PRE-SERVICE TEACHERS' OPINIONS, SELF-EFFICACY BELIEFS AND
STATE ANXIETY IN RELATION TO EDUCATIONAL PODCASTING

A THESIS SUBMITTED TO
THE GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES
OF
MIDDLE EAST TECHNICAL UNIVERSITY

BY

BERKAN ÇELİK

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR
THE DEGREE OF MASTER OF SCIENCE
IN
COMPUTER EDUCATION AND INSTRUCTIONAL TECHNOLOGY

SEPTEMBER 2014

Approval of the thesis:

PRE-SERVICE TEACHERS' OPINIONS, SELF-EFFICACY BELIEFS AND STATE ANXIETY IN RELATION TO EDUCATIONAL PODCASTING

submitted by **BERKAN ÇELİK** in partial fulfillment of the requirements for the degree of **Master of Science in Computer Education and Instructional Technology Department, Middle East Technical University** by,

Prof. Dr. Canan Özgen   _____
Dean, Graduate School of **Natural and Applied Sciences**

Prof. Dr. Soner Yıldırım   _____
Head of Department, **Computer Edu. and Inst. Tech.**

Prof. Dr. Zahide Yıldırım   _____
Supervisor, **Computer Edu. and Inst. Tech. Dept., METU**

Examining Committee Members:

Prof. Dr. Yasemin Gülbahar Güven   _____
Informatics, Ankara University

Prof. Dr. Zahide Yıldırım   _____
Computer Education and Instructional Tech. Dept., METU

Assoc. Prof. Dr. Ömer Delialioğlu   _____
Computer Education and Instructional Tech. Dept., METU

Dr. Hasan Karaaslan   _____
Computer Education and Instructional Tech. Dept., METU

Dr. Göknur Kaplan Akıllı   _____
Computer Education and Instructional Tech. Dept., METU

Date: 30.09.2014

I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

Name, Last Name: Berkan ÇELİK

Signature **:**

ABSTRACT

PRE-SERVICE TEACHERS' OPINIONS, SELF-EFFICACY BELIEFS AND STATE ANXIETY IN RELATION TO EDUCATIONAL PODCASTING

Çelik, Berkan

M.S., Department of Computer Education and Instructional Technology

Supervisor   : Prof. Dr. Zahide Yıldırım

September 2014, 237 pages

Technology continues to develop rapidly and it has an undeniable effect on education. Developments in information and communication technologies (ICT) especially Web 2.0 technologies have contributed much to change the traditional understanding of education. One of the Web 2.0 technologies that can contribute to teaching and learning process is podcasting technology. The purpose of this study is two folds. The first aim of this study is to investigate pre-service teachers` opinions on educational podcasts, podcasting process and their experience. Furthermore, this study also aims to investigate pre-service teachers' state anxiety prior to podcast development and their self-efficacy beliefs in relation to educational podcasts. The second aim of this study is to explore the effectiveness of educational podcasting in preparing pre-service teachers for their teaching profession through engaging them in authentic material development and presenting a subject in their field of study. This research study utilized a mixed method approach and convenience sampling method is used in the study. The data were collected through quantitative and qualitative instruments. They are Podcasting Familiarity Form, Educational Podcasting Opinion Questionnaire, State-Trait Anxiety Inventory, Educational Podcasting Self-Efficacy Beliefs Questionnaire, and semi-structured interview. The participants were pre-

service teachers from Department of Computer Education and Instructional Technology from one of the public universities in Ankara, Turkey. Quantitative data were collected from 25 participants and qualitative data were collected from 10 participants. The results showed that pre-service teachers' opinions are mainly positive regarding podcasts, podcasting process and activities, and their experience. Also, they had increased self-efficacy after engaging in podcast activities. Furthermore, the results showed that pre-service teachers experienced anxiety prior to podcast development. In addition, it was found that podcast activities could be useful to train pre-service teachers for their teaching profession and for the current technologies.

Keywords: Educational podcasting, podcast, pre-service teacher education, state anxiety, self-efficacy

ÖZ

ÖĞRETMEN ADAYLARININ EĞİTSEL PODCASTLERE YÖNELİK GÖRÜŞLERİ, ÖZYETERLİLİK ALGILARI VE DURUM KAYGILARI

Çelik, Berkan

Yüksek Lisans, Bilgisayar ve Öğretim Teknolojileri Eğitimi Bölümü

Tez Yöneticisi　　　: Prof. Dr. Zahide Yıldırım

Eylül 2014, 237 sayfa

Teknoloji hızla gelişmeye devam etmektedir ve bu doğrultuda da eğitim üzerinde yadsınamaz bir etkiye sahiptir. Bilgi ve iletişim teknolojilerindeki (BİT) gelişmeler, özellikle Web 2.0 teknolojileri geleneksel eğitim anlayışını değiştirmeye yönelik önemli katkılarda bulunmuştur. Öğrenme ve öğretim sürecine katkı sağlayan Web 2.0 teknolojilerinden biri de podcast teknolojisidir. İki ana amacı olan bu çalışmanın birinci amacı öğretmen adaylarının eğitsel podcastler, podcast geliştirme süreci ve tecrübeleri ile ilgili görüşlerini almaktır. Aynı zamanda bu çalışma öğretmen adaylarının podcastlere yönelik durum kaygısı ve özyeterlilik inançlarını ortaya çıkarmayı amaçlamaktadır. Çalışmanın ikinci amacı ise podcast geliştirme sürecinin öğretmen adaylarını gelecek mesleklerine hazırlamadaki etkililiğini incelemektir. Araştırmada karma yöntem deseni ve kolay ulaşılabilir yöntem kullanılmıştır. Çalışmanın verileri nicel ve nitel veri toplama araçları ile toplanmıştır. Nicel veriler Podcast Yatkınlık Formu, Eğitsel Podcast Görüş Anketi, Kaygı Envanteri ve Podcastlere Yönelik Özyeterlilik Anketi yoluyla toplanmıştır. Nitel veriler ise yarı yapılandırılmış görüşmeler ile toplanmıştır. Çalışmanın katılımcıları Ankara'daki bir kamu üniversitesinin Bilgisayar ve Öğretim Teknolojileri Eğitimi bölümünde eğitim gören öğretmen adaylarından oluşmaktadır. Çalışmanın nicel verileri 25 katılımcıdan

ve nitel verileri ise 10 katılımcıdan toplanmıştır. Çalışma sonuçları öğretmen adaylarının podcastlere, podcast geliştirme süreci ve tecrübelerine yönelik görüşlerinin olumlu olduğunu göstermiştir. Podcast aktivitelerinden sonra öğretmen adaylarının podcastlere yönelik özyeterliliklerinde artış gözlenmiştir. Ayrıca sonuçlar öğretmen adaylarının podcast geliştirmeden önce kaygı duyduklarını göstermiştir. Buna ek olarak podcast geliştirme sürecinin öğretmen adaylarını gelecekteki mesleklerine hazırlamada ve güncel teknolojiler için eğitmede etkili olduğu sonucuna ulaşılmıştır.

Anahtar Kelimeler: Eğitsel podcast süreci, podcast, hizmet öncesi öğretmen eğitimi, durum kaygısı, özyeterlilik

To Survive

ACKNOWLEDGMENTS

Friends are very important in one's life. I would like to thank Ayşe Karapınar Özbey, Duygu Jessica Güldere, Gamze Çıplak and Ömür Temizel for the true friendship.

I would like to thank Starbucks Ankara Beşevler branch for providing such a great environment to study.

Lastly and the most importantly, for their help, support and encouragement, I thank my dad and mum. I love you very much.

I might have forgotten to mention others who directly or indirectly involved in this study. Thank you very much …

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

FIGURES

CHAPTER 1

INTRODUCTION

Educational change is dependent on "what teachers do and think – it's as simple and as complex as that" (Fullan, 2007, p. 129).

"Being literate no longer only involves being able to read and write. The literate of the twenty-first century must be able to download, upload, rip, burn, chat, save, blog, Skype, IM, and share." (Mullen & Wedwick, 2008, p. 66).

This chapter presents background of the study, problem statement, purpose of the study, research questions, significance of the study, and definition of terms.

1.1 Background of the Study

Rapid advancements in technology and the transformative effect of technology have brought a lot into human beings' everyday lives. Similarly, advancements in Internet and wireless technologies have resulted in a diffusion of technologies at workplaces, schools and homes. Not a long time ago, in the last decade, there was a strong emphasis on and practice in equipping schools with computer systems, applications, laboratories and Internet connection. However, the range of tools in schools are changing rapidly nowadays. In order to promote and endorse the utilization of digital technologies in schools and universities, almost each country in the world has plans (Selwyn, 2013). Similarly, lots of projects were carried out around the globe for utilization of ICT in education. Acer- European Schoolnet Tablet and Netbook in Europe, Anytime Anywhere in Australia, Maine Laptop Technology Initiative in USA, Pirai Digital in Brazil (Trucano, 2010), Movement to Increase Opportunities

and Technology in Turkey (Fatih Project, 2012), Common Core Technology Project in USA and the Magellan Project are some examples of those projects. Several research studies, reviews and reports indicated the positive effects of ICTs in education, including learning, achievement and motivation (Balanskat, Blamire & Kefala, 2006; International Society for Technology in Education [ISTE], 2008; Liao, 2007; Organisation for Economic Co-operation and Development [OECD], 2005, 2010; Özmen, 2008; Passey, Rogers, Machell, McHugh & Allaway, 2003; Pilli & Aksu, 2013; Punie, Zinnbauer & Cabrera, 2008; Trucano, 2005).

Diffusion of ICT, access to mobile devices and Internet globally is happening at very fast rates. ICT Facts and Figures statistics provided by International Telecommunication Union (ITU) points out the growth of Internet penetration rate, mobile-cellular subscription and mobile broadband between the years 2009 and 2013. While 30% of the world's population was using the Internet in 2009, almost 40% of the world's population are using the Internet in 2013 and Europe (75%) has the highest penetration rate in the world. It is also reported that the age of Internet users (45%) is lower than 25. In 2010, 90% of world population and 80% of world population living in the rural areas had available access to a mobile network. Currently, the number of mobile-cellular subscriptions is almost equal the number of people in the world in 2013. There is an ongoing expansion of mobile broadband and there is a shift from 2G to 3G platforms worldwide. Mobile-broadband subscriptions have increased from 268 million to 2.1 billion between 2007 and 2013. In Europe, there are 422 million subscriptions with 68% penetration rate (ITU, 2009, 2010, 2011, 2013). When statistics provided by Turkish Statistical Institute (TÜİK) is examined, the trend is very similar to the findings of ITU. According to ICT Usage in Households Survey results, while 8.66% of the households had access to the Internet in 2005, 49.1% of households has access to the Internet in 2013 and 46.5% of them has broadband Internet access opportunity. Moreover, computer and Internet usage rates of people between the ages 16 and 74 were 17.65% and 13.93% respectively in 2005, whereas they were 49.9% and 48.9% respectively in 2013. In the first three months of 2013, of individuals using the Internet, whilst 41.1% has

used mobile phone or smart phone to connect wirelessly to the Internet outside the workplace and home, 17.1% has used a portable device (notebook, netbook, tablet PC etc.). When rates for children are examined, computer, Internet and mobile phone usage rates of children in the age group of 6 to 15 are 60.5%, 50.8% and 24.3%. These rates for children in the age group of 6 to 10 are 48.2%, 36.9%, 11% and for children in the age group 11 to 15 are 73.11%, 65.1% and 37.9% respectively (TÜİK, 2005, 2013). In the light of this statistics, the expansion of mobile devices make them a possible pedagogical tool. ITU (2009) states that mobile phones are the most prominent and prevalent personal technology in the world. It seems that mobile learning will get more interest and attention. Therefore, educators' awareness of technologies contributing to mobile learning is considerable and in this respect, podcasts can be one of the educational materials holding a high potential in mobile learning.

The use of multimedia has been very pervasive in educational settings from audio/video cassettes, CD/DVD to digital audio and video. Similarly, their potential in educational settings and their benefits have been recognized by educators, students and researchers for a long time. Similarly, emerging educational technologies offer a promising future for educational settings. They offer different approaches for teaching and students use various kinds of emerging educational technology (Shroff, Deneen & Ng, 2011). With the portability in technology, learning has a chance to extend outside of formal education (i.e., physical classrooms with black/white boards, paper based materials and high number of students) through accessible and flexible digital materials (Cheon, Lee, Crooks & Song, 2012). Expanding and evolving digital world has led to a variety of virtual environments and tools which serve as communication, expression, and information creation and acquisition (Mullen & Wedwick, 2008). In recent years, mobile technologies have seen a growing recognition and acceptance from educators. This resulted in several research studies assessing the effectiveness, acceptance and diffusion of mobile learning (see Cheon et al., 2012; Evans, 2008; Gikas & Grant, 2013; Liaw, Hatala & Huang, 2010; Liu, Carlsson & Li, 2010; Martin & Ertzberger, 2013; Mileva, 2011; Park, Nam &

Cha, 2012; Sandberg, Maris & Geus, 2011; Wang, Wu & Wang, 2009). Most of these studies and many more reported the easy access to materials without time and space limitations as one of the advantages of mobile learning. With the advancements in technology and increased access opportunities, mobile devices, Internet use, various types of computing has become a part of everyday life of people worldwide and a great number of portable devices are personally in use (Selwyn, 2013).

Parallel to everyday life, both Web 2.0 technologies and Mobile Web 2.0 have contributed much to educational settings and helped to provide many interesting, engaging and motivating environments for both teaching and learning. Being one of Web 2.0 tools, a podcast is "a digital audio recording, with or without images, which instructors can use to deliver content to students in an easy asynchronous fashion" (Foster, Larmore & Havemann, 2012, p. 1). The way podcasts are distributed and accessed make them an important pedagogical tool. That is, they use "push" or "subscription" technology instead of using "pull" technology (Evans, 2008, p. 492). To be more specific, podcasts are directly sent to the device receiving it and it does not require people to search podcasts. In this way, it saves time for people to reach information and prevents them from the threat of coming across illegal and irrelevant content on Internet. In addition, they can be accessed not only from mobile devices, but also from computers as well and be used for various educational purposes (Evans, 2008). Similarly, podcasts can be played on a wide range of portable devices such as Mp3 players (for example iPods), laptops, tablet PCs, mobile phones and personal digital assistants (PDA). This indicates significant opportunity for mobile learning. In this respect, "students can reconcile the scholarly tradition of sitting down to learn, from books or a computer, with the emergence of the mobile workforce" (Lee & Tynan, 2008, pp. 93-94). One of the goals of technology integration is that "the students should be able to use it with the same ease with which they use books, maps, pencils and pens" (Çakır & Yıldırım, 2006, p. 37). Podcasts fit in this claim very well and can be easily used not only by higher education students but also by K12 students.

4

In spite of the availability of many technological tools and devices, it is only possible to benefit from affordances of technology through effective use of technology in education and this is very much related to technology integration. Studies and literature reviews on technology integration, adoption, acceptance and use assert some factors preventing technology integration in education. Several of these studies reported crowded classrooms (Göktaş, Yıldırım & Yıldırım, 2009), lack of technological resources (Ertmer, 1999; Göktaş et al., 2009; Hew & Brush, 2007), lack of training (Ertmer, 1999; Toprakçı, 2006; Vrasidas & McIsaac, 2001), lack of motivation of pre-service teachers and teachers about the use of ICTs (Balanskat et al., 2006; Göktaş et al., 2009), attitudes and beliefs towards technology, teaching and learning (Ertmer, 1999; Ertmer, Ottenbreit-Leftwich, Sadik, Sendurur & Sendurur, 2012; Çakır & Yıldırım, 2009; Hew & Brush, 2007), technology knowledge and skills (Çakır & Yıldırım, 2009; Ertmer et al., 2012; Hew & Brush, 2007; Pelgrum, 2001) as barriers to technology integration. These findings shows that technology integration is affected by many factors, but of these factors, issues concerning teachers are the most important and critical for successful integration and use of technology. Gorder's (2008) study results state that teachers experience is likely to affect actual ICT use in the classroom and Tezci (2009) found a significant correlation between the ICT knowledge level and ICT use in education. Moreover, Usluel, Mumcu-Kuşkaya and Demiraslan (2007) reports a significant difference on the ICT use in learning-teaching process between teachers who took pre-service and in-service education in favour of the ones who took pre-service education. Therefore, experience and level of knowledge might play a critical role in ICT use for learning and teaching purposes.

Due to the fact that technology advances at a tremendous rate, it has become very hard to remain current with the changing technology. In this information age, use of mobile devices and interactive whiteboards are becoming more common in the Turkish educational system. Schools and teachers can be challenged by extensive technology adoption and integration issues. Nevertheless, the "Field of Dreams" syndrome ("build it and they will come") is frequently used in educational settings

leading to no success (Sugar, Crawley & Fine, 2004, p. 201). Having technology does not guarantee that it will be used for instructional purposes (Cuban, 2000; Queitzsch, 1997). Today's schools have more technology and there is a need for teachers who know how to utilize these technologies in an effective manner. However, training these teachers for effective integration of ICT is a challenging issue for teacher education programs (Angeli, 2005; Gill & Dalgarno, 2008; Grove, 2008). Furthermore, Shahan (1976) claims that human factors such as emotions, feelings, needs, beliefs are significant components of school reform (as cited in Norman, 2004) and those factors are also a very crucial indicator of technology use (Cuban, 2000) . Correspondingly, teacher education programs have a great influence on pre-service teachers' beliefs and attitudes, and therefore their readiness to use ICTs in learning settings (Gill & Dalgarno, 2008). Office of Technology Assessment (1995) suggests that before teachers adopt and integrate a certain technology, they must be persuaded of usefulness of that technology (as cited in Sugar et al., 2004, p. 201) and this can be accomplished by getting practice (Göktaş et al., 2009). Ertmer, Lehman, Park, Cramer & Grove (2003) mentions that the outcome of formal professional development may not last longer if it is not consistent with "what teachers learn and what goes on in the classroom" (p. 1958). Therefore, professional development initiatives should take into consideration varying technological and pedagogical needs of teachers and in this manner, not only students but also teachers take advantage of quality educational practices (Gorder, 2008, p. 75). Thereby, teacher training programs are natural places to start integrating ICT in education and the engagement of pre-service teachers with technology during their initial training is very important for effective technology integration in this respect.

1.2 Problem Statement

In societies, rapid developments in ICT have changed the work environments and the ways people work and interact. In parallel with this, there is a transition to be a knowledge economy in educational continuums. Therefore, there is a certain need for a change in schools and higher education (Collis, 2005). As the technology use

increases at schools, there have been more concerns about whether K-12 teachers are prepared enough to effectively integrate technology in education (Angeli, 2005). Whilst in this information age, educational settings face a transition in existing pedagogical tools in the classrooms such as a transition from black boards to interactive whiteboards, from paper-based to digital materials and many investments are made in technology (see Fatih Project, 2012). However, not only the school of education curriculum but also training program of pre-service teachers seem to remain the same without conforming to emerging technologies in all teacher education programs.

Under the teacher profession general competencies (Ministry of National Education [MoNE], 2006), teachers are required to have some technology skills. Of the 6 competencies specified, getting to know students, and teaching and learning process competencies include the following. Using ICTs, a teacher arranges appropriate learning environments for students with different experience, ability and skills (B2.3.), and taking into account the different needs of students, a teacher uses technology supporting student-centered strategies (C5.8). Nevertheless, emphasis is given on those domains, still not on to technology in pre-service teacher education programs as Rothenberg (1997), Whitworth (1996) and Ramcofer (1992) stated (as cited in Price, 1998). Moreover, "isolated ICT courses" may be effective in acquiring ICT proficiency, yet unless they are not integrated into "subject area" of pre-service teachers, they might not be effective in improving ICT use in teaching (Göktaş, Yıldırım & Yıldırım, 2008, p. 177).

Pre-service teacher education programs should train pre-service teachers to have necessary competencies to integrate ICTs in teaching-learning process (Lee et al., 2007; Russell, Bebell, O'Dwyer & O'Connor, 2003; Yıldırım, 2000) and teacher education programs must have emerging technology tools to allow pre-service teachers to experience them (Oigara & Keengwe, 2013). In order to grasp a view of integration, pre-service teachers need to be get involved in instruction, see examples and gain experience in technology. Additionally, in order to find out and understand

the potentials of technology or technological tool to improve learning, pre-service teachers need to be exposed to that technology or tool (Jinks, 2006). However, they may have anxiety or concern about their skills for integrating technology (Keating & Evans, 2001). Through a guided experience, knowledge and ability that pre-service teachers gain in their teaching profession related courses can be useful to form a good teaching-learning environment specified by standards (Price, 1998).

Computer Education and Instructional Technology Departments (CEIT) in Turkish Higher Education System aim to train IT teachers for facilitating technology integration at schools (Çakır & Yıldırım, 2006), for the effective use of technology in educational settings and for performing technology supported instructional practices (METU CEIT, 2014; Kılıçer, 2011; Topu & Göktaş, 2012). To achieve the mission of CEIT departments, pre-service teachers in CEIT undergraduate programs should be aware of and trained for emerging educational technologies.

Kay (2012a) conducted a comprehensive review of the literature on the use of video podcasts in education and research has shown that educational podcasts in educational settings have many positive effects on the students side such as improving learning and having control over learning; however, he found out that no studies in the review addressed the podcasts from instructors' perspectives in terms of workload, planning and design challenges and training. To him, instructors' attitudes toward the podcasts' role and effectiveness are yet to be explored. Furthermore, less attention has been paid to the educational podcast studies in Turkey. Very few researchers (Başaran, 2010; Cebeci & Tekdal, 2006; Erişen, 2010) have been interested in this "relatively young medium" (Chan, Chi, Chin & Lin, 2011, p. 313) and studies investigating the use of educational podcasts and educational podcasting process are limited in number. In addition, this innovation has not been studied from the design and development phase to the distribution phase for educational purposes and the views, experiences, self-efficacy beliefs, anxiety of practitioners have not been explored. Since pre-service teachers are the future's

teachers (Çakır & Yıldırım, 2006), their engagement with useful technological tools is crucial for them and their future students.

In addition, it is important for pre-service teachers to engage in real classroom contexts before starting their teaching profession to be familiar with real life situations (Price, 1998; Tokmak & Karakuş, 2011). In the past, IT pre-service teachers had "teaching practicum" in three sessions starting from the first year. School experience course was the first one being offered in the first year second term (Çakır & Yıldırım, 2006). In this way, pre-service teachers used to have a chance to see actual setting in the very beginning of their undergraduate education. However, nowadays, they only have their teaching practicum (school experience and teaching practice courses) during the fourth year of their education and they have the chance for practical experiences in school classrooms very late in their training process. Moreover, that experience is relatively limited. For the school experience course, they observe a mentor or mentors during a semester for 40 lesson hours. Similarly, for the teaching practice, they spend 60 lesson hours in the school environment, but they have only two lesson hours to practice teaching (Tokmak & Karakuş, 2011). As a result, they do not have much time to reflect on their teaching experience. Loughran (2002) states that "reflection continually emerges as a suggested way of helping practitioners better understand what they know and do as they develop their knowledge of practice through reconsidering what they learn in practice" (p. 34). It is likely that pre-service teachers need more practice teaching activities to be capable, confident of teaching and to enhance their professional learning. In addition to limited time for student teaching, there are also few opportunities for proper verbal or non-verbal skills training existing in the pre-service teacher education programs. Throughout their pre-service education, it is unlikely that pre-service teachers will have formal training in improving their verbal skills. To remedy this, producing podcasts may serve as a tool for improving verbal skills through engaging them in presenting a subject and provide an opportunity for reflecting on their experience whether there are some problems or not.

Integration of technology into teaching-learning environments is emphasized in strategic reports (see Johnson, Adams & Haywood, 2011; Johnson, Adams & Cummins, 2012), strategic plans (see MoNE 2010-2014 Strategic Plan), globally accepted standards and ongoing projects. Especially worldwide accepted ISTE Standards Teachers, ISTE Standards Computer Science Educators and Maryland Teacher Technology Standards put forth in short that teachers' knowledge of technology, effective use of technology, supporting individual learning are paramount in this "increasingly connected global and digital society". Furthermore, it is very important for the teachers to disseminate information in a variety of formats; design, implement and evaluate technology integrated learning experiences to promote understanding, problem-solving, communication or collaboration; facilitate student learning and promote creativity; create digital age learning experiences and assessments; create effective learning environments supported by technology (ISTE Standards Computer Science Educators, 2011; ISTE Standards Teachers, 2008; Maryland Teacher Technology Standards, 2002). The teachers' ability to develop the learning environments in new ways, their ability to use technology with pedagogy and promoting co-operative interaction affect the successful ICT integration into the classroom. Therefore, professional learning is very crucial (UNESCO ICT Competency Framework for Teachers, 2011). When aforementioned sources are examined, it is easy to see that what is asserted is "teacher experience with new technology". Therefore, this must be achieved in teacher education programs (Morrison & Jeffs, 2005, p. 71) since, of the obstacles mentioned before, lack of teacher training is one of the most common obstacles and it affects the use of technology in schools.

In short, it is quite likely that pre-service teachers will be required to teach in technology rich environments and use current educational technologies in their future careers as teachers. Most importantly, today's children grow up in digital environments (Mullen & Wedwick, 2008). Therefore, their future students will be digital natives (Prensky, 2001) or new millennium learners (OECD, 2008) and each

one will have different needs. Being capable of providing a wide range of uses, podcasts may serve as a tool to respond to their learning needs.

1.3 Purpose of the Study

The purpose of this study is two folds. The first aim of this study is to investigate pre-service teachers` opinions in terms of designing and developing three types (audio, video and enhanced podcast) of educational podcasts and podcasting process. Furthermore, this study also aims to investigate pre-service teachers' state anxiety prior to podcast development and their self-efficacy beliefs in relation to educational podcasts. The second aim of this study is to explore the effectiveness of educational podcasting in preparing pre-service teachers for their teaching profession through engaging them in authentic material development and presenting a subject in their field of study.

1.4 Research Questions

This study aimed to investigate pre-service teachers` opinions, state anxiety and self-efficacy beliefs in relation to educational podcasting. Hence, the study focused on the following research questions:

1. What are the pre-service teachers' opinions on educational podcasting?

- What are the pre-service teachers' opinions about the podcasts?
- What are the pre-service teachers' opinions about the podcasting process/activities?

2. What is the pre-service teachers' state anxiety level prior to podcast development?

3. What are the pre-service teachers' educational podcast self-efficacy beliefs before and after educational podcasting?

4. How do the pre-service teachers assess using podcasts as a teaching resource in terms of positive/negative aspects, challenges, types and duration of the podcasts they prepared?

5. How do the pre-service teachers perceive the value of educational podcast development process in preparing them for their teaching profession?

1.5 Significance of the Study

In today's world, there is a growing use of technological innovations and integration of those innovations into educational settings starting from early childhood education to higher and further education programs. As a result of these innovations, teachers' ICT integration into their teaching and their teaching profession competencies became very crucial. However, due to some limitations of teacher education programs, prospective teachers may not have a chance to practice teaching much and ICT integration into their teaching. This study provides contributions to the related literature, pre-service teachers and teacher educators, practitioners and curriculum designers.

Carrying out research studies with regard to podcasting in the form of instructional delivery is crucial and necessary for the successful integration and implementation of podcasting (McCombs, Houk, Higginbotham, Johnson & Liu, 2006). Implications of podcasting from the creators' side requires further research. This study is expected to fill the gap by investigating educational podcasting process from the perspective of pre-service teachers as podcast developers. Furthermore, this study may contribute to technology integration in pre-service teacher education programs.

Authentic learning experience about podcasts increase pre-service teachers' understanding and familiarity with podcasting, one of the popular Web 2.0 technologies. Familiarity with the tools that can help extend learning beyond the

boundaries of the classroom. The results of this study might be helpful to evaluate the effects of podcasting experience in professional learning of pre-service teachers.

This study is also important for teacher educators since it explores the utilization of podcasting activities in a teacher education program and it is one of the examples of how podcasting can be used in teacher education effectively to train pre-service teachers not only in terms of pedagogy but also in terms of technology. The use of podcasting in teacher education courses provide an almost free way for practitioners to train teachers. The results of the study and the activities in the study may be used by teacher educators or curriculum designers as guidelines how to use podcasting activities in the courses in teacher education since this study might guide them to create successful strategies to use podcasting activities. By considering the results of this study, teacher educators might design activities including new technologies.

The study provides both qualitative and quantitative evidence for pre-service teachers' engagement in educational podcasting process. Currently, it is not clear how podcasts can enhance pre-service teachers' professional learning and skill development. This study may be useful to enable pre-service teachers to gain additional technical skills and incorporate them with pedagogy. In this way, they will be more prepared in teaching with technology. At the same time, it may be useful for helping them get prepared for their future careers as teachers while holding their interest. Furthermore, an examination of pre-service teachers' engagement with educational podcasting may contribute to their acceptance of mobile technologies and help them in forming learner based learning environments. The results of this study may also provide additional insight into implementing educational podcasting process within the scope of instructional design or method courses to enhance pre-service teachers' professional learning. More courses or training programs focusing on the integration of Web 2.0 technologies into education can be implemented for pre-service teachers.

In addition to aforementioned significance issues, within the scope of this study, educational podcasting opinion questionnaire and an interview form were developed. These can be used in other studies. The results of the study can be used in further research by the researchers in instructional technology or teacher education etc. as well as practitioners.

1.6 Definition of Terms

Web2.0: "A name for all the internet features and websites that allow users to create, change, and share internet content (= information, pictures, etc.)" ("Web 2.0", 2014a).

Podcast: "A podcast is a digital audio recording, with or without images, which instructors can use to deliver content to students in an easy asynchronous fashion" (Foster et al., 2012, p. 1).

Podcasting: Podcasting is the name of the process of disseminating podcasts via personal web pages of podcast directories. (Foster et al., 2012, p. 1).

Using the term vodcasting was fashionable for some time, but most people use podcasting to include both audio and video (Harnett, 2010). Thus, throughout this thesis, the term podcast is used as a generic term to encompass both audio and video. Furthermore, the term podcast is used instead of educational podcast throughout the thesis.

Anxiety: "The feeling of being very worried" ("Anxiety", 2014).

State anxiety: State anxiety can be defined as "the current state of anxiety" (Julian, 2011, p. 467). In the present study, state anxiety means emotions that the pre-service teachers feel prior to creating educational podcasts.

***Trait anxiety*:** According to Spielberger (1983) trait anxiety "is the enduring personality characteristic which refers to relatively stable individual differences that characterizes people's anxiety or general feeling of anxiety" (as cited in Vitasari, Wahab, Othman, Herawan & Sinnadurai, 2010, p. 491).

***Self-efficacy*:** Bandura (1994) defines perceived self-efficacy as "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". In this study perceived self-efficacy beliefs in relation to educational podcasting is the beliefs about how well pre-service teachers can implement educational podcasting to create a teaching tool.

***Pre-service Teacher-Student Teacher*:** Teacher candidates who are still in the level of undergraduate study.

CHAPTER 2

LITERATURE REVIEW

This chapter consists of four main parts: Web 2.0, Podcasts, Perceived Self-Efficacy and Anxiety. In Web 2.0 section, a review of related literature that focuses on Web 2.0, Web 2.0 applications/services/tools/resources, and Web 2.0 perceptions of pre-service teachers is presented. In podcasts section, a review of related literature that focuses on types, features, benefits and challenges of podcasts in education; podcast studies in teacher education; and podcast research in Turkey is presented. Furthermore, in perceived self-efficacy section, sources of self-efficacy; self-efficacy and technology; self-efficacy, technology and education; self-efficacy, training and experience; Web 2.0 self-efficacy and self-efficacy towards podcasts are presented. In the last section, anxiety and related studies are presented.

2.1 Web 2.0

Web 2.0 concept was appeared at a conference between O'Reilly and MediaLive International. After a short while, Web 2.0 has begun to draw more attention. However, there are still disagreements about the meaning of Web 2.0. One group of people claim that Web 2.0 is a nonsense marketing fashion and the other group of people consider it "the new conventional wisdom". While other concepts have specific boundaries, there is no specific limit of Web 2.0 (O'Reilly, 2005).

Unfortunately, there is no unique definition of Web 2.0 since the term Web 2.0 carries various meanings; however, they share on common grounds that content generated by users, content sharing, collaboration, socialization, new means of interaction with Web-based applications are the emphasized characteristics of Web

2.0 (Conole & Alevizou, 2010; Franklin & Harmelen, 2007). Cambridge Dictionaries Online defines Web 2.0 as "a name for all the internet features and websites that allow users to create, change, and share internet content (= information, pictures, etc.)" ("Web 2.0", 2014a). Similarly, Web 2.0 is defined by Oxford Dictionaries as "the second stage of development of the Internet, characterized especially by the change from static web pages to dynamic or user-generated content and the growth of social media" ("Web 2.0, 2014b). Web 2.0 refers to "the new generation of web development and design concepts that are more organized than its predecessor" (Hossain & Aydin, 2011, p. 118).

Mainly being a one-way medium, the information followed one direction in Web 1.0. Users searched the Web since there is lots of information on it. Web 1.0 was like one of the approaches to teaching. That is to say, educators had the knowledge and dispensed it to students. As a result, students assimilated the knowledge (Crane, 2009). In Web 1.0, content was provided by a limited number of content authors for a crowded audience consisting of slightly passive readers. When it comes to Web 2.0, Web is a platform used by everyday users who create, re-purpose and consume the shared content. With the help of data sharing in Web 2.0, the Web has also turned into a platform for social software which promote users to socialise, collaborate and work with each other (Franklin & Harmelen, 2007).

Now, people are not restricted to read or consume information independently (Richardson, 2006) since Web 2.0 started a new period of Web interaction (Zajicek, 2007). Web 2.0 adds interactivity to the previous generation of Web and shifts users from pages which are read-only to pages which are read-write (Solomon & Schrum, 2010). In the same way, it moves internet users from static web technologies to dynamic ones with regard to both the use and development of web applications (Hossain & Aydin, 2011). In the past, creating content on the Web was not easy and required some technical knowledge such as HTML or protocols (Richardson, 2006). Fortunately, nowadays non-tech persons can add content to the Web easily. Educators who don't have programming skills have begun to publish their own

journals, photographs, videos, podcasts, wikis, slideshows and many more (Crane, 2009). Users can obtain information and they can create their content and share it with ease. Also, they can give feedback to others' posts, create product reviews and meet people having similar views (Solomon & Schrum, 2010, p. 152). Currently, creating content on the Web is as easy as consuming it by means of Web 2.0 tools.

2.1.1 Web 2.0 Applications/Services/Tools/Resources

As mentioned before, there is no unique definition of Web 2.0. Similarly, there is no consensus for the terms regarding Web 2.0. In other words, Web 2.0 systems, Web 2.0 services or Web 2.0 applications may be used interchangeably (Franklin & Harmelen, 2007). According to Anderson (2012, p. 305), "Web 2.0 affords the use of lightweight, readily accessible, and low-cost learning applications and tools".

Key Web 2.0 services/applications which represent "a more socially connected Web in which people can contribute as much as they can consume" (p. 4) are but not limited to Blogs, Wikis, Tagging and Social Bookmarking, Multimedia Sharing (Audio Blogging and Podcasting), RSS and Syndication. Although these exemplify Web 2.0 concept somehow, new application and services have emerged recently (Anderson, 2007). As an illustration, Web20guru and go2web20 Web sites include a number of Web 2.0 resources. Computers and mobile tools provide easier access to the Internet. Through these devices, Web 2.0 allow users to build a collaborative online society where users can share information in an interactive way and interoperable manner (Hossain & Aydin, 2011). Dynamic nature of the content is considered one of the most remarkable features of Web 2.0 applications. AJAX can be used by Web sites to get the new content dynamically with no need for page refresh/reloads. In addition, Web sites can use AJAX to adjust information, content of the page and layout instantly (Hailpern, Reid, Boardman & Annam, 2009). Therefore, Web 2.0 applications change and improve the way which students access to information, communications and collaborations (Solomon & Schrum, 2010, p. 167).

Web 2.0 tools have potential for extending learning beyond the closed doors of the classroom or the course Web sites which is accessed through a login form. Learners might not be satisfied with having all of their learning activities in the contexts having clear boundaries such as the schools they are attending temporarily (Anderson, 2012). Technologies supporting Web 2.0 services could be primary tools to enable student-centered learning and build collaborative and engaging environments. Therefore, it is important to train pre-service teachers to be prepared to use the technologies which students are used to utilize in their lives (Cheon, Song, Jones & Nam, 2010).

Utilizing the tools which students find attractive can play a role in making a difference in their learning (Solomon & Schrum, 2010). Web 2.0 applications have potential for transforming education since they are easy to use, have open nature, and they support collaboration and communication (Yuen, Yaoyuneyong & Yuen, 2011). Web 2.0 programs are preferred more by a growing number of classroom educators (Crane, 2009). Among many other ways, teachers can use Web 2.0 to motivate students, hold attention and enrich learning experiences (Yuen et al., 2011). Web 2.0 technology has the value to enhance student engagement, interaction, communication, and improve the whole learning experience through utilizing innovative learning tools that students can relate. This value gives rise to perceived usefulness of Web 2.0 technologies (Sadaf, Newby & Ertmer, 2012). Web 2.0 also has the profound opportunity to offer learning environments which are more interactive and customized for personal needs. In these environments, students can create knowledge instead of solely receiving information from teachers, interact and collaborate with students worldwide having similar interests (An & Williams, 2010).

Solomon & Schrum (2010) asserts "the eight Cs" (p.4) of the tools running on the Web. The eight Cs are: (1) communication, (2) collaboration, (3) connectedness, (4) communities of learners, (5) convergence, (6) contextualization, (7) cloud computing, and (8) (almost) cost-free. These tools have the potential for giving new

opportunities. The tools are always there, accessible from anywhere Internet connection available (Solomon & Schrum, 2010).

2.1.2   Web 2.0 Perceptions of Pre-Service Teachers

Murphy & Lebans (2008) mentioned that teachers have a strategic and remarkably important function in the use of Web 2.0 resources in an innovative way. Similarly, the result of technology use including success and failure relies largely on "human and contextual factors than on hardware and software" (Valdez et al., 2000, p. 4). Therefore, prospective teachers' Web 2.0 perceptions have been examined in a variety of research studies. Examining perceptions, views or beliefs are important because they are likely to affect technology implementations in educational settings (Yuen et al., 2011). According to Ropp (1999, p. 403), "If pre-service or inservice teachers demonstrate proficiency integrating technology into their teaching but do not believe that technology has a use in the classroom, they will probably not teach with technology despite their proficiency".

According to Cheon et al. (2010), there is a positive relationship between pre-service teachers' ease of use and usefulness perceptions of Web 2.0 technologies and satisfaction. Equally important, satisfaction has a positive influence on their intention of technology adoption and expectation. They mention in short that pre-service teachers who perceive that Web 2.0 service is easy to use and beneficial are more inclined to adopt them for teaching. Sadaf et al. (2012) explored pre-service teachers' behavioural, normative, and control beliefs about their intentions to utilize Web 2.0 technologies in their future professions. Pre-service teachers' beliefs indicated that integrating Web 2.0 technologies into teaching and learning environments is helpful, and there is a potential of Web 2.0 technologies to promote learning. Also, Web 2.0 tools have been believed to be very easy to use by pre-service teachers. In their study, Baltaci-Goktalay & Ozdilek (2010) examined the perceptions and attitudes of pre-service teachers' about Web 2.0 technologies and to comprehend their acceptance levels. They found that pre-service teachers had positive perceptions

about Web 2.0 technologies and their acceptance and intention of using these technologies were found to be high. Similarly, the findings of Jimoyiannis, Tsiotakis, Roussinos & Siorenta (2013) showed that participants had positive perceptions in terms of educational benefits of Web 2.0.

In brief, related study results showed that pre-service teacher perceptions are positive; however, in spite of having positive perceptions and attitudes, there is still a necessity to design some courses focusing on how to use various Web 2.0 technologies to ensure the effective and efficient use of Web 2.0 technologies in the classes (Eyyam, Meneviş & Doğruer, 2011).

2.2 Podcasts

The term podcast consists of two words: pod comes from the name of one portable player meaning "playable on demand" (p. 41) and cast comes from the word broadcast (Crane, 2009). According to Salmon, Edirisingha, Mobbs, Mobbs & Dennett (2008), a podcast is a digital media file that:

> • plays audio (sound) or audio and vision (sound and something to view);
> • is made available from a website;
> • can be opened and/or downloaded (taken from the website offering it and placed on something of your own) and played on a computer; and/or
> • is downloaded from a website to be played on a small portable player designed to play the sound and/or vision (Salmon et al., 2008, p.1)

Geoghegan & Klass (2007) provided another definition of podcast. They explain that a podcast is a content containing audio or video which is available online and can be downloaded automatically to any device such as computer or mobile media player. In short, apart from the terms feeds, aggregators, subscriptions which may lead to confusion, a podcast is simply "audio and video via subscription" (p. 5). Another definition given by Oxford Dictionaries is that a podcast is "a digital audio file made available on the Internet for downloading to a computer or portable media player, typically available as a series, new instalments of which can be received by subscribers automatically" ("Podcast", 2014) . Any video or audio content on the

Internet cannot be called a *podcast.* According to Braun (2007), for the video or audio content to be a podcast, it should be created and distributed on a somehow regular basis, be existing for download, be subscribed and allow an RSS feed including enclosures.

