.

Furthermore, Joo, Park, and Lim (2018) stated that teachers’ self-efficacy beliefs are related to their beliefs about their technology abilities and skills as educators. Therefore, teachers’ self-assessment about their technology integration skills should be considered to explore their self-efficacy beliefs towards technology. In this study, participants identified their technology integration level in different levels with different terms. For instance, Öngül identified her technology integration level as a four of five and said she uses technology every day and in different activities in both her daily and professional life. She also claimed she utilizes from different types of technology and if she cannot find what she needs she is able to search for it on different sources, and she never limits herself. Also, she always tries to solve her problem related to technology, which is shown as an evidence of technology knowledge.

Furthermore, Uzel identified her technology usage level as good, in fact, she helps her colleagues when they need. She said she is faster and more effective when she uses technology. It is very significant since Ghavifekr and Rosdy (2015) stated teachers should have high confident level to integrate technology as an educational tool in their teaching and learning practices. Berna also said she uses technology every day at school and in her daily and professional life. She stated her technology usage level stands at a high level. She claimed she adapts technology very fast. However, Lemis
stated that she does not feel comfortable while using technology. She uses only limited technological tool. For instance, she never used smart-board in her classroom.

Furthermore, Lemis claimed she does not feel she needs to use technology to enrich her teaching practices and students’ learning and added that it is not only about personal preference but also related to school climate. Even though Yilmaz et. al., (2016) stated self-efficacy beliefs are more influenced by internal variables such as existing capacity, equipment and hardware, administration and staff rather than external variables such as demographic information, personal attitudes have a major effect on self-efficacy beliefs (Tondeur, Van Braak, & Ertmer, 2017).

Willingness to Use Technology

Yilmaz et al. (2016) conducted a study to explore the relationship between preschool teachers’ attitudes related to use of technological tool and their self-efficacy beliefs. They found that there is a relationship between kindergarten teachers’ attitudes towards use of technology and their self-efficacy beliefs (Yilmaz et al., 2016). Therefore, it is very significant for teachers to have positive attitude towards using technology. All participants claimed that they use technology for their professional life. While the way of using technology such as preparing and modifying curriculum, and delivering the curriculum show similarities the frequency of technology use varies for each participant.

To be able to effectively integrate technology into teaching and learning process, it would not be adequate providing students, teachers and classrooms with technology and securing a connection to the Internet; because technology cannot compensate for adequate practice by itself (Ertmer, 2005; Tondeur, van Braak, Ertmer, & Ottenbreit-Leftwich, 2016). Although each participant’s classroom was provided with technological
tools only Öngül, Uzel and Berna use all technological devices in their classrooms. Lemis stated she does not use some of the technological tools, such as the smart-board, due to her own beliefs about quality pedagogy in early childhood. She does not consider technology integration to be necessary or valuable for teaching young children.

On the other hand, providing classrooms with technology does not guarantee better and effective technology use since there should be teachers who are willing to integrate technology to support teaching and learning process (Malik et al., 2018). Also, according to Joo et al. (2018), teachers’ self-efficacy beliefs are related to their confidence in their ability to promote students’ learning by using technology. Öngül stated she is aware of the difference when she integrates technology on students’ learning. Therefore, she is willing to use technology to enrich students’ learning. Uzel stated once she started to teach, she noticed how much technology can impact on students’ learning. Therefore, she became more eager to use it in her teaching practices. Berna claimed she was always eager to use technology even she did not have technology in Adana. She bought devices and tried to improve her teaching skills by using technology.

On the other hand, Hsu (2016) stated some teachers questions the value of technology usage on students’ learning. Lemis is one of these teachers who brings a critical perspective to the use of technology and does not believe students need technology to learn. She said that “I believe students can learn more while they are touching an old cellphone, which is not working instead of watching a new and modern smart-board”. She also stated that instead of showing a video about seasons, taking
students outside and providing them an opportunity to observe the season would be a more appropriate teaching method for young children.

**Technology Skills Preparedness**

Even though Yilmaz et al. (2016) stated there is no relationship between Turkish kindergarten teachers’ self-efficacy beliefs towards using technology and their educational backgrounds, other researchers proved that pre-service teachers should be prepared to integrate technology with pedagogical issues and curriculum (Angeli & Valenides, 2009; Voogt, Fisser, Pareja, Tondeur, & van Braak, 2013). In addition, Ghavifekr and Rosdy (2015) claimed that teachers’ skills to integrate technology plays a crucial role in the use of technology in education; thus, teachers should have sufficient technology skills to integrate technology in classrooms. While Öngül, Uzel and Lemis stated they were not prepared to use technology as an educational tool at the college level Berna said she took classes related to technology and they were very helpful for her to improve her technology skills.

According to Drummond and Sweeney (2017), worldwide teacher education program must prepare preservice teachers to make their future classrooms more effective by integrating technology. However, all participants claimed that their they engaged technology only during their classes related to technology, which were insufficient for majority of participants. They stated most of their classes were traditional and they were not provided with technology enriched materials and environments during their undergraduate programs. In fact, Öngül said she was the first student who included technology in the assignment. In addition, Uzel said “Our major inadequately
prepares pre-service teachers for technology integration, and we, as preschool teachers, should have more technology enriched classes, especially related to Media”.

All participants claimed that there are seminars under the scope of FATIH project, however, none of participants attended these seminars. Uzel stated that instead of forcing teachers to attend these courses, school districts could give seminars based on their needs during first and last two weeks of each academic year. Öngül also said that these seminars are not beneficial; thus, instead of investing money for these seminar universities should improve their education about technology integration. Malik et al., (2018) supported this idea by stating that “TPACK-ICT is an effort that can be done by teacher institutions to build a learning environment among prospective teachers” (p. 502).

Willingness to Learn Technology

Several researchers have agreed that there is a relationship between teachers’ intention to integrate technology and their self-efficacy (Anderson, Groulx, & Maninger, 2011; Jeung, 2014; Baker-Eveleth & Stone, 2008; Banas & York, 2014; Valtonen, Kukkonen, Kontkanen, Dillon, & Sointu, 2015). Therefore, teachers’ willingness could be a predictor of TPACK. While Öngül, Uzel and Berna are willing to learn technology Lemis does not need to improve her abilities related to technology. Öngül said she is trying to improve her abilities about technology. She gave an example of how she adapted technology when she was assigned to this school. She is also aware of changing technology and makes effort to learn new technologies. Uzel said she is good about learning technology especially when she needs it.
Furthermore, Berna said even though she has good technology skills she still needs to improve her skills to provide her students more enriched material. Berna defined herself as a curious about technology and she easily learns it and said, “I do not know if I am good or bad about using technology, but I am very curious about learning to use technology”. Berna added along with being curious towards learning technology, teachers should have basic knowledge first. It is not enough to know how to turn on and off a computer any more. On the other hand, Lemis stated “I am not a good student of technology learning, and I do not have any desire to learn anything related to technology. There was not any opportunity to learn technology and I did not create any opportunity either”.

Even though Joo et al., (2018) stressed that both pre-service and in-service teachers should utilize from the workshops and training programs to improve the level of their TPACK none of participants has attended a seminar or a training because of different reasons. While Uzel stated these trainings should be optional and this would make teachers more eager to attend, Lemis claimed she did not attend any technological courses or seminars, and she does not feel ready to use technology in the classroom. On the other hand, Öngül claimed these kinds of trainings are not valuable while Berna stated she does not have sufficient time to attend any of these seminar or trainings. However, Winzenried, Dalgarno and Tinkler (2010) proved that teachers who took technology integration courses are more effective in their teaching by using technology as an educational tool by comparing teachers who never attended any course or training related to technology integration.
Effectiveness of Teachers’ Technology Integration

According to Ghavifekr and Rosdy (2015), teachers proved that technology enriched teaching and learning is more effective than traditional classroom. They also stated technology integration makes students more engaged and more focused. They also stated that using technology helps teachers to make their students more motivated and engaged. Öngül, Uzel and Berna stated that using technology motivated their students and then, they became more engaged. Öngül said

When I am the only person who is talking about a topic, as you know children’s concentration time is limited, therefore students lose their attention after some
time; but when I use technology, they became motivated and focused on the topic.

Uzel also stressed that once she recorded a video during and an activity and showed their students, they became more motivated, and try to do better for the next time. In addition, Berna claimed that students are more focused when they watch a video about a topic by saying that “I used technology for introducing the topic. When students watch a video before I teach the topic, they become more active and pay more attention. While I deliver the topic, they recall their previous knowledge from the video”. She added that she used videos for attention-grabbing to start teaching a new topic.

On the other hand, Lemis stated she does not prefer to use technology to grab students’ attention. She said using technology to grab attention is not appropriate for young children because students can focus on a video only for a short time. After that, it would be more difficult to grab their attention. She also claimed that sometimes, students do not want to watch a video, cartoon or animation and dance. Therefore, she said does not need to use technology to make her students more engaged and motivated.

Heflin, Shewmaker and Nyguen (2017) stated teachers should explore and create opportunities to provide students with technology-enriched opportunities to combine with collaborative environments to improve their effective teaching. Also, while Achen and Dodd (2015) said collaborative learning environment fosters students’ learning Lai and Wu (2006) stressed that technology integration improves students’ perception of collaborative learning. However, since none of participants are allowed students to use technological tools independently, we cannot mention collaborative
learning through technology in this study. There are different reasons they claimed such as concerning about time limit and tools protection.

**Affordances of Technology for Students’ Learning**

Blackwell, Lauricella, and Wartella (2016) stated that “Teachers use this technology in a variety of learning contexts, some of which replicate more traditional practices and others that embody student-centered learning” (p.59). Öngül, Uzel, and Berna stated they use technology to foster students’ learning since they claimed that technology makes learning more visual, permanent, embody and transferable. For instance, Öngül gave an example from her previous experience by saying, “If I were the only one talking about dental health and saying that everybody should brush their teeth to protect them, they may not understand it as well as they saw in the video”. She said that illustrating the significance of dental health via video helped children to understand it and made their knowledge more permanent. Uzel said technology helps students to embody what they learned, and gave an example from her experience by saying,

> When I open a video, talking about Atatürk’s family, they pay attention and listen very carefully. The video is more beneficial for students since it has both audio and visual effects on their learning. Even though I showed a picture of his family and explained it, I do not feel that I can grab their attention as much as a video could. Once they watch the video, they can embody what they learned.

Öngül also said technology makes students’ learning transferable and stated watching a video helped students to understand dental health is significant, and another video to stop one of students’ unwanted behavior. Uzel said once she showed a video, students became more attractive and enjoyable and learn easier and faster.
In addition to that, Berna said showing them an animation about the topic makes students’ learning become more enjoyable, permanent and easier. She explained her aim to integrate technology for this class.

I was going to teach the five sense organs and needed to give ongoing information about what they are and how students can be aware of them. Instead of just talking about what the topic is I want to grab their attention first. So, I used the video as a hook to prepare them for the class, then I provided them with other materials.

She also stated that she believes students learning became more permanent and transferable once she used technology, and she got feedback positive feedback from parents.

On the other hand, Lemis did not agree with the idea that technology fosters students’ learning and said, “I do not want to say technology is significant and reinforce learning, therefore I am always using technology because I am not”. In fact, Lemis stated technology has negative effects on socio-emotional development. Since children are eager to spend much time to play online games and watching videos, cartoons, and animations they become a virtual person. They relate to characters in the games and cannot adapt to real-life. After some time, they lose socio-emotional abilities such as sharing, understanding others, having empathy, and helping people. They transform into merciless, strict and inconsiderate persons.

**Barriers of Technology Integration**

Nikolopoulou and Gialamas (2015) divided barriers related to technology integration into two parts: internal and external barriers. While internal barriers refer to
teacher’ negative attitude and their lack of confidence, external barriers present the limited sources, lack of time and lack of technical support. Öngül, Uzel and Berna agreed that lack of time is a significant barrier to use technology as an educational tool in the classrooms. They claimed especially during preparation for a class they should find videos and watch them to confirm their appropriateness. However, since they use at least one video for each topic, and they should prepare for other activities they cannot spend time to check videos. Öngül stated since she just skimmed the videos, she could miss some points and faces problems during the class. Uzel claimed she tries to solve the problem by using her sources from previous years, and this helps her to save time for preparing hands-on activities. On the other hand, Lemis did not mention anything related to time barrier towards using technology.

In addition, limited sources is another barrier participants stated. Since Ministry of National Education does not allow teachers to access websites such as YouTube except EBA, which has been still developed and does not sufficient sources for all grades currently, Öngül and Uzel slog on finding sources to provide students. However, Berna said she does not consider it as a barrier, because she could easily find and download whatever she needs at home and upload in to her flash drive to use in the classroom. She also uses pre-paid web-sites, which can be accessed from the school’s computers since they were created for education and protected for use in the classroom.

On the other hand, according to Lemis, the barriers through using technology are differentiation of students’ interests and school climates. Lemis mentioned since all
students' interests are different, and her school does not require and encourage teacher
to use technology, she would not use technology to enrich her teaching practices.
CHAPTER NINE: IMPLICATIONS AND CONCLUSION

Introduction

This concluding chapter of the study presents the implications of the study for early childhood educators and kindergarten teachers, limitations, recommendations for future research, and conclusion. This study explored Turkish kindergarten early career stage teachers’ technology beliefs and practices. The aim of the study was to explore Turkish kindergarten early career stage teachers’ self-efficacy beliefs and technology integration practices in their classrooms, and to build upon the existing research base to explore whether recent changes in the teacher preparation programs to include technology, have contributed to increased technology integration by kindergarten teachers who are in the early years of the career trajectory.