Podcasting is "the action of creating the podcast and distributing the podcast" (Salmon et al., 2008, p.1).
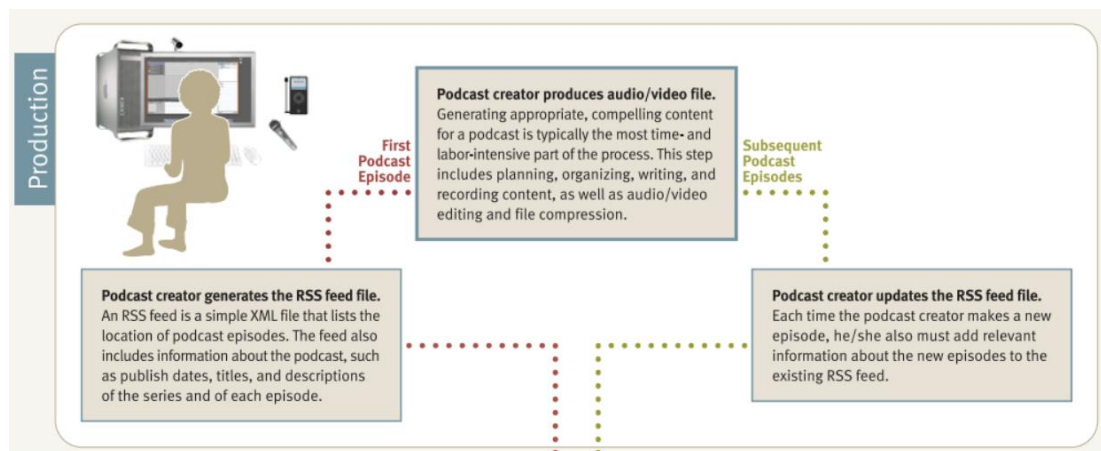
Figure 2.1 Production Process (Adapted from Deal, 2007)
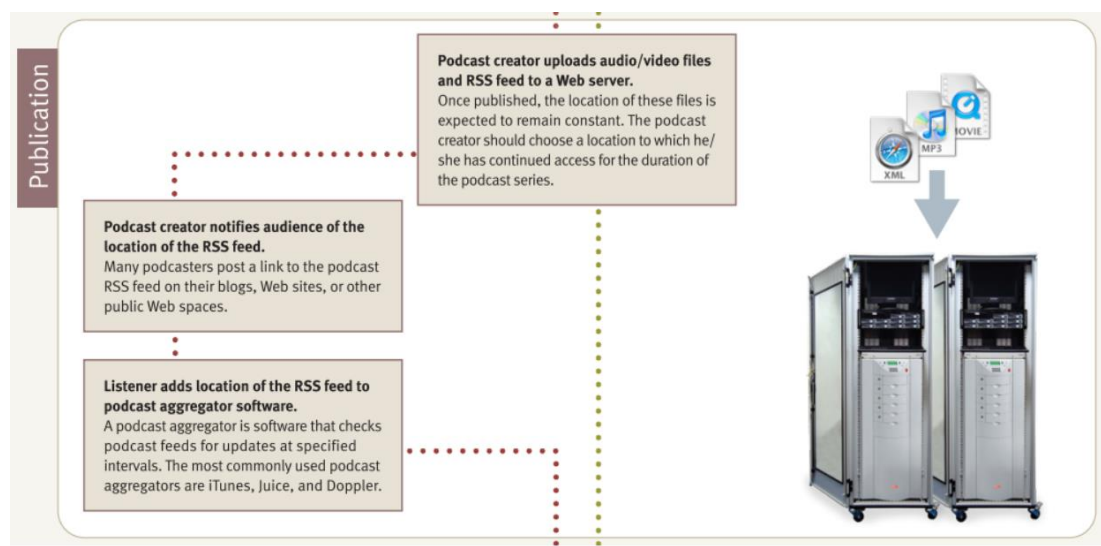
Figure 2.2 Publication Process (Adapted from Deal, 2007)
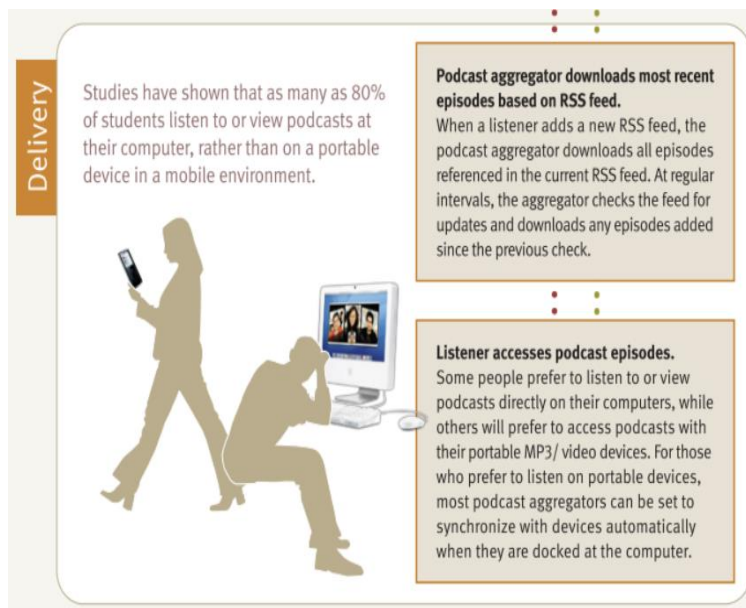
Figure 2.3 Delivery Process (Adapted from Deal, 2007)

Podcasting wasn't popular until fall 2004 and early 2005. After Apple's movement of updating iTunes store in such a way that providing podcast support, podcasts began to be popular (Braun, 2007) and the importance of podcasts started to grow. Likewise, in 2005, the word *podcast* was selected as the word of the year by The Oxford Dictionaries US due to attracting a lot interest and its rising popularity (British Broadcasting Corporation [BBC] News, 2005; Oxforddictionaries Blog, n.d.). Podcasts and podcasting began as entertainment (Salmon et al., 2008); however, podcasts have been used in a variety of ways in different educational contexts. Podcasting is getting much popular in educational settings, including especially the younger generation (Crane, 2009). Educators have explored various educational uses of podcasts and podcasting has been one of the most occasionally used Web 2.0 tools (Solomon & Schrum, 2010). The number of educators utilizing podcasting increases very rapidly (King & Gura, 2007). Podcast technology is easy to use and allows people such as students, teachers, and parents to share information at any time. Due to these reasons, podcasting can be a crucial tool in education (Crane, 2009). Being simple to create or use, podcasts are user-friendly, flexible and convenient tools (Solomon & Schrum, 2010).

The concept podcasting may be new, yet the cameras have been used in the classroom for a very long time. What podcasting eventually provides are improvements with regard to storage and delivery of lectures. Similar podcast directories and iTunes provide ease of access to educational content (Malan, 2007). Similarly, in some ways, podcasting is not even considered new since the streaming and downloadable audio have been around for many years and they are as old as the Web. In the same way, RSS which enables podcasting has been used for years. What is new regarding podcasting is the publication and subscription with ease. Correspondingly, podcasts can be used easily across multiple environments: over computer speakers, car stereo, and headphones - "all while listener is walking or exercising or driving or travelling or otherwise moving about (Campbell, 2005, p. 34).

Podcasting has something to provide all teachers "no matter what the subject or grade level" (King & Gura, 2007, p. 148). Podcasts can be utilized to enhance, extend the scope, access, and efficacy of activities in the classroom. King and Gura (2007) classifies the pedagogy of the podcasting-based activities into three main areas: (1) Podcasting can be harnessed in a way that supporting traditional instruction approaches. Teachers search the podcasts and use in the classroom (2) Teachers themselves create the podcasts to extend the access and availability of the teacher's voice out of class times (3) Students create the podcasts as projects. In this way, students can be motivated to "produce an authentic product/performance" (p. 201) which will be seen by real audience.

2.2.1 Types of Podcasts

Podcasts contained solely audio at first, but then smaller devices having increased memory capacity appeared and this has allowed to download video files as well (Harnett, 2010). In other words, podcasts are not confined to audio. Types of podcasts are grouped into three categories as audio podcast, video podcast and enhanced podcast (McCombs et al., 2006) according to the media type they include.

Each one of them comes with their own advantages and requirements. As it can be understood from its name, audio podcast solely contains audio. Video podcast also called vodcasts or vodcasting can contain sounds and either moving or static images. As to enhanced podcast, it is basically an audio podcast, yet contains additional visual sources such as static images, hyperlinks, slide shows etc. (Salmon et al., 2008). It can be claimed that video is always stronger than audio, yet if it were so, radio would have no longer been existed after the invention of television. Thereby, audio podcasting is still seen effective since audio podcasts can be listened to on the move; for example, while walking, driving or doing daily activities, watching a video is not a wise choice, but audio is and it is very suitable for people who don't have enough time to read, but listen (Harnett, 2010).

2.2.2 Features of Podcasts

One of the main features of podcasts is portability. Podcasts can be easily moved to a portable device supporting audio, e.g. iPod or other MP3 players. Therefore, anyone can download the podcasts to their players and listen to podcasts at work or during daily activities. Also, people are not supposed to use podcasts with portable media players or computers anymore; instead, people can download them to their mobile phones and listen while on the move (Braun, 2007; Harnett, 2010). Moreover, podcasts consists of MP3 audio files or video whose format is adjusted to be used on the Internet and portable devices. Since MP3 audio files have small file sizes and Internet-compatible video format, podcasts support portability (Geoghegan & Klass, 2007). Once downloaded to computer or any other device, podcasts can be used offline and kept on the device as long as the user wants (Solomon & Schrum, 2010).

Another feature is automatic push. That is, rather than checking any Web page or blog for the new content, when anything new is published on the Web site or blog, that content is sent (pushed) automatically to a person's device thanks to RSS feeds Braun (2007). Therefore, one does not have to check or look for it (Geoghegan & Klass, 2007). In this respect, considerable amount of time and effort is saved (Solomon & Schrum, 2010).

Podcasts make the listeners have control over podcasts. To illustrate, someone having any e-mail account does not have the full control to decide which mail to get and the sender has the control to choose whom to send the e-mails. Fortunately, listeners decide to subscribe to any podcast (Geoghegan & Klass, 2007) so that this prevents listeners from getting or seeing unwanted content.

Podcasts require available technological resources. A computer having Internet connection, a browser or an aggregator, and headphones or speakers are enough to use podcasts (Geoghegan & Klass, 2007).

2.2.3 Benefits of Podcasts in Education

Numerous research studies have confirmed the benefits of using podcasts in educational settings and much of the current literature relies on self-reported data.

Fernandez, Simo & Sallan (2009) determined five ways that students benefited from podcasts in their learning process: (1) providing an overall view of the chapters, therefore decreasing the time required to study and comprehend the contents so that allowing effective managing of time (2) providing a new material to revise what they had learned during the course and to revise before the exams (3) improving the proximity feeling among teachers and students (4) enhancing motivation (5) learning in different ways (p. 390). Through "On-Demand" media delivery, students have the freedom to download only the files which they need. When they once download the files, they can take them anywhere on their mp3 player (McCombs et al., 2006). In addition, podcasting provides opportunities for the learner to access the content repeatedly, control the speed and the pace of the podcasts. This leads students to adequately process content before the next piece of information is presented and this reduces cognitive load (Walls et al., 2010).

The podcasts are permanent and provide access at anytime. Also, they are important resources before tests or exams. Some participants found podcasts beneficial because

they visualize content and also allow them to elaborate on the essential teaching/pedagogical inputs (McNeill, Mukherjee & Singh, 2010). The interview results in the study of Lazzari (2009) confirmed that lecture podcasts had a positive effect on the learning process of students and before the exam, it reduced students' stress.

Popova, Kirschner and Joiner (2014) reported that students felt that podcast questions influenced their reflection, affected activation of their prior knowledge, and comprehension of the subject and knowledge deepening. Pastore (2008) discovered that students viewed podcasts as a valuable learning material and a way to enrich the learning process when used to support lecture. However, students stated that they preferred lectures when compared to using only podcasts for learning. They explained that one cannot interact with a podcast like the one can do with a professor and hence, they disliked the lack of interaction podcasts have. Kardong-Edgren and Emerson (2010) reported two hundred ten students' responses. It was found by the respondents that podcast were easy to access (91%), helped them for homework and examinations (85%), and understand the subject better (82%). In Brookes' (2010) study, it was clear that the participants perceived that podcasts had a positive impact on their academic performance when they were used to give formative feedback. Using podcasts helped respondents with their learning process. The extra information given in the podcasts helped many respondents to comprehend the instructional content better or faster. Also, when compared to solely reading a book or having discussions in discussion boards, many of them interpreted that listening to their professor's explanation resulted in more meaningful learning (Bolliger, Supanakorn & Boggs, 2010).

In the study of Meade, Bowskill & Lymn (2009), the vast majority of students found the podcasts very helpful or helpful as a learning tool and revision aid, and in enabling them to understand the pharmacology subject. With regard to accessibility of podcasts, 95% of respondents expressed that the podcasts are not only accessible, but also easy to navigate. Correspondingly, the majority of students found podcasts

useful   as   learning   tools   and   revision   aids
(Mostyn, Jenkinson, McCormick, Meade, Lymn, 2013).

McNeill et al. (2010) pointed out that of 40 postgraduate physical education teacher education students, 60% found podcasts enjoyable and 30% did worth looking forward to. Regarding the podcasts being educationally helpful, 50% responded very helpful and 40% did exceptionally helpful. The focus group interview revealed that participants had the opinion that podcasting could strengthen the bond between teacher and students, and believed that podcasting could be an excellent means to interact with students out of the classroom.

Many participants in the study of Bolliger et al. (2010) indicated that through hearing their professor's voice, they felt more connected to the professor. They were of the opinion that this provided a more humanized online learning environment. Accordingly, the participants in Fernandez et al.'s (2009) study stated that they had an increased feeling of proximity thanks to teacher's voice when compared to other materials. This improved "the feeling of a permanent contact between students and teachers" (p. 390). According to Evans (2008), podcast and revision lectures include a component of personal communication by means of the voice and the image of the lecturer for video podcasts.

Deal (2007) in teaching with technology white paper about podcasting explored educational podcasting in three areas: (1) lecture archives for review (2) supplemental educational materials and content (3) student-generated podcasts as assignments. Of the 85% of survey participants in the UM study believed that lecture archives for review had a positive influence on their performance and exam grades (Brittain et al., 2006 as cited in Deal, 2007). Furthermore, student created podcasts can be useful for some reasons since it helps develop technical competence, listening and presentation skills (Evans, 2006 as cited in Deal, 2007).

The positive results of the podcasts suggest that multi-model delivery function of podcasts resulted in increased understanding. Also, podcasts provided a more personal student/tutor relationhip which led to greater engagement and participants used materials effectively for review and supporting purposes. It was reported by the majority of respondents that podcasts had a positive impact on the learning experience. The comments of the students emphasized the benefit gained from having an audio contrary to having text-based explanation (Strickland, Gray & Hill, 2012).

Through podcasting on-demand course materials can be provided. Students can subscribe to the course and get the updated materials through RSS. In this way, missing class problem can be solved (McCombs et al., 2006). Mobile devices increase this flexibility and provide learners with an opportunity for revising instructional information while on the go (e.g., on the bus, on the train, or in the car) O'Bannon, Lubke, Beard & Britt, 2011).

The findings of O'Bannon et al. (2011) suggested that podcasts can be utilize in a technology course for the purpose of disseminating essential information and in this wise, additional time could be gained for other class activities in the classroom such as demonstration, hands-on practice, and guided practice. Similarly, the instructor can spare time for more student-centered interactions (p. 1891).

Duke University was among the first ones conducting podcast research. The research findings showed that podcasts improved convenience for students and faculty; reduced dependence on resources or places such as labs, and library locations and hours; enhanced student engagement and interest in class discussions, labs, and independent projects; and supported individual learning preferences. In addition, students also expressed that the feature to replay podcasts facilitated the understanding of difficult lectures (Belanger, 2005).

It was perceived by the students that the visual nature of the podcasts brought material to life and assisted them with their understanding. Podcast provided variety for teaching and learning experience through extending resources beyond lecture materials and paper-based materials, and facilitating comprehension (Hill, Nelson, France & Woodland, 2012). Many of the students responses (n=675) affirmed that podcasts assisted students with reviewing the lectures they participated (61%), catching up a missed lecture (19%), or revising the confusing points (4%). In addition, instructors and students in the study supported that podcasts help students learn (Lonn & Teasley, 2009).

2.2.4 Challenges

Kay (2012a) summarized the challenges when using video podcasts. Technical challenges are given as file size, download time, not owning a mobile device, knowledge required to use podcasts. Moreover, irrelevant podcasts, not engaging podcasts, distractions and no interactivity are mentioned as challenges. Further, not knowing the availability of podcasts and being too busy to view podcasts are considered challenges (p. 826). Forbes (2011) explained that the primary challenge teachers candidates had was exporting podcasts as MP3 files.

2.2.5 Podcast Studies in Teacher Education

Although podcasts have been extensively studied in higher education settings, the number of studies examining podcast creation from prospective teachers' perspective are very limited and thus the use of podcasts in teacher education programs mainly depends on using instructor created podcasts and very few of them focuses on pre-service teacher created podcasts.

In their study, Kennedy & Thomas (2012) compared the effect of enhanced podcasts including picture, text and audio with conventional text-based methods on the knowledge acquisition of the subject about schoolwide positive behavioural

interventions and supports (SW-PBIS). One hundred-sixty four undergraduate teacher candidates from two universities participated in the two group pretest–posttest design experimental study. Results showed that students in the experimental group watching enhanced podcasts outperformed significantly than the students in the control group reading a chapter. However, multiple choice instrument created by the researchers was applied in the study. Although satisfactory reliability score was provided for the instrument and construct validity was ensured by the experts in the SW-PBIS field, validity is still the issue that is needed to be considered while interpreting the results of the study.

In a study, O'Bannon et al. (2011) investigated achievement when podcasts on technology were used instead of lecture, listening preferences of the participants who used podcasts and barriers that prevented podcast use. Of 78 participants, 69 attended to the study. The podcast group and the control group were formed randomly. Among 18 podcasts created for the study, 12 were used. The types of podcasts were: audio only, slide shows with narration and video. Quiz, survey created by the first author of the study and podcast journals were used to collect data. The results of the study showed that there was no significant difference in the achievement scores between participants who used podcasts and who continued lecture instruction. Participants used computers to obtain podcasts and they were mainly used at homes. In addition, barriers can be summarized as: unfamiliarity, technical problems and not considering podcasts relevant to their learning. Although participants of the study mentioned that podcasts should not be used instead of lecture, authors expressed the opposite, adding they have no negative effect on achievement in a technology course. Pre-service teachers seemed to enjoy podcasts and their length, and found podcasts easy to use and substantially influential for learning.

In another study, Zhao & Jiao (2012) developed a podcasting-based teacher training model Teaching Skills Training on Podcasting (TSTOP) based on the training needs of pre-service teachers, drawbacks of available training models and characteristics of podcasting. The proposed model consists of various components: making training

objectives, designing lesson plans, teaching practice, evaluation, self-reflection. The effectiveness of the model was tested using a developed platform. The data were collected using interviews and surveys focusing on motivation, interest, feedback, reflection and self-assessment with 73 participants in China. The evaluation results indicated that TSTOP model was found effective and efficient for pre-service teacher training. TSTOP model metts the needs of the learners'. Through TSTOP model learners can see best practices in the form of videos and films, and can imitate them; therefore, they can learn from peers and teachers. Furthermore, TSTOP platform offers synchronous and asynchronous communications and discussions. This can help strengthen cooperation and exchange of knowledge in depth. Using TSTOP platform, ideas, lesson plans and suggestions, and reflections regarding the learning activities can be published by learners. Also, useful teaching and learning materials can be shared. The platform allows learners to upload their own teaching practices. Thanks to self-reflections and evaluations about lesson plans and teaching practices, teaching skills of teacher candidates can be developed and improved.

Kay (2012b) investigated the use of video podcasts in teaching software skills to pre-service teachers. The participants of the study were 104 volunteer pre-service teachers. The results of the study showed that video podcasts were found to be useful to help the participants learn new software tasks. Moreover, positive attitudes were shown by the majority of the participants in terms of the quality and effectiveness of the video podcasts.

Yamamoto (2009) examined the effect of the TPACK (Technology, Pegagogy, and Content Knowledge) based instruction on podcasting and vodcasting for pre-service teachers. There were 34 pre-service teachers from various departments in the study. The participants did research on pedagogy, peer-presentation and discussed on pedagogy. Then, they engaged in hands-on production in the pre-service teachers' content area. The results of the study indicated that podcasting and vodcating projects improve positive attitudes regarding the use of podcasting and vodcasting for class use between pre-service teachers. The results also showed that the

participants fostered positive attitudes towards the use of podcasting and vodcasting in their classrooms after the instructional sequences.

Another study was carried out by Ting (2011) to investigate the use of podcasts in ESL modules for Hong Kong pre-service teachers and the impact of podcasts on pre-service teachers' attitudes toward podcasting. In the study, teacher-created podcasts were used. The data were collected through a paper-based questionnaire and a semi-structured interview. Out of 116 students, 83 of them completed the questionnaire and 6 of them were interviewed. The results indicated that pre-service teachers generally had positive attitudes toward the use of podcasting in education.

Keengwe, Pearson and Smart (2009) conducted a study with regard to podcast development. Their study aimed to investigate pre-service teachers' perceptions of iPods' academic or instructional use. The qualitative study involved 45 pre-service teachers attending two different undergraduate courses: Technology for Teachers (TT class) and Social Studies Secondary Methods and Materials (SS class). Each participant was given an iPod. SS students prepared podcasts in the areas (economics, geography, history or political science) from social studies. In order to create podcasts, the participants were provided with supplementary class time for assistance and instruction. Further, they were given rubrics which include guidelines to prepare and develop podcasts. The interviews and focus groups explored that pre-service teachers enjoyed their experience of creating and publishing content. They found creating a podcast easy and thought that podcasts are tools for their students in the future who see "content as more relevant given the richness and variety of media" (p. 341).

Forbes' (2011) conducted a pilot study with 35 initial teacher education undergraduates. The pilot study engaged teacher education students in developing podcasts as part of their online paper. Students recorded, edited, uploaded and shared podcasts with peers, and both provided and received formative feedback. In this way, students learned about and learned through podcasting. In other words, they learned

reflective problem solving, exchanging formative feedback and had an understanding of new opportunities for learning and teaching.

2.2.6 Podcast Research in Turkey

Although there are many studies on podcasts worldwide, podcast research seems to have not been adopted by Turkish researchers for educational purposes. Therefore, the studies on podcasts in Turkey are very limited in number and scope.

Başaran (2010) examined effects of podcasts on language learning beliefs and self-efficacy perceptions about foreign language learning of first-year Turkish university students in his thesis. The participants were 187 university students and the mixed method were used in the study. He examined the language learning beliefs and self-efficacy perceptions of first-year students. In the study, students used podcasts as language learning objects for 12 weeks and their beliefs and self-efficacy perceptions were measured before and after using podcasts. The study also investigated participants' views and feelings regarding podcasts, and the tasks which were covered by the program. To examine self-efficacy perceptions and beliefs, BALLI and the English Self-Efficacy Scale were used. In addition, participants were given a podcast evaluation form four times to point out their views and feelings concerning listening to podcasts and the tasks. Interviews were conducted with 16 participants at the beginning and at the end of the course. The results showed that podcasts had positive influence on particular types of language learning beliefs and English self-efficacy perceptions. Generally, participants expressed positive views regarding the podcasts and tasks. Nevertheless, it was found that self-efficacy perceptions improved regarding basic level skills after the treatment, but not the advanced ones.

In their study, Cebeci & Tekdal (2006) provides introductory examination of approaches and using audio podcasts as learning objects in LMSs and LORs. They focused on podcasting and education, converting podcasts to learning objects, and inclusion of podcasting into e-learning. According to Cebeci & Tekdal, podcasting

provides an opportunity to extend lectures out of classrooms. They also state that audio learning objects can be a way to personalize the needs of auditory learners preferring learning via listening. In the e-learning context, the learning object concept has been the topic of discussions for several years. Considering these, some standards, implementations and applications were formulated. However, there is still not enough content for learning objects. Fortunately, podcasting holds great potential for producing and enriching learning objects due to its relative simplicity.

In another study, Özdener & Güngör (2010) examined the effects of video podcast technology on peer learning and project quality. Experimental design with post-test control group with 94 students was used in the study. Project quality was evaluated in terms of content and design presentation. The experimental group submitted their projects through video podcast and the control group did through CD. The effect of video podcast technology on peer learning was assessed using exams and the effect on project quality was assessed using project content scores. They found that there was no effect of video podcast technology on both peer learning and project content quality, but a positive effect was found on design presentation quality.

2.3 Perceived Self-efficacy

The psychological construct self-efficacy has taken the attention of many researchers. Starting from the late 1970s, researchers started to evaluate self-beliefs in a more task specific way and "one of the most important of these efforts focuses on self-efficacy" (Zimmerman, 2000, p.82).. Self-efficacy research has been the research interest in various areas such as medical settings (Caltabiano, Costin & Ochiai, 2013), academic settings (Pajares, 1996; Schunk, 1989; Zimmerman, 1995), and computers and technology (Henry & Stone, 1997; Lee & Lee, 2014; Murphy, Coover & Owen, 1989) with varying samples.

Being one of the components of Social Cognitive Theory, self-efficacy is defined by Bandura (1997, p.3) as "beliefs in one's capabilities to organize and execute the

courses of action required to produce given attainments". Another definition by Pajares (1996, p.546) is that "self-efficacy is defined in terms of individuals perceived capabilities to attain designated types of performances and achieve specific results". Bandura (1997) points out that efficacy beliefs have a substantial effect upon the way people follow for their actions, the amount of attempt they make, resistance to difficulties, thought structures, and the degree of success they achieve. Furthermore, those affect the way people feel, think, get motivated and perform. In other words, efficacy beliefs "affect performance both directly and by influencing intentions" (Bandura, 1997, p. 43)

2.3.1 Sources of Self-Efficacy

According to Bandura (1997, p. 11), "perceived self-efficacy is concerned with judgements of personal capability" and there are four main sources of self-efficacy beliefs: enactive mastery experiences, vicarious experiences, verbal persuasion and physiological and affective states. Mastery experiences are concerned with the demonstration of capability. They are based on authentic experiences and point out the evidence that whether someone put considerable effort and can actually succeed. Because of that, it is the most important source of efficacy and most influential in constructing efficacy beliefs. Successful experiences or performances result in strengthening and raising beliefs whereas failures which is not through lack of effort result in weakening and lowering them. When compared to other sources of efficacy respectively, mastery experiences bring about firmer and broader efficacy beliefs. Additionally, if efficacy beliefs are developed by means of enactive mastery experiences, "the cognitive and self-regulative facility for effective performance" is established (Bandura, 1997, p. 80).

Despite the influence of performance on personal capabilities, performance itself may not be attributed solely to explain the level of personal capabilities completely since there are some factors that can affect the point where perceived efficacy alterations can reach by means of performance experiences. To exemplify the factors,

earlier thoughts about capabilities, how a task is perceived in terms of difficulty, the level of effort invested, the degree of external help obtained, and the context where the performance takes place etc. (Bandura, 1997, p. 81).

The second source of self-efficacy beliefs is vicarious experiences. Vicarious experiences are concerned with changing self-efficacy beliefs through competency transmission (observing others while performing) and comparing oneself with other people's accomplishments. Correspondingly, vicarious experiences which is mediated through modelled accomplishments affect efficacy evaluations to a certain degree and modelling is considered an effective factor in order to develop personal efficacy. For some of the activities including "objective indicants of adequacy" (p. 86) such as swimming or flying a plane, there are certain measures of competency to evaluate personal capabilities whereas it is not possible for some of the activities. In these cases, people have to evaluate their capabilities with regard to other people's attainments. However, unless the models or the observed people are similar to themselves, people's personal efficacy beliefs are not much affected.

The third source of self-efficacy beliefs is verbal persuasion. If others around a person believe in his or her capabilities in realistic boundaries and express this instead of expressing doubts, these can help maintain self-efficacy beliefs particularly while dealing with difficulties. However, when compared to other sources of self-efficacy, verbal persuasion (alone) doesn't promote self-efficacy beliefs as much as mastery experiences and vicarious experiences. Fortunately, convincing people that they have the capabilities to do particular tasks seems to result in expending and maintaining greater effort than having self-doubts and focusing on personal deficiencies.

The fourth and the last source of self-efficacy beliefs is based on physiological and affective states. Physiological indicators such as extreme tiredness and affective states such as mood influence beliefs of personal efficacy. Due to those factors, people can think that they are inefficient. According to Bandura (1991) and Cioffi

(1991), to change self-efficacy beliefs, physical condition should be improved, amount of stress should be reduced and bodily states should be interpreted correctly (as cited in Bandura, 1997, p. 106).

In brief, among the sources of self-efficacy, while enactive experience has a strong influence (Zimmerman, 2000), physiological/affective states have the weakest influence on efficacy beliefs. Enhancing self-efficacy beliefs is highly dependent on performance experiences and thus, one should engage in performance tasks to alter self-efficacy beliefs, yet solely performance itself is not enough to specify the amount of information about the capabilities of people.

Self-efficacy is presumed to be sensitive to changes "in personal context and outcomes whether experienced directly, vicariously, verbally or physiologically" (p. 88). Therefore, due to this sensitivity, "self-efficacy beliefs are studied as indicators of change during instructional interventions as well as indicators of initial individual differences" (Zimmerman, 2000, p. 88).

2.3.2 Self-Efficacy and Technology

The self-efficacy concept had extensive implications, including theoretical and practical aspects for information technology research, and it was shown that self-efficacy perceptions have an influence on several contexts (Malliari, Korobili & Togia, 2012). According to Zimmerman (2000), self-efficacy measures provide predictive benefits when "a task is familiar and can be specified precisely" (p. 85). Pajares (1996) showed that "the predictiveness of self-efficacy measures increases as a function of both their specificity and correspondence to a skill" (cited in Zimmerman, 2000, p. 85).

The construct self-efficacy has been the core concept in different behavioural theories (Burke et al., 2009, p. 113). Similarly, it has been an important construct in technology acceptance related studies such as Aypay, Çelik, Aypay & Sever (2012), Teo (2009), Venkatesh & Davis (1996), Wong,Teo & Russo (2012) due to its

mediator position to predict behavioural intention or actual use of technology. According to Teo & Koh (2010), the use of technology for teaching and learning is prevalent in educational systems and therefore, it is crucial to investigate the drivers which predict and promote technology use. Self-efficacy presents a crucial individual trait and it mediates organizational influences, including encouragement support on the decision of an individual to use computers. For this reason, understanding self-efficacy is crucial for the successful application of systems in the organizations (Compeau & Higgins, 1995). For that reason, different self-efficacy types related to technology including computer self-efficacy and Internet self-efficacy have been studied by many researchers. Among the others, computer self-efficacy and Internet self-efficacy have been commonly used in research studies.

Meng-Jung and Chin-Chung (2003) found that students having high Internet self-efficacy had better information searching strategies and learned better when compared to those having low Internet self-efficacy in the context of Web-based learning task. The results of Yi & Hwang's (2003) study pointed out that application-specific self-efficacy has an important role to influence the intention to use a Web-based technology and then, the actual use of that technology. They found that application-sepecific self efficacy is one of the predictors of actual system use. In the study modeling the determinants of Internet use, Chen (2008) showed that there is a direct effect of perceived capability on Internet use. Meng-Hsiang and Chao-Min (2004) examined Internet self-efficacy and electronic service acceptance. Their research model supported the hypothesis regarding self-efficacy. That is, they found that there is a positive effect of Web-specific self-efficacy on e-service use and intention to use the e-service and there is a positive effect of general Internet self-efficacy on attitude toward using the e-service. Liaw, Huang & Chen (2007) found that perceived usefulness and perceived self-efficacy could predict the intention to use e-learning. The analyses showed that mobile self-efficacy has a positive influence on the levels of expansion of mobile device. In other words, it was revealed that mobile self-efficacy had remarkable direct influences on extended, integrative, and emergent usage (Oakley & Palvia, 2012). There is a crucial role of self-efficacy

in forming individual's beliefs and behaviors (Igbaria & Iivari, 1995).In the study of Compeau & Higgins (1995), the participants having high self-efficacy used computers more, had more enjoyment while using computers. Similarly, the respondents having high self-efficacy used computers more (Igbaria & Iivari, 1995).

2.3.3 Self-Efficacy, Technology and Education

Educational researchers have utilized self-efficacy instruments in a variety of academic settings and the settings related to technology (Puzziferro, 2008). Research has shown that teacher's self-efficacy for technology integration is a strong factor for identifying patterns of classroom computer use (Wang, Ertmer & Newby, 2004). Among other predictors, computer self-efficacy can also predict student teachers' potential computer use strongly. In other words, when student teachers are more confident about their capacities to teach with computers or/and use computers for educational purposes, it is more likely that they will be interested in teaching with computers (Sang, Valcke, van Braak & Tondeur, 2010). Pan and Franklin (2011) found teachers' self-efficacy in using Web 2.0 tools as the strong primary and significant predictor of the Web 2.0 tools use and integration in classrooms.

Teo (2009) investigated computer self-efficacy and intended uses of technology relationship through structural equation modeling (SEM) with a sample of student teachers. It was reported that the perceptions of basic technology skills and the perceptions of the ability to use technology have been found to be significant predictors for the intention to use in both a traditional or constructivist way.

Sang et al. (2009) found empirical support to argue that student teachers who have stronger constructivist beliefs with regard to teaching, subtstantial teaching efficacy and computer self-efficacy, and more posivite attitudes toward educational use of computers are more concerned with incorporating computers into their future teaching practice.

In another study, pre-service teachers' behavioral, normative, and control beliefs were found to influence pre-service teachers' intention to use Web 2.0 technologies in their prospective classrooms (Sadaf et al., 2012). In addition, perceived self-efficacy was found to be the most crucial determinant of the level of implementation for computer supported activities (Vidal, Mauro, Borrini & Jukna, 2006).

Self-efficacy can be a predictor of actual use of technology, however, improved self-efficacy beliefs do not guarantee the actual use of among teachers, but they are an essential condition for technology integration (Wang et al., 2004). However, when individuals become more comfortable with the technology, it is more likely that the device takes places more in the day-to-day activities of the individual (Oakley & Palvia, 2012).

2.3.4 Self-Efficacy, Training and Experience

Several research studies demonstrated that self-efficacy increases with training; however, there are many studies showing that training has no effect on self-efficacy. Torkzadeh and Van Dyke (2002) investigated the influence of training on Internet self-efficacy and attitudes, and found that training significantly affected and increased Internet self-efficacy with regard to browsing, encryption/decryption, system manipulation for male and female respondents, yet it did not affect user attitudes toward computers. Male and female respondents benefited equally from the training. Similarly, Chou (2001) investigated the function of training method and personal characteristics in computer learning behaviors. When compared to the instruction-based group, students in the behavior-modeling group scored higher on the measures of computer self-efficacy and learning performance. Torkzadeh, Pflughoeft & Hall (1999) investigated the relationship between training and computer self-efficacy, and also user attitudes and computer self-efficacy. It was likely that training programs were more effective for the respondents having positive attitudes and less effective for the respondents having negative attitudes. The results suggested that there is a direct influence of training on computer self-efficacy.In the

same way, Watson's (2006) research results showed that teachers' self-efficacy measured with the Personal Internet Teaching Efficacy Beliefs Scale (PITEBS) increased after the training program. Cassidy & Eachus (2002) stated that the participants who attended a computer training course had significantly higher self-efficacy and they had more experience and familiarity with computer software packages. The results of the study conducted by Torkzadeh, Chang & Demirhan (2006) supported the earlier findings concerning training programs. They found that training programs influenced self-efficacy. However, the findings of the study conducted by Tweed (2013) revealed that the duration of time spent in technology professional development did not have a significant role in self-efficacy, but the research showed that there is a significant association between self-efficacy and teachers' technology use in classrooms. Similarly, Miles (2013) found that there was no effect of intrusive training techniques on teachers' attitude or self-efficacy toward technology.

Malliari et al. (2012) found that IT self-efficacy and perceived computer competence were positively relevant to how often particular electronic activities are used and prior PC/Internet experience. Furthermore, it was also found that the frequency of use of IT was a remarkable predictor of IT self-efficacy. Pan (2008) examined pre-service teachers' behaviour pattern and its influence on self-efficacy for technology integration with 164 participants. The questionnaire was applied in three semesters in a year. Results showed that there was a significant increase in the self-efficacy for technology integration throughout each semester and self-efficacy was influenced by the prior computer experience.

2.3.5 Web 2.0 Self-Efficacy and Self-Efficacy towards Podcasts

Computer self-efficacy "refers to a judgment of one's capability to use a computer" (Compeau & Higgins, 1995, p. 192). Correspondingly, self-efficacy towards podcasts refers to one's capability to use, develop and publish podcasts.

Although there is a growing literature about the utilization of Web 2.0 tools in educational settings, computer or Internet self-efficacy beliefs of pre-service teachers or teachers, comparatively little research has been done concerning Web 2.0 self-efficacy and self-efficacy with regard to podcasts.

Horzum & Aydemir (2014) developed Web 2.0 Tools and Educational Usage Self-Efficacy Scale from the population of 2885 pre-service teachers. They used stratified sampling method considering the department and the grade level, and the sample consisted of 575 pre-service teachers. They developed a valid and reliable self-efficacy belief scale with regard to Web 2.0 tools consisting of 8 factors: (1) Weblogs and Educational Usage, (2) Instant Messaging and Educational Usage, (3) Wiki and Educational Usage, (4) RSS and Educational Usage, (5) Facebook and Educational Usage, (6) *Podcast and Educational Usage*, (7) Social Marking Tools and Educational Usage, (8) Image Sharing Sites and Educational Usage. However, after the development of the scale, self-efficacy scores of the participants were not given in the publication.

Another study conducted by Pan & Franklin (2011) examined in-service teachers' self-efficacy, professional development and Web 2.0 tools for integration. They used stratified sampling method using regional classification and school districts, and the sample consisted of 461 in-service K-12 teachers. The results showed that teachers' self-efficacy was likely to be neutral, meaning that they may not have enough confidence to use Web 2.0 tools. In particular, the mean of their self-efficacy beliefs with regard to podcasts was 2.81 (SD=1.28). Their results suggested that teachers' self-efficacy in using Web 2.0 tools as the strong, primary and significant predictor of the Web 2.0 tools use and integration in classrooms.

2.4 Anxiety

Anxiety is defined as "the feeling of being very worried" by Cambridge Dictionaries Online. Merriam-Webster defines anxiety as "fear or nervousness about what might happen". American Psychological Association explains based on the Encyclopedia of Psychology that anxiety is one of the emotions referring to feelings of tension, worried thoughts and physical changes in the body such as increase in the blood pressure. Anxiety occurs when human beings feel nervous in the situations which are unfamiliar to them (Yoon, 2012). Experiencing a little anxiety is natural in everyday life of people. Based on Freud's observations, anxiety is a prevalent experience among normal people (Ghinassi, 2010). However, anxiety can influence "how you think, behave, feel, and relate to others" (Elliott & Smith, 2006, p. 9). Being a significant, pervasive negative effect, and an interesting and complex phenomenon, anxiety includes the interaction among vigilance, attention, perception, reasoning, and memory (Rachman, 2004).

Studies carried out in psychology field assert that people experience anxiety when engaging in behaviours which they don't feel competent enough to perform. When trainees experience anxiety, they concentrate on inner thoughts and feelings instead of learning (Chou, 2001; Torkzadeh & Angulo, 1992 as cited in Torkzadeh et al., 2006, p. 543).

Anxiety is assumed to be a normal feeling to people and any internal or external changes, uncertain situations or uncertainty feelings can cause anxiety. In other words, upon facing a specific circumstance which human beings is not familiar with, it is inherent that most of them experience the same feelings of nervousness and tense. These are also considered as anxiety. For example, an oral interview, a presentation in the classroom can be given as examples which can cause anxiety for foreign language teachers or learners (Yoon, 2012). Anxiety cannot be described numerically since it is highly associated with nervousness, tension, frustration, and uneasiness (Yoon, 2012, p. 1100).

45

State anxiety can be defined as "the current state of anxiety" (Julian,2011, p. 467). According to Spielberger (1983) trait anxiety "is the enduring personality characteristic which refers to relatively stable individual differences that characterizes people's anxiety or general feeling of anxiety" (as cited in Vitasari, Wahab, Othman, Herawan & Sinnadurai, 2010, p. 491).

(Spielberger, 1966, p. 12) elaborated on these as the following:

> Ambiguity in the conceptual status of anxiety arises from the more or less indiscriminate use of the term to refer to two very different types of concepts. Anxiety is perhaps most commonly used in an empirical sense to denote a complex reaction or response— a transitory state or condition of the organism that varies in intensity and fluctuates over time. Bu t the term anxiety is also used to refer to a personality trait—to individual differences in the extent to which different people are characterized by anxiety states and by prominent defenses against such states. For example, consider the statement: "Mr. Smith is anxious." This may be interpreted as meaning either that Smith is anxious now or that Smith is an anxious person. If the statement is mean t to imply that Smith is anxious now, at this very moment , then the validity of the statement ma y be ascertained by making appropriate measurement s to determine whether or not Smith is manifesting (experiencing) a particular state with specifiable properties. On the other hand, if the statement is intended to signify that Smith is an anxious person, the same measurement s should reveal that Smith's level of state anxiety is chronically higher than that of most other people, as would be the case if he were suffering from anxiety-neurosis (Spielberger, 1966, p. 12).

Several types of anxiety has been researched worldwide by the researchers mainly in the area of psychology and psychiatry. Regarding pre-service teachers, speaking anxiety (Tüm & Kunt, 2013), mathematics anxiety (Wilson, 2013), science anxiety (Yürük, 2011), computer anxiety (Celik & Yesilyurt, 2013), teaching practice-related anxieties (Danner, 2014), and many others have been a research interest.

2.4.1 Related Studies

Hakkarainen (2009) involved in 10 faculty education students in the educational digital video production. The study examined students' learning processes and learning outcomes from the meaningful learning side. The questionnaire used in the study consisted of emotions that students had during digital video production process. The participants were asked to state to what extent they felt an emotion given in the questionnaire during the production and mention the reasons underlying the emotions. Despite the fact that there was a continuous change in the positive and negative emotions, the students' emotional engagement in learning was in a positively-toned manner. The questionnaire and video data analysis elicited that the students felt positive emotions in their learning process. The students expressed that they experienced satisfaction, feelings of challenge, interest and sense of community, and these were the most intensive ones that they experienced. It was found that these emotions were related to the topics of the course, small group-work in problem based learning tutorials, the creation of digital video in pairs, and the digital videos that they produced themselves. As to the negative emotions, stress, tension, and frustration were expressed as the most intense emotions. It was found that these emotions were related to timeline of the course, project plan changes, and technical equipment problems. In addition, the second interview revealed that students found scriptwriting as the most difficult part of the process and it also caused negatively-toned emotions.

Dale & Povey (2009) investigated the use of learner-generated podcasts and explored podcasting as an assessment tool with third year undergraduate students. Students produced podcasts about a heritage attraction in groups. Podcasts were successfully created and students stated that they were satisfied using this method of learning. When their initial thoughts were analysed, although students know the concept of podcasting and were familiar with it, they mentioned that they experienced feelings of fear and insecurity. However, none of them experienced podcast creation before and authors stated that this might be the cause of these negative emotions. Students

also expressed that they had fear because of using the technology, especially due to a new operating system which they used to create podcasts. In addition, students were excited about the podcast creation since they experienced podcast creation for the first time.

2.5 Summary of the Literature

Being one of the Web 2.0 technology, the potential of podcasts in teacher education has not been explored thoroughly. While most literature has focused on using instructor-created podcasts, podcasts created by other producers, how to create podcasts, technical issues, perceptions of use or perspectives of the learners (Mugwanya, Marsden & Boateng, 2011), not many have looked at structured podcasts created by pre-service teachers and their effects on training pre-service teachers or how they could help pre-service teachers to be prepared for the teaching profession. Furthermore, pre-service teachers' podcast self-efficacy has not been thoroughly investigated and in addition to this, the change in self-efficacy towards podcasts when pre-service teachers engaged in podcast activities has not been reported in the reviewed literature. Therefore, the current study explored pre-service teachers' opinions, self-efficacy and state anxiety in relation to hands-on experiences of pre-service teachers in educational podcasting, from setting up a podcast system to creating, publishing and subscribing to podcasts. In addition, this study focused on the perspective of the pre-service teachers who were both consumers and creators of podcasts in this study.

CHAPTER 3

METHODOLOGY

This chapter explains the methodology used in the study. It identifies research questions, overall design of the study, participants of the study, context of the study, data collection instruments, reliability and validity of the instruments, procedures of the study, data analysis, role of the researcher, assumptions and limitations of the study, and a summary of the chapter.

3.1 Research Questions

This study aimed to investigate pre-service teachers` opinions, experiences, state anxiety and self-efficacy beliefs in relation to educational podcasting. Hence, the study focused on the following research questions:

1. What are the pre-service teachers' opinions on educational podcasting?

- What are the pre-service teachers' opinions about the podcasts?
- What are the pre-service teachers' opinions about the podcasting process and activities?

2. What is the pre-service teachers' state anxiety level prior to podcast development?

3. What are the pre-service teachers' educational podcasts self-efficacy beliefs before and after educational podcasting?

4. How do the pre-service teachers assess using podcasts as a teaching resource in terms of positive/negative aspects, challenges, types and duration of the podcasts they prepared?

5. How do the pre-service teachers perceive the value of educational podcast development process in preparing them for their teaching profession?

3.2 Overall Design of the Study

The study was designed to examine pre-service teachers` opinions, and self-efficacy beliefs in relation to educational podcasting and their state anxiety prior to podcast activities. To address the research aim and research questions, the mixed method design (Creswell, 2012; Tashakkori & Teddlie, 2003) was selected for the study. The ground for a mixed methods approach was the need for quantitative methods and accompanying qualitative methods to fully satisfy the research questions, and using two methods together yields thorough grasp of research problems rather than using a single method (Fraenkel, Wallen & Hyun, 2012).

Mixed method design can be defined as a mixture of qualitative and quantitative methods in one study (Fraenkel et al., 2012; Bryman, 2008; Johnson & Christensen, 2008); however, blending the methods solely is not sufficient. In mixed methods designs, as Teddlie and Tashakkori (2010) points out, the common characteristic is "methodological eclecticism" (p. 8). It is choosing and combining suitable methods (qualitative, quantitative or mixed methods) to completely delve into "a phenomenon of interest" (p. 8). In doing so, the existing appropriate methods are opted, on purpose, for answering research questions by the researcher (Teddlie & Tashakkori , 2010) and for maintaining the strengths and lessening the weaknesses of both methods (Bergman, 2008; Johnson & Christensen, 2008; Drew, Hardman & Hosp, 2008).