I collected data from four Turkish kindergarten early career stage teachers who are working technologically well-equipped classrooms in Istanbul. The study was designed as a multiple case study and based on Bandura’s Social Cognitive Theory and TPACK framework. I completed three sessions semi-structured interview and two session observation with TIM-O question-based observation tool. I answered the following research questions in this study:

1. What are self-efficacy beliefs of Turkish kindergarten early career stage teachers towards technology?

2. How do Turkish kindergarten early career stage teachers integrate technology into their classrooms’ instructions?
Implications for Early Childhood Education in Turkey

Early childhood education has been developed as well as technology integration in education in Turkey. To improve the quality in early childhood education, Ministry of National Education has focused on developing technology integration in education. To do this, there are different projects such as FATIH has started. As it was mentioned earlier providing classrooms, teachers and students with technology did not create expected teaching and learning environment because of teachers’ technology integration levels remained low. Martin (2018) supported that by saying “To successfully integrate digital technologies into instructional practices, teacher candidates must be trained throughout their undergraduate experiences on technology implementation resources and strategies” (p.1777).

Both recent research and the findings of this study also showed that teachers’ preparation to integrate technology play a significant role to develop teachers’ self-efficacy beliefs and technology integration practice in their classroom instructions. Even though the term of TPACK has been used by researchers to explore teachers’ self-efficacy beliefs towards technology integration teacher preparation programs has not been enriched with TPACK. However, teacher education programs should be enriched with TPACK framework as Graham (2011) suggested TPACK framework can be used as a theoretical framework to train teacher candidates to use technology in content-specific ways in teacher education programs. In fact, TIM can be adapted and applied to prepare teachers for effectively and appropriately technology integration after modifying TIM based on Turkish cultural context. Preparing pre-service teachers at the universities plays a crucial role since teacher candidates may only see representation of
developmentally appropriate practice about technology integration at the universities since the schools do not provide in-service teachers with any opportunity to improve their practices appropriately.

Even though Ministry of National Education has offered seminars and courses for teachers to improve their technology skills, it has been said that teachers do not utilize strategies introduced in these seminars. These courses were designed to improve only technological skills and focused on neither content nor pedagogical knowledge. Therefore, the Ministry of National Education should revise their program to support developing in-service teachers’ developmentally appropriate practice about technology integration. They should revise both the context and the timeline of the program to make it more appropriate for in-service teachers. Ministry of National Education should ensure to set appropriate goals based on teachers’ current needs and enrich the seminar to provide teachers with not only technology knowledge but also pedagogical and content knowledge. To do this, they would also create their programs based on TPACK.

**Recommendations for Future Research**

The significance of technology in education especially in early childhood education in Turkey has become more focus by researchers. Even though teachers’ technology self-efficacy beliefs have been searched there is just a handful of research in this area. Therefore, more research should be conducted on issues related to teachers’ self-efficacy beliefs towards technology.

In addition, there is need to research teachers’ technology integration practices especially in kindergartens. These studies would bring to light to what extent
kindergarten teachers integrate technology, so the findings could inform the curriculum of teacher education programs in Turkey.

Finally, majority of current research was conducted quantitively. Even though the findings of these research are more generalizable since they have more participants, I would recommend to conduct more qualitative research to be able to see how current kindergarten in-service and/or pre-service teachers integrate technology as an educational tool into their classroom instructions to explore their needs to improve. These findings would be guide for both teacher educators and Ministry of National Education to prepare seminars and trainings.

**Limitations of the Study**

The four participants were selected from three schools in the metropolitan region of Turkey. The purpose of the study was to explore Turkish kindergarten early career stage teachers’ self-efficacy beliefs and technology integration practices in their classrooms. For this study, interviewing and observing were used for data collection. even though I was aware of the limits on my understanding of others, I could still strive to realize them by understanding their actions as Seidman (2013) stated. However, what I received as a result of an observation may not be at all consistent, since the teacher may prepare for that specific class and applied different methods to use technology to teach students. This could be a limitation for this study.

In addition, Seidman (2013) also said that the putting behavior in context would be the best way to make it meaningful, and interviewing gives the researcher an access to the context of people’s behavior. Thus, interviewing would be an appropriate data collection method to understand teachers’ technology integration states. However, there
were four teachers from Istanbul, which is the biggest metropolitan city in Turkey; the site cannot represent other kindergarten teachers through the country.

Finally, even though Ministry of National Education has been providing classrooms, teachers, and students with technological devices, majority schools through the country have not been provided yet. Thus, to generalize the findings, the conditions of schools and classrooms should be considered since one of the major barriers to use technology is lack of technological devices.

**Conclusion**

The findings of the study have enlightened the four participants’ self-efficacy beliefs and their technology integration practices into their classroom instructions. The aim of the study was to explore the teachers’ beliefs and practices towards technology. The findings indicate that teachers’ self-efficacy beliefs towards technology are related to their technology integration practices. Once they feel confident about their skills to use technology and willingness to use technology, their self-efficacy beliefs increase, and they reflect it to their practices. Preparedness to use technology plays a significant role to use technology. However, if teachers are eager to learn and catch up new innovations and changes in technology, they became able to effectively integrate technology in their teaching practice. However, if a teacher does not consider technology as a valuable on students’ learning and she is not willing to use and learn technology her practices would not include any technology-enriched outcome as it was mentioned by other researchers.

Furthermore, teachers who are willing to use technology claimed technology fosters students’ learning by making it easier, faster, permanent and transferable. Also,
they believe that technology makes their teaching more effective and helps students to be more focused and motivated. However, teachers mostly use technology to deliver curriculum by showing a video and play a song. Only teachers decide when and how to use technology in the classroom. Teachers also mentioned external barriers: time and source limit and stated that these barriers impact their teaching since they do not have access to all web-sites they have to find additional sources, but this creates time limit. They cannot find time to check each source, they could face problems related to appropriateness of the content.

On the other hand, the findings of this study are a lot more complex than what the research literature has led us to believe up to this point time with regard to the potential of the technology. First of all, even though technology gives opportunities for teachers to create collaborative learning environments none of the teachers prefer to use technology for indivual use. They mentioned different reasons such as time limit and the expense of technological tools.

In addition to these factors, teachers’ lack of preparedness at the university and their insufficient knowledge about how they can integrate technology to appropriately create technology-enriched environment supports students’ collaboratively working and learning affect their preferences. Since teachers were not prepared to use technology appropriately and effectively, they are not aware of how they could create a technology-enriched environment, which increases students’ collaborations and enrich their learning. Therefore, next step should be focusing on how technology can be used as a creativity tool rather than a tool to deliver the curriculum by showing a video.
Furthermore, Tondeur, et al., (2017) stated cultural and societal-related factors can have both direct and indirect effects on teachers’ abilities to turn their pedagogical beliefs into practice. School climate was another issue that one of the participants mentioned in this study. The effects of supporting and encouraging teachers to integrate technology by school districts should not be considered as a significant factor. Therefore, I believe teachers’ technology beliefs and practices are a product of training, personal experiences, beliefs, and environmental constraints and supports. Considering this fact, besides teachers’ self-efficacy beliefs and practices, how can school administrations create a culture for teachers to effectively integrate technology? What cultural consideration should be made?

Last but not least, in this study, participants are in their early career stages. In Turkey, new assigned teachers are seen keener and more innovative. However, the experience teachers acquire through years of practice and their adaption to school climates should also be considered as factors that affect their self-efficacy and implementation during later career stages. Therefore, teachers who have more teaching experiences, worked at the same school for a longer time and adapted to the school climate may integrate technology more actively, effectively and appropriately.
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Appendix A: The Regions of Turkey
Appendix B: IRB Approval Letter

November 15, 2018

Ozge Ozel
Teaching and Learning
Tampa, FL 33612

RE: Expedited Approval for Initial Review
IRB#: Pro00037331
Title: An Exploration of Early Career Stage Kindergarten Teachers’ Technology Integration in Istanbul

Study Approval Period: 11/15/2018 to 11/15/2019

Dear Ms. Ozel:

On 11/15/2018, the Institutional Review Board (IRB) reviewed and APPROVED the above application and all documents contained within, including those outlined below.

Approved Item(s):
Protocol Document(s):
Protocol, Version #1, 11.08.18.docx

Consent/Assent Document(s)*:
Teacher English Consent, Version #1, 11.08.18.docx.pdf
Teacher Turkish Consent, Version #1, 11.08.18.docx.pdf

*Please use only the official IRB stamped informed consent/assent document(s) found under the "Attachments" tab. Please note, these consent/assent documents are valid until the consent document is amended and approved.

It was the determination of the IRB that your study qualified for expedited review which includes activities that (1) present no more than minimal risk to human subjects, and (2) involve only procedures listed in one or more of the categories outlined below. The IRB may review research through the expedited review procedure authorized by 45CFR46.110. The research
Appendix B continued

proposed in this study is categorized under the following expedited review category.

(6) Collection of data from voice, video, digital, or image recordings made for research purposes.

(7) Research on individual or group characteristics or behavior (including, but not limited to,
research on perception, cognition, motivation, identity, language, communication, cultural
beliefs or practices, and social behavior) or research employing survey, interview, oral history,
focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

As the principal investigator of this study, it is your responsibility to conduct this study in
accordance with IRB policies and procedures and as approved by the IRB. Any changes to the
approved research must be submitted to the IRB for review and approval via an amendment.
Additionally, all unanticipated problems must be reported to the USF IRB within five (5)
business days.

We appreciate your dedication to the ethical conduct of human subject research at the University
of South Florida and your continued commitment to human research protections. If you have
any questions regarding this matter, please call 813-974-5638.

Sincerely,

Melissa Sloan, PhD, Vice Chairperson

USF Institutional Review Board
Appendix C: MoNE Approval Letter

T.C.
İSTANBUL VALİLİĞİ
İl Millî Eğitim Müdürlüğü

Sayı : 59090411-44.E.20039487  23.10.2018
Konu : Anket ve Araştırma İzni

Sayın: Özge ÖZEL

       b) Valilik Makamının 23.10.2018 tarih ve 19970434 sayılı oluru.

"İstanbul’daki Erken Kariyer Aşamasındaki Anaokulu Öğretmenlerinin Teknolojiyi Kullanmalarını Araştırma" konulu araştırma çalışmaz hakkındaki ilgi (a) dilekçe ve ekleri ilgi (b) valilik onayı ile uygun görülmüştür.

Bilgileriniizi ve söz konusu talebiniz; bilimsel amaç dışında kullanılmaması, uygulama sırasında bir örneği müdahaleümüzde muafaza edilen mühürli ve imzalı veri toplama araçlarının kurumlarımızda araştırıcılık tarafından ulaştırılacak uygulanılması, katılımcıların gönüllülük esasına göre seçilmesi, araştırma sonuç raporunun müdahaleümüzden izin alınmadan kamuoyuna paylaşılmaması koşuluyla, gerekli duyarunun araştırıcılık tarafından yapılmasına, okul idarecilerinin denetim, gözetim ve sorumluluğunda, eğitim-öğretim aksatmayacağ şekilde ilgi (b) Valilik Onayı doğrultusunda uygulanması ve işlem bitikten sonra 2 (iki) hafta içinde sonucun Mühürlüğümüz Strateji Geliştirme Bölümüne rapor halinde bilgi verilmesini rica ederim.

Timur TÜĞRAL
Mudur a.
Şube Müdürü

EK:
1- Valilik Onayı
2- Ölçekler
Appendix C continued

T.C.
İSTANBUL VALİLİĞİ
İl Millî Eğitim Müdürülüğü

Sayı: 59090411-20-E.19970434  23/10/2018
Konu: Anket ve Araştırma İzin Talebi

VALİLİK MAKAMINA


Amerika Güney Florida Üniversitesi Eğitim Bilimleri Enstitüsü doktora programı öğrencisi Özge ÖZEL’in ”İstanbul’daki Erken Karıyer Aşamasındaki Anaokulu Öğretmenlerinin Teknolojî Kullanımlarını Araştırması” konulu tezi kapsamında, ilimiz İstanbul genelinde bulunan eğitim kurumlarında görev yapan okul öncesi öğretmenlerine; gözetim ve görüşme soru formunu uygulama istemi hakkındaki ilgi (a) dilekçe ve ekleri Müdurlüğümüzce incelemiştir.

Araştırmacının söz konusu talebi; bilimsel amaç dışında kullanılmaması, uygulama sırasında bir örneği müdürülüğümüzde muhafaza edilen mühürli ve imzali veri toplama araçlarının kurumuzda araştırmacı tarafından ulaştırılarak uygulanması, katılımcıların gönülük esasına göre seçilmesi, araştırma sonuç raporunun müdürülüğümüzden izin alınmadan kamuoyuya paylaşılmaması koşuluyla, okul idarelerinin denetim, gözetim ve sorumluluğunda, eğitimin-öğretim aksatmayacak şekilde ilgi (b) Bakanlık emri esasları dahilinde uygulanması, sonuçtan Müdurlüğümüzde rapor halinde (CD formatında) bilgi verilmesi sayıla Müdürülüğümüzce uygun görülmektedir.

Mağlubiyetlerinde da uygun görüldüğü halinde olurlarınıza arz ederim.

Levent YAZICI
İl Millî Eğitim Müdürü

Ek:
1- Genelge.
2- Komisyon Tutanağı.