Johnson and Christensen (2008) states that mixed method research designs are categorized with respect to two main forms as time sequence (concurrent or

sequential) and paradigm significance (equal status or dominant status) .In particular, a sequential explanatory design (Creswell, 2002) including two stages was implemented within the scope of the study to gather data from various aspects in terms of ensuring reliability, to offer a complete understanding of interpretations about pre-service teachers` opinions, self-efficacy beliefs and their level of state anxiety. In sequential explanatory designs, both quantitative and qualitative data are collected consecutively, yet weight is given to the quantitative data. In the first stage, the researcher performs a quantitative method and in the second stage, in order to reveal quantitative findings, the researcher carries out a qualitative method. The data from these two methods are analysed respectively and the results of the qualitative analysis are used to broaden the findings of quantitative analysis (Fraenkel et al., 2012).
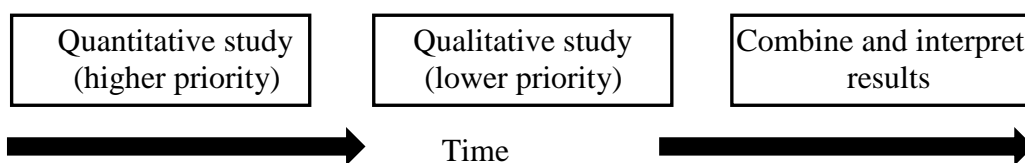
Figure 3.1 The Explanatory Design by Creswell and Plano Clark (adapted from Fraenkel et al., 2012)

In the first stage, quantitative data were collected using paper-based and web-based surveys. The aim of the quantitative stage was to find out pre-service teachers' opinions on educational podcasting in terms of podcasts, podcasting process and their experience, their anxiety levels and self-efficacy beliefs. In this way, a general view about aforementioned statements was acquired. In the second stage, qualitative data was collected through individual semi-structured interviews. The aim of the qualitative stage was to find out participants' opinions in depth, to seek answers for the research questions in detail except the research question 3 and explain the quantitative results thoroughly. Finally, findings from quantitative and qualitative stages of the study were integrated.

3.3 Participants of the Study

The participants consisted of 28 volunteer undergraduate students, yet quantitative data were collected from a total of 25 students. The participants of the study were Computer Education and Instructional Technology department students who attended to CEIT 225 Instructional Design Course given in the spring term of 2012-2013 at Middle East Technical University (METU). The number of female students was 8 (32%) and the number of male students was 17 (68%). Although convenience sampling was used, the participants were from different year of study. From 25 participants, 1 (4%) was freshman, 19 (76%) were sophomore, 4 (16%) were junior, and 1 (4%) was senior student. The participants came from different high schools: vocational high school (N=16 or 64%), Anatolian high school (N=4 or 16%), general high school (N=2 or 8%), Anatolian teacher high school (N=2 or 8%), and Anatolian technical high school (N=1 or 4%). Table 3.1 shows the distribution of participants by gender and year of study, and Figure 3.2 shows the distribution of participants by high school type.

Table 3.1 Distribution of Participants by Gender and Year of Study

Pre-service Teachers	Female		Male		Total	
	N	Percentage	N	Percentage	N	Percentage
Freshman	-	-	1	4%	1	4%
Sophomore	8	32%	11	44%	19	76%
Junior	-	-	4	16%	4	16%
Senior	-	-	1	4%	1	4%
Total	8	32%	17	68%	25	100%
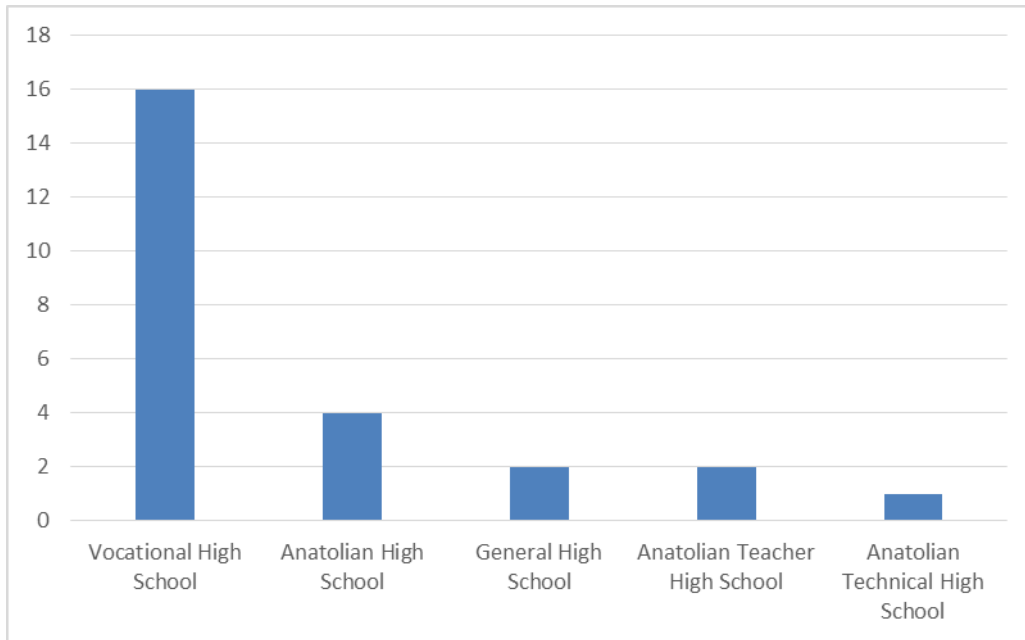
Figure 3.2 Distribution of Participants by High School Type

Their age range was from 20 to 30 (with a mean of 21.95 and a standard deviation of 2.15). Moreover, the GPA of the students was in the range of 1.53 and 3.22 (with a mean of 2.53 and a standard deviation of 0.47). They had met the same pre-requisites in their studies. In other words, they passed the same English exam which ensures that their English level is adequate to take CEIT 225 course and they took the same main courses in the first year such as introduction to education, information technology in education etc. Table 3.2 shows the distribution of participants by age and GPA.

Table 3.2 Distribution of Participants by Age and GPA

Age			
Minimum	Maximum	Mean	Standard Deviation
20	30	21.95	2.15
GPA			
Minimum	Maximum	Mean	Standard Deviation
1.53	3.22	2.53	0.47

53

The research took place within the scope of CEIT 225 Instructional Design Course. The selection of this course was made based on the following reasons. First of all, one of the goals of the course was creating instructional module. Secondly, the course provided opportunities for students to practice what they learnt in the lab sessions. Thirdly, the course objectives covered analysis, design, development, implementation and evaluation phases of instructional design. These phases were suitable for creating podcasts. Fourthly, while having a group work, the structure/organization of the course was flexible enough to provide opportunity for individual assessments as well. Due to these reasons, CEIT 225 Instructional Design Course fit within the purpose and context of this study and the participants of this study consisted of the pre-service teachers taking the course. Therefore, a convenience sampling method was used in the study. Since applying probability sampling methods is not always achievable and feasible in educational research, nonprobability sampling methods can be used. A researcher chooses participants because of the fact that "they are willing and available to be studied" (p. 145) based on convenience sampling. However, in doing so, findings cannot be generalized to a population, yet the sample can be used to obtain helpful data for responding questions and hypotheses (Creswell, 2012).

Based on the research design of the study, quantitative and qualitative phases were conducted sequentially. Thereby, study consisted of two sets of nested participants which mean the participants in qualitative phase are the subsample of the participants in quantitative phase (Teddlie & Yu, 2007). That is to say, they were also the participants of the quantitative phase of the study.

In the qualitative phase of the study, the selection of the interviewees was based on purposeful sampling among volunteer participants and 10 participants were interviewed. Using purposeful sampling, a researcher does not examine only the available cases; instead, a researcher selects a sample that will be the source of the data needed (Fraenkel et al., 2012; Patton, 1990). While selecting information-rich interviewees demonstrating the phenomenon of interest, an intensity sampling

strategy (Patton, 1990) was employed to gain in-depth understanding about their opinions concerning educational podcasting and explain the quantitative results completely.

The intensity sampling is based on the idea that one attempts to get cases which are information-rich instances of the phenomenon of interest. Moreover, to employ intensity sampling, a researcher is required to know the participants very well and have a strong reasoning (Patton, 1990). The selection of participants firstly depended on participant observation in both real classroom observation and online observation. To make the online observation clear, a Facebook group was used for asking questions, sharing problems etc. They were selected according to their interest in podcasts more than others, their podcast quality and performance, their willingness to develop podcasts, their willingness for future use, their satisfaction levels with their experience with educational podcasting, and most importantly sophomore and junior participants were selected to explore the role of educational podcasting in terms of preparing pre-service teachers for teaching profession.

There were 6 females (60%) and 4 males (40%) students in the qualitative phase of the study. Their age range was from 20 to 23 (with a mean of 21.6 and a mode of 22). Of 10 participants, 9 were in second grade and 1 were in third grade. Table 3.3 shows the distribution of participants by their gender and grade level.

Table 3.3 Distribution of Participants by Gender and Grade Level

Pre-service Teachers	Female		Male		Total	
	N	Percentage	N	Percentage	N	Percentage
Sophomore	6	60%	3	30%	9	90%
Junior	-	-	1	10%	1	10%
Total	6	60%	4	40%	10	100%

At the very beginning of the research, all participants were informed that participation in this research is voluntary and they always have a right to leave the research at any time.

3.4 Context of the Study

3.4.1   Course Description

The podcast activities took part during the course CEIT225-Instructional Design in the spring semester of 2012-2013. It is a compulsory course given in the second year and the fourth term of Computer Education and Instructional Technology undergraduate program. All of the students attending this course are pre-service teachers. The course has three credits. To be specific, it has two lesson hours theoretical lecture and two lesson hours laboratory practice each week. It aims to cover basic processes for effective and efficient instruction. In addition, it introduces basic principles, phases, models and methods of instructional design. Within the scope of the course, students are required to create various personal and group projects (a handout, a multimedia material and 3 types of podcasts), write project reports (analysis, design and development, final report) and conduct evaluations (formative and summative). The course was supported by a website (Metuonline) including reading materials, presentations, learning resources and assignments. Furthermore, there was a Facebook group that allowed students to ask questions, share their problems and respond to questions asked by the researcher. During the course hours, students were informed about what they were required to do in detail. Besides, they received guidance and feedback from their instructor and teaching assistants all the time.

The researcher was responsible for conducting laboratory sessions and giving feedback to students. In the lab sessions of the course, students were provided with weekly technical tutorial sessions on Adobe Photoshop, Adobe Flash, educational podcasts and podcasting process in a laboratory environment equipped with modern 20 desktop computers having Internet connection.

3.4.2   Podcast Publishing System

In the present study, a system called *Podcast Generator 1.4* was used as a podcast publishing system. Being an open source system, it provides a flexible environment for uploading, downloading, and publishing podcasts easily in a few steps. Also, it requires low server requirements. Each participant in the main and pilot study was provided with a publishing system solely belonging to them so that they could use it in their way and perform podcast tasks.

The podcasts published via this system can be accessed by reaching the system via using RSS automatically or via web interface manually. Moreover, the access to the podcasts can be in a device-free way; that is, the podcasts can be accessed using desktop computers, notebooks, netbooks, smartphones, tablets or MP4 players with Internet connection.

The system consists of *Home*, *Podcast Archive*, *Admin* and *Feed* components.

Home. When users type the URL of the podcast publishing system, the first place they see is *Home.* In this part, users can see the recent published podcasts, listen to or watch podcasts according to the type of the podcast (audio, video or enhanced podcast). Figure 3.3 shows the home page of the system.

Figure 3.3 Podcast Publishing System Blank Home Page

Podcast Archive. Podcast archive shows the uploaded podcasts to the system. It allows users to view the podcasts in terms of category or view all of the podcasts in the system. Figure 3.4 shows the podcast archive page of the system.
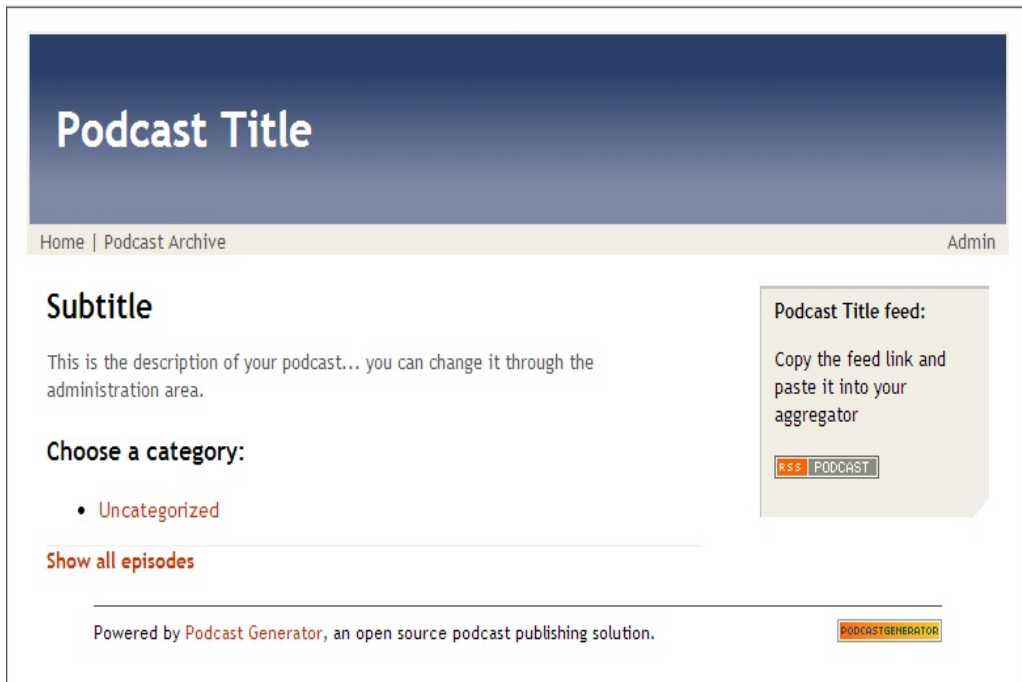
Figure 3.4 Podcast Publishing System Blank Podcast Archive Page

Admin. Podcast creator/publisher should login to system to enter the *Admin* area. In this area, a predefined username and password should be entered to go to the admin area. Figure 3.5 shows the login page of the system.
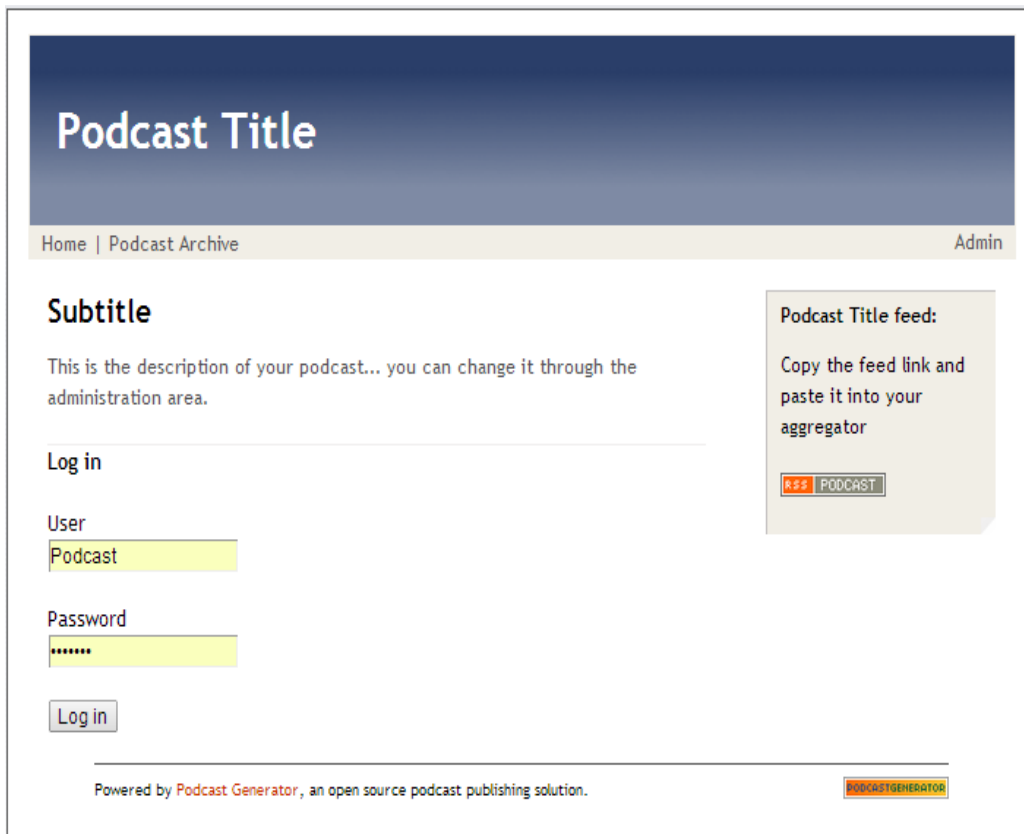
Figure 3.5 Podcast Publishing System Blank Podcast Archive Page

The *Admin* area enables podcast creator/publisher to create new podcast, edit or delete existing podcasts, use FTP feature to upload large files, manually regenerate XML feed, add or delete podcast categories, change podcast details, validate the feed and change system configuration. Figure 3.6 shows the admin page of the system.
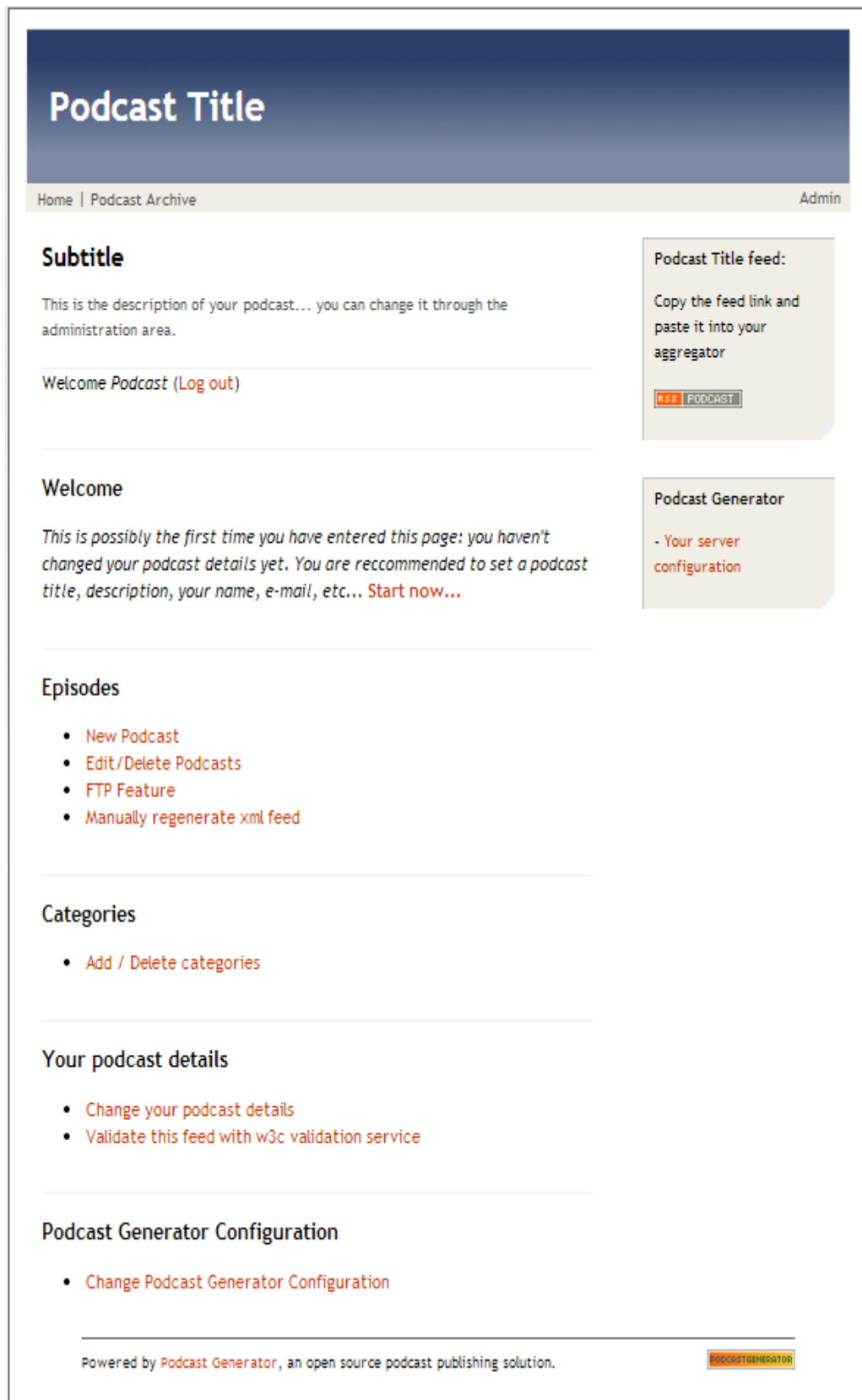
Figure 3.6 Podcast Publishing System Admin Page

Feed. The system uses XML instead of a database to store necessary information about podcasts. When a podcast added to the system, deleted from the system or edited on the system, RSS podcast feed is created automatically. Other users can subscribe to the podcasts published from this channel using this feed.xml file.

```
<!--  generator="Podcast Generator 1.4"  -->
▼<rss xmlns:itunes="http://www.itunes.com/dtds/podcast-1.0.dtd" xml:lang="en" version="2.0">
  ▼<channel>
    <title>Podcast Title</title>
    <link>http://www.sampleadress.com/podcast/</link>
    ▼<description>
      This is the description of your podcast... you can change it through the administration area.
    </description>
    ▼<generator>
      Podcast Generator 1.4 - http://podcastgen.sourceforge.net
    </generator>
    <lastBuildDate>Tue, 18 Feb 2014 10:49:34 +0200</lastBuildDate>
    <language>en</language>
    <copyright>Your copyright notice</copyright>
    <itunes:image href="http://www.sampleadress.com/podcast/images/itunes_image.jpg"/>
    ▼<image>
      ▼<url>
        http://www.sampleadress.com/podcast/images/itunes_image.jpg
      </url>
      <title>Podcast Title</title>
      <link>http://www.sampleadress.com/podcast/</link>
    </image>
    ▼<itunes:summary>
      This is the description of your podcast... you can change it through the administration area.
    </itunes:summary>
    <itunes:subtitle>Subtitle</itunes:subtitle>
    <itunes:author>Test</itunes:author>
    ▼<itunes:owner>
      <itunes:name>Test</itunes:name>
      <itunes:email>test@nospam.com</itunes:email>
    </itunes:owner>
    <itunes:explicit>no</itunes:explicit>
    <itunes:category text="Arts"></itunes:category>
  </channel>
</rss>
```

Figure 3.7 Podcast Publishing System Blank Feed Page

3.4.3   Feed Management and Feed Aggregator

To manage their feeds, the participants used Feedburner (http://www.feedburner.com). Using Feedburner, they could see how many people subscribed to their podcasts. Moreover, they could use it as feed aggregator as well, yet using it that way was not useful.

62

The participants used free feed aggregators to get the podcasts automatically on any device such as desktop computers, notebooks or mobile devices. Among many feed aggregators, they were advised to use Google Reader (during the study it was available but it is not available as of July 2013), Feedreader (http://www.feedreader.com), Feedspot (http://www.feedspot.com) or Feed Readers on Mozilla Firefox Browser (https://addons.mozilla .org).

3.4.4 Podcast Activities

Within the scope of this study, participants were required to create podcasts, publish podcasts and subscribe to each other's podcasts. To be more specific, they were required to create 3 types of podcasts such as audio, video and enhanced podcast for educational purposes. To do this, they were given three tasks. The participants were responsible for whole production (manuscript, shooting, editing etc.), and distribution process of podcasts. Furthermore, they were in charge of subscribing to others' podcasts. It is important to note that, the participants were told that they should imagine themselves as if they are presenting a subject using podcasts to students in a real educational setting for their professional learning. In addition to this, they were encouraged to give importance to the process more than the material they are required to develop. They created 2 podcasts per week and at the end of the 6th week, they created total 6 podcasts individually. The participants themselves determined their subjects. For that, they created their goals, objectives and instructional activities. In brief, using ADDIE model, the participants produced analysis, design and development, final reports and evaluation reports for their instruction.

3.4.4.1 Pre-Activity: Setting Up a Podcast System

Before the main tasks, the participants completed a pre-task to setup their own podcast system on a web server. Each participant in the study had his or her own podcast system to upload and publish podcasts.

3.4.4.2 Main Activities

3.4.4.2.1   Activity1: Audio Podcast

For audio podcast task, the participants were required to create 2 audio podcasts. The first podcast should be extemporaneous. That is, when the recording once started, the participants should not stop it until the end. The second podcast should be a complete educational podcast. That is, it should be ready to be used in actual educational setting. Furthermore, the participants were asked to subscribe to at least one person's podcasts to see how he or she is doing. They were given instructions as the following:

- The minimum time duration should be 3 minutes.
- It should be informational.
- The topic to be presented can be selected individually. It can be any part of Google Drive instruction.
- It should be in MP3 format.
- Upload the podcast to your podcasting system.
- Subscribe to at least one person's podcasts.

The content of the podcast should be as following:

1. Introduce yourself.
2. State objectives (what is going to be presented?).
3. Body part (the topic which will be presented).
4. Conclusion or summary.

After deciding the topics, follow these steps:

- Plan what you are going to present.
- A script for narration may be written, yet do not read it while recording.

3.4.4.2.2 Activity2: Video Podcast

For video podcast task, the participants were required to create 2 video podcasts. The first podcast should be extemporaneous. That is, when the recording once started, the participants should not stop it until the end. The second podcast should be a complete educational podcast. That is, it should be ready to be used in actual educational setting. Furthermore, the participants were asked to subscribe to at least one person's podcasts to see how he or she is doing.   They were given instructions as the following:

- The minimum time duration should be 5 minutes.
- It should be demonstrational.
- The topic to be presented can be selected individually. It can be any part of Google Drive instruction, but it should be different from audio podcast topic.
- Record your screen, your video and your audio at the same time.
- Upload the podcast to your podcasting system.
- Subscribe to at least one person's podcasts.

The content of the podcast should be as following:

1. Introduce yourself.
2. State objectives (what is going to be presented?).
3. Body part (the topic which will be presented). Use step-by-step demonstration
4. Conclusion or summary.

After deciding the topics, follow these steps:

- Plan what you are going to present.

- A script for narration may be written in accordance with the screen being recorded, yet do not read it while recording.

3.4.4.2.3 Activity3: Enhanced Podcast

For enhanced podcast task, the participants were required to create a presentation related to Google Drive instruction and turn it into 2 enhanced podcasts. The first podcast should be extemporaneous. That is, when the recording once started, the participants should not stop it until the end. The second podcast should be a complete educational podcast. That is, it should be ready to be used in actual educational setting. Furthermore, the participants were asked to subscribe to at least one person's podcasts to see how he or she is doing. They were given instructions as the following:

- The minimum time duration should be 3 minutes.
- It should be informational or demonstrational.
- The topic to be presented can be selected individually. It can be any part of Google Drive instruction, but it should be different from audio and video podcast topics.
- Record your PowerPoint slides and your audio at the same time.
- Upload the podcast to your podcasting system.
- Subscribe to at least one person's podcasts.

The content of the podcast should be as following:

1. Introduce yourself.
2. State objectives (what is going to be presented?).
3. Body part (the topic which will be presented). Use step by step demonstration.
4. Conclusion or summary.

66

After deciding the topics, follow these steps:

- Plan what you are going to present.
- A script for narration may be written in accordance with the slides being showed on the screen.
- Text slides can be created to help you.
- Content of the podcasts can include: photos, texts, graphics, images or music etc.

The participants were provided with rubrics for each podcasting task to ensure the quality of their podcasts.

Required Software and Hardware

In this study, three different programs were used. To create audio files, an open source software called Audacity 2.0.3 (see http://audacity.sourceforge.net) was used since it is free, easy to use and is also in portable form. To create video files, Techsmith Camtasia Studio 8 (see http://www.techsmith.com/camtasia.html) trial version was used because it lets users record their screen with their camera display, edit and publish videos. In addition to these, to create enhanced podcast content, Microsoft PowerPoint 2013 (see http://office.microsoft.com/) was used to create slides and record the voice of participants.

Creating podcasts required students to use computer (desktop, notebook, ultrabook or netbook) which has a camera and microphone, and is capable of running software such as Audacity, Camtasia and Microsoft PowerPoint.

Pre-service Teacher Training

In the beginning of the study, all participants were informed about what they were asked to do about educational podcasting and provided with comprehensive training to familiarize prospective teachers with educational podcasting, to enhance their

software competencies in terms of Audacity, Camtasia Studio and Microsoft Powerpoint, to enable them to gain podcasting experience, to introduce students to setup the podcast publishing system, podcast production, types of podcasts, podcasting process, podcast subscription, history of podcasting, benefits of podcasting and educational uses of podcasts. In addition, they were trained about recording conditions, RSS, RSS feeds, and podcast aggregators. It was ensured that all of the participants received the necessary training.

3.5 Data Collection Instruments

To fulfil the purpose of this study, five instruments were administered to answer the research questions. The quantitative instruments used to collect data in this study are Podcast Familiarity Form (developed by the researcher), STAI inventory (Trait Anxiety and State Anxiety Scales), Educational Podcast Self-Efficacy Beliefs Questionnaire (based on previous two studies), Educational Podcasting Opinion Questionnaire (developed by the researcher), and the qualitative instrument is interview guide (developed by the researcher). In the following section, each instrument is explained in detail.

3.5.1   Podcast Familiarity Form

Pre-service teachers' familiarity with podcasting was assessed by Podcast Familiarity Form with 8 dichotomous (0=No, 1=Yes) and 1 open-ended item prepared by the researcher. The primary aim of the form was to get information about the familiarity of students with podcasts to carefully plan the necessary training to provide pre-service teachers with a good command of educational podcasting. Students were asked to state whether they have listened to a podcast, subscribed to a podcast, downloaded a podcast, created a podcast, they know what RSS is, they have used a podcast for educational purposes, any of their instructors used podcasts during the courses they took and they would like to learn podcasting. In addition, the open-ended question focused on whether students could provide a definition of a podcast.

During the development of the form, Phd candidates from instructional technology was consulted for feedback. Grammatical corrections were made in the final form.

3.5.2   STAI (State-Trait Anxiety Inventory)

STAI is a self-reported inventory developed to measure anxiety by Spielberger, Gorsuch and Lushene (see Spielberger, Gorsuch, Lushene, Vagg & Jacobs, 1983) and the inventory was translated into Turkish Language by Öner and Le Compte between 1974-1977 (Öner & Le Compte, 1998). The inventory consists of 2 subscales: State Anxiety Scale and Trait Anxiety Scale. It has a total of 40 items: 20 items for assessing state anxiety and 20 items for assessing trait anxiety. In particular, State Anxiety Scale assesses the present situation of anxiety through getting data from the participants asking how they feel "right now" and Trait Anxiety Scale assesses "anxiety proneness" through getting data from the participants how they feel generally (Domino & Domino, 2006, p. 187; Julian, 2011, p. 467). The items in State Anxiety Scale ranges from Not at all (1) to Very much so (4) and the items in Trait Anxiety Scale ranges from Almost never (1) to Almost always (4) (Julian, 2011). When related literature is examined, it can be seen that this inventory is commonly used in research studies to measure anxiety. It is valid and reliable measure of trait and state anxiety (Öner & LeCompte, 1998). The manual prepared by Öner & LeCompte (1998) provides detailed information about the inventory. For this study, the reliability of trait anxiety scale was found 0.81. The reliability of state anxiety scale was found 0.95 (for audio podcast) and 0.94 (for video podcast).

3.5.3   Educational Podcast Self-Efficacy Beliefs Questionnaire

Rapid changes happen in the area of computer technology. This nature of computer technology results in challenges for research and instrument development in IS. This is not implying that existing instruments should not be used. They must be used carefully and reliability should be taken into consideration (Torkzadeh et al., 2006). The literature was reviewed in order to explore whether there was an existing self-efficacy instrument regarding podcasts. After a comprehensive literature review, a

limited number of questionnaires assessing self-efficacy beliefs regarding Web 2.0 technologies have been found. Nevertheless, this study required to use specific instrument for assessing self-efficacy beliefs regarding podcasts. Bandura (2006) explains this as "scales of perceived self-efficacy must be tailored to the particular domain of functioning that is the object of interest" (Bandura, 2006, p. 308). Torkzadeh et al. (2006) mentions two perspectives for measuring self-efficacy regarding computers. While the first one supports that task specific measures should be developed, the other supports the development of general measures. Moreover, Vispoel & Chen (1990) stated that "no single standardized measure of self-efficacy is appropriate for all studies and advised researchers to develop new or significantly revise existing measures for each study" (as cited in Miltiadou & Yu, 2000, p. 5). Taking these into consideration, the survey instruments were adapted from the studies of Pan (2011) and Horzum & Aydemir (2014) and minor changes were made on the items to make the items specific, suitable and relevant for the context of this study.

In order to examine pre-service teachers' self-efficacy toward podcasts, two instruments were administrated to investigate pre-service teachers' confidence and possession of necessary skills as mentioned below. The podcast subscale of Web 2.0 tools integration self-efficacy instrument (WTISEI) developed and modified by Pan (2011) based on literature review, a guide by Bandura (2006), and professional expert opinion was used. The instrument aimed at exploring the confidence of using Web 2.0 tools in teaching. It consisted of 5 Likert scale rating: Strongly Agree (SA), Agree (A), Neutral (N), Disagree (D) and Strongly Disagree (SD). The instrument consists of 30 items in total and five items represents each Web 2.0 tool (Pan, 2011). In addition to the instrument developed by Pan (2011), the podcast subscale of Web 2.0 tools and educational usage self-efficacy scale developed by Horzum & Aydemir (2014) was used. The scale was developed based on literature review and interviews with the teacher candidates. The instrument aimed at exploring Web 2.0 tools and educational usage self-efficacy of pre-service teachers. It consisted of 5 Likert scale rating: Strongly Agree (SA), Agree (A), Neutral (N), Disagree (D) and Strongly

Disagree (SD). The instrument consists of 57 items in total and different number of items represents each Web 2.0 tool. Podcasts are represented by 5 items. The reliability value in the beginning of the study was found 0.79 and 0.89 respectively. Similarly, the reliability value at the end of the study was found 0.78 and 0.83 respectively. Original studies yielded similar reliability scores. Horzum & Aydemir (2014) reported a reliability score of 0.95 for the subscale and Pan & Franklin (2011) reported a reliability score of 0.98 for the whole instrument.

All the items in the instrument were reviewed by the experts, Phd. candidates in computer education and instructional technology, and also by the expert in measurement and evaluation to ensure content validity. Once the survey instrument was developed, it was pilot tested with 117 pre-service teachers to ensure construct validity and 111 valid responses obtained.

3.5.3.1 Pilot Study

A pilot study was carried out in 2012 with 111 teacher candidates from different universities in Turkey to ensure content and construct validity. The data were collected by means of an online survey (Google Forms). The overall internal reliability of the pilot study was 0.86. This indicates the evidence of the high internal reliability of the instrument. The results revealed that there was no unclear wording of the items and unclear statements.

An exploratory factor analysis was conducted to see if the self-efficacy items which were modified for this study could be grouped together and combined to create a specific scale or not. All subscales were combined into a single construct and then, an exploratory factor analysis (EFA) was carried out with IBM SPSS 20 to see if the self-efficacy items could be grouped together in some way. Moreover, it was conducted to ensure appropriateness and construct validity.

Before EFA, some preliminary analyses were conducted to examine the assumptions of exploratory factor analysis. First of all, data were checked for normality. Next, Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) value was checked. It

was found to be 0.814. This value is considered sufficient to do factor analysis (Green & Salkind, 2007). Then, Bartlett's Test of Sphericity was examined (χ^2=805.614, p=0.000). These results indicated that the data were suitable to do factor analysis.

Principal Components Analysis (PCA) was conducted with a varimax rotation. The results revealed that the number of factors having eigenvalues greater than 1.0 are two and they accounted for 72.59% of the total variance explained. According to results, the factor loadings were clearly indicative of source domains and allowed to make clear distinctions regarding the domains. Hence, the items couldn't be grouped together so that two separate subscales which are "integration" and "educational usage" were used respectively in the study. In brief, the self-efficacy instrument is comprised of 10 items: 5 items for integration and 5 items for educational usage of podcasts. All of the items reflect the self-confidence to create, publish and use podcasts. Lower scores indicate lower-self efficacy and higher scores indicate higher self-efficacy. The loadings and the scree plot can be found in the Appendix F.

3.5.4 Educational Podcasting Opinion Questionnaire

Since an appropriate instrument was not found in the literature regarding the opinions of pre-service teachers about educational podcasting, educational podcasting opinion questionnaire was developed in English by the researcher in order to find out pre-service teachers opinions on podcasts, podcasting process and podcasting experience. Items except the demographic information were generated based on the objectives of the study, the previous research studies and results in the literature (e.g. Clark, Taylor & Westcott, 2007; Copley, 2007; Lee & Chan, 2007; Sutton-Brady, Scott, Taylor, Carabetta & Clark, 2009; Tam, 2012). From the items, a 46-item questionnaire was constructed. The final version of questionnaire consisted of 5 parts, included 46 items and the overall reliability was 0.92.

Part I consisted of 11 items. It was designed to determine the opinions of participants in terms of podcast products. Participants were required to indicate their level of agreement/disagreement to each statement. The items were 5-point Likert-type items

ranging from Strongly Disagree to Strongly Agree. The reliability of this part was 0.91. Part II consisted of 15 items. It was designed to specify the opinions of participants in terms of podcasting process and activities. Participants were required to indicate their level of agreement/disagreement to each statement. The items were 5-point Likert-type items ranging from Strongly Disagree to Strongly Agree. The reliability of this part was 0.78. Part III consisted of 11 items. It was designed to gather the opinions of participants in terms of their experience with podcasting. Participants were required to indicate their level of agreement/disagreement to each statement. Of the items, 8 items were 5-point Likert-type items ranging from Strongly Disagree to Strongly Agree. Additionally, three general items were placed at the end of this part to assess participants' experiences in general. For the general 3 statements, 1 item ranged from Extremely Unsatisfactory to Extremely Satisfactory, 1 item ranged from Completely Useless to Extremely Useful and 1 item ranged from Not Effective to Very Effective. The reliability of this part was 0.88. Part IV consisted of 3 items. It was designed to document Internet, Web 2.0 technologies usage and mobile device access of the participants. Part V consisted of 6 items. It was designed to identify demographic information of the participants. It included demographic items such as gender, age, grade level, GPA and high school type, and student ID number.

3.5.4.1 Pilot Study of the Opinion Questionnaire

While developing the questionnaire, first of all, the item repository was constructed via literature. At first, it was consisted of 90 items. After consulting the advisor, the items were decreased to 49. Then, to assure content validity appropriateness and contextual issues, the questionnaire was reviewed by five experts in instructional technology. The questionnaire was reorganized based on expert opinion. Some items were revised. For example, the item "I think podcasting contributes to my professional development" were revised as "I think podcasting contributes to my professional learning".

Subsequently, a pilot study was conducted with 23 students who did the same activities like the participants in the main study. They were asked to mark the items they didn't understand, mention what they didn't like about the questionnaire and give feedback. During the application of the questionnaire, the participants were closely observed; the unclear items stated by the pilot study participants were recorded, and their feedback was taken into account. According to the results of the pilot study, necessary corrections and substitutions were made. For example, the instruction part of the questionnaire was shortened since it was found very long by the participants. Similar items were omitted. The demographic information (Part I) and Internet, Web 2.0 technologies usage and mobile device access (Part II) part were placed at the end of the questionnaire because the participants stated that after finishing Part I and Part II, they were tired to continue with other parts of the questionnaire.

The final version of the questionnaire included 46 items in total. The overall internal reliability of the pilot study was 0.93; Part I was 0.83; Part II was 0.80; Part III was 0.92 respectively.

3.5.5 Interview Guide

Besides quantitative data, semi-structured interviews were conducted to gather qualitative data. For that reason, an interview guide was developed by the researcher in Turkish in order to obtain information about pre-service teachers' opinions, experiences and anxiety in relation to educational podcasting. During the development of the guide, subject matter experts were consulted and pilot study was conducted. The interview questions were prepared based on the research questions of the study, the pilot study, the situations (challenges etc.) emerged during the podcast activities and the research questions.

After the revisions, the final interview guide included 3 parts: introduction, questions and closing parts. The introduction part covered the purpose of the study, the number of the questions, the approximate duration it takes, the confidentiality of the personal information and mentioning the use of voice recorder. In the questions part, there

were 11 semi-structured questions and they focused on the research questions of the study. The first question focused on the positive and negative experiences of the participants during educational podcasting. Next 2 questions were about positive and negative sides of the use of podcasts in educational setting. The following 2 questions were about educational value of podcast types and the preference for podcast duration. The other 4 questions focused on opinions and experiences of pre-service teachers'. The last 2 questions were about the anxiety (Appendix E). However, the probes were not included in the interview guide. In the closing part, the participants were thanked due to their contribution to this study and they were asked whether they wanted to say something more.

One academic staff and a Phd student in the subject area checked the interview guide out and provided feedback. Furthermore, two pre-service teachers in the subject area reviewed the guide if the questions were clear and understandable. They provided feedback and their reactions to the questions were observed at the same time as well. According to feedback, the wording of the questions checked again and they were made clearer. Then, the interview guide was piloted with two pre-service teachers: one student from the main study section and one student from other section in order to determine whether the questions were clear or ambiguous and made sense for them. After the pilot study, necessary revisions made on the interview guide. Table 3.4 presents the research questions and the instrument association.

Table 3.4 Research Questions and Instrument Association

Research Questions	Quantitative	Qualitative
What are the pre-service teachers' opinions on educational podcasting?	X	X
What are the pre-service teachers' educational podcasts self-efficacy beliefs before and after educational podcasting?	X	-
What is the pre-service teachers' state anxiety level prior to podcast development?	X	X
How do the pre-service teachers assess using podcasts as a teaching resource in terms of positive/negative aspects, challenges, types and duration of the podcasts they prepared?	X	X
How do the pre-service teachers perceive the value of educational podcast development process in preparing them for their teaching profession?	X	X

3.6 Reliability and Validity of the Instruments

Reliability and validity are very core elements that need to be ensured carefully and critically for the success of a study. Reliability is defined as "the consistency of scores or answers from one administration of an instrument to another, and from one set of items to another" and validity is defined as "the appropriateness, meaningfulness, correctness, and usefulness of the inferences a researcher makes" (Fraenkel et al., 2012, p. 147). In the following part, reliability and validity of quantitative and qualitative instruments are explained.

Reliability of the quantitative instruments were assessed through Cronbach's alpha coefficient (Cronbach, 1951). The acceptable value of the alpha coefficient is recommended by Kline (1999) to be 0.7 and above (cited in Field, 2009). In this study, the quantitative instruments presented acceptable reliability scores.

In terms of validity, measurement validity, internal validity and external validity were taken into account. For the measurement validity, firstly, the existing

inventories in the literature were used (for STAI inventory see Öner & LeCompte, 1998) and the questionnaire was constructed based on the previous studies. Secondly, the content of the questionnaires and their formats were reviewed by subject matter experts, Phd students and research assistants who previously worked as teachers to ensure content validity. Thirdly, the factor analysis was carried out for the construct validity.

To improve internal validity, firstly, the researcher applied the instruments when the course instructor was in the classroom as well to prevent threats related to data collector. Secondly, the data were collected in the same place except the state anxiety scale to prevent location threat. The participants filled in that scale in the place they created their podcasts. Fraenkel et al. (2012) states that internal validity may be affected by the instruments used in the study. Thirdly, to enhance internal validity, reliable and valid instruments were used in the study. Finally, to prevent subject attitude threats, each participant were treated equally and they engaged in educational podcasting activities as a part of instruction so that none of them got any extra credit. However, nothing could be done to prevent mortality since the participation in the study was voluntary. As a result, two participants left the study because they failed the course

To improve external validity, subject characteristics including gender, age, high school type, and Internet, Web 2.0 technologies use were given in detail. The study can be implemented in a similar context with pre-service teachers by other researchers.

When compared to quantitative research, there is no rule of thumb especially for reliability issue in qualitative research. Nevertheless, there are some means to ensure validity and reliability in qualitative research (Yıldırım & Şimşek, 2011). In qualitative research, regarding validity and reliability, the term trustworthiness is used frequently. In terms of reliability, the recommendation made by Gibbs (2007; as cited in Creswell, 2009) was followed. Throughout transcription, the transcripts were continuously checked to prevent possible mistakes. Then, it was made sure that the

meaning and definitions of codes were not lost and it was assured that they meant the same thing throughout the research. Next, even the codes were generated together with the colleague, the developed codes were cross-checked all the time and intercoder agreement (Creswell, 2009) was achieved.

In terms of validity, the recommendation made by Creswell (2009) was followed. The data of the study were collected through qualitative and quantitative measures at different times. That is, diverse data sources were used for triangulation and it was guaranteed that the data from different sources confirmed each other. Member checking was used frequently for the quality of qualitative results. Some of the statements said by the participants were asked to participants again to decide precisely what they implied or the researcher explained what he understood and it was tried to make certain that the researcher understood what the participants implied correctly. In addition to these, the researcher provided the information about the research context in detail. This enhances the validity of the findings. Moreover, if the researcher spends more time with the participants (prolonged time) in real setting, it is likely that the findings will be more valid. For that, the researcher spent time with the participants as much as he could in the computer laboratory, office hours allocated for providing feedback to students and in the Facebook group which was created for the participants to ask questions or share their problems. Furthermore, peer debriefing of interview transcripts and analysis was conducted to improve credibility of this research and decrease the bias of the researcher. Another employed strategy was that an external auditor who did not know the researcher very well checked the qualitative part of the study and provided objective views. Finally, the findings of this study can be confirmed through audit trail. That is, raw data of the interview records, interview transcripts and analysis files were saved for confirmation.

3.7 Data Collection Procedures

Before data collection procedure started, necessary application was submitted to the Middle East Technical University Human Subjects Ethical Committee (HSEC) to get

an approval to begin this study. The approval document can be found in Appendix H. After getting permission from HSEC, necessary permissions from CEIT 225 course instructors from two sections were taken to collect data during the course times. Before the data collection started, after the participants were briefly informed about the study, ethical conditions for participating in the study is explained. These included privacy, voluntary participation, confidentiality, and no psychological and physical harm. Thereafter, the consent forms were filled in by the voluntary participants during their course time in a regular university classroom.

The study took 7 weeks excluding a national holiday and podcasting activities lasted 3 weeks. The data for the current study was collected during the 2012-2013 academic year in the spring term. The data collection process started in April 2013 with quantitative data collection and finished in May 2013 with qualitative data collection. Figure 3.8 summarizes when the data collection instruments were applied.
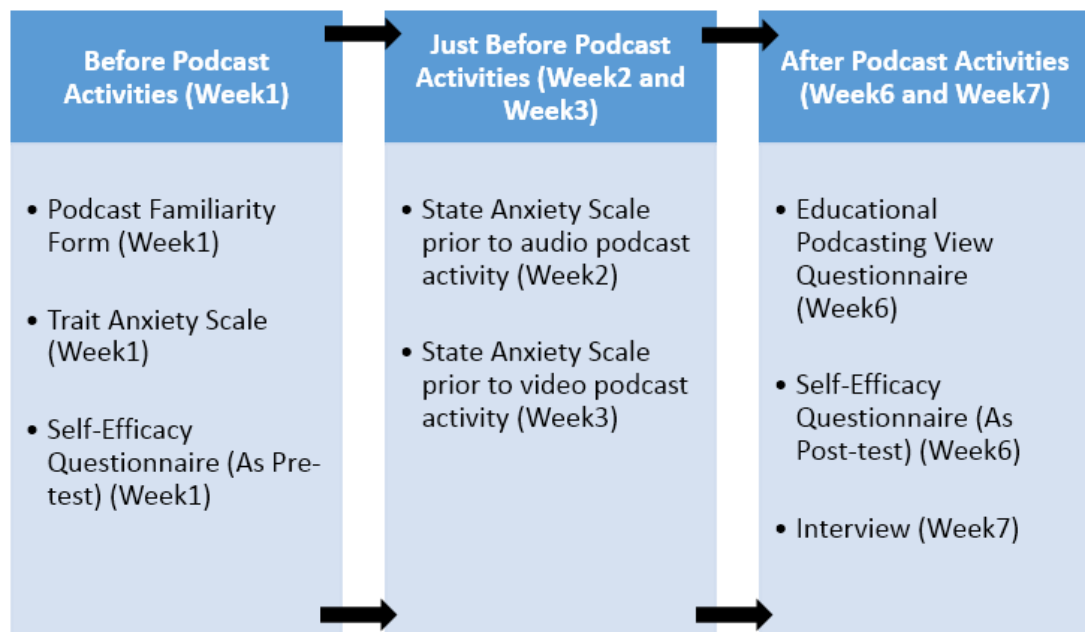
Figure 3.8 Summary of the Data Collection

In the quantitative phase of the study, before the participants started to receive necessary trainings and creating podcasts, podcasting familiarity form, trait anxiety scale and educational podcasts self-efficacy beliefs questionnaire prior to training and podcast activities were administered simultaneously in week 1 in the classroom environment by the researcher. The participants were not informed that they would fill in the same self-efficacy beliefs questionnaire again. After receiving tutorial on how to setup podcast publishing system and produce audio podcasts, the participants filled in state anxiety scale in an online environment in week2 before they started to create audio podcasts. Similarly, in week3, before they started to create video podcasts after receiving tutorial on how to produce video podcasts, the participants filled in state anxiety scale in an online environment. Furthermore, during the week4, the participants produced enhanced podcasts, yet state anxiety scale was not applied since the production process was similar to video podcasts and students were very busy with their course load. After finishing production and distribution of podcasts, students were administered educational podcasts self-efficacy beliefs questionnaire again and educational podcasting opinion questionnaire in week6 during the course time in the same classroom.

After completion of quantitative data collection, semi-structured face-to-face interviews were conducted with the identified participants one by one in week7. The day of the interviews was decided by the researcher, but the time of the interviews determined by the participants. Before the semi-structured interviews, the researcher asked whether they have any questions or concerns about the study. All of the interviews took place on the same day but in different locations (a meeting room and an empty office) in the department. The researcher made sure that the interview place is suitable for conducting interviews. Particularly, it was ensured that the interview places were free from noise and other people. Unlike other interview settings, the researcher did not spend some time with the participants for trust and rapport issues since most of the participants have known the researcher from other laboratory sessions and they spent the whole semester with the researcher in the laboratory sessions of CEIT225 course.

At the beginning of the interviews, the participants were informed about the purpose of the study again, the number of the questions in the interview, the approximate time the interview would last, the importance of sincere responds to the questions, the voice recording and the confidentiality of their responses and identities. The interviews took approximately between 8 and 15 minutes.

3.8 Data Analysis

During the research process, 2 students withdrew from the study because they failed the course. Their responses to questionnaires were taken out from the statistical analyses and the study continued with 25 participants. The collected data through paper-based and web-based measures were entered into statistical software packages. Before doing any data analysis, entered data were checked again for coding accuracy, and then missing information was identified and outlier check was done in the quantitative measures.

The undermentioned sections clarifies the analysis of the quantitative data and the qualitative data.

To analyse quantitative data, concerning the research questions of the study descriptive statistics were performed by using IBM Statistical Package for Social Sciences (SPSS) Version 20. Using the participants' responses to surveys, mean, standard deviation, total score, frequency and percentage were calculated. Similarly, the frequency distributions were constructed. In particular, for podcast familiarity form, frequencies and percentages were calculated. For STAI inventory, total scores, mean, standard deviation, frequency and percentages were calculated. It is important to note that there are reverse-coded items in the inventory and therefore aforementioned scores and values were calculated based on Öner & LeCompte (1998). In the same way, for educational podcasting opinion questionnaire, mean, standard deviation, frequency and percentage were calculated. To ensure reliability, Cronbach's alpha (Cronbach, 1951) was calculated for internal consistency.

In addition to these, a Wilcoxon sign-rank test was performed to examine and compare the change in the podcast integration and educational usage self-efficacy in the beginning and at the end of the study. The test was run for each item respectively to examine the difference between mean scores. Although, comparison between self-efficacy beliefs in the beginning and at the end of the study made, this study does not aim to prove statistical significance; therefore, it is a non-experimental measure (Spector, 1981). The reason for using this quantitative analysis as in the study of Hakkarainen (2009) was to describe, interpret and make sense of the data in depth and determine whether the podcast activities or training that pre-service teachers received are effective to enhance their self-efficacy beliefs.

To analyse qualitative data, content analysis was employed. The analysis was performed by using Nvivo 10 trial version. The following procedures were used in qualitative data analysis. The approach recommended by Creswell (2009) was used in the analysis of the qualitative data and the data analysis was done following 6 steps. Those steps are:

> *Step1*. Organize and prepare the data for analysis
> *Step2*. Read through all the data
> *Step3*. Begin detailed analysis with a coding process
> *Step4*. Use the coding process to generate categories or themes for analysis
> *Step5*. Advance how the themes will be represented in the qualitative narrative
> *Step6*. Making an interpretation or meaning of the data (Creswell, 2009, pp. 185-190)

Firstly, the audio files were converted into Mp3 format and they were checked by the researcher to check whether there was a problem or not. Then, the researcher listened to all of the interview records and he transcribed the records word by word carefully. However, to transcribe 3 interview records, he requested help from one of his colleagues who is doing a Phd in the same field and has experience in qualitative data analysis. The transcription was checked by the researcher to prevent data loss. Secondly, before starting the coding process, the transcriptions were read by the

researcher and his colleague to have "a general sense of information" (Creswell, 2009, p. 185). Thirdly, the transcriptions were coded with the same colleague. Before arriving at a conclusion, the codes were discussed and mutual decision was made in terms of codes. When there was a contradiction, again the codes were discussed and if there had not been a satisfactory consensus on a code, that code was not used. Fourthly, themes were created from the codes specified previously arriving at a consensus with the colleague. Fifthly, the developed themes were presented as a qualitative narrative in the results section of the thesis and they were presented as a table in the Appendix G. Lastly, necessary interpretations based on the research questions were made.

3.9 Role of the Researcher

In the present study, the researcher has an insider status. The researcher prepared the necessary web spaces for podcast publishing system, podcasting activities, rubrics and essential training for the participants. He was the teaching assistant of the CEIT 225 course. He was responsible for conducting lab sessions each week and grading the products of the students.

In addition, the researcher himself provided training for the participants and always encouraged them for their professional learning. Moreover, he guided the participants during the podcast activities and observed them.

3.10   Assumptions

This study was carried out based on following assumptions:

- The participants were provided with training each week before the activities and it is enough for the participants to fulfill the activities.
- The surveys were filled in with care and attention, and they were filled in accurately.

- The participants were honest during quantitative and qualitative data collection.

- While recording the podcasts, the participants considered themselves as they were presenting/teaching to students in a real educational setting.

- It is assumed that pre-service teachers did their tasks on time and obeyed the instructions that are required to conduct this study.

- Validity and reliability of the study were tried to be assured with necessary methods.

3.11   Limitations

There are several limitations of the present study that need to be taken into consideration. They can be summarized as the following:

- The findings of this study were based on the pre-service teachers in Computer Education and Instructional Technology Department at Middle East Technical University. In other words, the participants are homogenous.

- In the quantitative part of the study, convenience sampling was used and therefore, it may not be said that the sample is the representative of the population.

- The data of the study were gathered through self-reported measures of the participants and these measures were relied on.

- The researcher was not with the participants during the completion of state anxiety scales by the participants since they filled in the scales in the place they created their podcasts.

- Since the study is based on self-reporting of the subjects, bias can be inevitable. That is, further data may be needed to verify the results.

- The term teaching experience in this study is limited to the perceptions of the participants.

- Due to the nature of the study, no causal inferences about the relationships between the variables can be drawn.

CHAPTER 4

RESULTS

This chapter presents the results obtained from the study. In each subsection, results which answer the research questions are given in detail. This chapter consists of the following headings:

- Internet Use, Mobile Device Access and Frequency of Web 2.0 Use
- Participants' Work
- Participants' Familiarity with Podcasts
- Participants' Opinions on Educational Podcasting
- State Anxiety Prior to Podcast Activities and Trait Anxiety
- Self-Efficacy Beliefs Concerning Integration and Educational Usage of Podcasts
- Assessment of Podcasts Regarding Positive/Negative Aspects, Challenges, Types and Duration
- Assessment of Podcast Development Process in Preparing Pre-Service Teachers for Teaching Profession

4.1 Internet Use, Mobile Device Access and Frequency of Web 2.0 Use

The participants were asked to indicate their daily Internet use duration. In terms of Internet use, 2 (8%) of the participants indicated their Internet use duration as 1-2 hours; 2 (8%) indicated as 2-3 hours; 5 (20%) indicated as 3-4 hours, and a significant majority of the participants 16 (64%) indicated that they use Internet more than 5 hours a day. Table 4.1 shows Internet use of the participants.

Table 4.1 Internet Use of the Participants

Internet Use	Frequency	Percentage
1-2 Hours	2	8
2-3 Hours	2	8
3-4 Hours	5	20
More Than 5 Hours	16	64

The participants were asked to indicate their mobile device access. All of the participants stated that they have access to at least one mobile device. Regarding the access to Mp3 player (playing audio only), while 8 (32%) indicated that they have access, 17 (68%) of them indicated that they don't have access. Regarding the access to Mp4 player (playing audio and video), while 7 (28%) indicated that they have access, 18 (72%) of them indicated that they don't have access. Regarding the access to mobile phone (including smartphones), while 24 (96%) indicated that they have access, only 1 (4%) of them indicated that he or she doesn't have access. Regarding the access to tablet, while 5 (20%) indicated that they have access, 20 (80%) of them indicated that they don't have access. Regarding the access to notebook, while 16 (64%) indicated that they have access, 9 (36%) of them indicated that they don't have access. Table 4.2 shows mobile device access of the participants.

Table 4.2 Mobile Device Access of the Participants

Mobile Device Access	Yes	No
Mp3 Player (plays audio only)	8 (32%)	17 (68%)
Mp4 Player (plays audio and video)	7 (28%)	18 (72%)
Mobile Phone (including smartphones)	24 (96%)	1 (4%)
Tablet	5 (20%)	20 (80%)
Notebook	16 (64%)	9 (36%)

All of the participants were asked to indicate their frequency of Web 2.0 technologies (Wiki, Podcast, Blog, Facebook, Twitter, Skype, Instagram and LinkedIn) use. Table 4.3 shows the frequency of Web 2.0 technology use of participants.

86

Table 4.3 Frequency of Web 2.0 Technology Use

Web 2.0 Technology	Always	Usually	Sometimes	Rarely	Never	N
Wiki	2	7	7	3	5	24
	(8.3%)	(29.2%)	(29.2%)	(12.5%)	(20.8%)	
Podcast	-	2	6	11	4	23
		(8.7%)	(26.1%)	(47.8%)	(17.4%)	
Blog	-	2	9	6	5	22
		(9.1%)	(40.9%)	(27.3%)	(22.7%)	
Facebook	14	10	1	-	-	25
	(56%)	(40%)	(4%)			
Twitter	3	1	2	7	12	25
	(12%)	(4%)	(8%)	(28%)	(48%)	
Skype	3	4	6	5	6	24
	(12.5%)	(16.7%)	(25%)	(20.8%)	(25%)	
Instagram	1	-	2	6	14	23
	(4.3%)		(8.7%)	(26.1%)	(60.9%)	
LinkedIn	1	-	2	5	15	23
	(4.3%)		(8.7%)	(21.7%)	(65.2%)	

Most of the respondents stated that they use wiki (N=2 or 8.3% always use; N=7 or 29.2% usually use; N=7 or 29.2% sometimes use). Unlike Wiki, majority of the respondents responded that they don't use podcasts (N=11 or 47.8% rarely use and N=4 or 17.4% never use). Half of the respondents use blog (N=2 or 9.1% usually use; N=9 or 40.9% sometimes use). Among the Web 2.0 technologies, Facebook was the most common used one and all of the participants use Facebook. Unlike Facebook, Twitter was the least common used one. A very limited number of participants use Twitter (N=3 or 12% always use; N=1 or 4% usually use; N=2 or 8% sometimes use). More than half of the respondents stated that they use Skype (N=3 or 12.5% always use; N=4 or 16.7% usually use; N=6 or 25% sometimes use). More than half of the respondents stated that they don't use Instagram (N=14 or 60.9% never use). Finally, majority of the respondents stated that they don't use LinkedIn (N=5 or 21.7% rarely use and N=15 or 65.2% never use).

4.2 Participants' Works

The participants involved in three types of podcast (audio, video and enhanced) development from design phase to publishing phase. As a CEIT 225 course requirement, they were assigned a subject, Google Drive, from IT course curriculum and they chose a part to present with podcasts. Within the scope of the study and the course, the participants created 50 audio podcasts, 50 video podcasts, and 50 enhanced podcasts. In other words, 150 podcasts were developed by the participants. Moreover, they subscribed to their peers' podcasts.

4.3 Participants' Familiarity with Podcasts

In order to learn participants' knowledge about podcasts, they were asked to indicate whether they were familiar with podcasts or not, and they were also asked to indicate their willingness to learn podcasting. The findings are presented in Table 4.4.

The findings showed that almost all of the participants (88%, N=22) listened a podcast before. On the other hand, more than half of the respondents (66.7%, N=16) stated that they didn't subscribe to a podcast before. A significant majority of the participants stated that they downloaded a podcast. However, when it comes to creating a podcast, a significant majority of the participants (64%, N=16) stated that they didn't create a podcast before. Regarding the knowledge of RSS (Really Simple Syndication or also Rich Site Summary), 60% (N=15) of the participants stated that they didn't know what RSS was. While 54.2% (N=13) of the respondents stated that they used a podcast for educational purposes, 45.8% (N=11) of the participants stated that they didn't use a podcast for educational purposes. Half of the participants 52% (N=13) indicated that their instructors used educational podcasts during the courses they took before. Regarding their willingness to learn podcasting, 80% (N=20) of the participants stated that they would like to learn podcasting. In terms of providing a definition, a significant majority of the participants 72% (N=18) were not able to provide the definition of a podcast.

Table 4.4 Participants' Familiarity with Podcasts

Statement	N	Yes (%)	No (%)
1. Have you ever listened to a podcast?	25	22 (88%)	3 (12%)
2. Have you ever subscribed to a podcast?	24	8 (33.3%)	16 (66.7%)
3. Have you ever downloaded a podcast?	25	17 (68%)	8 (32%)
4. Have you ever created a podcast?	25	9 (36%)	16 (64%)
5. Do you know what RSS is?	25	10 (40%)	15 (60%)
6. Have you ever used a podcast for educational purposes?	24	13 (54.2%)	11 (45.8%)
7. Has any of your instructors ever used educational podcasts during the courses you took?	25	13 (52%)	12 (48%)
8. I would like to learn podcasting	25	20 (80%)	5 (20%)
9. Is there a definition provided? (Open-ended)	25	7 (28%)	18 (72%)

4.4 Participants' Opinions on Educational Podcasting (R.Q.1)

In order to obtain the opinions of the participants, educational podcasting opinion questionnaire was applied after pre-service teachers engaged in three podcast activities.

4.4.1 Participants' Opinions on Podcasts

In Part I of the questionnaire, the participants were asked to state their opinions regarding podcasts. Table 4.5 presents the participants' opinions on podcasts. Looking at the results, 80% (N=20) of the participants agreed or strongly agreed with the statement that podcasts are simple to develop and 64% (N=16) of the participants agreed or strongly agreed with the statement that podcasts are simple to publish. More than half of the participants (52% or N=13) think that podcasts are more

89

flexible than alternative methods (ie websites, handouts) for student learning. Furthermore, 80% (N=20) of the participants think that podcasts are useful for creating teaching materials and they (76% or N=19) think that podcasts are effective teaching aids. Of the participants, 84% (N=21) think that podcasts can help improve students' learning and they (88% or N=22) think that podcasts can be used as supplements to make lessons more effective. In addition, 76% (N=19) think that podcasts can extend teaching outside of classrooms. Regarding the item facilitating the comprehension of the content, 79.1% (N=19) of the respondents think that podcasts facilitate the comprehension of the content. In addition to these, more than half of the respondents (66.7% or N=16) stated that pre-service teachers should create podcasts frequently to be prepared for teaching and similarly, more than half of the respondents (70.8% or N=17) stated that they will use podcasts in their future profession.

Table 4.5 Participants' Opinions on Podcasts

I think …	1	2	3	4	5	M	SD
Podcasts are simple to develop	-	2 (8%)	3 (12%)	15 (60%)	5 (20%)	3.92	0.81
Podcasts are simple to publish	-	2 (8%)	7 (28%)	11 (44%)	5 (20%)	3.76	0.88
Podcasts are more flexible than alternative materials (ie websites, handouts) for student learning	-	4 (16%)	8 (32%)	7 (28%)	6 (24%)	3.60	1.04
Podcasts are useful for creating teaching materials	-	2 (8%)	3 (12%)	13 (52%)	7 (28%)	4.00	0.87
Podcasts are effective teaching aids	-	3 (12%)	3 (12%)	14 (56%)	5 (20%)	3.84	0.90
Podcasts can help improve students' learning	-	3 (12%)	1 (4%)	13 (52%)	8 (32%)	4.04	0.93
Podcasts can be used as supplements to make lessons more effective	-	2 (8%)	1 (4%)	17 (68%)	5 (20%)	4.00	0.76

Table 4.5 Participants' Opinions on Podcasts (Continued)

Podcasts can extend teaching outside of classrooms	-	1 (4%)	5 (20%)	13 (52%)	6 (24%)	3.96	0.79
Podcasts facilitate the comprehension of the content	-	-	5 (20.8%)	14 (58.3%)	5 (20.8%)	4.00	0.66
Pre-service teachers should create podcasts frequently to be prepared for teaching	1 (4.2%)	1 (4.2%)	6 (25%)	13 (54.2%)	3 (12.5%)	3.67	0.92
I will use podcasts in my future profession	1 (4.2%)	1 (4.2%)	5 (20.8%)	14 (58.3%)	3 (12.5%)	3.71	0.91

* 1=Strongly Disagree. 2=Disagree. 3=Neutral. 4=Agree. 5=Strongly Agree.

4.4.2 Participants' Opinions on Podcast Process and Activities

In Part II of the questionnaire, the participants were asked to state their opinions regarding podcasting process/activities. Table 4.6 presents the participants' opinions on podcasting process/activities. More than half of the participants (66% or N=14) disagreed or strongly disagreed that podcasting is a boring process. Concerning the item podcasting requires too much time, the majority of the participants (64% or N=16) disagreed or stayed neutral with the statement that podcasting requires too much time; however, 56% (N=14) of the participants stated that podcasting requires too much effort. For the item requirement of technological resources (ie technological equipment), 80% (N=20) of the participants agreed or strongly agreed that podcasting requires available technological resources (ie technological equipment). Only 24% (N=6) of the participants indicated that podcasting requires advanced technological knowledge.

For the items about speaking, presentation, pronunciation and teaching skills, more than half of the participants agreed or strongly agreed that podcasting improves speaking (60% or N=15), presentation (64% or N=16), pronunciation (68% or N=17) and teaching skills (64% or N=16).

Most of the participants (76% or N=19) think that podcasting can be used as instructional strategy. Moreover, 64% (N=16) of the participants stated that

podcasting helps them get ready for their teaching profession. Correspondingly, more than half of the respondents (N=13 or 54.1%) stated that podcasting has potential to add value to pre-service teachers' teaching experience. Of the respondents, 83.3% (N=20) responded that podcasting contributes to their professional learning. For the item regarding the awareness of mobile potential of podcasting, 72% (N=18) of the participants stated that they are aware of mobile potential of podcasting. Furthermore, 84% (N=21) of the participants stated that it is easy for them to learn podcasting.

Table 4.6 Participants' Opinions on Podcasting Process/Activities

I think ...	1	2	3	4	5	M	SD
Podcasting is a boring process	3 (12%)	11 (44%)	6 (24%)	4 (16%)	1 (4%)	2.56	1.04
Podcasting requires too much time	-	9 (36%)	7 (28%)	7 (28%)	2 (8%)	3.08	1.00
Podcasting requires too much effort	1 (4%)	8 (32%)	2 (8%)	12 (48%)	2 (8%)	3.24	1.13
Podcasting requires available technological resources (ie technological equipment)	-	1 (4%)	4 (16%)	18 (72%)	2 (8%)	3.84	0.62
Podcasting requires advanced technological knowledge	2 (8%)	8 (32%)	9 (36%)	6 (24%)	-	2.76	0.93
Podcasting improves speaking skills	-	1 (4%)	9 (36%)	10 (40%)	5 (20%)	3.76	0.83
Podcasting improves presentation skills	-	1 (4%)	8 (32%)	11 (44%)	5 (20%)	3.80	0.82
Podcasting improves pronunciation skills	-	1 (4%)	7 (28%)	11 (44%)	6 (24%)	3.88	0.83
Podcasting improves teaching skills	-	1 (4%)	8 (32%)	12 (48%)	4 (16%)	3.76	0.78
Podcasting can be used as instructional strategy	1 (4%)	-	5 (20%)	15 (60%)	4 (16%)	3.84	0.85
Podcasting helps me get ready for my teaching profession	1 (4%)	1 (4%)	7 (28%)	15 (60%)	1 (4%)	3.56	0.82

Table 4.6 Participants' Opinions on Podcasting Process/Activities (Continued)

Podcasting has potential to add value to pre-service teachers' content presentation experience	-	1 (4.2%)	10 (41.7%)	11 (45.8%)	2 (8.3%)	3.58	0.72
Podcasting contributes to my professional learning	-	2 (8.3%)	2 (8.3%)	18 (75%)	2 (8.3%)	3.83	0.70
I am aware of the mobile potential of podcasting	-	4 (16%)	3 (12%)	16 (64%)	2 (8%)	3.64	0.86
It is easy for me to learn podcasting	-	2 (8%)	2 (8%)	16 (64%)	5 (20%)	3.96	0.79

* 1=Strongly Disagree. 2=Disagree. 3=Neutral. 4=Agree. 5=Strongly Agree.

4.5 State Anxiety Prior to Podcast Activities and Trait Anxiety (R.Q.2)

4.5.1 State Anxiety Prior to Audio Podcast Activity

In order to investigate the anxiety level and emotions that the participants experienced before creating audio podcasts, State Anxiety Scale was utilized. Of the participants, 24 of them responded to the survey.

The results yielded both positive and negative emotions. Before creating audio podcasts, More than half of the participants (54.2% or N=13) stated that they felt calm moderately so. However, more than quarter of the respondents (37.5% or N=9) expressed that they somewhat felt secure. Half of the participants (N=12) stated that they were somewhat tense. Moreover, a significant majority of the participants (70.8% or N=17) stated that they were regretful not at all. Half of the participants (N=12) expressed that they felt at ease moderately so and less than half of the participants (45.8% or N=11) indicated that they somewhat felt upset. Nearly half of the participants (45.8% or N=11) stated that they are presently worrying over possible misfortunes not at all and they felt rested moderately so. For the statement feeling anxious, more than quarter of the respondents (37.5% or N=9) felt somewhat anxious. Of the participants, 45.8% (N=11) stated that they felt comfortable

93

moderately so. For the statement regarding self-confidence, more than quarter of the respondents (37.5% or N=9) expressed that they somewhat felt self-confident. In addition, for the items about feeling nervous and being jittery, more than half of the respondents stated that they (54.2% or N=13) felt nervous and they (66.7% or N=16) were jittery not at all. More than half of the respondents (58.3% or N=14) expressed that they felt "high strung" not at all and they expressed that they (54.2% or N=13) were relaxed moderately so. For the statements feeling content and being worried, more than quarter of the respondents (37.5% or N=9) stated that they somewhat felt content and half of the respondents (N=12) indicated that they somewhat felt worried. A significant majority of the respondents (79.2% or N=19) expressed that they felt over-excited and rattled not at all. For the statements, feeling joyful and pleasant, over half of the respondents (54.2% or N=13) stated that they felt joyful very much so and more than quarter of the respondents (37.5% or N=9) expressed that they somewhat felt pleasant. These results are presented in detail in Table 4.7 below.

Table 4.7 Percentage, Mean and Standard Deviation Scores for State Anxiety Prior to Audio Podcasting

		Not at all	Somewhat	Moderately so	Very much so	M	SD
1.	I feel calm	4 (16.7%)	5 (20.8%)	13 (54.2%)	2 (8.3%)	2.54	0.88
2.	I feel secure	7 (29.2%)	9 (37.5%)	8 (33.3%)	-	2.04	0.81
3.	I am tense	8 (33.3%)	12 (50%)	3 (12.5%)	1 (4.2%)	1.87	0.80
4.	I am regretful	17 (70.8%)	5 (20.8%)	1 (4.2%)	1 (4.2%)	1.42	0.78
5.	I feel at ease	3 (12.5%)	4 (16.7%)	12 (50%)	5 (20.8%)	2.79	0.93
6.	I feel upset	6 (25%)	11 (45.8%)	5 (20.8%)	2 (8.3%)	2.13	0.90
7.	I am presently worrying over possible misfortunes	11 (45.8%)	8 (33.3%)	4 (16.7%)	1 (4.2%)	1.79	0.88
8.	I feel rested	1 (4.2%)	4 (16.7%)	11 (45.8%)	8 (33.3%)	3.08	0.83
9.	I feel anxious	7 (29.2%)	9 (37.5%)	6 (25%)	2 (8.3%)	2.13	0.95
10.	I feel comfortable	7 (29.2%)	2 (8.3%)	11 (45.8%)	4 (16.7%)	2.50	1.10

Table 4.7 Percentage, Mean and Standard Deviation Scores for State Anxiety Prior to Audio Podcasting (Continued)

11.	I feel self-confident	8 (33.3%)	9 (37.5%)	6 (25%)	1 (4.2%)	2.00	0.89
12.	I feel nervous	13 (54.2%)	7 (29.2%)	3 (12.5%)	1 (4.2%)	1.67	0.87
13.	I am jittery	16 (66.7%)	5 (20.8%)	3 (12.5%)	-	1.46	0.72
14.	I feel "high strung"	14 (58.3%)	6 (25%)	4 (16.7%)	-	1.58	0.78
15.	I am relaxed	1 (4.2%)	3 (12.5%)	13 (54.2%)	7 (29.2%)	3.08	0.78
16.	I feel content	2 (8.3%)	9 (37.5%)	8 (33.3%)	5 (20.8%)	2.67	0.92
17.	I am worried	8 (33.3%)	12 (50%)	2 (8.3%)	2 (8.3%)	1.92	0.88
18.	I feel over-excited and rattled	19 (79.2%)	3 (12.5%)	-	2 (8.3%)	1.38	0.88
19.	I feel joyful	1 (4.2%)	-	10 (41.7%)	13 (54.2%)	3.50	0.59
20.	I feel pleasant	1 (4.2%)	9 (37.5%)	6 (25%)	8 (33.3%)	2.88	0.95

* Negative items were reverse-coded

4.5.2 State Anxiety Prior to Video Podcast Activity

In order to investigate the anxiety level and emotions that the participants experienced before creating video podcasts, State Anxiety Scale was utilized. Of the participants, 23 of them responded to the survey.

The results yielded both positive and negative emotions. Before creating video podcasts, more than half of the participants (52.2% or N=12) stated that they felt calm moderately so. However, more than quarter of the respondents (43.5% or N=10) expressed that they somewhat felt secure. Nearly half the participants (47.8% or N=11) stated that they were somewhat tense. Moreover, 65.2% (N=17) stated that they were regretful not at all. Almost half of the participants (47.8% or N=11) expressed that they felt at ease moderately so and less than half of the participants (39.1% or N=9) indicated that they somewhat felt upset. More than half of the participants (60.9% or N=14) stated that they are presently worrying over possible misfortunes not at all and they (43.5% or N=10) felt rested very much so. For the statement feeling anxious, more than quarter of the respondents (43.5% or N=10) felt somewhat anxious. Of the participants, 34.8% (N=8) stated that they felt comfortable

moderately so. For the statement regarding self-confidence, more than quarter of the respondents (43.5% or N=10) expressed that they felt self-confident moderately so. In addition, for the items about feeling nervous and being jittery, more than half of the respondents stated that they (47.8% or N=11) felt nervous and they (52.2% or N=12) were jittery not at all. Of the respondents (43.5% or N=10) expressed that they felt "high strung" not at all and they expressed that they (43.5% or N=10) were relaxed moderately so. For the statements feeling content and being worried, 47.8% (N=11) of the respondents stated that they felt content very much so and less than half of the respondents (43.5% or N=10) indicated that they somewhat felt worried. The majority of the respondents (65.2% or N=15) expressed that they felt over-excited and rattled not at all. For the statements, feeling joyful and pleasant, over half of the respondents (52.2% or N=12) stated that they felt joyful very much so and more than quarter of the respondents (43.5% or N=10) expressed that they felt pleasant moderately so. These results are presented in detail in Table 4.8 below.

Table 4.8 Percentage, Mean and Standard Deviation Scores for State Anxiety Prior to Video Podcasting

		Not at all	Somewhat	Moderately so	Very much so	M	SD
1.	I feel calm	2 (8.7%)	5 (21.7%)	12 (52.2%)	4 (17.4%)	2.78	0.85
2.	I feel secure	5 (21.7%)	10 (43.5%)	5 (21.7%)	3 (13%)	2.26	0.96
3	I am tense	6 (26.1%)	11 (47.8%)	6 (26.1%)	-	2.00	0.74
4	I am regretful	15 (65.2%)	5 (21.7%)	3 (13%)	-	1.48	0.73
5.	I feel at ease	2 (8.7%)	4 (17.4%)	11 (47.8%)	6 (26.1%)	2.91	0.90
6	I feel upset	6 (26.1%)	9 (39.1%)	6 (26.1%)	2 (8.7%)	2.17	0.94
7	I am presently worrying over possible misfortunes	14 (60.9%)	5 (21.7%)	3 (13%)	1 (4.3%)	1.61	0.89
8.	I feel rested	2 (8.7%)	4 (17.4%)	7 (30.4%)	10 (43.5%)	3.09	1.00
9	I feel anxious	7 (30.4%)	10 (43.5%)	6 (26.1%)	-	1.96	0.77
10.	I feel comfortable	1 (4.3%)	8 (34.8%)	8 (34.8%)	6 (26.1%)	2.83	0.89
11.	I feel self-confident	7 (30.4%)	6 (26.1%)	10 (43.5%)	-	2.13	0.87

Table 4.8 Percentage, Mean and Standard Deviation Scores for State Anxiety Prior to Video Podcasting (Continued)

12	I feel nervous	11 (47.8%)	7 (30.4%)	5 (21.7%)	-	1.74	0.81
13	I am jittery	12 (52.2%)	8 (34.8%)	3 (13%)	-	1.61	0.72
14	I feel "high strung"	10 (43.5%)	9 (39.1%)	4 (17.4%)	-	1.74	0.75
15.	I am relaxed	1 (4.3%)	3 (13%)	10 (43.5%)	9 (39.1%)	3.17	0.83
16.	I feel content	-	8 (34.8%)	4 (17.4%)	11 (47.8%)	3.13	0.92
17	I am worried	10 (43.5%)	10 (43.5%)	3 (13%)	-	1.70	0.70
18	I feel over-excited and rattled	15 (65.2%)	8 (34.8%)	-	-	1.35	0.49
19.	I feel joyful	-	2 (8.7%)	9 (39.1%)	12 (52.2%)	3.43	0.66
20.	I feel pleasant	-	5 (21.7%)	10 (43.5%)	8 (34.8%)	3.13	0.76

* Negative items were reverse-coded

4.5.3 Trait Anxiety

In order to investigate the participants' trait anxiety, trait anxiety scale was used. Of the participants, 24 of them responded to the survey.

For the statement "I feel pleasant", almost all of the respondents stated that sometimes (66.7% or N=16) or often (25% or N=6) they feel pleasant. More than half of the respondents (62.5% or N=15) expressed that sometimes they tire quickly. Respondents (62.5% or N=15) indicated that they almost never feel like crying. For the statement "I wish I could be as happy as others seem to be", less than half of the respondents (37.5% or N=9) stated they sometimes wish they could be as happy as others seem to be. The respondents (62.5% or N=15) expressed that they are sometimes losing out on things because they can't make up their mind soon enough. Further, majority (66.7% or N=16) reported they often feel rested. Similarly, a significant majority (75% or N=18) reported that they are sometimes "calm, cool, and collected". Twelve and a half percent of respondents (N=3) stated that often and almost always they feel that difficulties are piling up so that they cannot overcome them. Of the respondents, 54.2% (N=13) indicated that they sometimes worry too much over something that really doesn't matter; similarly, 58.3% (N=14) indicated

that they are sometimes happy. Less than half of the respondents (45.8% or N=11) stated that they are sometimes inclined to take things hard. More than half of the respondents (58.3% or N=14) stated that they almost never lack self-confidence. In the same way, more than half of the respondents (54.2% or N=13) stated that they sometimes feel secure. For the statement "I try to avoid facing a crisis or difficulty", half of the respondents (N=12) indicated that they sometimes try to avoid facing a crisis or difficulty. Similarly, half of the respondents (N=12) indicated that they sometimes feel blue and they are content. More than half of the respondents (62.5% or N=15) expressed some unimportant thought sometimes runs through their mind and bothers them, and they (54.2% or N=13) stated that they sometimes take disappointments so keenly that they can't put them out of their mind. Less than half of the respondents (41.7% or N=10) expressed that they are steady people. For the statement "I become tense and upset when I think about my present concerns", 37.5% (N=9) stated that they sometimes or often become tense and upset when they think about their present concerns. These results are presented in detail in Table 4.9 below.

Table 4.9 Participants' Trait Anxiety Percentage, Mean and Standard Deviation Scores

		Almost never	Sometimes	Often	Almost always	M	SD
21.	I feel pleasant	2	16	6	-	2.17	0.57
		(8.3%)	(66.7%)	(25%)			
22.	I tire quickly	4	15	4	1	2.08	0.72
		(16.7%)	(62.5%)	(16.7%)	(4.2%)		
23.	I feel like crying	15	7	-	2	1.54	0.88
		(62.5%)	(19.2%)		(8.3%)		
24.	I wish I could be as happy as others seem to be	5	9	8	1	2.13	0.95
		(20.8%)	(37.5%)	(33.3%)	(4.2%)		
25.	I am losing out on things because I can't make up my mind soon enough	4	15	4	1	2.08	0.72
		(16.7%)	(62.5%)	(16.7%)	(4.2%)		
26.	I feel rested	2	4	16	2	2.75	0.74
		(8.3%)	(16.7%)	(66.7%)	(8.3%)		

Table 4.9 Participants' Trait Anxiety Percentage, Mean and Standard Deviation Scores
(Continued)

27.	I am "calm, cool, and collected"	2 (8.3%)	18 (75%)	3 (12.5%)	1 (4.2%)	2.13	0.61
28.	I feel that difficulties are piling up so that I cannot overcome them	8 (33.3%)	13 (54.2%)	2 (8.3%)	1 (4.2%)	1.83	0.76
29.	I worry too much over something that really doesn't matter	7 (29.2%)	13 (54.2%)	1 (4.2%)	3 (12.5%)	2.00	0.93
30.	I am happy	4 (16.7%)	14 (58.3%)	5 (20.8%)	1 (4.2%)	2.13	0.74
31.	I am inclined to take things hard	7 (29.2%)	11 (45.8%)	4 (16.7%)	2 (8.3%)	2.04	0.91
32.	I lack self-confidence	14 (58.3)	6 (15%)	4 (16.7%)	-	1.58	0.78
33.	I feel secure	3 (12.5%)	13 (54.2%)	8 (33.3%)	-	2.21	0.66
34.	I try to avoid facing a crisis or difficulty	7 (29.2%)	12 (50%)	5 (20.8%)	-	1.92	0.72
35.	I feel blue	7 (29.2%)	12 (50%)	3 (12.5%)	1 (4.2%)	1.83	0.87
36.	I am content	9 (37.5%)	12 (50%)	3 (12.5%)	-	1.75	0.68
37.	Some unimportant thought runs through my mind and bothers me	5 (20.8%)	15 (62.5%)	3 (12.5%)	1 (4.2%)	2.00	0.72
38.	I take disappointments so keenly that I can't put them out of my mind	8 (33.3%)	13 (54.2%)	2 (8.3%)	1 (4.2%)	1.83	0.76
39.	I am a steady person	9 (37.5%)	10 (41.7%)	5 (20.8%)	-	1.83	0.76
40.	I become tense and upset when I think about my present concerns	5 (20.8%)	9 (37.5%)	9 (37.5%)	1 (4.2%)	2.25	0.85

* Negative items were reverse-coded

Trait Anxiety, State Anxiety prior to audio podcast and State Anxiety prior to video podcast minimum scores, maximum scores, mean scores, and standard deviation values are presented in the Table 4.10 below.

Table 4.10 Minimum, Maximum and Mean Scores, and Standard Deviation Values for Trait Anxiety and State Anxiety

	N	Minimum	Maximum	M	SD
Trait Anxiety	24	35	57	45.17	6.20
State Anxiety (Audio Podcast)	24	31	48	40.25	4.36
State Anxiety (Video Podcast	23	32	46	38.48	3.34

According to the findings, the respondents experience anxiety in their normal lives. Furthermore, it is evident from the findings that they experienced anxiety prior to podcast development. The mean of trait anxiety levels of pre-service teachers were the highest when compared to both state anxiety prior to audio podcasting and video podcasting. The results showed that state anxiety with regard to audio podcasting was relatively higher than that of video podcasting and state anxiety level decreased prior to creating a video podcast.

In addition, the interview results revealed that pre-service teachers expressed that they experienced other emotions in addition to anxiety as well. The codes emerged in this theme as (1) Anxiety, (2) Worry, (3) Excitement, (4) Enjoyment.

Anxiety

Pre-service teachers (n=8) stated that they had anxiety prior to the development of podcasts. The reason behind experiencing anxiety was recording own voice and video, whether they had the confidence to develop podcasts, whether someone was listening to them while recording etc. They added that the number of podcasts they developed helped them decrease the anxiety they experienced. One pre-service teacher explained:

"One can inevitably feel anxious and nervous while recording his/her own audio and image. Will I be able to manage that? Will I have any trouble or will I stop while explaining the subject and so on. All in all, the environment where you record is supposed to be quiet and it is possible to have irrelevant noises. I experienced many other things similar to that; that is anxiety." [Interviewee 1]

"Tabi ister istemez insan ses ve görüntüsünü kaydederken hani biraz endişe, kaygı ya da heyecan duyabiliyor. Sonuçta acaba yapabilecek miyim? Hani bir aksaklık yaşar mıyım? Ya da bu bilgiyi anlatırken duraksıcak mıyım, bir şey olacak mı? Sonuçta hani kaydettiğiniz ortamın sessiz olması gerekiyor ve herhangi bir başka sesler de çıkabilir. Ve bunun gibi bir sürü şey yaşadım yani kaygı."

One pre-service teacher commented:

"Yes, I was anxious because I didn't know how to do it. I was worried about my voice. I wondered if I could succeed. I often hesitated if my appearance is ok or how is my voice heard and so on. But in time, everything became well at the end... Yes, I observed change in the anxiety level since I was too excited and anxious in my first attempt. However, that mood gradually disappeared and later I was ok. I managed to keep calm. Number of podcasts had an impact on that." [Interviewee 3]

"Evet [kaygı] duydum çünkü nasıl yapacağımı bilmiyordum. Sesim nasıl çıkacak diye düşünüyordum. Acaba yapabilecek miyim yapamayacak mıyım diye düşündüm. Yani görüntü nasıl olacak, sesim nasıl çıkacak, hiç çıkmayacak belki falan diye çoğu yerde takıldığım da oldu. Ama zamanla en sonuncusunda güzel olmuştu. ... Evet [değişim] gözlemledim yani çünkü ilk yaptığımda fazlasıyla heyecanlı ve kaygılıydım. Ama daha sonra bu yavaş yavaş oturdu yani içimde daha iyi oldu. Daha bir sakin biçimde yaklaştım. Podcastlerin sayısı bunda etkili oldu."

Another one stated:

"Frankly, it happened. In the beginning, I was very excited while recording audio on my own. It made me feel worried that someone will listen to the recording. I guess, then I got used to it anyway... Of course, in the beginning it was a little worrying knowing that someone will listen to what I record. I was afraid of making mistakes or speaking in a funny way. But, then I concluded that people wouldn't focus on such things since these podcasts are for educational purposes... I was naturally excited in the beginning and then I got used to. It was better towards the end." [Interviewee 7]

"Olmadı desem yalan olacak. Evet oldu. İlk başta çok heyecanlanmıştım kendi başıma ses kaydı yaparken. Hani bunu birinin bunu dinliyor olması beni biraz kaygılandırmıştı. Ama sonra alıştım yani herhalde bilmiyorum... Ya tabi endişe kaygı dediğim gibi birinin bu kaydettiğim şeyi dinliyor olması benim için ilk başta biraz böyle kaygı vericiydi. Ya ben yanlış yaparsam ya işte sesim çok komik gelirse falan diye ama sonra aslında hani o bu podcastlere ulaşma amacı hani eğitimse zaten birşeyleri öğrenmekse insanın odaklanacağı şeyler farklı olur diye düşünüyorum... Haliyle yani ilk başta heyecanlıydım kaygılıydım ama sonlara doğru artık bir alışkanlık falan olmuş gibi geldi. Daha iyiydi. Öyle güzeldi."