OLUR
23/10/2018

Ahmet Handi USTA
Vali a.
Vali Yardımcısı

İl Millî Eğitim Müdürlüğü Etabı direktör M. İrhan Öktem Cadd.
No:1 Esde Adılive Binası Sultanahmet Fatih/İstanbul

A. BALTA VIHKI
Tel: (0 212) 455 04 00-239
Appendix D: IRB Consent Form (English Version)

Study ID: Pro00037331 Date Approved: 11/15/2018

Informed Consent to Participate in Research Involving Minimal Risk

Pro # 00037331

You are being asked to take part in a research study. Research studies include only people who choose to take part. This document is called an informed consent form. Please read this information carefully and take your time making your decision. Ask the researcher or study staff to discuss this consent form with you, please ask her to explain any words or information you do not clearly understand. The nature of the study, risks, inconveniences, discomforts, and other important information about the study are listed below.

We are asking you to take part in a research study called:

“An Exploration of Early Career Stage Kindergarten Teachers’ Technology Adoption Levels in Istanbul”

The person who is in charge of this research study is Ozge Ozel. This person is called the Principal Investigator. However, other research staff may be involved and can act on behalf of the person in charge. She is being guided in this research by Dr. Ilene Berson.

The research will be conducted at the selected public schools in Istanbul, Turkey.

Purpose of the study

The purpose of this study is to explore the linkage between kindergarten teachers’ early career stages and the stage of technology adoption in Turkey.

Why are you being asked to take part?

We are asking you to take part in this research study because you are a female Turkish kindergarten teacher who is working in your first, second or third year, and has a technologically well-equipped classroom at a public school in Istanbul.

Study Procedures:

If you take part in this study:

- You will be conducted 3 sessions interview and 2 sessions observation. While first-session interview will take approximately 30 minutes, second and third session interviews will take...
Appendix D continued

approximately 45 minutes. Each session observation will last one school day (it might vary on
the schools).
- You will have right to choose the places for the interviews and dates and times for interviews
and observations while observations will be conducted in the classrooms.
- You will be asked to be audiotaped at the beginning of each interview to make sure I will not
miss any significant information that you will provide. I will be the only one who will access to
these records. They will not include any identifiable information and will be kept with
numbers. Also, they will be maintained only 5 years on my personal and password protected
computer for 5 years, then, I will delete all of them from my computer.
- You will be also asked to be video recorded during observation. If you give me permission, the
classroom observation will be video recorded. This video recording will only include you and
will not include any of students.

Total Number of Participants
About 6 individuals will take part in this study.

Alternatives / Voluntary Participation / Withdrawal
You do not have to participate in this research study.

Benefits
The potential benefits of participating in this research study include advancing the knowledge of the
field.

Risks or Discomfort
This research is considered to be minimal risk. That means that the risks associated with this study are
the same as what you face every day. There are no known additional risks to those who take part in this
study.

Compensation
You will receive no payment or other compensation for taking part in this study.

Costs
It will not cost you anything to take part in the study.

Privacy and Confidentiality
We will do our best to keep your records private and confidential. We cannot guarantee absolute
confidentiality. Your personal information may be disclosed if required by law. Certain people may
need to see your study records. These individuals include:
  - The research team, including the Principal Investigator, study coordinator, and all other
    research staff.
  - Certain government and university people who need to know more about the study, and
    individuals who provide oversight to ensure that we are doing the study in the right way.
  - Any agency of the federal, state, or local government that regulates this research.
Appendix D continued

\[\text{Study ID: Pro00037331 Date Approved: 11/15/2018}\]

- The USF Institutional Review Board (IRB) and related staff who have oversight responsibilities for this study, including staff in USF Research Integrity and Compliance. We may publish what we learn from this study. If we do, we will not include your name. We will not publish anything that would let people know who you are.

**You can get the answers to your questions, concerns, or complaints**

If you have any questions, concerns or complaints about this study, or experience an unanticipated problem, call Ozge Ozel at 533 450 25 13.

If you have questions about your rights as a participant in this study, or have complaints, concerns or issues you want to discuss with someone outside the research, call the USF IRB at (813) 974-5638 or contact by email at RSCH-IRB@usf.edu.

**Consent to Take Part in this Research Study**

I freely give my consent to take part in this study, I understand that by signing this form I am agreeing to take part in research. I have received a copy of this form to take with me.

\[\text{Signature of Person Taking Part in Study \hspace{1cm} Date}\]

\[\text{Printed Name of Person Taking Part in Study}\]

**Statement of Person Obtaining Informed Consent**

I have carefully explained to the person taking part in the study what he or she can expect from their participation. I confirm that this research subject speaks the language that was used to explain this research and is receiving an informed consent form in their primary language. This research subject has provided legally effective informed consent.

\[\text{Signature of Person obtaining Informed Consent \hspace{1cm} Date}\]

\[\text{Printed Name of Person Obtaining Informed Consent}\]
Appendix E: IRB Consent Form (Turkish Version)

Study ID: Pro00037331 Date Approved: 11/15/2018

Minimal Risk İçeren Araştırmalara Katılmak İçin Rıza Bilgilendirmesi

Pro # 00037331


Sizden aşağıdaki araştırmaya katılmamızı rica ediyoruz:

“İstanbul’da Erken Kariyer Dönenindeki Anaokulu Öğretmenlerinin Teknoloji Benimseme Seviyelerinin Araştırılması”


Araştırma İstanbul, Türkiye’de seçilen devlet okullarında gerçekleştirilecektir.

Çalışmanın Amacı

Bu çalışmanın amacı, anaokulu öğretmenlerinin erken kariyer aşamaları ile Türkiye’deki teknoloji benimseme aşaması arasındaki bağlantıyı incelemektir.

Neden Katılmanız İsteniyor?

Bu araştırma çalışmasında yer almanızı istiyoruz çünkü ilk, ikinci veya üçüncü sene içinde çalışmakta olan ve İstanbul’da bir devlet okulunda teknolojik olarak iyi donanımlı bir sınıf sahibi kadın bir Türk anaokulu öğretmeni sizsiniz.

Araştırma Prosedürü:

Bu çalışmaya katırsınız:
Appendix E continued

- 3 saat görüşme ve 2 saat gözleme tabi tutulacakınız. İlk görüşme görüşmesi yaklaşık 30 dakika sürecekken, ikinci ve üçüncü oturum görüşmeleri yaklaşık 45 dakika sürecektr. Her oturum gözlemi bir okul günü sürecektir (okullarda değişiklik gösterebilir).
- Görüşmeler ve gözlemler için tarih ve zamanları seçme hakkınız olacak, gözlemler derslerde yapılacaktır.

Toplam Katılımcı Sayısı
Bu çalışmaya toplamda 6 kişi katılacaktır.

Alternatifler / Gönüllü Katılım / Çekilme
Bu çalışmaya katılım zorunluluğunuz yoktur.