Another one explained:

"Yes, I felt anxious. Because I couldn't decide what to write at first. I couldn't decide what to speak. For example, audio podcast was supposed to be three minutes long and I was concerned about filling the time… Troubles didn't change. For some reasons, I created podcasts close to the deadline. It was not because of me. But I was more comfortable while preparing. I could plan at ease what to say, how to do things. I believe I was able to speak naturally in time. Because, my friends criticized me for speaking like a robot when I asked them to listen my initial records. Then, I was satisfied with the final recordings when I listened to them." [Interviewee 9]

"Evet [Kaygılandım]. Çünkü ilk başta ne yazacağımı bilemedim. Ne konuşcağımı bilemedim. Mesela dedim audio podcastte, en az üç dakikaydı sanırım, nasıl dolacak bu üç dakika diye düşündüm... Sorunlarda bir değişiklik olmadı yine o yüzden yine bi şey oldu [podcast oluşturmak] son zamana kalabildi falan. Benden, bana bağlı olmayan sebeplerden dolayı. Ama diğer açıdan yine hazırlarken mesela daha rahattım. İşte bunu buraya söylerim, bunu şöyle yaparım diye daha rahat düşünebildim. Daha sonra konuşmam daha doğallaştı diye düşünüyorum. Çünkü ilkinde arkadaşlarıma dinlettiğimde onlar da söylemişti "Robot gibi konuşmuşsun, hiç hoşumuza gitmedi." diye. Sonradan dinlediğimde benim de hoşuma gitmeye başladı en sondakiler."

Worry

Pre-service teachers (n=4) stated that they experienced worry before the development of podcasts. The reason behind experiencing worry was fear of making mistakes, recording and editing. One pre-service teacher explained:

"Of course, I knew nothing about making podcast in the first activity-audio podcast. Therefore, I made more mistakes due to my lack of knowledge. I was more anxious and more excited. I was more comfortable in the last activity- enhanced podcast since I knew how to do it. I felt more confident for preparing the podcast." [Interviewee 1]

"Tabi şimdi ilk etkinlikte audio podcastte daha hiç bilmiodum podcast hazırlamayı. Bu yüzden hani bilgi eksikliğinden dolayı hani daha çok yanlış yaptım. Daha endişeli daha heyecanlıydım. En sonki enhanced'e geldiğimde artık neyi nasıl yapacağımı bildiğim için daha rahattım. Hani kendimi daha hazır hissediyordum podcasti hazırlamaya."

Another pre-service teacher explained:

"Yes. I was worried because I used the program for the first time, as I stated. I didn't know the interface. How to record, how to edit? I was anxious in the beginning as I didn't know the answers of these questions. But I overcame it by practicing." [Interviewee 5]

"Evet. Endişeliydim çünkü dediğim gibi başında da programı ilk defa kullanıyorum. Tam yerlerini bilmiyorum. Nasıl kaydedeceğim? İşte nasıl düzenleme yapacağım üstünde. Bunları bilmediğim için ilk başta kaygılıydım. Ama deneyerek bu kaygıyı hallettim, üstesinden geldim."

Excitement

The analysis of the interviews showed that pre-service teachers (n=7) felt excitement while recording the podcasts. The reasons behind experiencing excitement were not having prior experience with podcasts, seeing himself/herself on the screen. One pre-service teacher explained:

"...Because it was the first time I have ever heard of podcast in the first activity. I learnt how to do it a couple of days ago. Err, also I was supposed to record my own voice. Firstly, I got excited but then the excitement disappeared after practicing. I was way more comfortable in the enhanced podcast activity compared to the first podcast activity." [Interviewee 2]

"...Çünkü ilk etkinlikte ilk defa hayatımda podcast duymuştum ve öğrenmiştim hani birgün önce iki gün önce öğrenmiştim podcasti nasıl yapacağımızı işte. Eee bir de sesimi kaydedecektim. Çok böyle bir heyecan yaşadım fakat yani yaptıktan sonra geçti. Video podcast zenginleştirilmiş podcastte gayet hani ilk podcaste göre çok daha rahattım."

The other one said:

"Of course I was anxious. You get excited because you wonder how your voice sounds. Therefore, you wonder how it makes you feel to be a teacher." [Interviewee 5]

"Tabiki [kaygılandım]. Yani biraz heyecanlanıyorsun çünkü ses tonunun nasıl çıktığını merak ediyorsun. Bu yüzden eee merak ediyorsun öğretmenlik nasıl bir şey."

Another one commented:

"Frankly, it happened. In the beginning, I was very excited while recording audio on my own. It made me worried that someone will listen to the recording. I guess, then I got used to it anyway...I was naturally excited and anxious in the beginning and then I got used to..." [Interviewee 7]

"Olmadı desem yalan olacak. Evet oldu. İlk başta çok heyecanlanmıştım kendi başıma ses kaydı yaparken. Hani bunu birinin bunu dinliyor olması beni biraz kaygılandırmıştı. Ama sonra alıştım yani herhalde bilmiyorum...Haliyle yani ilk başta heyecanlıydım kaygılıydım ama sonlara doğru artık bir alışkanlık falan olmuş gibi geldi..."

Another one said:

"As I stated, I was more excited in the podcast activity that I recorded my image. I can say the last podcast was similar to the audio podcast. I think we don't get much excited when we don't record our own image." [Interviewee 8]

"Dediğim gibi kendimi çektiğimiz podcastte biraz daha heyecan vardı. Son podcastte de audio podcast gibiydi diyebilirim. Kendi görüntümüz olmadığı zaman bence çok fazla heyecanlanmıyoruz diye düşünüyorum."

Enjoyment

Three pre-service teacher expressed that they began to enjoy the recording phase of the podcasts. It was explained:

"As a positive point, it turned to be entertaining. For example, when I heard my own voice after the first recording." [Interviewee 6]

"Olumlu olarak aslında eğlenceli gelmeye başladı. İlk yaptıktan sonra kendi sesimi duyunca falan tekrar."

"... Besides, I didn't have any negative experience. I enjoyed most of the time." [Interviewee 7]

"... Hani onun dışında olumsuz pek bir şey yaşamadım. Eğlendim çoğu zaman"

….after a certain point I liked podcasts. I got used to." [Interviewee 9]

"... bi yerden sonra hoşuma gitmeye başladı podcastler. Alıştım. Öyle..."

4.6 Self-Efficacy Beliefs Concerning Educational Usage and Integration of Podcasts (R.Q.3)

The participants' self-efficacy beliefs were assessed using two subscales: Web 2.0 integration self-efficacy and Web 2.0 educational usage self-efficacy. The pattern of change in self-efficacy was examined after participants received training and engaged in podcast activities. All of the items reflect the self-confidence to create, publish and use podcasts. All participants (N=25) responded to the survey. Percentages, mean scores, and standard deviation values were computed for responses to each item.

In the beginning of the study for integration self-efficacy, a significant majority of the participants (84% or N=21) indicated that they can use computers to create podcast, such as mp3 file. When asked about their confidence to use necessary programs to record, edit and convert audio file, almost half of the participants (48% or N=12) stated that they can use necessary programs such as Audacity, Camtasia to record, edit and convert audio file into mp3 file. Of the participants, 84% (N=21) expressed that they can upload and download podcast files online. However, when asked to indicate their confidence to use RSS, only 28% (N=7) agreed or strongly agreed that they can use RSS feed to subscribe podcast files. In response to downloading and uploading video clips/segments online, the majority of the participants (80% or N=20) stated that they can download and upload video clips/segments online. Table 4.11 shows these findings.

Table 4.11 Descriptive Findings for Integration Self-Efficacy in the Beginning of the Study

Items	1	2	3	4	5	M	SD
1.I can use computers to create podcast, such as mp3 file	1 (4%)	-	3 (12%)	14 (56%)	7 (28%)	4.04	0.89
2.I can use necessary programs such as Audacity, Camtasia to record, edit and convert audio file into mp3 file	2 (8%)	5 (20%)	6 (24%)	5 (20%)	7 (28%)	3.40	1.32
3.I can upload and download podcast files online	-	2 (8%)	2 (8%)	11 (44%)	10 (40%)	4.16	0.90
4.I can use RSS feed to subscribe podcast files	4 (16%)	5 (20%)	9 (36%)	3 (12%)	4 (16%)	2.92	1.23
5.I can download and upload video clips/segments online	2 (8%)	-	3 (12%)	12 (48%)	8 (32%)	3.96	1.10
Overall						3.69	

* 1=Strongly Disagree. 2=Disagree. 3=Neutral. 4=Agree. 5=Strongly Agree

In the beginning of the study for educational usage self-efficacy, for the statement concerning the preparation of audio presentations via podcasts, over half of the participants (60% or N=15) agreed or strongly agreed that they can prepare audio presentations via podcasts. Regarding the statement publishing audio diaries on podcasts, almost half of the participants (44% or N=11) agreed or strongly agreed that they can publish audio diaries on podcasts. Participants were asked about whether they can transfer audio data to portable devices, 56% (N=14) of them agreed or strongly agreed that they can transfer audio data which was downloaded via podcast to portable devices. Participants were asked to indicate whether they can create podcasts for lessons; 64% (N=16) agreed or strongly agreed that they can create podcasts for lessons. Of the participants, 48% (N=12) of the participants stated that they can publish various contents (lesson, homework, panels, etc.) via podcasts. Table 4.12 shows these findings.

Table 4.12 Descriptive Findings for Educational Usage Self-Efficacy in the Beginning of the Study

Items	1	2	3	4	5	M	SD
1.I can prepare audio presentations via podcasts	-	4 (16%)	6 (24%)	11 (44%)	4 (16%)	3.60	0.96
2.I can publish audio diaries on podcasts	-	7 (28%)	7 (28%)	7 (28%)	4 (16%)	3.32	1.07
3.I can transfer audio data which was downloaded via podcast to portable devices	-	4 (16%)	7 (28%)	11 (44%)	3 (12%)	3.52	0.92
4.I can create podcasts for lessons	-	5 (20%)	4 (16%)	14 (56%)	2 (8%)	3.52	0.92
5.I can publish various contents (lesson, homework, panels, etc.) via podcasts	-	7 (28%)	6 (24%)	10 (40%)	2 (8%)	3.28	0.98
Overall						3.44	

* 1=Strongly Disagree. 2=Disagree. 3=Neutral. 4=Agree. 5=Strongly Agree

At the end of the study for integration self-efficacy, all of the participants (N=25) agreed or strongly agreed that they can use computers to create podcast, such as mp3 file. When asked about their confidence to use necessary programs to record, edit and convert audio file, a significant majority of the participants (92% or N=23) stated that they can use necessary programs such as Audacity, Camtasia to record, edit and convert audio file into mp3 file. Of the participants, 96% (N=24) expressed that they can upload and download podcast files online. When asked to indicate their confidence to use RSS, 92% (N=23) agreed or strongly agreed that they can use RSS feed to subscribe podcast files. In response to downloading and uploading video clips/segments online, all participants (N=25) stated that they can download and upload video clips/segments online. Table 4.13 shows these findings.

Table 4.13 Descriptive Findings for Integration Self-Efficacy at the End of the Study

Items	1	2	3	4	5	M	SD
1.I can use computers to create podcast, such as mp3 file	-	-	-	12 (48%)	13 (52%)	4.52	0.51
2.I can use necessary programs such as Audacity, Camtasia to record, edit and convert audio file into mp3 file	-	-	2 (8%)	9 (36%)	14 (56%)	4.48	0.65
3.I can upload and download podcast files online	-	-	1 (4%)	10 (40%)	14 (56%)	4.52	0.59
4.I can use RSS feed to subscribe podcast files	1 (4%)	-	1 (4%)	13 (52%)	10 (40%)	4.24	0.88
5.I can download and upload video clips/segments online	-	-	-	9 (36%)	16 (64%)	4.64	0.49
Overall						4.48	

* 1=Strongly Disagree. 2=Disagree. 3=Neutral. 4=Agree. 5=Strongly Agree

At the end of the study for educational usage self-efficacy, for the statement concerning the preparation of audio presentations via podcasts, majority of the participants (92% or N=23) agreed or strongly agreed that they can prepare audio presentations via podcasts. Regarding the statement publishing audio diaries on podcasts, a significant majority of the participants (96% or N=24) agreed or strongly agreed that they can publish audio diaries on podcasts. Participants were asked about whether they can transfer audio data to portable devices, 92% (N=23) of them agreed or strongly agreed that they can transfer audio data which was downloaded via podcast to portable devices. Participants were asked to indicate whether they can create podcasts for lessons; all of them (N=25) agreed or strongly agreed that they can create podcasts for lessons. Of the participants, 88% (N=22) of the participants stated that they can publish various contents (lesson, homework, panels, etc.) via podcasts. Table 4.14 shows these findings.

Table 4.14 Descriptive Findings for Educational Usage Self-Efficacy at the End of the Study

Items	1	2	3	4	5	M	SD
1.I can prepare audio presentations via podcasts	-	-	2 (8%)	13 (52%)	10 (40%)	4.32	0.63
2.I can publish audio diaries on podcasts	-	-	1 (4%)	16 (64%)	8 (32%)	4.28	0.54
3.I can transfer audio data which was downloaded via podcast to portable devices	-	-	2 (8%)	13 (52%)	10 (40%)	4.32	0.63
4.I can create podcasts for lessons	-	-	-	13 (52%)	12 (48%)	4.48	0.51
5.I can publish various contents (lesson, homework, panels, etc.) via podcasts	-	-	3 (12%)	11 (44%)	11 (44%)	4.32	0.69
Overall						4.34	

* 1=Strongly Disagree. 2=Disagree. 3=Neutral. 4=Agree. 5=Strongly Agree

A Wilcoxon sign-rank test was conducted to examine and compare the change in the podcast integration and educational usage self-efficacy in the beginning and at the end of the study. The test was run for each item respectively to examine the difference between mean scores.

Regarding participants' podcast integration self-efficacy beliefs, a Wilcoxon signed-rank test elicited a significant change in self-efficacy beliefs except the Item3 (p>0.05). The results showed that there is a significant difference between self-efficacy beliefs in the beginning and at the end of the study for the Item1, Item2, Item4, and Item5 (p<0.05). This means that the positive change occurred in self-efficacy beliefs and participants' podcast integration self-efficacy beliefs changed after the training they received and engaging in podcast activities. Mean scores, standard deviation values, Z statistic and p values are presented in the Table 4.15 below.

Table 4.15 Integration Self-Efficacy

Items	Pair	N	Mean	SD	Z	p
1.I can use computers to create podcast, such as mp3 file	Pre	25	4.04	0.89	-2.524	0.012
	Post	25	4.52	0.51		
2.I can use necessary programs such as Audacity, Camtasia to record, edit and convert audio file into mp3 file	Pre	25	3.40	1.32	-3.177	0.001
	Post	25	4.48	0.65		
3.I can upload and download podcast files online	Pre	25	4.16	0.90	-1.897	0.058
	Post	25	4.52	0.59		
4.I can use RSS feed to subscribe podcast files	Pre	25	2.92	1.23	-3.609	0.000
	Post	25	4.24	0.88		
5.I can download and upload video clips/segments online	Pre	25	3.96	1.10	-2.968	0.003
	Post	25	4.64	0.49		

Regarding participants' educational usage self-efficacy beliefs, a Wilcoxon signed-rank test showed a significant change in self-efficacy beliefs. The results showed that there is a significant difference between self-efficacy beliefs in the beginning and at the end of the study for the Item1, Item2, Item3, Item4 and Item5 (p<0.05). This means that the positive change occurred in self-efficacy beliefs and participants' educational usage self-efficacy beliefs changed after the training they received and engaging in podcast activities. Mean scores, standard deviation values, Z statistic and p values are presented in the Table 4.16 below.

Table 4.16 Educational Usage Self-Efficacy

Items	Pair	N	Mean	SD	Z	p
1.I can prepare audio presentations via podcasts	Pre	25	3.60	0.96	-3.216	0.001
	Post	25	4.32	0.63		
2.I can publish audio diaries on podcasts	Pre	25	3.32	1.07	-3.325	0.001
	Post	25	4.28	0.54		
3.I can transfer audio data which was downloaded via podcast to portable devices	Pre	25	3.52	0.92	-2.960	0.003
	Post	25	4.32	0.63		
4.I can create podcasts for lessons	Pre	25	3.52	0.92	-3.688	0.000
	Post	25	4.48	0.51		
5.I can publish various contents (lesson, homework, panels, etc.) via podcasts	Pre	25	3.28	0.98	-4.068	0.000
	Post	25	4.32	0.69		

These results indicated that integration and educational usage self-efficacy increased after participants' received training and successfully engaged in podcast activities.

4.5 Assessment of Podcasts Regarding Positive/Negative Aspects, Challenges, Type and Duration (R.Q.4)

Positive Aspects

The analysis of the interviews revealed the participants' comments on positive aspects of podcasts. They are classified as podcast as a learning material and development of podcasts. Total 6 codes were found: (1) Mobility (2) Useful (3) Real life like context (4) Permanency (5) Individual differences, and (6) Easy to develop.

As a Learning Material
Mobility

The participants clearly mentioned the mobility feature of podcasts including time and place independency during the interviews. Pre-service teachers (n=8) emphasized the benefits of mobility for students. They thought that being one of the most important feature, they agreed that time and place independency allows

students to reach podcasts anytime and anywhere, and especially after their lessons. Their responses clearly indicated that podcasts are accessible through any device having Internet connection.

One of the pre-service teachers said:

"When you prepare a podcast related to a specific subject, any student can access it through the Internet from any place. Nowadays, it is not a big deal to find Internet connection. Internet cafes are everywhere. Young people have smart phones. Indeed, a student can access to podcasts and listen to their teacher as if he or she is listening to a real lecture. He or she can understand the lecture from beginning to end again. Podcasts can be considered as a private lesson. A student can reach them as if he or she is taking a private lesson and that is free of charge." [Interviewee 2]

"Bi podcast hazırladığınızda fakat o konuyla alakalı öğrenci istediği her an ulaşabilir buna internetten, internet bulduğu her yerden. Şu an zaten internet bulmak o kadar sıkıntı da değil. Internet kafe dolu her yer. Evet, her yerde internet kafe dolu yani. Gençlerde de yeteri kadar akıllı telefonlar var. Hani öğrenci istediği zaman girip oraya [podcastlere erişip] gerçek bir ders dinliyormuş gibi öğretmenini dinleyebilir. Dersi baştan sona tekrar anlayabilir. Öğrenci istediği her yerden bence özel ders gibi bir nevi düşünebiliriz podcastleri, özel ders alıyormuş gibi ulaşabilir ve hani bedava bu."

In the same way, another pre-service teacher stated:

"When students want to learn something other than the lecture hours, they can use podcasts. It may be more practical regarding this issue to listen to people explaining the subject for students after learning the subject in the lecture." [Interviewee 8]

"Yani öğrenciler ders dışında da bişeyleri öğrenmek istediği zaman podcastlere başvurabilir. Özellikle de öğrenciler [için] yani hani derste öğrendikten sonra bu işi anlatan kişiler[i dinlemek] daha böyle pratik olabiliyor bu konularda."

Useful

Some of the pre-service teachers (n=3) thought podcasts are useful for some learner groups such as visually impaired learners. They added that podcasts' types can offer various benefits. That is, they may be like a lesson environment.

By covering these statements, one of the participants stated:

"For instance, a student who has visual impairment can improve his/her learning after listening to a podcast more than one time. Or he or she can have no sight impairment but can have problem in his/her ear. In this way, he/she can learn better through seeing; that is, he/she had the lecture about a subject and then, when he/she goes home, he/she can watch again. He/she can learn better." [Interviewee 3]
"Yani mesela görme bozukluğu olan bir öğrenci için bunu dinledikçe dinledikçe konuyu daha iyi bir şekilde pekiştirir. Ya da ne bileyim görmesi iyi olabilir ama kulağında bir problem olabilir. Bu sefer de görerek daha iyi bir şekilde [öğrenebilir] hani derste gördü ama daha sonra eve gittiğinde tekrar izledi. Daha iyi bir şekilde öğrenebilir."

Likewise, another pre-service teacher stated:

"I think three types of podcasts are very beneficial for different aspects. I like video podcast most because video podcast explains any topic step by step via recording the screen of the computer. In addition, since you have recorded your voice and screen, it becomes more like a lecture environment. Therefore, I liked the video podcast most. On the other hand, there are also enriched podcasts which are called enhanced podcasts. In the enhanced podcast, there is a PowerPoint presentation. You can explain a subject step by step to a student like explaining a PowerPoint presentation in the lecture. That is useful as well. For instance, in audio podcast, you can record your voice regarding any subject, it may be a verbal subject for example, and you might be a history teacher. A student can listen to this even walking on the road if you can explain the subject verbally adding some sense of homour. In this way, the student can come to the lesson being ready for that subject. He/she can listen to this

after lecture. I think three types of podcasts are very beneficial but the most pleasant one is the video podcast." [Interviewee 2]

"Ya bence [podcastlerin] üçü de çok faydalı. Üçü farklı yönlere faydalı. Ben en çok video podcasti beğendim çünkü video podcast bir konuyu adım adım kendi bilgisayarınızda hani kendi bilgisayarınızın görüntüsünü kaydederek açıklıyor. Bir de sizin görüntünüz ve sesiniz olduğu için daha çok bir ders ortamı gibi oluyor. O yüzden ben video podcasti daha çok beğendim. Fakat mesela öteki taraftan ee zanginleştirilmiş podcastler var enhanced podcast dediğimiz. Onda da bir powerpoint sunumu var hani aynı dersteki powerpoint sunumunu anlatır gibi bir öğrenciye step step birşeyler anlatabilirsiniz. O da yararlı olur. Audio podcastde mesela ses kaydınızı bir konu hakkında [yapabilirsiniz] sözel bir konu olabilir mesela tarih dersi öğretmeni olabilirsiniz. Sözel bir şekilde hem de derste anlattığınız gibi esprili bir şekilde bi konuyu anlatırsanız öğrenci bunu yolda giderken bile dinleyebilir. Hem de derse hazırlıklı gelmiş olur. Dersten sonra da dinleyebilir. Hani bu bence üçü de çok yararlı ama en zevklisi video podcast."

Real Life Like Context

Small number of participants indicated that podcasts can be real life like context. Two of the participants expressed that podcasts can be like a lesson environment and students can have lessons in the form of podcasts. To support these issues, one of the participants stated:

"...video podcast explains any topic step by step via recording the screen of the computer. In addition, since you have recorded your voice and screen, it becomes more like a lecture environment." [Interviewee 2]

"...video podcast bir konuyu adım adım kendi bilgisayarınızda hani kendi bilgisayarınızın görüntüsünü kaydederek açıklıyor. Bir de sizin görüntünüz ve sesiniz olduğu için daha çok bir ders ortamı gibi oluyor."

Similarly, one of the participants stated:

114

"The use of podcasts can be an effective instuctional strategy because podcasts give students the opportunity to repeat the subject continuously. If a student cannot learn anything from the lecture; for example, he/she lost his/her focus, he/she can listen and repeat the lecture continuously so he/she won't have missed the subject. He/she will have a lecture within easy reach." [Interviewee 4]

"[Podcast kullanımı iyi bir öğretim stratejisi] Olabilir çünkü [podcastler] öğrenciye sürekli tekrar hakkı tanır. Yani bir öğrenci birşeyi öğrenemiyorsa hani dersi kaybetti. İşte dersi kaybetmemiş gibi olacak sürekli dinleyebilecek, tekrar edebilecek. Elinin altında bir ders olmuş olacak."

Permanency

The participants (n=2) stated that the information provided by the podcasts can be permanent in students' mind because of the visual aspects of podcasts.
This was explained by one of the pre-service teachers:

"I explain positive aspects of using podcasts in education. Indeed, when students watch, they can understand the subject efficiently. Because, they gain something from visual aspect. In addition to visual aspect, they can store in the memory by listening the voice. So, the learned subject may be more permanent in the memory." [Interviewee 5]

"Podcastlerin eğitimde kullanılmasının olumlu yönlerini açıklarım. Şöyle öğrenciler izledikleri zaman daha verimli bir şekilde algılayabilirler konuyu. Çünkü görsel açıdan birşeyler kazanıyorlar. Görsel açıya ek olarak bir de sesini dinleyerek hafızaya atabilirler. Bu şekilde hafızada daha kalıcı olabilir öğrendikleri konu."

Another one explained:

"…The first podcast which we only recorded audio lasted a little short. I thought that it would be longer since I took detailed notes but it took a short time. You say lots of

115

things within a short time. I think this can confuse the minds of people. Explaining a short process takes much longer time when it is explained visually but I think it is more permanent." [Interviewee 8]

"İlk podcast sadece konuştuğumuz podcast biraz daha kısa sürdü. Hani daha uzun olabileceğini düşünüyordum, baya bişeyler not almıştım ama çok kısa sürmüştü. Çok kısa zamanda bir sürü şey söylüyorsun. İnsanların aklı karışabilir diye düşünüyorum. Görerek anlatmada biraz daha uzun sürüyor belki küçük bir işlemi anlatmak ama daha kalıcı olduğunu düşünüyorum."

Individual Differences

The interviews showed that pre-service teachers think that podcasts can support disabled students with regard to learning. Four of the participants expressed that students having concentration problems, students whose level is not the same with others in the classrooom or unsuccessful students can benefit from podcasts.

"A student can check the podcasts before examination or after examination whether he/she did correct or not. He/she can get prepared before the lesson. For example, I am not that kind of person who sits and studies. I am a person requiring others to explain and help me because when I sit and study, it doesn't last longer than 30 minutes. For instance, if I listened to a podcast, I can continue listening it without getting bored and I can learn something while I am walking on the road or travelling on the bus. This also saves me time. Books sometimes include unnecessary information. I can skip those and I can learn the essence of the subject with the help of the podcast. I think podcast becomes beneficial in this way." [Interviewee 2]

"[Öğrenci] sınavdan önce sınavdan sonra hatta ben doğru mu yaptım diye bakabilir. Derse gelirken hazırlıklı olabilir mesela ben hiç oturup bişeyler okuyarak çalışan bir insan değilim. Hep birileri bana anlatsın bilen birinden yardım alayım diyen biriyim. Oturup çalışınca çünkü yarım saati geçmiyor benim çalışmam. Fakat bir podcast dinlesem mesela dinleyerek olduğu için daha rahat hani sıkılmadan şey yapabilirim mesela yolda yürürken bile yada otobüsteyken bile dinleyerek birşeyleri

öğrenebilirim. Bu da hem zamandan kazandırır bana zamandan tasarruf ederim hem de bazen şöyle oluyor kitaplarda gereksiz bilgiler de oluyor. Bunları atlayıp hemen konunun özünü öğrenebilirim bir podcast sayesinde. Bence bu şekilde gayet yararlı olur podcast."

"...Each person has a different level of learning so that they cannot learn at the same time within same duration. But, when students go their homes, to reinforce their learning, they will be able to listen, and see and listen. Therefore, I think it is a very effective method." [Interviewee 3]

"... Hani herkesin öğrenme seviyesi farklı olduğu için hani herkes aynı anda aynı sürede öğrenemeyecek ama bunu pekiştirmek için öğrenciler kendileri evlerine gittiğinde dinleyebilip hani görüp de dinleyebilecekler. Bu yüzden bence çok etkili bir yöntem."

"It will be very effective for especially students with disabilities and students having difficulty in understanding because teacher has a contradiction between the successful and unsuccessful student. For instance, teacher can give the podcasts to the unsuccessful students and make him/her repeat the subject." [Interviewee 4]

"Özellikle engelli öğrenciler için ve anlama zorluğu çeken öğrenciler için çok etkili olacaktır çünkü sınıflarda başarılı ve başarısız öğrenci arasında öğretmen sürekli gel git yaşıyor... Mesela başarısız öğrenciye podcastleri vererek evde de tekrar etmesini sağlayabilir."

"I often use podcasts delivered on the Internet for my homework. Indeed, instead of reading the text for a long time, I watch the podcast and understand what I should do in 5 minutes. Also, I see the shortcuts. By means of using podcasts, a student can learn how to do his/her homework or how to do an assigned project without losing time." [Interviewee 6]

"Ya bende kendi ödevlerim için çoğu zaman podcastleri kullanıyorum internet üzerinde yayınlanan podcastleri. Açıkçası açıp texti uzun uzun okuyup onu anlamakla uğraşmak yerine, hani podcasti izleyip beş dakika içinde ne yapmam

gerektiğini anlayabiliyorum. Hani kısayollarını da görüyorum. Hani aynı şekilde verilen bir ödevi nasıl yapacağını veya verilen bir projeyi nasıl yapacağını öğrenci podcastler sayesinde vakit kaybetmeden öğrenebilir."

Very small number of pre-service teachers (n=1) expressed their thoughts as podcasts are appealing, users have control over podcasts, and podcasts provide easy focus respectively.

"For example, you will give math lecture, you can give it not through audio podcast but by video podcast with a a game-like way. It may attract their attention much." [Interviewee 9]

"Yani mesela matematik anlatacaksanız, auido değil de video podcastle, bir program, oyun gibi bişeyle anlatabilirisiniz çocuklara. Çok ilgilerini çekebilir."

"Person can watch it and apply it whenever he/she wants. He/she can do lots of things, including pausing it." [Interviewee 4]

"Kişi hem izleyebiliyor, izlediği zaman uygulayabiliyor. Hani durdurabiliyor vesaire bir sürü şey yapabiliyor."

"To me, the second video podcast is more effective because you both took the screen display and your display appear on the screen as well. This attracts students' attention more. They can focus on the subject quickly. Therefore, I think it is more effective." [Interviewee 5]

"... ikinci olan video podcast bana göre daha etkili çünkü hem ekranın görüntüsünü alıyorsun hem de senin kendi görüntün ekranda yer alıyor. Bu öğrencilerin dikkatini daha çok çeker. Konuya daha çabuk odaklanabilirler. Bu yüzden daha etkili olduğunu düşünüyorum."

Development
Easy to Develop

Regarding the development of podcasts, the results of the analysis showed that developing podcasts was found to be easy by the pre-service teachers. According to the majority of the interviewed pre-service teachers (n=7), developing podcasts were easy.

"Among the materials I prepared, the easiest one was podcast. For instance, we prepared a Photoshop material and it took many weeks to finish. In other words, designing was hard. It is difficult to decide what to put in it. We prepared Flash material. It took more time. But, the easiest one and taking short time was podcast." [Interviewee 2]

"Yani benim hazırladığım materyaller içinde en kolayı podcastti. Bir photoshop materyal hazırladık mesela. O bayağı bi haftamızı aldı. Yani dizayn etmek zor. Oluşturmak içine koyacağımız şeylere karar vermek zor. Flash materyal hazırladık. O zaten çok daha uzun sürdü. Fakat en kolayı bence en kısa zaman alanı podcastti."

"I think it is easy to create and publish podcasts. If we learn the use of programs and tools those are necessary for preparing podcasts, the rest of it is easy." [Interviewee 6]

"[Oluşturmak ve yayınlamak] bence kolay. Yani bunları podcastleri yapacağımız programları ve araçları kullanmayı öğrenirsek, gerisinde zaten bir şey yok kolay yani."

"Generating podcasts? You see, preparations etc. may be hard; place issue or voice issue etc... But after preparation and as long as it is short, I think that it is easy." [Interviewee 9]

"Podcast oluşturmak? Ya işte, hazırlıklar falan biraz zor olabiliyor. İşte yer meselesi, ses meselesi gibi... Ama hazırlayıp, kısa olduğu sürece kolay diye düşünüyorum."

Negative Aspects

The analysis of the interviews revealed that the participants' opinions on podcasts in terms of negative aspects. They are classified as podcast as a learning material and development of podcasts. Total 7 codes were found: (1) Drop out (2) Negative effect on student (3) Loss of attention (4) Economical reasons for access (5) Boredom, (6) Difficult, and (7) Time consuming.

As a Learning Material
Drop Out

Only two pre-service teacher expressed that due to time and quality reasons, podcasts may result in drop out on the students' side.
A pre-service teacher pointed out:

"I think five and seven minutes are convenient. Longer durations than these may cause that students get bored and do not finish the entire subject. Therefore, student may not learn the subject entirely. Instructor can tell all the subjects within five and seven minutes. Learner can listen these podcasts without getting bored. I think duration shorter than five minutes is short in terms of content."

"Beş ve yedi [dakika] bence uygundur. Bunun daha üstündekiler hani öğrencinin sıkılmasına, konuyu tam bitirememesine yol açabilir. Bu yüzden konuyu tam anlamıyla öğrenmez. Beş ve yedi [dakikada] gayet hani bütün konuları anlatabilir, öğreten kişi. Öğrenen kişi de bu bilgiyi alan kişi de bu süre zarfında sıkılmadan dinleyebilir. Beşten aşağısı da bence içerik bakımından kısa bir süredir."

Another one stated:

"...Voice and display should have good quality. Because, students may get bored from corrupted quality or they may give up listening when he/she doesn't hear the voice. Therefore, the quality of sound, display and used material are very important in podcasts." [Interviewee 1]

"... Ondan sonra ses ve görüntü kaliteli olmalıdır. Çünkü hani öğrenciler görüntüsü bozuk olan şeylerden sıkılabilir. Veya sesi tam duymadığı şeyi [dinlemeyi] bırakıp çıkabilir. Bu yüzden ses, görüntü ve kullanılan materyalin kalitesi podcastlerde çok önemlidir."

Negative Effects on Student

Pre-service teachers (n=2) expressed possible negative effects for students. It was mentioned when students are provided with podcasts to support their learning, the importance of the course may diminish due to the availability of podcasts. In addition, when podcasts are not used in the appropriate way, they may have negative effect on students.

It is explained by one pre-service teacher:

"I think there is not many negative aspects. But, once upon a time, instructors were said to publish lecture-videos on Youtube and anyone could watch lectures from there. Okay, the difference between successful and unsuccessful students will be eliminated. In this situation, students will not listen to the lecture at the lesson hour with regard to idea that they can listen at the home. But this time, I think this will diminish the importance of the lesson." [Interviewee 4]

"Bence çok olumsuz bir yönü yok fakat işte şey çıkmıştı bir zamanlar. Üniversite öğretmenleri dersleri Youtube'da yayınlayacak işte herkes ordan dinleyecek falan. Bu tamam işte hani başarılı öğrenciyle başarısız öğrenci arasında bir fark kalmayacak. Yani öğrenci derste dinlemeyecek. Nasıl olsa evde dinlerim diye. Bu sefer dersin önemi azalacak diye düşünüyorum."

The other one explains:

"I don't think there will be any difficulty but there may be some limitations. For example, if audio podcasts are generated for an applied lesson, I don't think they will be beneficial for students. Students cannot keep the subject in the mind. It will be

like listening to music, I do not think it will be very beneficial for me." [Interviewee 7]

"Zorluk olacağını düşünmüyorum da sınırlılık şey olabilir yani mesela kalkıp da uygulamalı bir derste sadece audio podcast oluşturulduğunda pek bir yararlı olduğunu düşünmüyorum öğrenci için. Hani uçup gider o. Müzik dinliyor gibi olacak yani benim için pek bir faydalı olacağını düşünmüyorum."

Loss of Attention

Three of the pre-service teachers expressed that podcasts may cause students to lose their attention if the duration of podcasts are too long and the podcasts have background music.

One pre-service teacher stated:

"... A student can listen a podcast longer than 7 minutes, but it should not be too long though. Because, student may have loss of attention again..."

"... Yani bir öğrenci 7 dakikadan daha uzun bir podcasti dinleyebilir ama yine çok uzun olmaması lazım. Çünkü yine dikkat dağınıklığı yaşayabilir öğrenci ..."

One explained:

"I think, music may be distractive so that adjusting sound level of the music is important. In fact, the music can be put into where we are quiet and show steps. However, it should be adjusted well since we shouldn't put any music that can be distractive for students." [Interviewee 2]

"Müzik biraz dikkat dağıtıcı olabilir hani müziğin ses düzeyini ayarlamak önemlidir. Aslında boşluk böyle sustuğumuz yerlere sadece adım gösterdiğimiz yerlere müzik konulabilir ama yine onu da iyi ayarlamak lazım çünkü öğrencinin dikkatini dağıtabilecek bir müzik koymamalıyız bence."

Another one explained:

"I think five-minute duration is ideal. Because student may get bored from the subject after duration exceeds five minutes so that this distracts student's attention. Durations shorter than five minutes may not provide the entire content. This may cause problems." [Interviewee 5]

"Süre beş dakika ideal olduğunu düşünüyorum. Çünkü beş dakikanın üzerine çıktıkça öğrenci konudan sıkılabilir, bu yüzden dikkati dağılabilir. Beş dakikanın altında olduğu zaman da tam yani içeriğini veremeyebilir. Bu yüzden sıkıntı olabilir."

Economical Reasons for Access

Two pre-service teachers stated that the use of podcasts requires some technological equipment and the students who don't have these can have problems accessing to the podcasts.
One pre-service teacher commented:

"There may be problem related to financial situation. Because, if one does not have Internet connection or computer, this may be a problem. On the other hand, I think there won't exist another problem." [Interviewee 3]

"Yani maddi yönden belki bir olumsuzluk olabilir. Çünkü internet ulaşımı olmayan birisi için ya da bilgisayarı olmayan birisi için bu sorun olabilir. Diğer türlü bence başka sorun olmaz."

The other one commented:

"Computer and Internet connection are necessary for podcasts since podcast is an educational material requiring some technology. The students who are in a bad financial situation may not access to these opportunities. I do not think, there will be any negative thing apart from that. I absolutely believe the necessity of using podcasts in education." [Interviewee 6]

"Olumsuz yönü yani şimdi podcasti teknolojik bir eğitim materyali olduğu için hani bunun için bilgisayar ve internet gereklidir en azından. Belki maddi durumu iyi olmayan öğrenciler ya da bu hani şeylere imkanı olmayan öğrenciler erişemeyebilir . Onun haricinde olumsuz hiçbişey olduğunu düşünmüyorum. Kesinlikle eğitimde kullanılması gerektiğine inanıyorum."

Boredom
For Pre-service Teacher

Half of the pre-service teachers (n=5) who joined the interview pointed out that podcasts may cause boredom on the developers' side because of the duration of the podcasts.

One of the pre-service teachers explained:

"If I had prepared a podcast longer than 7 minutes, I might have been bored because while recording, you get excited and it makes you think that when it will end. Some mistakes are inevitable in longer podcasts and therefore, I might be bored." [Interviewee 1]

"[Yedi dakikadan fazla podcast hazırlasaydım] sıkılabilirdim çünkü hem heyecan oluyor kaydederken hani artık ne zaman bitcek düşüncesi oluşuyor. Uzadıktan sonra bazı yanlışlar yapma daha kaçınılmaz olduğu için sıkılabilirdim."

Another one explained:

"I think, the duration of the podcast should not exceed 5 minutes. The person gets bored and the students will get bored more..." [Interviewee 3]

"[Podcast süresi] bence 5 dakikayı geçmemeli. Çünkü yani insan sıkılıyor hani öğrenciler daha çok sıkılacaklar..."

In the same way, another one explained:

"I think it should not exceed five minutes because while I am preparing, I even get bored after five minutes. I think student will also get bored while listening." [Interviewee 4]

"Beş dakikayı geçmemesi gerektiğini düşünüyorum çünkü beş dakikayı geçtikten sonra ben bile hazırlarken sıkılıyorum. Öğrencinin de bunu dinlerken sıkılacağını düşünüyorum."

For Student

In addition to boredom on the developers' side, more than half of the pre-service teachers (n=6) who joined the interview pointed out that podcasts may cause boredom on the student side because of duration of podcasts.

One of the pre-service teachers stated:

"I think five and seven minutes are convenient. Longer durations than these may cause that students get bored and do not finish the entire subject..." [Interviewee 1]

"Beş ve yedi [dakika] bence uygundur. Bunun daha üstündekiler hani öğrencinin sıkılmasına, konuyu tam bitirememesine yol açabilir..."

Another one stated:

"...Voice and display should have good quality. Because, students may get bored from corrupted quality"

"... Ondan sonra ses ve görüntü kaliteli olmalıdır. Çünkü hani öğrenciler görüntüsü bozuk olan şeylerden sıkılabilir."

In the same way, one said:

"Audio may be boring because there is no screen display." [Interviewee 6]

"Audio belki sıkıcı olabilir çünkü ekran görüntüsü yok."

125

Another one said:

"...If the podcasts I watch are very long, after 10 minutes, even if it is full of good content, a person can get bored." [Interviewee 9]
"...Benim izlediğim şeylerde [podcastler] çok uzun bir şeyse zaten, 10 dakikadan sonra devamlı içi ne kadar dolu olursa olsun insan sıkılabiliyor."

Development
Difficult

With regard to development of the podcasts, according to some of the pre-service teachers (n=3), the development process of podcasts was found to be difficult. They added that after creating podcasts, sharing and subscribing to other person is really demanding.
One of the pre-service teacher said:

"I don't think it is easy but I think it could be easier. As if there exists one Web site or environment that anyone can use, it would be easier. Indeed, sharing after recording and subscribing to other recordings are really demanding." [Interviewee 8]
"Kolay olduğunu düşünmüyorum daha kolay olabilir diye düşünüyorum. Belki tek bir site olsa herkesin kullanabileceği ya da bir ortam olsa keşke daha kolay olur diye düşünüyorum. Özellikle hani çektikten sonra paylaşmak ve birine abone olmak gerçekten zahmetli iş."

One of the pre-service teachers stated:

"Publishing was complex in the beginning. In fact, I could not do at my first trial and I got help from my friend. But later then, publishing was not complex. That is achievable you know." [Interviewee 6]

"Yayınlamak başta karmaşık gelmişti. Hatta ilk denememde yapamamıştım arkadaşımdan yardım almıştım ama daha hani sonra yayınlamak da çok kompleks bir şey değil. Ulaşılabilir [yapılabilir] yani."

In addition, another pre-service teacher explained:

"I think it is not easy to create and publish podcasts. Because, it is necessary to spend time. It is necessary to be proper. It is necessary to have fluent speech and it is necessary to adjust your voice tone accordingly. Therefore, it requires much time." [Interviewee 3]

"[Podcast oluşturmak ve yayınlamak] bence [kolay] değil. Çünkü zaman harcamak gerekiyor. Düzgün olması gerekiyor. Konuşmanın akıcı olması gerekiyor. Ses tonunuzun iyi ayarlanmış olması gerekiyor. O yüzden baya bir zaman gerekiyor."

Time consuming

With regard to development of the podcasts, according to some of the pre-service teachers (n=5), the development process of podcasts was found to require much time. They added that they made some mistakes and this also caused them to spend much time.

One pre-service teacher explained:

"I spent an hour because my voice was not good in some parts. Therefore, I recorded again. There was a flaw in the display, and I recorded again. For these reasons, I spent an hour." [Interviewee 3]

"Ben bir saatimi harcamıştım. Yani çünkü ses tonum bazı yerlerde iyi çıkmadı. Onun için bir daha çekmem gerekti. Görüntüde bozukluk oldu o yüzden tekrar çektim. Yani bu yüzden bir saatim gitmişti."

Another one stated:

"Let me explain like this: it is very hard to record yourself. When I made a mistake, I was going back to beginning. It took me about 3 hours, it took a lot." [Interviewee 7]

"Şöyle söyleyim hani çok zor hani kendinizi kaydediyor olmak. Bir yanlışta aa yanlış yaptım deyip en başına dönüyordum ben. Hani bu benim yaklaşık üç saatimi falan aldı yani baya bir aldı."

Similarly, another one explained:

"I recorded the audio podcast approximately 2 or 3 times but I didn't spend much time, they last 3 minutes anyway. But when I edited in Camtasia later, I spend 15-20 minutes. I might have spent more. In the podcasts we made in Powerpoint, I spent too much time in the edited version because there was a possibility of rewind, rerecord on each slide. Apart from that, in the slide transitions, there were audio problems etc. Therefore, it took a little longer time." [Interviewee 8]

"Eee audio da yaklaşık 2-3 kere çektim en fazla onda fazla zaman harcamadım üçer dakikalık zaten. Ama camtasiada sonradan düzenlediğimde bir on beş yirmi dakika harcadım. Daha fazla da harcamış olabilirim. Sonuncusunda da powerpointte yaptığımız podcastimizin düzenlenmiş halinde de çok daha fazla zaman harcadım çünkü onda her slaytta tekrar geri alma, işte tekrar kaydedilme olanağı vardı onun dışında arada geçerken ses sıkıntıları vesaire vesaire sıkıntılardan biraz daha uzun sürdü o."

Challenges

Based on the analysis of the interviews, challenges could be described under 6 codes: (1) Not having sufficient time, (2) Recording place, (3) Technical issues, (4) Lack of Confidence, (5) Lack of Podcast Experience, and (6) Lack of Technical Knowledge

Not Having Sufficient Time

Two pre-service teachers mentioned that time may be a challenge to develop podcasts. If the podcast developer doesn't have sufficient time to present the content, he or she can read the content, and develop podcasts. Moreover, busy schedule of podcast developers can cause a time problem to develop podcasts.

One pre-service teacher said:

"I think it should be read from paper because you should be well-prepared to read (explain) naturally. I mean if you don't have sufficient time I think it is more appropriate to write it down on paper, minimize the mistakes and give correct information." [Interviewee 1]

"Ya bence bir kağıttan okunmalı çünkü doğal olarak okumak (anlatmak) için bir kere iyi hazırlanmış olman gerek. Yani bu kadar zamanınız yoksa bir kağıda yazıp yanlışı en aza indirip doğru bilgiyi vermek açısından daha uygundur diye düşünüyorum."

Another one explained:

"I was worried since I had other courses and did not have time to prepare it so it was a problem." [Interviewee 9]

"Kaygılandım, işte yetişmicek, derslerim de var, ne ara yapcam bunu falan, o yüzden sorun oldu."

Recording Place

The recording place of the podcasts has been considered to be a challenge by the pre-service teachers (n=8). It was explained that to record podcasts, the place should be silent and finding a silent place for some pre-service teachers staying in the dormitories may be troublesome. Moreover, it was added that while recording, someone may come into the recording place and some noise from outside can disturb the recording.

It was explained by one pre-service teacher:

"I think the negative point is that I stay in the dormitory and it is really difficult to prepare a podcast for someone staying in a dormitory because it is a problem to find a silent place. We live with eight people in a room. Any noise might come from outside or hallway at any moment. Someone might come into room suddenly, it is really annoying. This was the most troublesome point I experienced." [Interviewee 2]

"Olumsuz olarak da bence ben yurtta kalıyorum, yurtta kalan biri için podcast hazırlamak gerçekten çok zor. Çünkü sessiz bir ortam bulmak sıkıntılı. Sekiz kişi kalıyoruz hani bir odada. Her an dışarıdan koridordan bi ses gelebiliyor. Biri küt diye odaya girebiliyor, gerçekten sıkıntılı bir durum. En çok olumsuzluk yaşadığım kısım bu oldu."

Another one explained:

"As a negative point, the location was a problem for me during this preparation lasting four weeks because it is difficult to prepare a silent place to record since we are dormitory students. Our friends were going in and out naturally..." [Interviewee 6]

"Bu dört hafta süren hazırlık süresince benim için yer problem oldu olumsuz olarak. Çünkü kayıt edebileceğiz sessiz ortam yaratmak zordu yurt öğrencisi olduğumuz için. Arkadaşlarımız hani onlar da doğal olarak odaya girip çıkıyorlardı ..."

In the same way, another one said:

"As you know, we live in dormitory. Making audio record, video record was somewhat problematic in the dormitory because we live in a room for four people. So it was a bit troublesome for us to wait for the times that the room is empty." [Interviewee 7]

"Biliyorsunuz yurtta yaşıyoruz. Yurtta ses kaydı video kaydı yapmamız biraz sorun oldu. Hani dört kişilik odada yaşıyoruz. Ve dolayısıyla insanların hani odanın boş olduğu saatleri gözlemek biraz bizim için sıkıntı oldu."

Technical Problems

Pre-service teachers (n=5) indicated that they encountered technical problems related to Google account, display on the computer, and audio on the computer.

One pre-service teacher said:

"For instance, while preparing video podcast and creating a Google account, we faced some problems. Google did not approve my name while creating account. It made me angry during video podcast record." [Interviewee 1]
"Mesela örnek olarak video podcast hazırlarken Google hesabı oluştururken bazı aksaklıklar yaşadık. Google benim account oluştururken ismimi falan kabul etmedi. Video podcast sırasında kayıt sırasında beni sinirlendirmişti."

Another one stated:

"There were computer-related problems. There was a flaw in the video so I recorded it again." [Interviewee 3]
"Bilgisayardan kaynaklanan bazı sakatlıklar oldu. Görüntüde bozukluk oldu o yüzden tekrar çektim."

Another one said:

"There was a problem in my computer. My computer was not already doing audio record, my voice was very low etc." [Interviewee 9]
"Bilgisayarımda sorun oldu. Bilgisayarımda ses kaydı yapılmıyordu zaten, çok az geliyordu sesim falan."

Lack of Confidence

One pre-service teacher expressed lack of confidence with regard to development of podcasts. It was explained:

"While recording audio and video of oneself, human might feel worry, anxiety or excitement whether intentionally or not. You worry if I could manage it? If I got into trouble? Or if I hesitate while conveying information, if something would happen? "

"Tabi ister istemez insan ses ve görüntüsünü kaydederken hani biraz endişe, kaygı ya da heyecan duyabiliyor. Sonuçta acaba yapabilecek miyim? Hani bir aksaklık yaşar mıyım? Ya da bu bilgiyi anlatırken duraksıcak mıyım, bir şey olacak mı?"

Lack of Podcast Experience

Some pre-service teachers (n=4) explained that their lack of podcast experience has been a challenge for them.

One pre-service teacher expressed:

"Of course, I didn't know anything about preparing podcast in the first activity of audio podcast. So, due to lack of information, I made lots of mistakes." [Interviewee 1]

"Tabi şimdi ilk etkinlikte audio podcastte daha hiç bilmiodum podcast hazırlamayı. Bu yüzden hani bilgi eksikliğinden dolayı hani daha çok yanlış yaptım."

Another one explained:

"Because I heard of podcast for the first time in my life in the first activity and one day or two days ago I learned how to make a podcast." [Interviewee 2]

"Çünkü ilk etkinlikte ilk defa hayatımda podcast duymuştum ve öğrenmiştim hani birgün önce iki gün önce öğrenmiştim podcasti nasıl yapacağımızı işte."

Lack of Technical Knowledge

Some pre-service teachers (n=3) explained that their lack of technical knowledge has been a challenge for them.One said:

"Because, as I said at the beginning, I used the program for the first time. I don't know exact places. How would I record? How would I make adjustments on it?" [Interviewee 5]

"Çünkü dediğim gbi başında da programı ilk defa kullanıyorum. Tam yerlerini bilmiyorum. Nasıl kaydedeceğim? İşte nasıl düzenleme yapacağım üstünde."

Another one explained:

"...Apart from that, I was afraid in the beginning when I saw the tools we were going to use. They seemed very complicated but when I started to use and realized they were easy, I did not have any negative experience otherwise." [Interviewee 6]

"...Onun haricinde ilk başta kullanacağımız araçları görünce korkmuştum. Çok karmaşık gelmişlerdi ama kullanmaya başlayınca kolay olduğunu da görünce herhangi bir onun dışında olumsuz bir şey yaşamadım."

Solutions

Based on the analysis of the interviews, solutions could be described under 5 codes: (1) Place solution, (2) Appropriate time, (3) Trial-error, (4) Technical solutions, and (5) Trial podcast.

Place Solution

Night Record: One pre-service teacher recorded his/her podcasts at night after everyone slept. It was explained:

"Yes, I stay in dormitory. Compulsorily, I had to study at nights. I waited for everyone to sleep." [Interviewee 3]

133

"Evet yurtta kalıyorum. Mecburen gece çalışmak zorunda kaldım. Herkesin uyumasını bekledim."

Request from Friends: One pre-service teacher requested from his/her friends not to enter the room and to warn others to be silent. It was explained:

"I warned my friends about this problem. I asked them not to enter the room since I would make an audio record or make a video record. Or I asked them to warn other comers not to speak." [Interviewee 2]

"Ee bu sorunu arkadaşlarımı uyardım. Şu an içeride bi ses kaydı yapıcam ya da işte bi görüntü kaydı yapıcam odaya girmeseniz olur mu falan diye. Hani ya da bi gelenleri uyarsanız ses çıkarmasanız diye."

Appropriate Time

Three pre-service teachers recorded his/her podcasts in the appropriate time when the room is available. It was explained:

"Generally, I tried to record when my friends are not in the room." [Interviewee 6]
"Ben bunu genelde odada arkadaşlarım olmadığı zaman kaydetmeye çalıştım."

Another pre-service teacher expressed:

"In break times of other courses or I waited for my friends to leave the room." [Interviewee 9]
"Başka derslerimin olduğu arada ya da oda arkadaşımın gitmesini bekledim odadan falan."

Trial-error

Pre-service teachers (n=3) indicated that they tried trial-error to create their podcasts. It was explained:

"By doing lots of trial and error. I said this part isn't done, then I changed that, and then I prepared the best, I mean I progressed step-by-step." [Interviewee 4]

"Birçok deneme yaparak. Şurası olmadı dedim. Sonra orayı değiştirdim. Sonra en iyisini hazırlayarak yani adım adım giderek."

Another pre-service teacher explained:

"Before that, before making final podcasts, I made some different trials. After that, I made the final podcasts." [Interviewee 6]

"Bundan önce gerçek asıl podcastleri yapmadan önce birkaç farklı deneme yaptım. Daha sonra gerçek podcastleri yaptım."

Technical Solutions

Borrowing Microphone: Two pre-service teachers borrowed microphones from their department to record their voices better. It was explained:

"Such as borrowing microphone from the department." [Interviewee 8]

"Buradan [bölümden] miktofon alma gibi."

Similarly, it was explained:

"I borrowed microphone from the department..." [Interviewee 9]

"İşte, bölümden mikrofon aldım falan..."

Finding Another Computer: One pre-service teachers borrowed a notebook from his/her friend to create podcast. It was explained:

"Such as finding a working computer and using in turn." [Interviewee 10]

"Çalışan bir bilgisayarı alıp sırayla onu kullanma gibi."

Trial Podcast

Three pre-service teachers expressed that creating a trial podcast helped them to develop better podcasts.

It was explained:

"We prepared trial podcast at first. It helped me a lot. I am a bit more comfortable in trial podcast. I mean even if I make mistake it is not a big deal. I found chance to fix these errors in my second final podcast. I think making trial podcast is useful for us in this respect." [Interviewee 2]

"İlk deneme podcasti hazırlamıştık. O çok yardımcı oldu bana. Deneme podcastinde biraz daha rahat oluyorum. Hani hata yapsam da sıkıntı olmuyor. Bu hataları ikinci gerçek podcastimde düzeltme imkanı buldum. Bence deneme podcasti yapmamız da bu açıdan yararlıydı bizim için."

In the same way, it was explained:

"Particularly we created two from each podcast. Since I observed my mistakes in the first one, I was more careful in the second one and I did not get excited." [Interviewee 6]

"Özellikle her podcastten iki tane yaptık. Birincisinde yanlışlarımı gözlemlediğim için ikincisinde daha dikkatli oldum ve heyacanlanmadım."

Similarly, it was explained:

"But it might be useful as well to record yourself once before the second one and record once more." [Interviewee 8]

"Ama şey de faydalı olabilir ikincide önceden bir kere kendin bir kaydedip sonradan bir daha kaydetmek yararlı oluyor."

Type Preference

When asked for the type preference with regard to their benefits in education, the results of the analysis showed that pre-service teacher prefer video and enhanced podcasts. However, responses of pre-service teachers clearly indicated their preference for the type of podcasts is mostly video podcasts. Based on the analysis of the interviews, type preference could be described under 2 codes: (1) Video podcast, and (2) Enhanced podcast.

Video Podcast

Pre-service teachers (n=8) clearly expressed that when evaluated with regard to benefits in education, they preferred video podcasts. They stated that video podcasts are kind of a lesson environment, can provide step-by-step demonstrations, and provide audio visual information. One of the pre-service teachers stated:

"I liked the video podcast most because video podcasts explains a subject step by step on your computer via recording your computer's screen. Since there is your image and your voice, it is more like a real lesson environment. Therefore, I liked the video podcast most." [Interviewee 2]
"Ben en çok video podcasti beğendim çünkü video podcast bir konuyu adım adım kendi bilgisayarınızda hani kendi bilgisayarınızın görüntüsünü kaydederek açıklıyor. Bir de sizin görüntünüz ve sesiniz olduğu için daha çok bir ders ortamı gibi oluyor. O yüzden ben video podcasti daha çok beğendim."

Similarly, another one stated:

"I definitely think that podcasts are useful in education. We created three types of podcasts, including audio, video and enhanced podcast. Audio may be boring since there is no visual elements; there is only audio. To me, it was like a radio show at first. But, among them, I think that video podcast is the most useful one and also

enhanced as well. Since in the video podcast if we are explaining the use of something technological, I think that video is useful. A student can see there what to do. Instead of only reading or listening to a text, we also show what we mean while explaining the tool, and therefore I think that it is very useful." [Interviewee 6]

"Podcastlerin kesinlikle yararlı olduğunu düşünüyorum eğitimde. Biz üç farklı podcast hazırladık. Audio, video ve ehanced olmak üzere. Audio belki sıkıcı olabilir çünkü ekran görüntüsü yok, sadece ses. Bana radyo programı gibi gelmişti ilk başta. Ama video podcast bunların içinde en yararlı olduğunu düşünüyorum. Enhanced de. Çünkü videoda özellikle teknolojik birşeyin kullanımını anlatıyorsak videonun en yararlı olduğunu düşünüyorum. Öğrenci orada hem ne yapacağını görebilir. Sadece texti okumaktan veya dinlemektense neyi kastediyoruz bir tool u anlatırken, bunu da gösterdiğimiz için yani çok yararlı olduğunu düşünüyorum."

One pre-service teacher explained:

"...Most of us own tablets and smart phones. It is more logical to study through both listening and watching. For this reason, I think that the second podcast we created using Camtasia is more useful. Especially, whether our image is on the screen or not, it is very useful to present a subject both through watching and explaining at the same time. In the last podcast type, I don't think that explaining the subject on presentation is not as useful as video podcast because it is more stable... It may be useful in verbal things, but in technical subjects I don't think that it is valid. Video podcast is better with regard to technical subjects....Explaining a short process takes much longer time when it is explained visually but I think it is more permanent." [Interviewee 8]

"...Artık çoğumuzda tabletler, akıllı telefonlar var. Hem dinleyerek, hem görerek çalışmak daha mantıklı. O bakımdan da ikinci podcastimizde camtasiayla yaptığımız video podcastin çok daha yararlı olduğunu düşünüyorum. Özellikle de hani görüntümüz olur olmaz ama ekran görüntüsünün aynı anda hem izleyerek hem anlatılarak yapılması çok yararlı. Son podcast çeşidimizde de sunum üstünden gidilmesinin camtasia kadar yararlı olduğunu düşünmüyorum. Çünkü o da biraz

daha durağan...Hani o da belki sözel şeylerde yararlı olabilir ama böyle daha çok teknik konularda en azından pek geçerli değil diye düşünüyorum. İkincisi teknik konularda daha iyi.... Görerek anlatmada biraz daha uzun sürüyor belki küçük bir işlemi anlatmak ama daha kalıcı olduğunu düşünüyorum."

Another one commented:

"I think video podcast is more effective because not only it gives opportunity to see but also to hear. A person can watch and apply it whenever he/she wants. He/she can stop it and can do many things. Therefore, I prefer video podcast." [Interviewee 4]

"Video podcasti bence de daha şey daha etkili çünkü hem kişiye görme imkanı sağlıyor hem de duymasına yardımcı oluyor. Kişi hem izleyebiliyor, izlediği zaman uygulayabiliyor. Hani durdurabiliyor vesaire bir sürü şey yapabiliyor. Onun için bence video podcast."

Enhanced Podcast

Pre-service teachers (n=2) clearly expressed that when evaluated with regard to benefits in education, they preferred enhanced podcasts. They stated that enhanced podcasts provide audio visual information. A pre-service teacher stated:

"The enhanced podcast that I created at the end is more effective because I can explain the subject not only visually but also verbally. Students will learn by seeing." [Interviewee 3]

"En son hazırladığım enhanced podcast daha etkili bence çünkü hem görsel açıdan da göstererek anlatıyorum herşeyi hem ses açısından her türlü daha iyi. Hani görerek öğrenmiş olacak öğrenci."

Duration Preference

Based on the analysis of the interviews, duration preference could be described under 3 codes: (1) Ideal time (2) Minimum Time, and (3) Maximum Time.

Ideal Time

Almost all of the pre-service teachers (n=9) stated different ideal duration preference for a podcast. Responses of pre-service teachers clearly indicated their preference for the ideal time duration for podcasts. Their preferences included both particular time and time span. The ideal time should be 5 minutes expressed by the pre-service teachers. Moreover, it was commented ideal time span for podcasts should be between 3 and 5 minutes, 7 and 10 minutes, and 5 and 15 minutes. One pre-service teacher commented:

"The longest podcast I created was 7 minutes if I remember correctly. It was 7-minute podcast or was closer to 8 minutes. To be honest, while preparing it, I got bored towards the end. But, when I listen to it later, I didn't feel it that long. A student can listen to a podcast which is longer than 7 minutes but still it shouldn't be long anyway. Because a student can have loss of attention again. Other than that, I created a 3-minute podcast. While listening, I felt it was short. During preparation, it feels like it is long; however, while listening, it ends immediately. Therefore, I think that podcasts which are between 7 and 10 minutes are convenient." [Interviewee 2]

"Benim podcastlerimin en uzunu 7 dk'ydı yanlış hatırlamıyorsam. 7dk'lık bir podcastti, 8'e yakındı. Onu hazırlarken ben sonlara doğru sıkıldım açıkçası hani hazırlarken ben sıkıldım fakat daha sonra dinleyince hani bana o kadar uzun gelmedi. Yani bir öğrenci 7 dk'dan daha uzun bir podcasti dinleyebilir ama yine çok uzun olmaması lazım. Çünkü yine dikkat dağınıklığı yaşayabilir öğrenci. Onun dışında 3dk'lik bir podcast hazırladım. O da mesela kısa geldi bana dinlerken. Hazırlarken uzunmuş gibi geliyor fakat dinlerken konu hemen bitiyor. O yüzden bence 7 dk ve 10 dk arası podcastler uygundur."

Another one commented:

"I think the ideal time is 5 minutes because when it exceeds five minutes, a student can get bored of the subject and therefore, he/she can lose attention. When it is shorter than 5 minutes, the subject cannot be explained completely. So it may be a problem." [Interviewee 5]

"Süre beş dakika ideal olduğunu düşünüyorum. Çünkü beş dakikanın üzerine çıktıkça öğrenci konudan sıkılabilir, bu yüzden dikkati dağılabilir. Beş dakikanın altında olduğu zaman da tam yani içeriğini veremeyebilir. Bu yüzden sıkıntı olabilir."

Similarly, another one said:

"I think that it may be between 5 and 10 minutes in Camtasia. I don't think that it will disturb students." [Interviewee 8]

"Beş dakika on dakika arası camtasiada olabilir diye düşünüyorum. Rahatsız edeceğini düşünmüyorum onların."

Minimum Time

When asked for the time preference, in addition to ideal time, pre-service teachers (n=3) stated minimum time duration for the podcasts. Responses of pre-service teachers clearly indicated their preference for the minimum time duration for podcasts. It was commented that minimum time for podcasts should be more than 3 minutes and not less than 5 minutes. One of the pre-service teacher stated:

"5 and 7 minutes are appropriate. The ones exceeding these can cause students to get bored and not to finish the subject. For that reason, a student may not learn the subject completely. With a podcast lasting 5 and 7 minutes, one can explain all the subjects. Moreover, learners can listen to the podcast without getting bored in this time duration. I think the one lasting less than 5 minutes is short with regard to content." [Interviewee 1]

"Beş ve yedi bence uygundur. Bunun daha üstündekiler hani öğrencinin sıkılmasına, konuyu tam bitirememesine yol açabilir. Bu yüzden konuyu tam anlamıyla öğrenmez. Beş ve yedi gayet hani bütün konuları anlatabilir, öğreten kişi. Öğrenen kişi de bu bilgiyi alan kişi de bu süre zarfında sıkılmadan dinleyebilir. Beşten aşağısı da bence içerik bakımından kısa bir süredir."

One of them said:

"I think the podcasts which are between 5 and 15 minutes can be useful. Five minutes can change according to the content, but if something is short, there is no need to extend it. Because, after a certain point, it may be boring. But if we are going to show through examples or if we will enrich more, I think that podcasts should be 15 minutes. More would be boring anyway." [Interviewee 6]

"Bence beş ile on beş dakikalık sunumlar [podcastler] yararlı olabilir. Beş dakika yani içeriğine göre değişir tabiki hani anlatacağımız şey kısa birşeyse onu uzatmaya gerek yok. Çünkü bir süreden sonra sıkıcı olabilir. Ama eğer işte örnekleme ile göstereceksek daha da zenginleştireceksek on beş dakika olmalı diye düşünüyorum. Daha fazlası zaten sıkıcı olur."

Maximum Time

When asked for the time preference, in addition to ideal time and minimum time, pre-service teachers (n=6) stated maximum time duration for the podcasts. Responses of pre-service teachers clearly indicated their preference for the maximum time duration for podcasts. It was commented that maximum time for podcasts should not exceed 5-6 minutes on average. One of the pre-service teacher stated:

"I think that it shouldn't exceed 5 minutes because when it exceeds 5 minutes, even I am getting bored as well. I think that student will get bored as well while listening to this." [Interviewee 4]

"Beş dakikayı geçmemesi gerektiğini düşünüyorum çünkü beş dakikayı geçtikten sonra ben bile hazırlarken sıkılıyorum. Öğrencinin de bunu dinlerken sıkılacağını düşünüyorum."

One of them said:

"Sure. I think that the podcasts lasting short are short in terms of the content. To me, those are not good. I got bored when I created a 7 minute podcast. I think the duration should not exceed 4 or 5 minutes. Instead, podcasts should be divided into parts." [Interviewee 7]

"Tabi. Eee ben şöyle düşünüyorum. Çok kısa podcastler içerik konusunda hani kısa kısadır. Hani çok iyi değil gibi geliyor bana. Yedi dakikalık hazırladığım podcastte ben bile sıkıldım. Hani bence 4 dk ya da 5 dk nın üzerine çıkmamalı. Onun yerine hani part part bölümlere ayırarak podcastler oluşturulmalı diye düşünüyorum."

Another one said:

"If the subject is long, podcasts shouldn't be kept long. It can be divided into three to five parts, but still it should not exceed 5-6 minutes when the audience and the narrator are considered." [Interviewee 9]

"Şimdi konu uzunsa podcast uzun tutulmamalı bence. Üçe beşe bölünebilir ama yine 5-6 dakikayı geçmemesi daha iyi dinleyici açısından, anlatıcı açısından da öyle."

4.6 Assessment of Podcast Development Process in Preparing Pre-Service Teachers for Teaching Profession (R.Q.5)

In Part III of the questionnaire, the participants were asked to state their opinions regarding their podcasting experience. Table 4.17 presents participants' opinions on

podcasting experience. Almost all of the participants (84% or N=21) agreed or strongly agreed that podcasting experience was an instructive experience for them. Regarding the item opportunity to gain teaching skills regarding content presentation, majority of the participants (80% or N=20) stated that podcasting experience provided opportunity to gain teaching skills regarding content presentation. In the same way, 80% (N=20) of the participants agreed or strongly agreed that podcasting experience helped them reflect on their content presentation performance. Of the participants, 60% (N=15) indicated that podcasting experience helped them recognize their potential in teaching. Seventy-six percent of the participants (N=19) agreed or strongly agreed that podcasting experience helped them gain new knowledge and skills that are useful in their future profession. Similarly, eighty percent of the participants (N=20) agreed or strongly agreed that podcasting experience helped them evaluate their performance continuously. Moreover, a significant majority of the participants (88% or N=22) agreed or strongly agreed that podcasting experience provided an opportunity to learn about new teaching strategies. While forty percent (N=10) agreed or strongly agreed that podcasting experience increased their interest in teaching, 36% (N=9) stayed neutral.

Table 4.17 Participants' Opinions on Podcasting Experience

I think …	1	2	3	4	5	M	SD
Podcasting experience was an instructive experience for me	-	2 (8%)	2 (8%)	20 (80%)	1 (4%)	3.80	0.65
Podcasting experience provided opportunity to gain teaching skills regarding content presentation	-	1 (4%)	4 (16%)	19 (76%)	1 (4%)	3.80	0.58

Table 4.17 Participants' Opinions on Podcasting Experience (Continued)

	1	2	3	4	5	M	SD
Podcasting experience helped me reflect on my content presentation performance.	-	2 (8%)	3 (12%)	19 (76%)	1 (4%)	3.76	0.66
Podcasting experience helped me recognize my potential in teaching	1 (4%)	2 (8%)	7 (28%)	13 (52%)	2 (8%)	3.52	0.92
Podcasting experience helped me gain new knowledge and skills that are useful in my future profession	-	1 (4%)	5 (20%)	14 (56%)	5 (20%)	3.92	0.76
Podcasting experience helped me evaluate my performance continuously	-	1 (4%)	4 (16%)	15 (60%)	5 (20%)	3.96	0.73
Podcasting experience provided an opportunity to learn about new teaching strategies	-	2 (8%)	1 (4%)	20 (80%)	2 (8%)	3.88	0.67
Podcasting experience increased my interest in teaching	2 (8%)	4 (16%)	9 (36%)	9 (36%)	1 (4%)	3.12	1.01

* 1=Strongly Disagree. 2=Disagree. 3=Neutral. 4=Agree. 5=Strongly Agree.

For the statement, "In general, how would you rate your experiences with podcasting during 4 weeks?", 68% (N=17) of the participants rated as satisfactory or extremely satisfactory while 28% (N=7) stayed neutral. Table 4.18 presents the results.

Table 4.18 Rating of Experiences with Podcasting during 4 Weeks

	1	2	3	4	5	M	SD
In general, how would you rate your experiences with podcasting during 4 weeks?	-	1 (4%)	7 (28%)	16 (64%)	1 (4%)	3.68	0.63

* 1=Extremely Unsatisfactory. 2= Unsatisfactory. 3=Neutral. 4= Satisfactory. 5= Extremely Satisfactory.

For the statement, "In general, how useful were these podcasting experiences for increasing your presentation effectiveness?", 80% (N=20) of the participants found podcasting experience useful or extremely useful while 16% (N=4) stayed neutral. Table 4.19 presents the results.

Table 4.19 Usefulness of Podcasting Experience for Increasing Presentation Effectiveness

	1	2	3	4	5	M	SD
In general, how useful were these podcasting experiences for increasing your presentation effectiveness?	-	1 (4%)	4 (16%)	19 (76%)	1 (4%)	3.80	0.58

* 1=Completely Useless. 2=Useless. 3=Neutral. 4=Useful. 5=Extremely Useful

For the statement,"In general, what do you think about the role of podcasts in preparing pre-service teachers for teaching profession?", 76% (N=19) of the participants found the role of podcasts experiences effective or very effective while 20% (N=5) stayed neutral. Table 4.20 presents the results.

Table 4.20 Role of Podcasts in Preparing Pre-Service Teachers for Teaching Profession

	1	2	3	4	5	M	SD
In general, what do you think about the role of podcasts in preparing pre-service teachers for teaching profession?	-	1 (4%)	5 (20%)	17 (68%)	2 (8%)	3.80	0.65

* 1=Not Effective. 2=Somewhat Effective. 3=Neutral. 4=Effective. 5=Very Effective.

In addition to quantitative findings, the interview results revealed that pre-service teachers perceived the value of educational podcast development process in preparing them for their teaching profession under 6 codes as (1) Self-evaluation, (2) Preperation for teaching practice, (3) Learning, (4) Teaching skills, (5) Confidence to be a teacher, and (6) Realization of difficulties of teaching.

Self –Evaluation

Pre-service stated that podcasting experience helped them with regard to voice control (n=4) and body language (n=2).

Voice Control: Pre-service teachers (n=4) expressed that they learned how to control their voice, to adjust the tone of their voice, and to use their voice effectively to gain students' attention. One of the pre-service teachers said:

"I have learned to use my voice better because it is important to use the voice tone effectively to get the attention of students. I have learned to use my voice in a good way." [Interviewee 5]

"Sesimi iyi kullanabilmeyi öğrendim çünkü podcast hazırlarken ses tonunu etkili kullanmak önemlidir öğrencinin dikkatini çekmek için. Bunu iyi bir şekilde kullanmayı öğrendim."

Another one said:

"So let me tell you this way. So I guess I have learned how to use my voice. I have learned where to raise my voice, to ajdust my voice. I have learned how to use my voice." [Interviewee 7]

"Yani şöyle söyleyim. Yani sesimi [kullanmayı öğrendim] herhalde yani. Sesimi böyle nerede yükseltmeliyim, nerede işte şöyle yapmalıyım [ayarlamalıyım]. Sesimi kullanma [yı öğrendim]."

Body Language: Pre-service teachers (n=2) mentioned that podcasting activities have been effective with regard to how to position themselves on the camera and where to look in the video. One of the pre-service teachers said:

"I learned how to position myself when I speak to people because my image was being recorded in the second podcast; I was on the screen as well. Therefore, I saw how I position myself. I changed my position through trial and error. This made me gain experience." [Interviewee 5]

147

"İnsanlara hitap ederken nasıl duracağımı öğrendim çünkü ikinci podcastte görüntü beni de alıyordu, ekranda ben de vardım. Bu yüzden nasıl bir duruş sergileyeceğimi gördüm. Kendim deneme yanılma yöntemiyle bu duruşumu değiştirdim. Bu bana bir deneyim kazandırdı."

Another one said:

"While recording myself, I learned where to look in the video." [Interviewee 7]
"İşte videoda nereye bakacağını falan hani kendimi kaydederken bunları görmüş [öğrenmiş] oldum yani."

Preparation for Teaching Practice

Thanks to podcasting experience, pre-service teachers felt like their experience was helping them getting ready for their future teaching practices. Pre-service teachers (n=3) mentioned that podcasting activities has been especially effective for understanding how to behave students, how they understand better and how to design the lecture. One pre-service teacher stated:

"It helped us get ready for future internship in this way. We understood how we can behave students, how we can approach them, how they understand better what we teach in one way or another during our teaching practice. Due to these aspects, podcasting activities can be effective for our future teaching practice and profession."
"Evet bu yönden hani bizi hem staja hazırladı. Stajda öğrencilere nasıl davranabiliriz nasıl yaklaşabiliriz hani neyi nasıl anlatırsak daha iyi anlarlar onlar nasıl daha rahat olur [bunu anladık]. Bu yönden hem stajımıza hem stajdan sonraki öğretmenlik hayatımıza etkili olabilir."

Another one stated:

"I am explaining the subject as if there are students. I am in attempt to teach something there. Therefore, I gained good experience. I think that podcasting activities are important for teaching practice."

"Çünkü karşında sanki öğrenciler varmış gibi anlatıyorum. Orada birşeyler öğretme çabası içindeyim. Eee bu yüzden bana iyi deneyim kazandırdı. [Podcast aktivitelerinin] Öğretmenlik tecrübesi için önemli olduğunu düşünüyorum."

Learning

After successful completion of the activities, pre-service teachers expressed that they learned about educational material, programs, and about lecture and lecture skills.

About educational material: The interview results revealed that podcasting activities have been effective for pre-service teachers to learn about educational material podcasts. Four pre-service teachers stated that they learned what the podcast is, how to create a podcast, how and where to publish the podcasts in Ceit225 course. One-pre service teacher explained:

"For instance, I learned what a podcast is and how to create a podcast for the first time in this course. I was familiar with these before, but I didn't know the concept of the podcast. So this was what I experienced positively; I learned what a podcast is, how to create it." [Interviewee 2]

"Ben mesela ilk defa bu derste öğrendim podcastin ne olduğunu ve podcast hazırlamayı. Daha önce bunlarla karşılaşmıştım fakat podcast kavramını bilmiodum ben. Eee olumlu olarak yaşadığım şey bu oldu öğrendim ben podcastin ne olduğunu, nasıl hazırlanacağını."

Another one explained:

"I gained knowledge about how I can prepare a material about a subject, and which materials I can prepare. Let's assume there is a subject. Now I can create three types of podcasts and I can provide them with a rich learning method." [Interviewee 1]

"Daha sonra hani öğrencilere bişeyi bi konuda nasıl bir materyal hazırlayabilirim, hangi materyalleri hazırlayabilirim konusunda artık bilgi sahibi oldum. Hani mesela bir konu var artık üç türlü podcast hazırlayıp onlara zengin bir öğrenme metodunun içine sokabileceğimi düşünüyorum."

About programs: The interview results revealed that podcasting activities have been effective for pre-service teachers to learn about programs. They think that these programs will be very useful for them in the future and they will use them for a variety of purposes. Five pre-service teachers stated that they learned programs which they didn't hear at all before or they didn't know how to use. Pre-service teachers used Audacity software, Camtasia Studio and Microsoft PowerPoint in the study. One explained:

"First of all, I learned some programs which I didn't know; for example, I learned Camtasia in this period. I have learned audiocity [Audacity] for audio." [Interviewee 1]

"Öncelikle bilmediğim bazı programları mesela Camtasia'yı öğrenmiş oldum bu şey için süreçte. Audio [Ses için] audiocity [Audacity] programını öğrenmiş oldum."
Another one said:

"As I mentioned before, I learned how to use two programs which I didn't see before. Actually I have known that Powerpoint has a screen recorder, but I didn't know how to use it. I learned this." [Interviewee 8]

"Yine daha önceden de bahsettiğim gibi burda iki programı kullanmayı öğrendim daha önceden hiç görmediğim. Ve hani biliyodum mesela şeyi Powerpoint 'in ekran kaydedicisi olduğunu fakat nasıl kullanıldığını bilmiyordum. Bunu öğrenmiş oldum."

About Lecture and Lecture Skills: The interview results showed that pre-service teachers (n=8) gained experience about lecture and lecture skills by means of podcasting experience. They stated that podcasting activities have been effective for pre-service teachers to learn how to desing a lecture, how to give a lecture, how to

get ready for lecture, be planned for lecture, and how to explain a subject better. One pre-service teacher said:

"I gained better lecturing skills indeed. I gained experience about how to explain my thoughts to a person." [Interviewee 3]
"Daha iyi bir ders anlatma becerisi kazandırdı aslında. Düşüncelerimi karşımdaki insana daha iyi nasıl anlatabileceğimi kazandım."

Another one said:

"First of all, I thought about how I would enter the lecture/class. I decided how to give a lecture in a planned way. I learned how to behave while giving a lecture when I become a teacher; therefore, it is a very important [experience]. I learned how to explain a subject, what to take into consideration while giving a lecture from now on." [Interviewee 4]
"Evet öncelikle derse nasıl gireceğimi düşündüm. Nasıl planlı ders anlatacağıma karar verdim, kararlaştırdım. Onun için bence çok önemli [tecrübe] yani bir öğretmen olduğumda ders anlatırken nasıl davranmam gerektiğini öğrendim. Ben bundan sonra ders anlatırken nasıl anlatmam gerektiğini nelere dikkat etmem gerektiğini öğrendim."

One pre-service teacher expressed:

"...I experienced how to process a lecture from beginning to end on my own. Sometimes we critisize our teachers. I tried to be careful about those aspects for teaching experience. I gained these skills." [Interviewee 6]
"... Hani baştan sona derse nasıl başlamalıyım nasıl bitirmeliyim. Hani bunu kendim görmüş oldum. Biz de zaman zaman hocalarımızı eleştiriyoruz. O şeylere dikkat etmeye çalıştım öğretmenlik deneyimi için. Bana bu becerileri kazandırdı yani."

Another one expressed:

"You might know something, but while teaching them, how and in which order will I expain them? It has been useful for me to create this kind of podcast before we go to schools to gain experience. Preparing this podcast has been an example for me about the lecture I will give in the future. I gain skills to give a better lecture indeed..." [Interviewee 10]

"Birşeyler biliyor olabilirsin ama bunları anlatırken acaba hangi sırada nasıl anlatacağım falan derken okullara gidip deneyim almadan önce böyle bir podcast hazırlamak faydalıydı benim açımdan. Bu podcasti hazırlamak hani ileride yaşayacağım ders anlatması için bana bir örnek oldu aslında. Daha iyi bir ders anlatma becerisi kazandırdı aslında..."

Teaching Skills

The interview results showed that pre-service teachers (n=6) gained teaching skills by means of podcasting experience. It was explained by pre-service teachers:

"I learned how to explain a subject to a person, how to teach a subject and in this process I learned how to study and how to disseminate knowledge to someone. It helped me about teaching experience in this regard. It helped me how I can teach something to a person in the best way."

"Ve hani bazı konuları ben birine nasıl anlatıcam nasıl öğreticem derken bu süreçte nasıl çalışacağımı ona neyi [bilgiyi] nasıl aktaracağımı öğrenmiş oldum. Öğretmenlik deneyiminde bu anlamda yardımcı oldu. Bir insana bişeyi nasıl öğretebilirim en iyi şekilde, buna yardımcı oldu."

"...While preparing podcasts, I felt myself as if I was giving a lecture to a student instead of speaking to the computer. I prepared myself for how I can explain better to someone who doesn't know the subject and I am teaching something to that person. To me, it was kind of teaching. I believed it helped me gain experience even if it is

not exactly the same with talking in front of real class, I felt myself like that way at least; like I am tutoring a student, preparing a lecture for a student."

"...Ben podcast hazırlarken hani bilgisayara konuşuyorum gibi değil de bir öğrenciye ders anlatıyorum gibi hissettim kendimi. Hani nasıl daha iyi anlatabilirim hani sanki karşımda bilmeyen bir insan varmış, ben ona birşey öğretiyormuşum gibi kendimi hazırladım. Hani bu bir nevi öğretmenlik yapmak gibiydi benim için. Bana deneyim sağladığına inanıyorum hani gerçekten bir sınıfa çıkıp konuşmak gibi olmasa da en azından hani ben kendimi o şekilde hissettim bir öğrenciye ders anlatıyor ders hazırlıyor gibi."

"It gave me the ability to become a teacher. From now on, I learned how to give a lecture and what to take into consideration because I am teaching as if there are students. I am in attempt to teach something there..."

"Bana öğretmen olma becerisini kazandırdı. Ben bundan sonra ders anlatırken nasıl anlatmam gerektiğini nelere dikkat etmem gerektiğini öğrendim. Çünkü karşımda sanki öğrenciler varmış gibi anlatıyorum. Orada birşeyler öğretme çabası içindeyim..."

"Podcasts definately helped me gain teaching experience. Although there are no students there, it is still exciting. You will hear your own voice, you can put yourself instead of someone else, and you have a chance to evaluate your voice. This also teaches you to be careful about your speech. Due to the fact that you take into consideration how to deliver a lecture, how to present subjects from beginning to end, how to finish a lecture, we can almost say that it is a complete teaching experience."

"Podcastler öğretmenlik deneyimi kazanmama kesinlikle yardımcı oldu. Her ne kadar karşınızda öğrenci olmadan yapsanız da yine bir heyecanı oluyor. Acaba hani kendi sesimizi duyacağımız için öğrenci yerine koyarsanız kendinizi kendi sesinizi değerlendirme şansı buluyorsunuz ve bu size ayriyeten de konuşmanıza dikkat etmeyi [öğretiyor], bir ders nasıl işlenir baştan sona konuları nasıl vermeliyim, nasıl

bitirmeliyi mi de düşündüğümüz için tam bir öğretmenlik deneyimi diyebiliriz neredeyse.”

Confidence to Be a Teacher

Only two pre-service teachers expressed that they believed they can be a teacher. It was explained:

“I believed I can be a teacher. I believed I can explain a subject and while explaining, I saw that how important it is to be planned.”
“Olumlu olarak öğretmen olabileceğime inandım. Birşeyi anlatabileceğime inandım ve bir şey anlatırken planlı olmanın ne kadar önemli olduğunu gördüm.”

“So now I believe I can be a teacher”
“Evet yani öğretmen olabileceğime inanıyorum artık.”

Realization of Difficulties of Teaching

Podcasting experience helped pre-service teachers to realize the difficulties of teaching. They teachers (n=3) indicated that they realized the difficulties of teaching through their podcasting experience. One said:
“I learned that it is difficult to teach something to a person. I thought I could explain the topic well, but in fact after recording a podcast, I thought and saw that there are missing parts. Apart from that it was nice to make me realize this. I consider this positive”.
“İnsana birşey anlatmamın zor olduğunu öğrenmiş oldum. Hani kendim tamam çok güzel anlatabileceğimi düşünüyordum aslında ama hani bunu artık birşeyi [podcast] kaydettikten sonra izlerken aslında eksikliklerininin olduğunu düşünüm, gördüm. Onun dışında hani bunun bana göstermesi güzel birşeydi. Bunu olumlu olarak görüyorum.”

Another one said:

"Actually it seems very easy to create podcasts, but preparing the content is like you are preparing yourself for the lecture. To create podcasts, you have to be prepared like a teacher who prepares himself/herself to give a lecture in front of a board."
"Yani oluşturmak aslında şöyle hani çok kolay gibi görünüyor ama hani onun içeriğini hazırlamak, hani kendinizi aslında bir derse hazırlıyor gibisiniz. Hani kalkıp bir tahtada öğrenciye ders anlatacak gibi nasıl hazırlanıyorsa öğretmen, bunda da o şekil hazırlanıyorsunuz."

4.7 Summary of Findings

The results showed that pre-service teachers found podcasts easy to develop and publish. They were satisfied with their experience with podcasts and they added that podcasting contributed to their professional learning.

When it comes to self-efficacy beliefs, Wilcoxon sign-rank test results showed that there was a significant change when self-efficacy beliefs were compared in the beginning and at the end of the study. It was found that there was a significant improvement in the self-efficacy scores of pre-service teachers after the training they received and their podcasting experience. The results indicated that the participants became more confident in creating, publishing, and using podcasts after the study.

When the anxiety examined, it was found that in their normal lives, some of the pre-service teachers experienced high levels of anxiety. Prior to activities, it was found that pre-service teachers experienced more anxiety before creating audio podcasts when compared to creating video podcasts.

Pre-service teachers found podcasting activities relevant and effective in preparing them for their future profession.

At the end of the study, the participants became familiar with podcasting and gained experience of designing and developing learning materials. They acquired necessary skills for setting up a podcast system, podcast development and publishing podcasts.

CHAPTER 5

DISCUSSION, CONCLUSION AND IMPLICATIONS

This chapter presents major findings of the study, the discussion and conclusion of the results, implications and suggestions for practitioners, and recommendations for future research. The first aim of this study was to investigate pre-service teachers` opinions on educational podcasts, and podcasting process. Furthermore, this study also aimed to investigate pre-service teachers' state anxiety prior to podcast development and their self-efficacy beliefs in relation to educational podcasts. The second aim of this study is to explore the effectiveness of educational podcasting in preparing pre-service teachers for their teaching profession through engaging them in authentic material development and presenting/teaching a subject in their field of study. Participants of the study were 25 pre-service teachers from Computer Education and Instructional Technology Department at Middle East Technical University. First of all, the data were collected from 25 participants through quantitative instruments, and then, semi structured interviews were conducted with 10 participants to gain rich and deep insight into pre-service teachers' opinions about educational podcasting. All participants engaged in activities to develop podcasts. The activities aimed to enhance pre-service teachers' confidence to set up a podcast system, design, develop and publish three types of podcasts: audio, video and enhanced podcast. Participants successfully completed the activities and created 150 podcasts.

5.1 Discussion

5.1.1   Educational Podcasting Opinions

In order to obtain the opinions of the participants, educational podcasting opinion questionnaire was applied after pre-service teachers engaged in three podcast activities. In this section, pre-service teachers' opinions about the podcasts, and podcast process/activities are discussed.