Yararlar
Bu araştırma çalışmasına katılımınız potansiyel faydaları arasında olan bilgisinin ilerletilmesi yer almaktadır.

Riskler veya Rahatsızlıklar

Tazmin
Bu çalışmaya katılsınız için herhangi bir ödeme veya başka bir tazminat almazsınız.

Maliyet
Çalışmaya katılmak için size hiçbir şey masrafi olmayacaktır.

Gizlilik ve Mahremiyet
- Baş Araştırmacı, araştırma koordinatörü ve diğer tüm araştırma personelini içeren araştırma ekibi.
Appendix E continued

Study ID: Pro00037331 Date Approved: 11/15/2018

- Çalışma hakkında daha fazla bilgiye ihtiyac duyan belirli hükümet ve üniversiteler insanları ve çalışmayı doğru şekilde yapıtmadan emin olmak için gözetim sağlayan bireyler.
- Bu araştırmayı düzenleyen federal, eyalet veya yerel yönetim ajansı.
- USF Araştırma Dürüstlüğü ve Uyumluluğundaki personel de dahil olmak üzere, bu çalışma için gözetim sorumlulukları olan USF Kurumsal İnceleme Kurulu (IRB) ve ilgili personeller.

Bu çalışmadan öğrendiklerimizi yayılabiliriz. Eğer yaparsak, isminizi dahil etmeyiz. İnsanların kim olduğunu bilmesini sağlayacak hiçbir şey yayınlanamayacaktır.

**Sorularınızı, endişelerinizi veya şikayetlerinizi yanıtlayabilirsiniz.**

Bu çalışma hakkında herhangi bir sorunuz, kaygınız veya şikayettiniz varsa veya beklenmedik bir problem yaşarsanız, Özge Özel’i 533 450 25 13 numaralı telefondan arayın.

Bu çalışmaların bir katılımcısı olarak hakkınızı hakkında sorularınız varsa veya araştırma düşündüğü bir kişi ile görüşmek istedğiniz şikayetlerinizi, kayglarınız veya sorunlarınız varsa, (813) 974-5638 numaralı telefondan USF IRB’yi arayın ya da e-posta ile RSCH-IRB@usf.edu adresinden iletişim geçin.

**Bu Araştırma Çalışmasına Katılmaya Rıza Beyanı**


Çalışmaya Katılan Kişiinin İmzası

Çalışmaya Katılan Kişiünün Adı Soyadı

**Bilgilenirilmiş Onay Alınan Kişsi Beyanı**

Çalışmaya katılımlarından ne bekleyebileceğleri konusunda dikkatlice açıklamıştım. Bu araştırma konusunun bu araştırmaayı açıklamak için kullanılan dili konuşduğumu ve ana dilinde bilgilenirilmiş onam formu aldığımı doğuralarım. Bu araştırma konusu yasal olarak etkili bilgilenirilmiş onay vermiştir.

Bilgilenirilmiş Onay Alınan Kişinin İmzası

Bilgilenirilmiş Onay Alınan Kişinin Adı Soyadı
Appendix F: Interview Protocol (English Version)

First-Session Interview

I would like to thank you once again for being willing to participate in my study. As I have mentioned to you before, my study seeks to explore the linkage between kindergarten teachers’ early career stages and the state of technology adoption in Turkey. The aim of this research is to understand current early career kindergarten teachers’ self-efficacy beliefs toward using technology and their state of technology integration. I will conduct three-session interview and two-session observation under the scope of this study. We will start the process with first-session interview and first observation, and then we will continue with second-session interview and second observation. Finally, we will end the process with third-session interview. Our interview today will last approximately 30 minutes during which I will be asking you about your demographic information and your thoughts, beliefs and experiences regarding to technology. Please do not hesitate to ask any question you want about the study, interview and/or questions.

You already completed a consent form indicating that I have your permission to audio record our conversation. Are you still ok with me recording (or not) our conversation today?

If yes: Thank you! Please let me know if at any point you want me to turn off the recorder or keep something you said off the record.

If no: Thank you for letting me know. I will only take notes of our conversation.
Appendix F continued

Before we begin the interview, do you have any questions? [Discuss questions] If any questions (or other questions) arise at any point in this study, you can feel free to ask them at any time. I would be more than happy to answer your questions.

During interview feel free to not answer any question you want. Also, you will always have right to opt out from both interview and study.

Now, if you are ready let us start!

1- What is your age?

2- When did you graduate from university?

3- What is the highest level of education you have completed?

4- How long have you been working as a kindergarten teacher?

5- How long have you been teaching at this school?

6- How many students do you have currently?

7- To familiarize myself with your background, briefly share your experiences with regard to technology in your personal life.

8- How would you describe yourself as a technology user?

9- Tell me how you have used technology in places other than school.

10-Tell me about the kinds of technology that are available for you at home.

11-Tell me about the kinds of technology that are available for you at school.

12-What technology is available for day-to-day use in your classroom?

13-Tell me about the kinds of technology that are available for students to use.

14-What forms of technology do you use with your students?

15-How often do you integrate technology in your classroom?
Appendix F continued

16-Think about how technology is used in your classroom. How would you describe the current use of technology in your classroom?

17-In your opinion, what is the role of technology in students’ learning?

18-What do you do with your students in the classroom with technology?

19-Is there anything else you would like to tell me about this topic?

Second-Session Interview

I hope you are having a wonderful day. It is very nice to see you again. Today, we will continue with our second-session interview, which will take approximately 45 minutes. I would like to learn more about your beliefs, thoughts and experience about using technology in your teaching and learning process.

Again, I would like to remind you that you have right to not answer any question you want and ask any question you want during our interview. Do you have any question before we start?

If yes, discuss questions.

If not, let us start the interview.

1. I could find chance to observe that you used technology for ______ in your classroom. Could you please give me more detail about this lesson/activity in which you used technology with your students? What would you like to teach in this class? What was the reason you integrate technology to deliver this content?

2. Describe how you made decision regarding to what technology to use in your classroom in this activity?
Appendix F continued

3. So, what was the most important point in this activity about integrating technology?

4. In your opinion, what parts of this activity engage students most during this class?

Possible Probes:
   a. You observe increased student attention/participation
   b. You observe fewer students off-task

5. What strategies and activities did you use for engaging your students with technological tools to enhance their learning in this activity?

6. What kinds of working types do you prefer in this activity while using technology? Individually or collaboratively? Why?

7. During my observation, I have noticed that you have different level of students who have various funds of knowledge. How did you diversify technological activities for different teaching activities and different level of students?

8. What about the current curriculum and your program philosophy? Do you believe that Ministry of Education and you were be able to adopt and modify curriculum and teaching program based on new technology? Does your plan have this activity with technology?