5.1.1.1 Podcasts

According to the opinion questionnaire and qualitative results, while majority of pre-service teachers thought podcasts are simple develop, yet only more than half of the participants thought that podcasts are simple to publish. This finding is consistent with the relevant literature. Copley (2007) mentions that developing audio podcasts of lectures is very simple. Digital media players having audio recording feauture are widely available at low cost. In the study of Keengwe et al. (2009), pre-service teachers found creating a podcast easy and thought that podcasts are tools for their students in the future who see "content as more relevant given the richness and variety of media" (p. 341). In addition, the lecturers and students in the study of Sutton-Brady et al. (2009) expressed that podcasts were easy to develop and use. Regarding publishing the podcasts, pre-service teachers might have felt confused about RSS and feeds.

While half of the participants thought that using podcasts are more flexible than alternative materials (ie websites, handouts) for student learning, one third of the participants were neutral. In Copley's (2007) study, the students rated audio and video podcasts more and highly useful than traditional printed handouts as lecture materials. The reason for staying neutral could be that pre-service teachers might think that listening to a podcast may not be an optimal learning method for all learners. Learners may still prefer text-based materials or electronic (web-based) materials (Chan, Lee & McLoughlin, 2006). However, developing a podcast could be

158

time saving for the teacher when compared to preparing the same material in the written form (Randall, 2011). In addition, listening to their professor's voice could result in more meaningful learning for students instead of only reading a textbook or using discussion boards (Bolliger et al., 2010).

Quantitative results showed that almost all of the participants thought that podcasts can help improve students' learning; podcasts can be used as supplements to make lessons more effective; and majority thought that podcasts are effective teaching aids. Prior research has also confirmed these findings. Tam (2012) reported that the students found the podcast useful and considered podcasting as a method that can be used for supplementing face-to-face teaching. Tam's results indicated that using podcasts for demonstration of procedures or skills was the most effective type of podcast whereas reproduction of lecture materials was the least effective. Hew (2009) noted that instructors were usually satisfied with podcasting. They felt that when learning is made available through podcasts, this provides students with more opportunities to have interaction with the curriculum, and therefore students could learn more. The findings of the empirical study suggested that podcasting is an effective tool as a supplement for the traditional resources of a course (Fernandez et al., 2009). In addition to these, McLean & White (2009) noted that the first instructor in the study felt that both podcasts and vodcasts were obviously useful for students and for the instructor regarding providing supplemental background material related to the course.

Pre-service teacher were of the opinion that podcasts can extend teaching outside of classrooms and podcasts facilitate the comprehension of the content. Previous studies have noted this finding. McNeill et al. (2010) stated in their study through interviews that podcasting made the teacher-student relationship stronger. The pre-service teachers believed that "podcasting was an excellent way to interact with students beyond the classroom" (p. 18). The students and the lecturers valued the short-format podcasts for a couple of reasons, including personalising learning, extending learning, listening at own pace (Sutton-Brady et al., 2009). In addition, facilitation

of understanding of the content is addressed in many studies. In the study of Belanger (2005), students expressed that the feature to replay podcasts facilitated the understanding of difficult lectures (Belanger, 2005). According to Meade, Bowskill & Lymn (2011), through using podcasts, the participants had greater control over their learning and met their learning needs in addition to getting help about understanding a complex topic. In pre-service teachers' field of study, mobile learning and related devices are now very popular. Their opinions could have been affected by these and made their opinions stronger regarding extending teaching outside of classrooms. Moreover, podcasts can be used with several devices and this provides students with many alternatives to acess to content so that podcasts might help them about the comprehension of the content.

Regarding future use of podcasts, only 2 participants strongly disagreed and disagreed that will use podcasts in their future profession. That is, the results from this study appear to provide strong evidence that majority of the pre-service teachers are willing to use podcasts in the future. The reasons that may account for this could be that they enjoyed producing podcasts, perceived them as effective educational materials, and found them easy to develop etc. Also, their positive experience and familiarity could be another reason since pre-service teachers tend to use technologies with which they are more familiar. Popova et al. (2014) noted that "as we all know, tool appropriation is almost impossible if the intended users do not themselves experience the tool as positive" (p. 337). In the same way, Teo (2009) reported that the perceptions of basic technology skills and the perceptions of the ability to use technology have been found to be significant predictors for the intention to use in both a traditional or constructivist way. Confirming the aforementioned statement, a number of studies reported that pre-service teachers were willing to use podcasts in the future. After engaging in podcast production, a number of students in Forbes' (2011) study expressed that they would think about having their students create podcasts in their classrooms. In the study of Kim and King (2011), while engaging in the podcast and blog project, the attitutes of teacher candidates turned into positive. Also, they had a willingness to integarate these

160

digital tools into their projects. Particularly, when they completed the project and saw their projects on the website, pre-service teachers expressed confidence and enthusiasm (Kim & King, 2011). In Yamomoto's (2009) study, pre-service teachers developed audio and video podcasts in the context of the subject they are teaching. The results of the study indicated that podcasting and vodcating projects starting with researching on pedagogy, peer-sharing, discussing on pedagogy and then, hands-on development of the podcasts and vodcasts in the content area of pre-service teachers improve positive attitudes regarding the use of podcasting and vodcasting for class use. The results also showed that the participants fostered positive attitudes towards the use of podcasting and vodcasting in their classrooms after the instructional sequences. They considered podcasts, vodcasts, and also their combination as useful instructional media in classrooms as the result of the instruction on podcasting and vodcasting. Both instructors in the study of McLean & White (2009) were of the opinion that their experiences regarding podcasting were useful for their students and they think of continuing utilizing podcasting in the classroom. Finally, Ting (2011) stated that pre-service teachers usually displayed positive attitudes in terms of utilizing podcasting in education.

5.1.1.2 Podcast Process and Activities

When the results are examined, only 5 of the participants thought that podcasting is a boring process. This means that majority of the participants enjoyed podcasting. Keengwe et al. (2009) conducted a study with regard to podcast development. The interviews and focus groups explored that pre-service teachers enjoyed their experience of creating and publishing content. Likewise, Carvalho, Aguiar & Maciel (2009) reported that students as creators appeared to have enjoyed creating a podcast. All of the students expressed "it has been an interesting, new, innovative, useful and also funny experience" (p. 138). In parallel, McNeill et al. (2010) stated that while majority of teacher candidates in the study found podcasts enjoyable. The ESOL teacher candidates' enjoyed producing podcasts and blogs as a project. The reports and interviews of pre-service teachers revealed that applying podcasting and

blogging into ELL classroom was fun, effective and useful (Kim & King, 2011). In addition, students were excited about the podcast creation since they experienced podcast creation for the first time (Dale & Povey, 2009).

Regarding time requirements, nine of the participants thought that podcasting requires too much time while 7 were neutral and over half of the participants thought that podcasting requires too much effort. These were also supported by the qualitative findings. This might be due to fact that more than half of the participants didn't create a podcast and sucbscribed to a podcast before. Moreover, the nature of the activities could have led to this opinion since they were required to produce total 6 podcasts, yet a final version should be a complete podcast which is ready to be used in educational settings. However, time requirements are noted in several studies. Schmidt (2008) noted that it can take approximately four hours to create a short podcast for the first time, but when podcasters become more experienced, the less time is needed to create podcasts. Recording the podcast with a program like Audacity is simple; however, editing can be time consuming. In the beginning, patience is needed from both instructors and students. According to McNeill et al. (2010), publication process of podcasts is somewhat time consuming. Similarly, McLean & White (2009) reported that students found the podcast project time consuming. In addition to these, the lecturers in the study of Sutton-Brady et al. (2009) expressed that it was time consuming to develop podcasts. Carvalho et al. (2009) pointed out that the lecturers in the project found creating podcasts difficult and stressed that it can be a very time-consuming task since one should get familiar with the needed software and it is essential "to write, rehearse and record what one wants to say" (p. 139). According to Copley (2007), the most time-intensive step in the process pointed out as synchronising the slides and lecture audio manually on the movie timeline in Windows MovieMaker. However, converting a lecture into a video podcast takes no more time than giving the actual lecture. The evaluation of time issues regarding podcast development is important since it is directly related to whether educators adopt podcasts or not. According to Hew (2009), there is a need for research regarding the cost-effectiveness of using podcasts. This information

would not be enough to convince institutions to use podcasts in the courses; however, it would be useful for the instructors such as knowing the staff time and storage size requirements for recording, processing and posting the podcast files. In other words, it could be enough to influence the decision of individual educators.

Majority of the pre-service teachers in this study thought that podcasting requires available technological resources/ equipment. This suggests that pre-service teachers are aware of the fact that they can utilize podcasting with available resources. Also, they can help other teacher candidates utilize podcasting. Available technology requirement is noted by several authors in the literature. Lee & Tynan (2008) expressed that podcasts can be played on desktop computers, a range of portable devices such as Mp3 players, laptop computers and tablet PCs in addition to mobile phones and PDAs. Accordingly, Richardson (2006) explained that all you need is a digital audio recorder capable of creating an Mp3 file, space to host the file, and "something to say" to develop a basic podcast (p. 112).

Only 6 of the participants thought that podcasting requires advanced technological knowledge. This can be interpreted as anyone with a moderate technological knowledge can use, develop and subscribe to podcasts. Richardson (2006) noted that one does not need a lot of technical know-how. The quick success of podcasting can be attributable to the fact that they are easy to create and consume because of RSS. However, the technical terms such as feeds, aggregators, and subscriptions may result in confusion (Geoghehan & Klass, 2007). Furthermore, Copley (2007) explained that designing and developing podcast materials demand more advanced media skills than most academics have. This denotes that there might be a possible training need in this area if m-learning through utilizing podcasts in higher education is expected to be realised. The same could be valid for pre-service teachers. In other words, they might need training regarding podcasts.

More than half of the participants thought that podcasting improves speaking, presentation, pronunciation, teaching skills whereas only 1 participant disagreed the

statements respectively. As Crane (2009, p. 41) notes "students can edit and revise until what they say and how they say it is perfected". Therefore, production of podcasts has a great potential for improving pre-service teachers' aforementioned skills. The podcast producers in the study of Chan et al. (2006) consider their involvement and engagement in the production of content for podcasts a positive learning experience. Moreover, the focus group discussions showed that podcast producers reflected on the activity and perceived it as a kind of experiential learning that made them have positive gains such as technical and generic skills. Furthermore, Ducate & Lomicka (2009) reported examination of podcasting as a tool for pronunciation skills in language learning in intermediate level. Podcasts were used for improving pronunciation in second language learning German and French. Students created five scripted pronunciation recordings and then three extemporaneous podcasts. However, the results showed no significant improve in the pronunciation regarding accentedness or comprehensibility. This result shows that how podcasting is implemented, the design of the activities and the duration of experience should be considered critically for improving skills.

Perhaps more importantly, more than half of the participants thought that they are aware of the mobile potential of podcasting. This could be due to the popularity of mobile learning in their majors. When podcasting is used together with Mp3 players and other portable devices, there is a potential for real any-time, any-place learning and this leads us to mobile learning (Strickland et al., 2012). However, when the related literature is examined, the studies focusing on mobile aspects of podcasting are very rare. Several studies reported that students used podcasts mostly on desktop computers. To increase the mobile potential of podcasting, it is vital that educators or researchers be aware of this potential and inform students about the various usage of podcasts.

Almost all of the participants though that it is easy for them to learn podcasting. This was echoed in previous studies. Lecturers in the study of Sutton-Brady et al. (2009) expressed that they found podcasting easy. According to findings of Ma, Andersson

& Streith (2005), how student teachers' perceive the usefulness of computer technology has a direct significant influence on their intentions to use and similarly, how student teachers' perceive the ease of use of computer technology has an indirect significant influence on their intentions to use it.

5.1.2 Self-Efficacy Beliefs

Long before it was stated by Bandura (1997, p. 241) that educational settings would be relying on technologically mediated instruction. Hence, it would call for specific types of teacher efficacy. Today's technology is "very different from the way it was in the 1970s" (Solomon & Schrum, 2010, p. 167).

Technological devices change rapidly and therefore this requires upgrading of knowledge and skills continuously since "teachers' belief in their efficacy affect their receptivity to, and adoption of, educational technologies" (Bandura, 1997, p. 241). Furthermore, not only the structure of information technologies, but also the competence of the user have a considerable effect on the productive use of these technologies (Torkzadeh et al., 2006). For these reasons, self-efficacy has been examined in the specific context of Web 2.0 technologies in this study; that is, self-efficacy construct in the context of podcasts.

The self-efficacy measure has been applied before and after the participants had traning and engaged in podcast activities to examine pre-service teachers' self-efficacy regarding podcasts since "self-efficacy judgments specifically refer to future functioning and are assessed before students perform the relevant activities" (Zimmerman, 2000, p. 84). Then, the change and improvement in the self-efficacy beliefs after training and podcast activities were evaluated. When pre and post survey results are compared, the results suggest that pre-service teachers reported increased self-efficacy for both domains. Their confidence levels were found as follows: educational usage (M=4.34) and integration (M=4.48). These results suggest that pre-service teachers' self-efficacy tended to be higher after the traning and the activities.

In other words, pre-service teachers' were pretty much confident regarding podcasts. These findings are consistent with the characteristic of self-efficacy; that is, self-efficacy is dynamic and subject to change when people acquire new information and experiences (Torkzadeh et al., 2006, p. 542). Taken together, it appears to be that the training and the activities have been effective in increasing their confidence. Moreover, this might also be due to homogenous participants; in other words, all participants are CEIT students. CEIT students mostly come from similar high schools and they have a stronger technical background than their peers in other departments in faculty of education. Pre-service teachers' departments might have affected the results of self-efficacy and different results could have been obtained if the participants had been from other departments in faculty of education.

The aforementioned finding is comparable with prior studies since the study confirmed the findings of previous studies which examined the effect of training and experience on self-efficacy. According to Yamomoto's (2009) findings, the preservice teachers enrolled in an undergraduate level instructional technology class gained confidence in creating podcasts and vodcasts after production of podcasts and vodcasts. Results showed that there was a significant improvement in the confidence level of pre-service teachers. In the same way, as cited by Yuen et al. (2011), Chen, Wan & Son (2008) noted that training and experience increases teachers' confidence in using Web 2.0 technologies. When teachers experience or utilize the applications in training or classrooms, their attitudes toward Web 2.0 become more positive.

After receiving training and engaging in three different podcast activities, pre-service teachers had significant improvent in their self-efficacy. As mentioned earlier, enhancing self-efficacy is important since it is related to one's own perceptions of his or her ability, and the action of a person is influenced by his/her thoughts (Farah, 2011).

Mean results indicated that pre-service teachers' provided highest responses for the statement "I can upload and download podcast files online" (Pre-questionnaire

M=4.16; Post-questionnaire *M*=4.52) and there was no significant improvement in the statement after the training and podcast activities.This could be due to the fact that CEIT students are very familiar with downloading and uploading files. Also, Hew (2009) explains that students and educators from science and technology departments could pertain to Internet technologies such as podcasts more than would those from other majors. Furthermore, mean results indicated that pre-service teachers' provided lowest responses for the statement "I can use RSS feed to subscribe podcast files" (Pre-questionnaire *M*=2.92; Post-questionnaire *M*=4.24) and there was a significant improvement in the statement after the training and podcast activities. Tam (2012) stated that currently, students can use multimeadia tools easily and they are more experienced in using those tools. However, when it comes to using podcasts or RSS feeds, it is still relatively new to them. The technical terms such as feeds, aggregators, and subscriptions may result in confusion (Geoghehan & Klass, 2007). Further, investigating the necessary technology for developing podcasts can scare people away since at first glance, there are daunting terms as XML, RSS or aggregation. However, when technical terms left aside, podcasting is almost the same as web publishing McCombs et al., 2006). These justifications could explain the reason for the pre-questionnaire mean value for the aforementioned item.

As the results suggest, pre-service teachers' integration and educational usage self-efficacy regarding podcasts was somehow midway between middle and high in the beginning. This could be explained as the pre-service teachers in this study are familiar more with other technologies that may support their podcast confidence. Majority of the participants (70.8% or N=17) stated that they will use podcasts in their future profession, while 20.8% (N=5) stayed neutral and 2 (8.4%) stated the opposite. Overall, these could suggest that after traning and fulfilling the activities pre-service teachers have gained similar confidence level and developed more confidence when compared to mean scores in the beginning of the study. However, because of the method of the study, this study didn't control for self-efficacy and thus, the improvement in the self-efficacy could be due to other factors other than training and podcast activities. In a year-long quantitative study, Pan (2008) found

after completing a computer literacy program, pre-service teachers acquired similar confidence levels regarding the instructional use of technologies and had increased self-efficacy. According to Teo & Koh (2010), improving self-efficacy toward media tools can assist pre-service teachers with having more confidence to facilitate the use of media production software for learning on the students' side. Moreover, Sadaf et al. (2012) pointed out that because of having high self-efficacy beliefs; that is, skills and knowledge regarding the use of these technologies in a classroom, pre-service teachers were motivated to use Web 2.0 technologies.

However, one should not forget that self-efficacy can be a predictor of actual use of technology, yet improved self-efficacy beliefs do not guarantee the actual use among teachers, but they are an essential condition for technology integration (Wang et al., 2004). However, when individuals become more comfortable with the technology, it is more likely that the device takes places more in the day-to-day activities of the individual (Oakley & Palvia, 2012).

5.1.3 Anxiety

The mean scores of STAI inventory show the level of anxiety. In other words, mean scores above 42 is interpreted as high anxiety. The findings of trait anxiety showed that while 16 out of 24 pre-service teachers experience high level of anxiety in their normal lives, only 6 of them experience moderate level of anxiety and 2 of them experience no anxiety. This could be because of the course load of CEIT students, course requirements or could be related to their private lives.

Prior to audio podcast development, the findings of state anxiety showed that while 9 out of 24 pre-service teachers experienced high levels of anxiety, 12 of them experienced moderate level of anxiety and 3 of them experienced no anxiety. In addition, prior to video podcast development, the findings of state anxiety showed that while 5 out of 23 pre-service teachers experienced high levels of anxiety, 12 of them experienced moderate level of anxiety and 6 of them experienced no anxiety.

Studies carried out in psychology field assert that people experience anxiety when engaging in behaviours which they don't feel competent enough to perform. When trainees experience anxiety, they concentrate on inner thoughts and feelings instead of learning (Chou, 2001; Torkzadeh & Angulo, 1992 as cited in Torkzadeh et al., 2006, p. 543). The reasons for experiencing anxiety were expressed by the pre-service teachers during the interviews as recording their own voice and video, whether they have the confidence to develop podcasts, whether someone was listening to them while recording, which is consistent with the aforementioned statement. According to Lomicka & Lord (2011), when coming to in front of a microphone or camera, several students become shy. This could be one of the possible reasons for pre-service teachers since although they record their audio and video in the third year, they often do not in the second year. According to Çelik (2008), it is possible that when peer student teachers observe their peers, this can cause stress for student teachers. Furthermore, in any situation when student teachers are observed by anyone, this can be stress-provoking. Therefore, the idea of being listened and watched by peers could cause pre-service teachers to experience anxiety prior to podcast development.

The finding showed that student teachers differed in the way they experience anxiety in their normal lives, yet were similar prior to audio podcast development and prior to video podcast development. They had similar feelings regarding audio and video podcast development; however, they experienced lower anxiety prior to video podcast development when compared to audio podcast development. It was explained by pre-service teachers that number of podcasts they developed seemed to help them lessen the anxiety level they experienced. Similarly, Dale & Povey (2009) investigated the use of learner-generated podcasts and explored podcasting as an assessment tool with third year undergraduate students. Students successfully produced podcasts about a heritage attraction in groups. Although students know the concept of podcasting and were familiar with it, they mentioned that they experienced feelings of fear and insecurity. However, none of them experienced

podcast creation before and authors stated that this might be the cause of these negative emotions. Students also expressed that they had fear because of using the technology, especially due to a new operating system which they used to create podcasts. In another similar study, Hakkarainen (2009) involved in 10 faculty education students in the educational digital video production. As negative emotions, stress, tension, and frustration were expressed as the most intense emotions. It was found that these emotions were related to timeline of the course, project plan changes, and technical equipment problems. When the individual items in anxiety scale and the qualitative data are examined, the same feelings and reasons are valid for this study as well.

In one study, podcasting was given as a student assignment by the second instructor. They were expected to complete research interviews and share the results on the Web. McLean & White (2009) reported that students' anxiety towards the technology itself was an obstacle for creativity and hindered the final efforts of some students. In this study students were given podcast activities as assignments as well; however, they successfully completed the activities using their creativity unlike in the study of McLean & White (2009). This seemed to suggest that there was no effect of state anxiety on CEIT pre-service teachers' performance. This could be explained as CEIT pre-service teachers are generally surrounded with technology rich environments and when they are not familiar with technology, they try to learn it.

5.1.4 Assessment of Podcasts Regarding Positive Aspects, Challenges, Types and Duration

Positive Aspects

As cited in the study of Yuen et al. (2011), teachers' perceptions regarding the usefulness and feasibility of adapting Web 2.0 applications for the classroom were shaped by both experience utilizing specific technologies and being faimiliar with the

potential benefits of the technologies (Crook et al., 2008). Therefore, examining pre-service teachers' comments regarding the potential benefits of podcasts in education is important for them to utilize podcasts. When pre-service teachers are aware of the benefits of podcasts, they can incorporate them into their teaching. Similar to any educational technology, whether and how podcasting affects the quality of learning or learning outcomes depends on how it is implemented. Whether podcasting enhance education or not depends on the context, especially goals and suitable learning activities, and it also depends on how podcasting is put to use (Deal, 2007).

The interview findings revealed that pre-service teachers stated the positive aspects as a learning material and development process. The positive aspects as a learning material expressed as mobility, useful, real life like context, permanency and supporting individual differences. The positive aspect regarding development process expressed as easy to develop. These results partially support that they are aware of the main benefits of podcasts. Further, the responses of pre-service teachers' supported a number of benefits explored in the literature.

In the interviews the mobility, usefulness, and capability to support individual differences was stressed by pre-service teachers. Many authors and researchers put emphasis on the accessibility of Web 2.0 technologies. IMPALA (Informal Mobile Podcasting And Learning Adaptation) research affirmed that podcasting can provide flexibility in the time when students can study, location where students can study, pace and sequence of studying (faster or slower), and alternative information channels (instead of reading, many students like to listen) (Salmon & Nie, 2008). Results from Salmon & Nie's (2008) study also affirmed the previous findings that many students expressed that control over podcast such as being able to stop and play the podcast again helped them take notes, catch up on the parts which students missed in the lecture again and use the podcast at their own pace. Generally, Tam's (2012) findings suggested that podcasts assisted the students in the study with achieving personalised learning.

Taken together, being aware of the positive aspects of podcasts after their hands-on experience with podcasts, pre-service teacher can consider them valuable resources for learning environments and it is likely that they could prefer podcasts when they need a material which is accessible, useful, and capable of supporting individual differences.

Challenges

Modern education operates within a technology rich environment and this environment is becoming highly complex. While providing new possibilities, it also gives rise to challenges (Conole & Alevizou, 2010). Even if spre-service teachers come from technology rich background, facing challenges is inevitable. Qualitative findinds showed that pre-service teachers had a variety of challenges. They expressed lack of confidence, lack of podcast experience, lack of technical knowledge, not having sufficient time, recording place and technical issues as challenges. Although these challenges expressed from the creators' side, pre-service teachers were also the consumers of podcasts. These challenges were addressed by previous studies, yet some of the studies addressed those as barriers.

In Tam's (2012) study, the interview results indicated that some students encountered difficulties in subscribing to the podcasts, particularly in the beginning of the study. In the review, Hew (2009) explained first-order barriers as lack of time to prepare podcasts, and technical problems regarding accessing and downloading podcasts, and second-order barriers as unfamiliarity with podcasts, and not seeing the relevance for their learning. According to Lomicka & Lord (2011), students face challenges when podcasts are made part of the curriculum. To exemplify, all of the students may not have appropriate equipment for recording and playing podcasts Also, the recordings made by students can have bad quality. Forbes (2011) explained that the primary challenge teachers candidates had was exporting podcasts as MP3 files. Furthermore, qualitative results in the study of Yamomoto (2009) suggested that the participants were not knowledgeable to develop podcasts or vodcasts.

172

Similarly, almost all participants expressed that they didn't hear of podcasting before. There occured technical issues since the participants used software and tools which were new to them. It was expressed by the participants that dealing with glitches increased their confidence to use the new technology indeed.

Being consistent with the literature, pre-service teachers had similar challenges except downloading and listening to the podcasts. Although majority of the participants in this study listened and downloaded podcasts, very few of the participants created or subscribed to podcasts. It can be said that they had surface knowledge about podcasts. Therefore, they had challenges and some of them found their own solutions to them.

In addition, Kay (2012a) summarized the challenges when using video podcasts. Technical challenges are given as file size, download time, not owning a mobile device, and knowledge required to use podcasts. Moreover, irrelevant podcasts, not engaging podcasts, distractions and no interactivity are mentioned as challenges. Further, not knowing the availability of podcasts and being too busy to view podcasts are considered challenges (p. 826). These were not addressed in this study because the file size of their podcasts was not large, they mostly had broadband connection, and they gained necessary knowledge in the lab sessions.

Type Preference

According to Suydam (1990), technology can support diverse learning styles better. Moreover, technology can also assist techers to respond to students' learning styles through providing rich environments which involve students' tactile, visual and auditory senses (as cited in McCombs et al., 2006). Therefore, the content type and appropriateness are among the important factors for creating podcast lectures. The presentation of podcast may be in several forms; for example, audio recordings of lecturer with presentation etc. (Mugwanya et al., 2011). Sutton-Brady et al. (2009) expressed that it is suggested by the available data in the literature that majority of

students enjoy the flexibility of the format, yet there are various responses relying on the content and intended purpose of the study with podcasts. Therefore, the design and media are likely to affect the effectiveness of podcasting.

When asked for the type preference with regard to their benefits in education, the interview findings revealed that pre-service teachers preferred video and enhanced podcasts; however, they clearly stated that their preference for the type of podcast is mostly video podcasts. The reason for preferring video podcast was mentioned that video podcasts are like a lesson environment, can provide step-by-step demonstrations, and provide audio-visual information.

Responses regarding the preference for the types of podcasts varied in the literature and studies yielded mixed results regarding the type preference of podcasts. In one study, of the participants, 47.7% preferred a podcast and 52.3% preferred a vodcast (Zelin II & Baird, 2012). Among three formats: video, audio synchronized with images from the presentation slides, and audio only, two-thirds of the respondents preferred the audio-only format (Brittain et al., 2006 as cited in Deal, 2007). Copley (2007) reported that video podcast was the preferred format selected by the students for supplementary lecture materials. The reason behind this was obtaining a complete record of the lecture through video podcasts. The ones preferred audio podcast expressed the reason for their preference as obtaining a complete record of the lecture through audio podcasts (69%) as well and 15% of them mentioned smaller file size to download. In addition, several students preferring audio podcast commented that when a handout of lecture slides is provided with audio, audio itself is sufficient. According to Mastroberardino, Santangelo, Botta, Marucci & Belardinelli (2008), when compared to unimodal formats, it has been shown that if information is presented through bimodal formats (audio-visual), it results in better recall (cited in Meade et al., 2011). This is supported by Mount & Chambers (2008, p. 56); they found that video podcasting provides better integration of the visual and text-based materials that found in paper-based manuals and thus, improves learner cognition.

While the participants in this study were of the opinion supporting video podcasts, they were not of the opinion that supporting audio podcasts. The reason for this could be due to that audio podcasts are unable to convey visual information (Hew, 2009). However, it is noted that if the podcasts are utilized to offer just-in-time relevant information, audio podcasts can be a useful tool for students' learning in this regard (Siciliano et al., 2011 as cited in Hew & Cheung, 2013). Although it was stated that from the learner's side, a podcast containing only audio could be compared to "a class taught in the dark" (p. 38) and incorporating visual elements into the podcast opens the lights (Gonzalez, 2011). Audio podcasts have some advantages over video and enhanced podcasts because listening does not include visual fixation and hence, people can listen while doing other activities (Lee & Chan, 2007, p. 216). The educators who involved in the podcast project report explained what they learned with regard to type of the podcasts that audio podcast shouldn't be used to disseminate information or explain concepts which can be presented better visually (Chan et al., 2006) since podcasts including visuals or video podcasts might help students understand more complex concepts and accommodate learners who learn visually (Bolliger et al., 2010). This issue should be kept in mind.

Enhanced podcasts have some advantages over both video and audio podcasts. Salmon et. al. (2008) warned that video podcasts require more space when compared to audio podcasts, and therefore enhanced podcasts is likely to be more feasible (Ting, 2011). Also, developing and editing images is usually easier than that of a video. Hyperlinks can be placed into enhanced podcasts and this can overcome lack of interactivity (Gonzalez, 2011).

Duration Preference

The design of the podcast regarding duration has a remarkable impact on learning, and the length is also crucial for the effectiveness and success of podcasts. Researchers tried to classify length of podcasts into categories. Hew (2009) stated

that the answers to "how long do students prefer the podcasts to be?" can be useful for the design of the podcast duration. The question of how long a podcast should be is affected by many factors such as the content of subject matter, the perceived usefulness of the podcasts on the students' side and whether listening to a podcast is a must requirement (p. 342). Edirisingha, Salmon & Nie (2008) stated that "You may be tempted, as the owner of the voice in your podcasts, to think that your students would listen to your podcasts regardless of how long they are!" (p. 164).The research of Edirisingha et al.'s (2008) reported the inverse relationship between the length of a podcast and tendency to listen to it based on the data from students who listened to IMPALA podcasts during two academic years. They noted that 10 minutes is likely to be the appropriate maximum length of podcasts that students intend to listen to. Carvalho et al. (2009) proposed a taxonomy having six dimensions consisting of type, medium, length, author, style and purpose. Length is divided into three categories: short (1-5 minutes), moderate (6-15 minutes) or long (>15 minutes).

When asked for the duration preference with regard to their benefits in education, pre-service teachers expressed ideal time, minimum time and maximum time. Pre-services teachers expressed that the ideal time should be 5 minutes. According to Corbeil & Corbeil (2011), 1.5 to 2 single-spaced typed-page approximately equals to a five-minute podcast. It was commented by the pre-service teachers that ideal time span for podcasts should be between 3 and 5 minutes, 7 and 10 minutes, and 5 and 15 minutes. It was also commented that minimum time for podcasts should be more than 3 minutes and not less than 5 minutes, and maximum time for podcasts should not exceed 4 or 5 minutes. The reason for time duration was stated that due to longer podcasts, students can have loss of attention and get bored. Moreover, the creator of podcast can also get bored. It was recommended by pre-service teachers that the podcast can be divided into smaller parts instead of a long podcast. It is important to note that pre-service teachers' were given a minimum time requirement for audio, video and enhanced podcast activities. This might have affected their perception of the length of the podcasts. Previous researched elicited that students mainly preferred short podcasts (Chan et al., 2011; Hew, 2009; Strickland et al., 2012; Zelin II &

Baird, 2012). The findings of this study also confirmed this; pre-service teachers preferred shorter podcasts both for creating and using in education.

The reason for short length is explained in several studies. Tapscott (2009) explained that students of today are known as the Net Generation and they switch between the activites. Moreover, they like multitasking and occasionally have mental breaks. Thereby, video podcasts based on worked-examples, which are long in duration, can be problematic in retaining student attention. In addition, Medina (2008) suggested that the attention span of people diminishes after approximately 10 minutes when they are exposed to passively presented instructional material. Also, Renkl (2005) supports using minimalist explanations that focusses on related meaningful details and lessens extraneous information which potentially increase cognitive load. Considering these statements, 5 minutes is almost an appropriate length (as cited in Kay, 2014). Therefore, it is important for pre-service teachers' to be aware of the length of podcasts due to aforementioned factors.

The length of podcast files can affect the level of satisfaction of a learner. Taking into students' recommendations, podcasts files should be short to keep attention and interests of learners (Bolliger et al., 2010). The educators who involved in the podcast project report explained what they learned with regard to length of the podcasts that time duration of the podcasts shouldn't exceed the attention span of the listener and should be given importance. In the Charles Sturt University experience, the authors worked on the podcasts which were 3 to 5 minutes long, aprroximately the length of a song (Chan et al., 2006). Files which are long in duration might take much time to download (Bolliger et al., 2010) and lead students to lose focus if they are subject to too much information (Hsueh, 2011). The reason for preferring short podcasts might also be due to the fact that the file size of longer podcasts which last an hour or more is large (Campbell, 2005, p. 36).

Revealing the assessment of duration of podcasts by pre-service teachers can be useful for teacher educators and pre-service teachers. If teacher educators design

podcast activities, they may have an idea about when pre-service teachers get bored so that they can design the activities accordingly. Similarly, pre-service teachers may have an idea about the optimum length of podcasts if they decide to produce podcasts for their students. Therefore, it is important to be aware of the length of podcasts to increase the potential benefits of podcasting.

5.1.5 Assessment of Podcast Development Process in Preparing Pre-Service Teachers for Teaching Profession

Teacher candidates acquire theoretical knowledge during their undergraduate education and they should be provided with real implementation environments in which they can apply this theoretical knowledge into practice in the optimum time (Uçar, 2012). One of the useful aspects of practicum is that it helps student teachers gain experience in the actual teaching and learning environment. Student teachers can apply theory into practice and apply the skills they gained throughout their undergraduate studies (Çelik, 2008). For this reason, the process of teacher training has been debated due to the concern for quality. In particular, the practice of this process is carried out in practice schools under the control of faculty of education and this has positive and negative aspects (Uçar, 2012). However, relevant literature points out the problems in the preparation of pre-service teachers for the teaching profession. The main problems can be addressed as lack of communication and cooperation between the faculty and the school, short application time for teacher candidates, and the reluctance of those involved in the process (Kocadere & Aşkar, 2013). It was mentioned as a problem for the process of teaching practice by the participants in a study conducted by Uçar (2012) that the time allocated for teaching practice is short and limited, and the semester which the practice take place is not appropriate. Moreover, it was especially added that teaching practice takes places in the second semester of fourth year which the teacher candidates have graduation and KPSS anxiety. This causes them to have motivation issues (Uçar, 2012). In the same way, it was commented in another study that both the duration of theoretical lectures at the university and teaching practicum at schools are short and limited. It is meant

178

that the short practice time and the available time at practice schools are not sufficient for teacher candidates to get familiar with the school environment, see exemplary cases, and have an opportunity to teach (Kocadere & Aşkar, 2013).

Effective preparation of pre-service teachers for the teaching profession is crucial since effective preparation helps teacher candidates lessen their teaching-related concerns. As known generally, for the teaching to be effective there must be two main parts: good preparation and good application (Çelik, 2008). Teacher candidates' practical experience is crucial to achieve success in the preparation of qualified professional teachers (Danner, 2014). Aforementioned findings suggest that student teachers should spend more time in practicum to put into practice what they learned at universities and however, it is not possible due to current regulations in the curriculum. For this reason, generally, teacher education programmes have been influenced by a number of mock practices for pre-service teachers. As cited in Zhao & Jiao (2012), there are some approaches to train pre-service teachers regarding their teaching skills. Among those, educational practice and micro-teaching are the main approaches. These aim to help pre-service teachers gain sufficient skills; however, for some students, these approaches may not result in acquiring them because of the short durations of training programs. Micro-teaching focuses more on basic and general skills in classroom, yet it ignores needs of individual learners (Felder & Brent, 2005). Other approaches including digital training, case-based training, and video based training are assumed to be more effective regarding training teaching skills (Moursand & Bielefeldt, 1999), yet they demand a great amount of resources and equipments that might slow down the adoption process. Altough skills are applied and experience is gained under mock conditions, mock experiences are useful to increase the confidence of teacher candidates regarding teaching profession.

The quantitative and qualitative results showed that the pre-service teachers appreciated their educational podcasting experience without real students; however, as Crane (2009) notes "knowing that there is a real-world audience gives students purpose and motivation to create a spectacular product" (p. 41). Pre-service teachers

179

developed podcasts as if they were presenting a subject to real students. During the interviews, they expressed that their experience has been useful in preparing them for teaching profession. Particularly, it was pointed out by pre-service teachers that their experience has been effective in voice control; body language; preparation for teaching practice; learning about educational material, programs, and lecture and lecture skills; confidence to be a teacher; and realization of difficulties of teaching. Moreover, the pre-service teachers considered their experience as teaching experience. The findings of interviews strongly reinforced the questionnaire findings. In general, majority thought about the role of podcasts in preparing and helping them get ready for teaching profession effective or very effective. Therefore, educational podcasting could be considered as one of these mock practices that take place in teacher education programs.

Quantitative and qualitative results supported that pre-service teachers benefited from their engagement in podcast actvities. Moreover, most of the participants were of the opinion that podcasting contributes to their professional learning since through their podcasting experience, they learned about technology and also about preparing educational materials following instructional design principles. Needless to say, teacher candidates are responsible for staying current in their content areas. Also, teachers are the most important factor in educational settings and they are supposed to have qualifications and skills to teach effectively. According to the ESOL teacher candidates in the study of Kim and King (2011), learning podcasting was useful for their future teaching and they considered the course as an opportuniy for professional development. In addition, they built confidence through the projects.

While over half of the participants thought podcasting experience helped them recognize their potential in teaching, 7 were neutral and 3 strongly disagreed or disagreed. The reason for disagreeing, strongly disagreeing and staying neutral might be due to the number of the activities, the duration of the activities and having the activities as requirements within the scope of CEIT 225 course.

Only 10 of the pre-service teachers thought that podcasting experience increased their interest in teaching while 9 stayed neutral and 6 disagreed or strongly disagreed. The reasons for this might be due to the nature of the pre-service teachers. The ones agreed or strongly agreed the statement above could think of being teachers in the future and therefore, could be having positive thoughts and might want to improve themselves. In the same way, the ones strongly disagreed, disagreed or stayed neutral to the statement above could think of not being teachers in the future and therefore, could be having negative thoughts. Also, the participants' responses (strongly disagree, disagree or neutral) might have been affected by the attitudes of pre-service teachers. In other words, CEIT pre-service teachers mostly do not think of being teachers. Teachers who manage practice teaching and school administrators who involved in one study mentioned one of the factors that cause the teaching practice to be ineffective that teacher candidates do not like the profession, they have the lack of interest and motivation (Uçar, 2012). However, through positive mock experiences, in this study through the positive podcast activities, pre-service teachers could like the profession and their interest could be increased with engaging them in more mock experiences. Thereby, the podcast activities in relation to improving the preparation of pre-service teachers for practicum or teaching profession are very important.

Majority thought podcasting experience helped them reflect on their content presentation performance and evaluate their performance continuously. Pre-service teachers can record themselves using podcasts and listen to their voice right away. They can evaluate their language use, pronunciation and intonation continuously.As Salmon and Nie (2008, p. 9) point out, "Learner-developed podcasts encourage students to reflect on their own learning, improve on their performance during content creation as well as reconsider and modify their ideas" (Hargis & Wilson, 2005; Huann & Thong, 2006). Moreover, engaging pre-service teachers in projects which enhance the pedagogy of pre-service teachers is a great opportunity for them to connect theory and practice (Yamomoto, 2009). Therefore, it seems clear from the findings of this study that even if the experiences are mock, they are useful.

Nineteen of the participants thought that podcasting experience helped them gain new knowledge and skills that are useful in their future profession, yet only 1 disagreed. In Papastergiou's (2011) study, after engaging in educational multimedia and web development, teacher candidates felt that they had useful knowledge and skills which will assist them enhance their future practices, enabling them to be more motivational and effective for their students.

Podcasting requires the use of effective oral presentation skills (Solomon & Schrum, 2010, p. 52). According to Nurmukhamedov & Sadler (2011), speech rate influences students' understanding and also frustration with podcasts. Likewise, the teaching profession requires effective oral presentation skills and good speech rate as well; however, there is almost no course solely focusing on imroving pre-service teachers' oral presentation skills. In this regard, podcast activities can be useful for pre-service teachers since through recording their voice, they could improve oral presentation skills. In the interviews, it was pointed out by the pre-service teachers that they learned how to control their voice. They reshaped and re-recorded their podcasts prior to final submission for the purpose of creating a quality material. In this way, they practiced recording and listening to their voice. Moreover, "a friendly tone invites students to learn and helps build intimacy with the speaker" (Edirisingha et al., 2008, p. 165) and using various formats in the podcasts such as lecture style, conversational, question and answer etc. could be one of the ways to keep students interested (Randall, 2011). For the teachers, having a friendly tone is a requirement to have a good rapport with their studens. During their undergraduate studies, pre-service teachers can do practice to improve the tone of their voices and they can try practising the formats as Randall (2011) mentioned. Therefore, podcasting could help pre-service teachers in terms of voice control and effective oral presentation skills.

5.2 Implications for Practice

All of the participants in this study were CEIT pre-service teachers and one should be cautious about interpreting and generalizing the results of this study. This study contributes to podcast literature in the field of teacher education and the results of this study have practical implications for practice. Some recommendations for practice can be made and the possible recommendations are presented below.

This study provided comprehensive understanding about pre-service teachers' opinions on educational podcasting, their self-efficacy and emotions prior to podcast development. These study can help practitioners and teacher educators in the design and utilization of podcasts activities to train pre-service teacher with regard to technology and necessary skills for teaching. Understanding pre-service teachers opinions on educational podcasting, their self-efficacy and emotions prior to podcast development could provide useful insights into how this technology can be used with pre-service teachers. This study could be helpful for educators who plan to implement podcasting with pre-service teachers in the method courses.

The use of audio and video is pervasive in educational settings. With the advancements in technology, it is very likely that mobile learning will be more common; however, some students may not afford to buy some devices supporting mobile learning. Fortunately, podcast can be used in mobile learning to deliver learning materials including visual, auditory and textual information. Therefore, pre-service teachers can be trained in the ways providing almost free access to mobile learning since many of the students have a variety of mobile devices.

Pre-service teachers can be made aware of mobile potential of podcasting through engaging them in podcast activities. In this way, in the future, pre-service teachers can design mobile integrated learning environments for their students and this can support mobile learning.

Practitioners could create environments which provides increased training opportunities for pre-service teachers for Web 2.0 technologies and enhance pre-service teachers' application specific self-efficacy. In this way, adoption of Web 2.0 technologies by pre-service teachers could be increased and the use of those technologies could be facilitated in their future professions. Moreover, these environments may help improve pre-service teachers' attitudes and perceptions toward Web 2.0 technologies.

5.3 Suggestions for Further Research

This study could be replicated with the pre-service teachers from other departments of faculty of education and the results could be compared. Moreover, further research should consider collecting data from different universities to compare the differences of findings. In this way, it could be found whether podcast activities would be effective in other departments in preparing pre-service teachers for their future profession. Additionally, further research could be carried out with other participants such as in-service teachers since they have more experience with the students in the classrooms. Hence, they could engage in podcast activities to meet the needs of their students.

In this study, the opinion of these student teachers may have been affected by the novelty effect. Therefore, it would also be more fruitful for future research to extend the activity times and number to destroy the novelty effect.

Future research could focus on more situated podcasting activities with various pedagogical strategies since "there is still little description of how to combine podcasting successfully with existing pedagogies and there is no evidence-based model to follow, in either strategy or practice" (Tam, 2012). Furthermore, podcast activities can be associated with TPACK.

There is a need for more studies focusion on mobile aspects of podcasting could be conducted because "interestingly the prediction that podcasting could result in pervasive mobile learning that truly takes place anywhere, as argued by advocates, did not bear fruit" (Hew, 2009, p. 341).

In a further research project, the subscription phase can be tracked to determine the subscriptions of the participants and formal peer assessment could be added.

Podcasts could be developed using theoretically valid instructional design principles. After the development of podcasts by pre-service teachers, these products could be used by students and the effectiveness of podcasts can be researched. In this way, pre-service teachers could be motivated for their future profession. In addition, there is lack of research in K-12 settings (Hew, 2009). If pre-service teachers engage more in podcast activities and gain experience, the number of research in K-12 settings might increase.

The research design of study could be changed and the study could be replicated through using experimental setups to examine the effectiveness of podcasts or survey research to benefit from the predictive function of self-efficacy since the method of this study does not allow to examine them in detail and self-efficacy is solely used in a descriptive way in this study.

In addition, while the self-efficacy questionnaire was based on previous studies and its validity was checked, a complete self-efficacy scale regarding podcasts and types of podcasts can be developed since the psychometrics of the instrument in this study require further assessment. Moreover, valid and reliable measures can be developed regarding educational podcasting opinions to ensure the quality of data since the questionnaire used in this study was very specific for the context of the study.