9. What impact did you hope technology will have on your students in this activity?
   a. Educational outcome
   b. Socio-emotional outcome
Appendix F continued

8- During my observation, I have noticed that your students _______ with technology during this activity. What was the most difficult parts to complete this activity? Have you or your students had a challenge while you were doing this activity? How did you help yourself and/or children when they face difficulty while you are integrating technology?

9- How did you use technology to evaluate teaching and learning process related to this activity?

10. Is there anything else you would like to tell me about this topic?

Third-Session Interview

Today, we will conduct our third and last session interview and it will take approximately 45 minutes. Before we start, I would like to thank you to be a part of my study again. Your participation is very significant and valuable for this study. It was my pleasure to meet with you and found a chance to observe and hear your beliefs, thoughts and experience about technology integration. As I mentioned before, you have right to not answer any question you want and ask any question during our interview. Before we start, do you have any question?

If yes, discuss questions.

If not, let us start the interview.

11. Based on my second observation, I have noticed that you did an activity that includes technology. I was wondering what made them successful. What helped you to make it successful?
Appendix F continued

12. What is the most difficult part of using technology in this activity? (Such as learning how to use a technological device, combining technology and curriculum, using technology in the classroom or solve the problems related to technology etc.) How did you solve these difficulties?

13. How did you make decision about using technology in this activity? What was your preference to work individually or collaboratively? Why?

14. Based on the information you just provided me about the difficulties while using technology, I was wondering how you did you solve technological problems in this activity.

15. During my observation, I have noticed that you use technology for _____. So, I was wondering that what skills and knowledge you find important while using technology for this activity.

16. In our first interview, you described yourself as a _____ technology user. So what about as a technology learner? How would you describe yourself as a technology learner?

17. During my observation I saw different technological tools in your classroom such as interactive white board, so I was wondering how you keep up with new technologies.

18. When I was at the university, I just took two computer classes which included only Microsoft programs. However, I noticed that universities opened ICT class during last a few years. So, I was wondering if you took any class related to
Appendix F continued

- technology at the university. If yes, to what extent did your college coursework help you to integrate technology in your classroom?

19. I heard that teachers attended seminar about technology integration under the scope of FATIH. Have you attended it? If yes, what do you think about it? Was it helpful and/or useful? If not, what types of professional development activities have helped you learn to use available technology?

a. How would you describe your technology training?

20. What other types of learning experiences have helped you learn to use available technologies?

Possible Probes:

1. Where have you learned such technology (college courses, community classes, personal training with family and friends, self-taught)?

2. What technologies have you learned and from whom?

21. When you think your classes, trainings and experiences, do you feel you are adequately prepared to teach early childhood content using technology? Explain

22. What additional training do you feel would be necessary to prepare you to use technology to teach young children?

23. Based on this information you just provided me what are your perceptions of how your teaching has changed through the use of technology?

24. Is there anything else you would like to tell me about this topic?
Appendix G: Interview Protocol (Turkish Version)

Görüşme Protokolü

Birinci Oturum Görüşmesi


Bugünkü görüşmeciniz yaklaşık 30 dakika sürecek ve bu süre boyunca size demografik bilgilerinizi ve teknolojiyle ilgili düşüncelerinizi, inançlarınız ve deneyimleriniz hakkında sorularım olacak. Çalışma, görüşme ve / veya sorular hakkında istediğiniz soruyu sormaktan çekinmeyin.


Görüşme sırasında istediğinizi herhangi bir soruya cevap vermemenekten çekinmeyin.

Ayrıca, diledüğiniz zaman görüşmeden ve çalışmadan vazgeçme hakkına sahip olacaksınız.

Şimdii, eğer hazyarlanız başlayalım!

- Yaşınız nedir?
- Üniversiteden ne zaman mezun oldunuz?
- Tamamladığınız en yüksek eğitim seviyesi nedir?
Appendix G continued

- Ne zamandır anıokulu öğretmen olarak çalışıyorsunuz?
- Bu okulda ne kadar süredir çalışıyorsunuz?
- Şu anda kaç öğrenciniz var?
- Sizi daha yakın tanyabilmem için, kişisel yaşamınızdaaki teknolojiyle ilgili deneyimlerinizi kısaca paylaşır mısınız?
- Kendinizi bir teknoloji kullanıcı olarak nasıl tanımlarsınız?
- Teknolojiyi okul dışındaki yerlerde nasıl kullandığınızı anlatır mısınız?
- Evde sizin için mevcut olan teknoloji türlerini anlatınız.
- Bana okulda kullanabileceğiniz teknoloji türlerini anlatınız.
- Sınıfınızda günlük kullanım için hangi teknoloji kullanıma hazır durumda?
- Öğrencilerin kullanabileceği teknoloji çeşitleriini anlatınız.
- Öğrencilerinize hangi teknolojiyi kullanıyorsunuz?
- Teknolojiyi sınıfınza ne sıkıkla eniğre ediyorsunuz?
- Teknolojinin sınıfınızda nasıl kullanıldığıni düşünün. Teknolojinin mevcut kullanımını sınıfınızda nasıl tanımlarsınız?
- Sizce, öğrencilerin öğretmesinde teknolojinin rolü nedir?
- Öğrencilerinize sınıfta teknoloji kullanarak neler yapıyorsunuz?
- Bu konu hakkında bana söylemek istediğiniz ilave bir şey var mı?

İkinci Oturum Görüşmesi

Umarım harika bir gün geçiriyorsunuzdur. Sizi tekrar görmek çok güzel. Bugün, yaklaşık 45 dakika sürecek olan ikinci oturum görüşme devam edeceğiz. Öğretim ve öğrenme
sürecinizde teknolojiyi kullanma hakkındaki inançlarınız, düşünceceleriniz ve deneyiminiz hakkında daha fazla bilgi edinmek istiyorum.

Yine, size herhangi bir soruyu cevaplamama ve görüşme sırasında istediğiniz herhangi bir soruyu sorma hakkına sahip olduğunuuzu hatırlatmak isterim. Başlamadan önce bir sorunuz var mı?

Varsa, soruları tartışın.

Değilsen, görüşmeye başlayalım.

- İlk görüşmemizde sağladığı bilgileri dayanarak, sınıftınızda teknolojik aygıtlar olarak _______ var. Bu ders hakkında detaylı bilgi verir misiniz? Bu aktivitede ne öğretmeni amaçladınız? Neden teknoloji kullanmayı tercih ettiniz?
- Bu aktivite de hangi teknolojinin kullanılacağına dair nasıl karar verdiğiizi açıklayın.
- Sizin açımdan, bu aktivitede teknolojiye kullanmanın olmanın önemi nedir?
- Size, bu aktivitede hangi teknoloji türleriyle öğrenciler daha çok etkileşim içinde oldu?

Muhtemel Sorular:
a. Öğrenci ilgisinin / katılımanın artmasını gözlemleyebilirsiniz
b. Daha az öğrenciyi görev dışı görmemeniz
- Öğrencilerinizi, öğrenmelerini geliştirmek için, bu aktivitede teknolojik araçlarla etkileşimi açısından hangi stratejileri kullandınız?
- Bu çalışmada teknolojiyi kullanırken hangi tür çalışma sekillini tercih ettiniz? Bireysel mi yoksa iş birliği mi? Niçin?
- Gözlemlerim sırasında, farklı bilgi birikimine sahip öğrencilerin farklı seviyelerde olduğunu fark ettim. Farklı öğretim etkinlikleri ve farklı düzeydeki öğrenciler için teknolojik etkinlikleri nasıl çeşitlendirdiniz?
Appendix G continued

- Mevcut mül斐at ve program felsefəiniz nədir? Eğitim Bakanlığına və yeni təhnokrəyi dayalı mül斐at və rəhbərlik programınızı bəninşeyip dəyişən bəhnədədiği inanışınız? Bu aktivitə planında da bu şəkilde məydi?
- Bu aktivitədə təhnokrəvinin təsadıfçiləriniz üzərində ne daxili bir etki olacağınızı düşündənz?
  a. Eğitimsel sonuç
  b. Sosyo-diyəqasal sonuç
- Gözəlləşimiz sırasında, təsadıfçilərinizin bu aktivitədə ____ təhnokrəyi ilə fərqlənmişdir.
Bu aktivitə sırasında, cənəb bələm nəydi? Təhnokrəyi kullanırdığınız cənəb və ya da məşəbə nasılları var mıdı?
- Öğretmə və öyrənmə sərəncamı dəyişən dəyişən və yox təhnokrəyi bu aktivitədə nasılları kullanırdınız?
- Bu konu hakkında bana söyləmek istədiyiniz başqa bir şey var mı?

Üçüncü Oturum Gözəlləşə
Bu gün üçüncü və son oturum görüşümdən nisbətən daha çox təhqir edəcək və yaklaşık 45 dəqİka süreyəcək. Başlamadan öncə, təkər çalışıramın bir parçası olduğunuz üçün teşəkkür dərəcəm.
Katılımıınız bu çalışma üçün çox önəmli və dəyişəndir. Sizən təşəkkür və təhnokrəyi
entegrəsiyonu ilə bağlı inanıqlarınızı, düşüncələrinizi və mənşəyinizini gözəlləşən və duyma
şansı bulmak benim üçün bir zevkti. Daha öncə də belə dəyişən dəyişən və istədiyiniz bir sərəncanın
cevablamamına və görüşəniz sırasında herhangi bir sərəncanın sahibinizdir. Başlamadan
öncə, bir sərəncan var mı?
  Varsa, sərənləri tərləşən.
Appendix G continued

Değilse, görmeyi başlatalım.

- İkinci oturum görüşmesinde bana verdığınız bilgilerle dayanarak, teknolojiyi kullandığınız bir dersi anlattınız. Bu dersi başarılı kılan neydi? Size başarılı olmanız için neler yardım etti?
- Teknolojiyi bu aktivitede kullanmanın en zor kısmını neydi? (Teknolojik cihazların nasıl kullanlacağını bilmek, teknoloji ve mürtefati birleştirmek, sınıfta teknolojiyi kullanmak veya teknoloji vb. problemleri çözmevi öğrenmek gibi.)
- Bu aktiviteyi uygularken teknolojiyi kullanımı ile ilgili kararları nasıl aldıınız? Kişisel mi yoksa grup çalışması mı amaçladınız? Neden?
- Teknolojiyi kullanırken karşılaştığınız zorluklar hakkında bana sağladığınız bilgilerle dayanarak, bu aktivitedeki teknolojik problemleri nasıl çözüğünüzü merak ediyorum.
- İlk görüşmemizde kendinizi bir _____ teknoloji kullanıcısı olarak tanımladınız. Peki ya teknoloji öğrenicisi olarak? Kendinizi bir teknoloji öğrenicisi olarak nasıl tanımlarsınız?
- Gözlemlerim sırasında sınıftınızda interaktif beyaz tahta gibi farklı teknolojik araçlar gördüm, bu yüzden yeni teknolojiyile nasıl aydınlanız diye merak ediyorum.
- Üniversitedeyken, sadece Microsoft programlarını içeren iki bilgisayar dersi aldım. Ancak, üniversitelerin son birkaç yıl boyunca teknoloji kullanımı için dersler açtıklarını fark ettim. Yani, üniversitede teknolojiyle ilgili herhangi bir dersi alıp almadığınızı merak ediyorum. Eğer evetse, üniversite dersiniz ne dereceye kadar teknolojiyi sınıftınız entegre etmenize yardımcı oldu?
Appendix G continued

• Öğretmenlerin FATIH kapsamında teknoloji entegrasyonu ile ilgili seminere katıldığını duydum. Siz de katıldınız mı? Eğer evet ise, bunun hakkında ne düşünüyorsunuz? Yararlı ve / veya kullanıldığı myd? Değilse, mevcut teknolojiyi kullanmayı öğrenmek için hangi mesleki gelişim aktiviteleri size yardımcı oldu?
  a. Teknoloji eğitiminizi nasıl tanmlarsınız?

• Hangi tür öğrenme deneyimleri mevcut teknolojileri kullanmayı öğrenmenize yardımcı oldu?

Muhtemel Sorular:
  a) Böyle bir teknolojiyi nerede öğrendiniz (kolej kursları, topluluk sınıfları, aile ve arkadaşlarla kişisel eğitim, kendi kendine eğitim)?
  b) Hangi teknolojileri öğreniniz ve kimden?

• Derslerinizi, eğitimlerinizi ve deneyimlerinizi düşünüğünüzde, teknolojiyi kullanarak erken çocukluk içeriklerini öğretmeye yeterince hazır olduğunuzu hissediyor musunuz?
Açıklayınız.

• Küçük çocukları eğitmek adına teknolojiyi kullanmaya hazırlanmak için hangi ek eğitimlerin gerekli olduğunu düşünüyorsunuz?

• Bu bilgilere dayanarak, bana eğitim ve öğretimin teknolojinin kullanımı ile nasıl değiştğine dair algılarınız neler oldu?

• Bu konu hakkında bana söylemek istediginiz başka bir şey var mı?
ABOUT THE AUTHOR

Özge Özel completed her undergraduate education in preschool teaching at Muğla Sıtkı Koçman University. During this time, she took classes related to special education in early childhood education. After graduation, she was assigned as a preschool teacher and taught 6-years old students for 5 months. Then, she was awarded a scholarship by the Ministry of National Education to come to the U.S and pursue her master and doctorate degree. She earned her master’s degree in early childhood education at University of Texas at San Antonio and completed her thesis about multicultural education and bilingualism in early childhood education. After that, she started to pursue her Ph.D. degree in early childhood education at University of South Florida. During this time, she concentrated on technology in early childhood education.