REFERENCES

An, Y., & Williams, K. (2010). Teaching with Web 2.0 Technologies: Benefits, Barriers and Lessons Learned. *International Journal of Instructional Technology and Distance Learning, 7*(3). Retreived September 24, 2014, from http://www.itdl.org/Journal/Mar_10/article04.htm

Anderson P. (2007). What is Web 2.0? Ideas, technologies and implications for education. JISC Technology and Standards Watch, Joint Information Systems Committee, UK. Retrieved from http://www.jisc.ac.uk/media/documents/techwatch/tsw0701b.pdf

Anderson, T. (2012). Networks, Web 2.0, and the Connected Learner. In R. Reiser & J. Dempsey (Eds.), *Trends and Issues in Instructional Design and Technology* (3rd ed., pp. 299-308). Boston: Pearson.

Angeli, C. (2005). Transforming a Teacher Education Method Course through Technology: Effects on Preservice Teachers' Technology Competency. *Computers and Education*, *45*(4), 383-398. DOI: 10.1016/j.compedu.2004.06.002

Anxiety. (2014). In *Cambridge Dictionaries Online*. Retrieved September 28, 2014, from http://dictionary.cambridge.org/dictionary/turkish/anxiety?q=Anxiety

Aypay, A., Çelik, H., Aypay, A., & Sever, M. (2012). Technology acceptance in education: A study of pre-service teachers in Turkey. *Turkish Online Journal of Educational Technology*, *11*(4), 264.

Balanskat, A., Blamire, R., & Kefala, S. (2006). *The ICT impact report: A review of studies of ICT impact on schools in Europe*. European Schoolnet.

Baltaci-Goktalay, S. S., & Ozdilek, Z. Z. (2010). Pre-service teachers' perceptions about web 2.0 technologies. *Procedia - Social and Behavioral Sciences*, *2*(2), 737-4741. doi:10.1016/j.sbspro.2010.03.760

Bandura, A. (1994). Self-efficacy. In V. S. Ramachaudran (Ed.), *Encyclopedia of human behavior* (Vol. 4, pp. 71-81). New York: Academic Press. (Reprinted in H. Friedman [Ed.], *Encyclopedia of mental health*. San Diego: Academic Press, 1998). Retreived September 25, 2014, from http://web.stanford.edu/~kcarmel/CC_BehavChange_Course/readings/Bandura_Selfefficacy_1994.htm

Bandura, A. (1997). *Self-efficacy : the exercise of control*. New York : W.H. Freeman.

Bandura, A. (2006). Guide For Constructing Self-Efficacy Scales. In F. Pajares & T. Urdan (Eds.), *Self-Efficacy Beliefs of Adolescents* (pp. 307-337). IAP.

Başaran, S. (2010). *Effects of podcasts on language learning beliefs and self-efficacy perceptions of first-year Turkish university students.* Unpublished doctoral dissertation, Çukurova University, Adana, Turkey.

Belanger, Y. (2005). Duke university ipod first year experience final evaluation report. Retreived September 24, 2014, from http://cit.duke.edu/pdf/reports/ ipod_initiative_04_05.pdf

Bergman, M. (2008). *Advances in Mixed Methods Research: Theories and Applications*. Los Angeles [Calif.]: SAGE.

Bolliger, D. U., Supanakorn, S., & Boggs, C. (2010). Impact of Podcasting on Student Motivation in the Online Learning Environment. *Computers & Education*,*55*(2), 714-722. doi: 10.1016/j.compedu.2010.03.004

Braun, L. W. (2007). *Listen Up! Podcasting for Schools and Libraries*. Information Today, Inc.

British Broadcasting Corporation [BBC] News. (2005, December 7). Wordsmiths hail podcast success. Retrieved November 20, 2013, from http://news.bbc.co.uk/2 /hi/technology/ 4504256.stm

Brookes, M. (2010). An evaluation of the impact of formative feedback podcasts on the student learning experience. *Journal of Hospitality, Leisure, Sport & Tourism Education*, *9*(1), 53-64. doi:10.3794/johlste.91.238

Bryman, A. (2008). *Social research methods*. Oxford; New York: Oxford University Press, 2008.

Burke, N., Bird, J., Clark, M., Rakowski, W., Guerra, C., Barker, J., & Pasick, R. (2009). Social and Cultural Meanings of Self-Efficacy. *Health Education & Behavior, 36*(5), 111S-128S. doi: 10.1177/1090198109338916

Caltabiano, M., Costin, S., & Ochiai, M. (2013). Development and Validation of the Medical Social Self-efficacy Scale for Use in Culturally Diverse Communities. *Journal 0f Immigrant and Minority Health. doi: 10.1007/s10903-013-9874-9*

Campbell, G. (2005). There's Something in the Air: Podcasting in Education. *EDUCAUSE Review*, *40*(6). Retrieved September 24, 2014, from http://eric.ed.gov/?id=EJ745798

Carvalho, A. A., Aguiar, C., & Maciel, R. (2009) *A taxonomy of podcasts and its application to higher education.* In ALT-C 2009 "In dreams begins responsibility" - choice, evidence and change, 8 - 10 September 2009, Manchester. Retreived September 24, 2014, from http://repository.alt.ac.uk/638/

Cassidy, S. S., & Eachus, P. P. (2002). Developing the computer user self-efficacy (CUSE) scale: Investigating the relationship between computer self-efficacy, gender and experience with computers. *Journal of Educational Computing Research*, *26*(2), 133-153. doi:10.2190/JGJR-0KVL-HRF7-GCNV

Cebeci, Z., & Tekdal, M. (2006). Using Podcasts as Audio Learning Objects. *Interdisciplinary Journal of Knowledge & Learning Objects*, 247-57.

Celik, V., & Yesilyurt, E. (2013). Attitudes to Technology, Perceived Computer Self-Efficacy and Computer Anxiety as Predictors of Computer Supported Education. *Computers & Education*, *60*(1), 148-158. doi: 10.1016/j.compedu.2012.06.008

Chan, W. M., Chi, S. W., Chin, K. N., & Lin, C. Y. (2011). Students' perceptions of and attitudes towards podcast-based learning–A comparison of two language podcast projects. *Electronic Journal of Foreign Language Teaching*, *8*(1), 312-335. Retrieved September 24, 2014, from http://e-flt.nus.edu.sg/v8s12011/chan.pdf

Chan, A., Lee, M., & McLoughlin, C. (2006). Everyone's learning with podcasting: A Charles Sturt University experience. *ASCILITE 2006 - The Australasian Society for Computers In Learning In Tertiary Education*, *1*(Proceedings of the 23rd Annual Conference of the Australasian Society for Computers in Learning in Tertiary Education: Who's Learning? Whose Technology?, ASCILITE 2006), 111-120.

Chen, Y. L. (2008). Modeling the determinants of Internet use. *Computers And Education*, *51*(2), 545-558. doi:10.1016/j.compedu.2007.06.007

Cheon, J., Lee, S., Crooks, S. M., & Song, J. (2012). An Investigation of Mobile Learning Readiness in Higher Education Based on the Theory of Planned Behavior. *Computers & Education*, *59*(3), 1054-1064. doi:10.1016/j.compedu.2012.04.015

Cheon, J., Song, J., Jones, D. R., & Nam, K. (2010). Influencing Preservice Teachers' Intention to Adopt Web 2.0 Services. *Journal of Digital Learning in Teacher Education (International Society For Technology In Education)*, *27*(2), 53-64.

Chou, H. W. (2001). Effects of training method and computer anxiety on learning performance and self-efficacy. *Computers in Human Behavior*, *17*(1), 51-69. doi:10.1016/S0747-5632(00)00035-2

Clark, S., Taylor, L. & Westcott, M. (2007). Using short podcasts to reinforce lectures. In Proceedings of UniServe Science Teaching and Learning Research, 22-27. Retreived September 24, 2014, from http://science.uniserve.edu.au/ pubs/procs/2007/08.pdf

Collis, B. (2005). E-Learning and the Transformation of Education for a Knowledge Economy. In M. Castells & G. Cardoso (Eds.), *The Network Society: From Knowledge to Policy* (pp. 215-223). Washington, DC: Johns Hopkins Center for Transatlantic Relations.

Compeau, D. R., & Higgins, C. A. (1995). Computer Self-Efficacy: Development of a Measure and Initial Test. *MIS Quarterly*, *19*(2), 189-211.

Conole, G., & Alevizou, P. (2010). *A literature review of the use of Web 2.0 tools in Higher Education.* HEA Academy, York, UK. Retrieved September 24, 2014, from http://oro.open.ac.uk/23154/

Copley, J. (2007). Audio and Video Podcasts of Lectures for Campus-Based Students: Production and Evaluation of Student Use. *Innovations in Education and Teaching International*, *44*(4), 387-399. doi: 10.1080/14703290701602805

Corbeil, M., & Corbeil, J. (2011). Getting Started: Academic Podcasting made Simple. In B. Facer & M. Abdous (Eds.), *Academic Podcasting and Mobile Assisted Language Learning* (pp. 54-69). New York.

Crane, B. (2009). *Using WEB 2.0 tools in the K-12 classroom*. Neal-Schuman Publishers.

Creswell, J. (2002). *Research design: Qualitative, quantitative, and mixed method approaches* (2nd ed.). Thousand Oaks, Calif.: Sage Publications.

Creswell, J. (2009). *Research design: Qualitative, quantitative, and mixed method approaches* (3rd ed.). Thousand Oaks, Calif.: Sage Publications.

Creswell, J. (2012). *Educational Research Planning, Conducting, and Evaluating Quantitative and Qualitative Research* (4th ed.). Boston: Pearson.

Cronbach, L. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika, 16*(3), 297-334. Retrieved September 20, 2014, from http://psych.colorado.edu/~carey/courses/psyc5112/readings/alpha_cronbach. pdf

Cuban, L. (2000). So Much High-Tech Money Invested, So Little Use: How Come?. Retrieved September 24, 2014, from http://www.faculty.pnc.edu/ dpratt/271/cuban.htm

Çakır, R., & Yıldırım, S. (2006). Are Computer Teachers Trained for the Teaching Profession? An Assessment of Computer Teacher Training Program. *Education and Science*, *31*(142), 35.

Çakır, R., & Yıldırım, S. (2009). What Do Computer Teachers Think About the Factors Affecting Technology Integration in Schools? *Elementary Education Online*, *8*(3), 952.

Çelik, M. (2008). Pre-Service Efl Teachers' Reported Concerns and Stress for Practicum in Turkey. *Eğitim Ve Bilim*, *33*(150), 97. Retreived September 24, 2014, from http://uvt.ulakbim.gov.tr/uvt/index.php?cwid=9&vtadi=TSOS& c=ebsco&ano=86898_9aa57ad98936133d2d7fcc89a399c860&?

Dale, C., & Povey, G. (2009). An evaluation of learner-generated content and podcasting. *Journal of Hospitality, Leisure, Sport & Tourism Education*, *8*(1), 117-123. doi:10.3794/johlste.81.214

Danner, R. (2014). Student Teachers' Perceptions of Sources of Teaching Practice-Related Anxieties. *Journal of Teaching and Teacher Education, 2*(1), 47-59.

Deal, A. (2007). *Teaching with technology white paper podcasting*. Retrieved September 5, 2014, from http://www.cmu.edu/ teaching/ technology/ whitepapers/Podcasting_Jun07.pdf

Domino, G., & Domino, M. (2006). *Psychological Testing An Introduction* (2nd ed.). New York: Cambridge University Press.

Drew, C., Hardman, M., & Hosp, J. (2008). *Designing and conducting research in education*. Los Angeles, Calif.: SAGE Publications.

Ducate, L., & Lomicka, L. (2009). Podcasting: an effective tool for honing language students' pronunciation?. *Language, Learning & Technology*, (3). 66.

Edirisingha, P., Salmon, G., & Nie, M. (2008). Developing pedagogical podcasts. In G. Salmon & P. Edirisingha (Eds.), *Podcasting for Learning in Universities* (pp. 153-168). Maidenhead: Open University Press.

Elliott, C., & Smith, L. (2006). *Anxiety & depression workbook for dummies*. Indianapolis, Indiana: Wiley Publishing.

Erişen, İ. (2010). *Language production in a typological perspective: a corpus study of Turkish slips of the tongue*. Unpublished master's thesis, METU, Ankara, Turkey

Ertmer, P.A. (1999). Addressing first-and second-order barriers to change: Strategies for technology integration. *Educational Technology Research and Development, 47*(4), 47-61.

Ertmer, P., Lehman, J., Park, S., Cramer, J. & Grove, K. (2003). Adoption and Use of Technology-Supported Learner-Centered Pedagogies: Barriers to Teachers' Implementation. In D. Lassner & C. McNaught (Eds.), *Proceedings of World Conference on Educational Multimedia, Hypermedia and Telecommunications 2003* (pp. 1955-1958). Chesapeake, VA: AACE.

Ertmer, P. A., Ottenbreit-Leftwich, A. T., Sadik, O., Sendurur, E., & Sendurur, P. (2012). Teacher Beliefs and Technology Integration Practices: A Critical Relationship. *Computers & Education, 59*(2), 423-435. doi:10.1016/ j.compedu.2012.02.001

Evans, C. (2008). The Effectiveness of M-Learning in the Form of Podcast Revision Lectures in Higher Education. *Computers & Education*, *50*(2), 491-498. doi: 10.1016/j.compedu.2007.09.016

Eyyam, R. R., Meneviş, I. I., & Doğruer, N. N. (2011). Perceptions of teacher candidates towards Web 2.0 technologies. *Procedia - Social and Behavioral Sciences*, *15*(3rd World Conference on Educational Sciences - 2011), 2663-2666. doi:10.1016/j.sbspro.2011.04.166

Farah, A. (2011). Factors influencing teachers' technology self-efficacy: A case study. *Dissertation Abstracts International Section A*, *73*, 2055.

Fatih Project. (2012). Retrieved November 10, 2013, from http://fatihprojesi.meb.gov.tr/tr/english.php

Fernandez, V. V., Simo, P. P., & Sallan, J. M. (2009). Podcasting: A new technological tool to facilitate good practice in higher education. *Computers And Education*,*53*(2), 385-392. doi:10.1016/j.compedu.2009.02.014

Field, A. (2009). *Discovering statistics using SPSS* (3rd ed.). London: SAGE.

Forbes, D. (2011). Beyond lecture capture: Student-generated podcasts in teacher education. *Waikato Journal of Education*, *16*(1), 51-63. Retrieved September 24, 2014, from http://researchcommons.waikato.ac.nz/ bitstream/ handle/ 10289/6140/Forbes%20Beyond.pdf

Foster, J., Larmore, J., & Havemann, S. (2012). The Basics of Educational Podcasting: Enhancing the Student Learning Experience. Retreived September 24, 2014, from http://edis.ifas.ufl.edu/pdffiles/MB/MB00400.pdf

Fraenkel, J., Wallen, N., & Hyun, H. (2012). *How to design and evaluate research in education* (8th ed.). New York: McGraw-Hill Education.

Franklin, T., & Harmelen, M. (2007). *Web 2.0 for Content for Learning and Teaching in Higher Education*. Retrieved September 4, 2014, from http://www.jisc.ac.uk/media/documents/programmes/digitalrepositories/web2 -content-learning-and-teaching.pdf

Fullan, M. (2007). *The new meaning of educational change*. New York: Teachers College Press.

Geoghegan, M., & Klass, D. (2007). *Podcast solutions the complete guide to audio and video podcasting* (2nd ed.). Apress.

193

Ghinassi, C. (2010). *Anxiety*. Santa Barbara, Calif: Greenwood/ABC-CLIO.

Gikas, J., & Grant, M. M. (2013). Mobile computing devices in higher education: Student perspectives on learning with cellphones, smartphones & social media. *The Internet and Higher Education*, 18. doi:10.1016/j.iheduc.2013.06.002

Gill, L., & Dalgarno, B. (2008). Influences on pre-service teachers' preparedness to use ICTs in the classroom. *ASCILITE 2008 - The Australasian Society For Computers In Learning In Tertiary Education*, (Proceedings of the 25th Annual Conference of the Australasian Society for Computers in Learning in Tertiary Education, ASCILITE 2008), 330-339.

Gonzalez, T. (2011). Going beyond Audio: Adding Multimedia to Podcasts for Foreign Language Education. In B. Facer & M. Abdous (Eds.), *Academic Podcasting and Mobile Assisted Language Learning* (pp. 37-53). New York.

Gorder, L. (2008). A Study of Teacher Perceptions of Instructional Technology Integration in the Classroom. *Delta Pi Epsilon Journal*, *50*(2), 63-76.

Göktaş, Y., Yıldırım, Z., & Yıldırım, S. (2008). A Review of ICT Related Courses in Pre-Service Teacher Education Programs. *Asia Pacific Education Review*, *9*(2), 168-179.

Göktaş, Y., Yıldırım, S., & Yıldırım, Z. (2009). Main Barriers and Possible Enablers of ICTs Integration into Pre-service Teacher Education Programs. *Educational Technology & Society*, *12* (1), 193–204.

Green, S. B., & Salkind, N. J. (2007). *Using SPSS for Windows and Macintosh : analyzing and understanding data*. Upper Saddle River, N.J.: Pearson/Prentice Hall.

Grove, K., J. (2008). Student Teacher ICT Use: Field Experience Placements and Mentor Teacher Influences. Retrieved November 12, 2013, from http://www.oecd.org /edu/ceri/41674583.pdf

Hailpern, J., Reid, L., Boardman, R., & Annam, S. (2009). Web 2.0: Blind to an accessible new world. *WWW'09 - Proceedings Of The 18Th International World Wide Web Conference*, (WWW'09 - Proceedings of the 18th International World Wide Web Conference), 821-830. doi:10.1145/1526709.1526820

Hakkarainen, P. (2009). Designing and Implementing a PBL Course on Educational Digital Video Production: Lessons Learned from a Design-Based Research. *Educational Technology Research and Development*, *57*(2). doi:10.1007/s11423-007-9039-4.

Harnett, M. (2010). *A quick start guide to podcasting: creating your own audio and visual material for iPods, BlackBerries, mobile phones, and websites*. London, UK ; Philadelphia, PA : Kogan Page.

Henry, J., & Stone, R. (1997). The development and validation of computer self-efficacy and outcome expectancy scales in a nonvolitional context. *Behavior Research Methods, Instruments, and Computers*, *29*(4), 519-527.

Hew, K. (2009). Use of Audio Podcast in K-12 and Higher Education: A Review of Research Topics and Methodologies. *Educational Technology Research and Development*, (3). 333. doi:10.1007/s11423-008-9108-3.

Hew, K. F., & Brush, T. (2007). Integrating Technology into K-12 Teaching and Learning: Current Knowledge Gaps and Recommendations for Future Research. *Educational Technology Research and Development*, *55*(3). doi:10.1007/s11423-006-9022-5.

Hew, K., & Cheung, W. (2013). Use of Web 2.0 Technologies in K-12 and Higher Education: The Search for Evidence-Based Practice. *Educational Research Review*, *9*47-64.

Hill, J., Woodland, W., Nelson, A., & France, D. (2012). Integrating Podcast Technology Effectively into Student Learning: A Reflexive Examination. *Journal Of Geography In Higher Education*, *36*(3), 437-454. doi:10.1080/03098265.2011.641171

Horzum, M., & Aydemir, Z. (2014). Web 2.0 Tools and Educational Usage Self-efficacy: A Scale Development Study. *Procedia - Social and Behavioral Sciences*, *116*(5th World Conference on Educational Sciences), 453-458. doi:10.1016/j.sbspro.2014.01.239

Hossain, M., & Aydin, H. (2011). A Web 2.0-Based Collaborative Model for Multicultural Education. *Multicultural Education & Technology Journal*, *5*(2), 116-128. doi: 10.1108/17504971111142655

Hsueh, S. (2011). Challenges of Adopting Web 2.0 and Mobile 2.0 for Language Learning. In B. Facer & M. Abdous (Eds.), *Academic Podcasting and Mobile Assisted Language Learning* (pp. 70-91). New York.

Igbaria, M. M., & Iivari, J. J. (1995). The effects of self-efficacy on computer usage. *Omega*, (6), 587.

International Society for Technology in Education [ISTE] Standards Teachers. (2008). International Society for Technology in Education. Retreived September 24, 2014, from http://www.iste.org/docs/pdfs/20-14_ISTE_Standards-T_PDF.pdf

International Society for Technology in Education [ISTE]. (2008). Policy Brief: Technology and Student Achievement-The Indelible Link. Retrieved November 20, 2013, from https://computerexplorers.com/Student-Achievement-Brief.pdf

International Society for Technology in Education [ISTE] Standards Computer Science Educators. (2011). International Society for Technology in Education. Retreived September 24, 2014, from http://www.iste.org/docs/pdfs/20-14_ISTE_Standards-CSE_PDF.pdf

International Telecommunication Union [ITU]. (2009). *The World in 2009: ICT Facts and Figures*. Retrieved November 10, 2013, from http://www.itu.int/en/ITU-D/Statistics/ Documents/ facts/ICTFactsFigures 2009.pdf

International Telecommunication Union [ITU]. (2010). *The World in 2010: ICT Facts and Figures*. Retrieved November 10, 2013, from http://www.itu.int/en/ITU-D/Statistics/Documents/facts/ ICTFacts Figures 2010.pdf

International Telecommunication Union [ITU]. (2011). *The World in 2011: ICT Facts and Figures*. Retrieved November 10, 2013, from http://www.itu.int/en/ITU-D/Statistics/Documents/facts/ICTFactsFigures 2011.pdf

International Telecommunication Union [ITU]. (2013). *The World in 2013: ICT Facts and Figures*. Retrieved November 09, 2013, from http://www.itu.int/en/ITU-D/Statistics/Documents/facts/ICTFactsFigures 2013-e.pdf

Jimoyiannis, A., Tsiotakis, P., Roussinos, D., & Siorenta, A. (2013). Preparing Teachers to Integrate Web 2.0 in School Practice: Toward a Framework for Pedagogy 2.0. *Australasian Journal of Educational Technology*, *29*(2), 248-267.

Jinks, S. (2006). Preservice Teachers Engaged in Digital Video Production. In C. Crawford et al. (Eds.), *Proceedings of Society for Information Technology & Teacher Education International Conference 2006* (pp. 3450-3455). Chesapeake, VA: AACE.

Johnson, L., Adams, S., and Haywood, K. (2011). *The NMC Horizon Report: 2011 K-12 Edition*. Austin, Texas: The New Media Consortium.

Johnson, L., Adams, S., and Cummins, M. (2012). The *NMC Horizon Report: 2012 K-12 Edition.* Austin, Texas: The New Media Consortium.

Johnson, B., & Christensen, L. B. (2008). *Educational research: quantitative, qualitative, and mixed approaches*. Los Angeles: Sage Publications.

Julian, L. J. (2011). Measures of anxiety: State-Trait Anxiety Inventory (STAI), Beck Anxiety Inventory (BAI), and Hospital Anxiety and Depression Scale-Anxiety (HADS-A). *Arthritis Care and Research*, *63*(SUPPL. 11), S467-S472. doi:10.1002/acr.20561

Kardong-Edgren, S. S., & Emerson, R. R. (2010). Student adoption and perception of lecture podcasts in undergraduate bachelor of science in nursing courses. *Journal of Nursing Education*, *49*(7), 398-401. doi:10.3928/01484834-20100224-04

Kay, R. (2012a). Exploring the use of video podcasts in education: A comprehensive review of the literature. *Computers in Human Behavior*, *28*(3), 820-831. doi: 10.1016/j.chb.2012.01.011

Kay, R. (2012b). Using video podcasts to enhance technology-based learning in preservice teacher education: a formative analysis. *Journal of Information Technology and Application in Education, 1*(3), 97-104.

Kay, R. H. (2014). Developing a framework for creating effective instructional Video podcasts. *International Journal of Emerging Technologies in Learning*, *9*(1), 22-30. doi:10.3991/ijet.v9i1.3335

Keating, T. & Evans, E. (2001). Three Computers In The Back of the Classroom: Preservice Teachers' Conceptions of Technology Integration. In J. Price et al. (Eds.), *Proceedings of Society for Information Technology & Teacher Education International Conference 2001* (pp. 1671-1676). Chesapeake, VA: AACE.

Keengwe, J., Pearson, D., & Smart, K. (2009). Technology Integration: Mobile Devices (iPods), Constructivist Pedagogy, and Student Learning. *AACE Journal*, *17*(4), 333-346. Retreived September 24, 2014, from www.editlib.org/p/29411/article_29411.pdf

Kennedy, M., & Thomas, C. (2012). Effects of Content Acquisition Podcasts to Develop Preservice Teachers' Knowledge of Positive Behavioral Interventions and Supports. *Exceptionality*, *20*(1), 1-19. doi:10.1080/09362835.2011.611088

Kılıçer, K. (2011). Bilgisayar ve öğretim teknolojileri eğitimi öğretmen adaylarının bireysel yenilikçilik profilleri. Unpublished Doctoral Thesis. Anadolu University, Eskişehir.

Kim, D., & King, K. P. (2011). Implementing Podcasts and Blogs with ESOL Teacher Candidates' Preparation: Interpretations and Implications. *International Forum of Teaching & Studies*, *7*(2), 5-19.

King, K. P., & Gura, M. (2007). *Podcasting for teachers : using a new technology to revolutionize teaching and learning*. Charlotte, NC : IAP, 2007.

Kocadere, S., & Aşkar, P. (2013). *Okul Uygulamaları Derslerine İlişkin Görüşlerin İncelenmesi ve Bir Uygulama Modeli Önerisi*. Hacettepe Üniversitesi Eğitim Fakültesi Dergisi, *28*(2). Retreived September 24, 2014, from http://dergipark.ulakbim.gov.tr/hunefd/article/view/5000048079/5000045400

Lazzari, M. M. (2009). Creative use of podcasting in higher education and its effect on competitive agency. *Computers & Education*, *52*(1), 27-34. doi:10.1016/j.compedu.2008.06.002

Lee, M. W., & Chan, A. (2007). Pervasive, Lifestyle-Integrated Mobile Learning for Distance Learners: An Analysis and Unexpected Results from a Podcasting Study. *Open Learning*, *22*(3), 201-218. doi: 10.1080/02680510701619810

Lee, Y., & Lee, J. (2014). Enhancing pre-service teachers' self-efficacy beliefs for technology integration through lesson planning practice. *Computers & Education, 73*, 121-128. doi:10.1016/j.compedu.2014.01.001

Lee, C. B., Teo, T. T., Chai, C. S., Choy, D. D., Tan, A. A., & Seah, J. J. (2007). Closing the gap: Pre-service teachers' perceptions of an ICT based, student centred learning curriculum. *ASCILITE 2007 - The Australasian Society for Computers In Learning In Tertiary Education*, (Proceedings of the 24th Annual Conference of the Australasian Society for Computers in Learning in Tertiary Education, ASCILITE 2007), 554-562.

Lee, M., & Tynan, B. (2008). Podcasts and distance learning. In G. Salmon & P. Edirisingha (Eds.), *Podcasting for Learning in Universities* (pp. 92-102). Maidenhead: Open University Press.

Liao, Y. (2007). Effects of computer-assisted instruction on students' achievement in Taiwan: A meta-analysis.*Computers & Education*, (2), 216. doi:10.1016/j.compedu.2004.12.005

Liaw, S., Hatala, M., & Huang, H. (2010). Investigating acceptance toward mobile learning toassist individual knowledge management: Based on activity theory approach.*Computers and Education*, *54*(2), 446-454. doi:10.1016/j.compedu.2009.08.029

Liaw, S., Huang, H., & Chen, G. (2007). Surveying Instructor and Learner Attitudes toward E-Learning. *Computers & Education*, *49*(4), 1066-1080. doi:10.1016/j.compedu.2006.01.001

Liu, Y., Carlsson, C., & Li, H. (2010). Factors driving the adoption of m-learning: An empirical study. *Computers and Education*, *55*(3), 1211-1219. doi:10.1016/j.compedu.2010.05.018

Lomicka, L., & Lord, G. (2011). Podcasting- Past, Present and Future: Applications of Academic Podcasting In and Out of the Language Classroom. In B. Facer & M. Abdous (Eds.), *Academic Podcasting and Mobile Assisted Language Learning* (pp. 1-20). New York.

Lonn, S., & Teasley, S. (2009). Podcasting in higher education: What are the implications for teaching and learning?. *Internet and Higher Education*, *12*(2), 88-92. doi:10.1016/j.iheduc.2009.06.002

Loughran, J. J. (2002). Effective reflective practice in search of meaning in learning about teaching. *Journal of Teacher Education*, *53*(1), 33-43. doi:10.1177/ 0022487102053002004

Ma, W., Andersson, R., & Streith, K. (2005). Examining user acceptance of computer technology: an empirical study of student teachers. *Journal of Computer Assisted Learning*, *21*(6), 387-395. doi:10.1111/j.1365-2729.2005.00145.x

Malan, D.J. (2007). *Podcasting Computer Science E-1.* In Proceedings of the 38th SIGCSE Technical Symposium on Computer Science Education. Retrieved September 5, 2014, from http://cs.harvard.edu/malan/publications/fp150-malan.pdf

Malliari, A., Korobili, S., & Togia, A. (2012). IT self-efficacy and computer competence of LIS students. *Electronic Library*, *30*(5), 608. doi:10.1108/02640471211275675

Martin, F., & Ertzberger, J. (2013). Here and now mobile learning: An experimental study on the use of mobile technology. *Computers & Education*, 76. doi:10.1016/ j.compedu. 2013. 04.021

Maryland Teacher Technology Standards. (2002). Maryland State Department of Education Program Approval and Assessment Branch. Retrieved September 24, 2014, from http://www.mttsonline.org/standards/ MDTchr TechStds MTTS.pdf

McCombs, S., Houk, K., Higginbotham, D., Johnson, G. & Liu, Y. (2006). Turning iPod into an Effective Portable Learning Tool. In C. Crawford et al. (Eds.), *Proceedings of Society for Information Technology & Teacher Education International Conference 2006* (pp. 438-443). Chesapeake, VA: AACE. Retrieved September 20, 2014 from http://www.editlib.org/p/22076

McLean, D., & White, E. (2009). Two Approaches to Podcasting Use in the Classroom. *MERLOT Journal of Online Learning and Teaching, 5*(2), 336-347.

McNeill, M., Mukherjee, S., & Singh, G. (2010). Podcasting in Physical Education Teacher Education. *ICHPER-SD Journal of Research*, *5*(1), 16-19. Retrieved September 5, 2014, from http://www.eric.ed.gov/ contentdelivery/servlet/ ERICServlet?accno=EJ903498

Meade, O. O., Bowskill, D. D., & Lymn, J. S. (2009). Pharmacology as a foreign language: A preliminary evaluation of podcasting as a supplementary learning tool for non-medical prescribing students. *BMC Medical Education*, *9*(1), doi:10.1186/1472-6920-9-74

Meade, O. O., Bowskill, D. D., & Lymn, J. S. (2011). Pharmacology podcasts: A qualitative study of non-medical prescribing students' use, perceptions and impact on learning. *BMC Medical Education*, *11*(1), doi:10.1186/1472-6920-11-2

Meng-Jung, T., & Chin-Chung, T. (2003). Information Searching Strategies in Web-Based Science Learning: The Role of Internet Self-Efficacy. *Innovations in Education & Teaching International*, *40*(1), 43.

Meng-Hsiang, H., & Chao-Min, C. (2004). Internet self-efficacy and electronic service acceptance. *Decision Support Systems*, *38*(3), 369-381. doi:10.1016/j.dss.2003.08.001

Middle East Technical University Computer Education and Instructional Technology [METU CEIT]. (2014). *Vision & Mission*. Retrieved October 10, 2014, from http://ceit.metu.edu.tr/vision-mission

Miles, G. (2013). How is Teacher Self-Efficacy and Attitude toward Technology Affected by Extended Intrusive Training?. Instructional Technology Education Specialist Research Papers. Paper 8. Retreived September 24, 2014, from http://digitalcommons.georgiasouthern.edu/edu-papers/8

Mileva, N. N. (2011). The Effectiveness of Mobile Learning in the Form of Performance Support System in Higher Education. *International Journal of Interactive Mobile Technologies*, *5*(4), 17.

Miltiadou, M., & Yu, C. (2000). Validation of the Online Technologies Self-Efficacy Scale (OTSES).

Ministry of National Education [MoNE]. (2006). Teacher profession general competencies. Retrieved November 15, 2013, from http://otmg.meb.gov.tr/belgeler/otmg/Yeterlikler.pdf

Ministry of National Education [MoNE]. (2009). Ministry of National Education 2010-2014 Strategic Plan. Retrieved November 15, 2013, from http://sgb.meb.gov.tr/Str_yon_planlama_V2/MEBStratejikPlan.pdf

Morrison, W. F., & Jeffs, T. L. (2005). Outcomes of Preservice Teacher's Technology Use. *Assistive Technology Outcomes and Benefits*, *2*(1), 71-78. Retrieved September 24, 2014, from http://eric.ed.gov/?id=EJ1002120

Mount, N., & Chambers, C. (2008). Podcasts and practicals. In G. Salmon & P. Edirisingha (Eds.), *Podcasting for Learning in Universities* (pp. 43-56). Maidenhead: Open University Press.

Mostyn, A. A., Jenkinson, C. M., McCormick, D. D., Meade, O. O., & Lymn, J. S. (2013). An exploration of student experiences of using biology podcasts in nursing training. *BMC Medical Education*, *13*12. doi:10.1186/1472-6920-13-12

Mugwanya, Marsden & Boateng, (2011). A preliminary study of podcasting in developing higher education institutions: A South African case, *Journal of Systems and Information Technology, 13*(3), pp.268 - 285.

Mullen, R. & Wedwick, L. (2008). Avoiding the Digital Abyss: Getting Started in the Classroom with YouTube, Digital Stories, and Blogs. *Clearing House: A Journal of Educational Strategies, Issues and Ideas, 82*(2), 66-69.

Murphy, C., Coover, D., & Owen, S. (1989). Development and Validation of the Computer Self-Efficacy Scale. *Educational and Psychological Measurement, 49*(4), 893-899. doi: 10.1177/001316448904900412

Murphy, J., & Lebans, R. (2008). Unexpected outcomes: Web 2.0 in the secondary school classroom. *International Journal of Technology in Teaching and Learning, 4*(2), 134-147.

Norman, S. (2004). The Human Face of School Reform. *National Forum of Educational Administration & Supervision Journal*, *21*(4), 1-6.

Nurmukhamedov, U., & Sadler, R. (2011). Podcasts in Four Categories: Applications to Language Learning. In B. Facer & M. Abdous (Eds.), *Academic Podcasting and Mobile Assisted Language Learning* (pp. 176-195). New York.

Oakley, R. L., & Palvia, P. C. (2012). A study of the impact of mobile self-efficacy and emotional attachment on mobile device infusion. *18Th Americas Conference On Information Systems 2012, AMCIS 2012*, 2653-2661.

O'Bannon, B. W., Lubke, J. K., Beard, J. L., & Britt, V. G. (2011). Using Podcasts to Replace Lecture: Effects on Student Achievement. *Computers & Education*, *57*(3), 1885-1892. doi: 10.1016/j.compedu.2011.04.001

Oigara, J. & Keengwe, J. (2013). A model for integrating pedagogy and technology in teacher education. In R. McBride & M. Searson (Eds.), *Proceedings of Society for Information Technology & Teacher Education International Conference 2013* (pp. 3331-3335). Chesapeake, VA: AACE. Retrieved November 18, 2013 from http://www.editlib.org/p/48607.

O'Reilly, T. (2005, September 30). What Is Web 2.0: Design Patterns and Business Models for the Next Generation of Software. Retrieved September 17, 2014, from http://oreilly.com/web2/archive/what-is-web-20.html

Organisation for Economic Co-operation and Development [OECD]. (2005). *Are Students Ready for a Technology-Rich World? : What PISA Studies Tell Us*. Paris: OECD Publishing.

Organisation for Economic Co-operation and Development [OECD]. (2008). *New millennium learners: initial findings on the effects of digital technologies on school-age learners.* Retrieved November 10, 2013, from http://www.oecd.org/site/educeri21st/40554230.pdf

Organisation for Economic Co-operation and Development [OECD]. (2010). *Are the New Millennium Learners Making the Grade?: Technology Use and Educational Performance in Pisa*. OECD Publishing.

Oxforddictionaries Blog. (n.d.). Which words have been selected as Word of the Year in recent years?[Web log post]. Retrieved September 28, 2013, from http://blog.oxforddictionaries.com/word-of-the-year-faq/

Öner, N., & LeCompte, A. (1998). *Durumluluk-Süreklilik Kaygı Envanteri* (2. baskı). İstanbul: Boğaziçi Üniversitesi Yayınevi.

Özdener, N., & Güngör, Y. (2010). Effects of video podcast technology on peer learning and project quality. *Procedia - Social and Behavioral Sciences*, *2*(2), 2217-2221. doi:10.1016/j.sbspro.2010.03.311

Özmen, H. H. (2008). The influence of computer-assisted instruction on students' conceptual understanding of chemical bonding and attitude toward chemistry: A case for Turkey. *Computers and Education*, *51*(1), 423-438. doi:10.1016/j.compedu.2007.06.002

Pajares, F. (1996). Self-Efficacy Beliefs in Academic Settings. *Review of Educational Research, 66*(4), 543-578. Retrieved September 4, 2014, from http://0-www.jstor.org.library.metu.edu.tr/stable/pdfplus/1170653.pdf

Pan, C. (2008). A year-long investigation of self-efficacy for technology integration and behavior pattern in a pre-service technology course using Hispanic student population. *International Journal of Technology in Teaching and Learning, 4*(1), 34–44

Pan, S. (2011). The relationship between teachers' self-efficacy and the integration of Web 2.0 tools in k-12. *Dissertation Abstracts International Section A*, *71*, 3996

Pan, S. C., P., & Franklin, T. (2011). In-Service Teachers' Self-Efficacy, Professional Development, and Web 2.0 Tools for Integration. *New Horizons in Education*, *59*(3), 28-40. Retrieved September 24, 2014, from http://files.eric.ed.gov/ fulltext/ EJ955543.pdf

Papastergiou, M. (2011). Physical education and sport science undergraduate students as multimedia and web developers: Moving from the user's to the creator's perspective. *Education and Information Technologies*, *16*(3), 281-299. doi:10.1007/s10639-010-9129-5

Park, S., Nam, M., & Cha, S. (2012). University Students' Behavioral Intention to Use Mobile Learning: Evaluating the Technology Acceptance Model. *British Journal of Educational Technology*, *43*(4), 592-605. doi:10.1111/j.1467-8535.2011.01229.x

Passey, D., Rogers, C., Machell, J., McHugh, G., & Allaway, D. (2003). The motivational effect of ICT on pupils. Retrieved November 10, 2013, from http://eprints.lancs.ac.uk/3691/

Pastore , R. (2008). Students' Perceptions of Podcasts in the Classroom. *International Journal of Instructional Technology and Distance Learning, 5* (12). Retreived September 24, 2014, from http://www.itdl.org/ Journal/ Dec_08/article04.htm

Patton, M. (1990). Qualitative evaluation and research methods *(pp. 169-186).* Beverly Hills, CA: Sage

Pelgrum, W. J. (2001). Obstacles to the integration of ICT in education: Results from a worldwide educational assessment. *Computers And Education*, *37*(2), 163-178. doi:10.1016/S0360-1315(01)00045-8

Pilli, O., & Aksu, M. (2013). The Effects of Computer-Assisted Instruction on the Achievement, Attitudes and Retention of Fourth Grade Mathematics Students in North Cyprus. *Computers & Education*, *62*(3), 62-71. doi: 10.1016/j.compedu.2012.10.010

Popova, A., Kirschner, P. and Joiner, R., 2014. Effects of primer podcasts on stimulating learning from lectures : How do students engage? *British Journal of Educational Technology*, *45*(2), pp. 330-339. doi: 10.1111/bjet.12023

Prensky, M. (2001). Digital Natives, Digital Immigrants Part 1. *On the Horizon, 9*(5) 1-6. Retrieved September 24, 2014, from http://www.marcprensky.com/writing/Prensky%20-%20Digital%20Natives, %20 Digital%20Immigrants%20-%20Part1.pdf

Price, B. (1998). The Importance for Preservice Teachers to Have Practice Experiences to Apply Theory to Reality. *Electronic Journal of Science Education*, *2*(3). Retrieved September 28, 2014, from http://ejse.southwestern.edu/article/view/7583/5350

Podcast. (2014). In *Oxford Dictionaries*. Retrieved September 28, 2014, from http://www.oxforddictionaries.com/definition/english/podcast

Punie, Y., Zinnbauer, D., & Cabrera, M. (2008). A review of the Impact of ICT on Learning: Working paper prepared for DG EAC. Institute for Prospective Technological Studies (IPTS), JRC, European Commission. Retrieved November 19, 2013, from http://ftp.jrc.es/EURdoc/JRC47246.TN.pdf

Puzziferro, M. (2008). Online Technologies Self-Efficacy and Self-Regulated Learning as Predictors of Final Grade and Satisfaction in College-Level Online Courses. *American Journal of Distance Education*, *22*(2), 72-89. doi: 10.1080/08923640802039024

Queitzsch, M. (1997). The northwest regional profile: Integration of technology in preservice teacher education programs, Northwest Educational Technology Consortium. Retrieved September 26, 2014 from http://www.orianit.edu-negev.gov.il/anitaksp/files/מאמרים באנגלית/Integration of IT in teacher preparation.doc

Rachman, S. (2004). *Anxiety*. Hove: Psychology Press ; New York : Taylor & Francis.

Randall, R. (2011). *Increasing student engagement using podcasts*. Retrieved September 20, 2014, from https://tv.unsw.edu.au/files/unswPDF/ CS_ Podcasts _LTTO.pdf

Richardson, W. (2006). *Blogs, wikis, podcasts, and other powerful web tools for classrooms*. Thousand Oaks, Calif.: Corwin Press.

Ropp, M. (1999). Exploring Individual Characteristics Associated with Learning to Use Computers in Preservice Teacher Preparation. *Journal of Research on Computing in Education*, *31*(4), 402.

Russell, M. M., Bebell, D. D., O'Dwyer, L. L., & O'Connor, K. K. (2003). Examining teacher technology use: Implications for preservice and inservice teacher preparation. *Journal of Teacher Education*, *54*(4), 297-310. doi:10.1177/0022487103255985

Sadaf, A., Newby, T. J., & Ertmer, P. A. (2012). Exploring Pre-Service Teachers' Beliefs about Using Web 2.0 Technologies in K-12 Classroom. *Computers & Education*, *59*(3), 937-945. doi:10.1016/j.compedu.2012.04.001

Salmon, G., Edirisingha, P., Mobbs, M., Mobbs, R., & Dennett, C. (2008).. *How to Create Podcasts for Education*. Maidenhead, Berkshire, England: Society for Research into Higher Education.

Salmon, G., & Nie, M. (2008). Doubling the life of iPods. In G. Salmon & P. Edirisingha (Eds.), *Podcasting for Learning in Universities* (pp. 1-11). Maidenhead: Open University Press.

Sandberg, J. J., Maris, M. M., & De Geus, K. K. (2011). Mobile English learning: An evidence-based study with fifth graders. *Computers and Education*, *57*(1), 1334-1347. doi:10.1016/j.compedu.2011.01.015

Sang, G., Valcke, M., van Braak, J., & Tondeur, J. (2010). Student Teachers' Thinking Processes and ICT Integration: Predictors of Prospective Teaching Behaviors with Educational Technology. *Computers & Education*, *54*(1), 103-112. doi:10.1016/j.compedu.2009.07.010

Selwyn, N. (2013). *Education in a digital world : global perspectives on technology and education*. New York : Routledge.

Schmidt, J. (2008). Podcasting as a learning tool: german language and culture every day. *Teaching German*, (2). 186. doi:10.1111/j.1756-1221.2008.00023.x.

Schunk, D. (1989). Self-efficacy and achievement behaviors. *Educational Psychology Review, 1*(3), 173-208. Retrieved September 4, 2014, from http://link.springer.com/article/10.1007/BF01320134

Shroff, R. H., Deneen, C. D. & Ng, E. M. W. (2011). Analysis of the technology acceptance model in examining students' behavioural intention to use an e-portfolio system. *Australasian Journal of Educational Technology*, 27(4), 600-618. http://www.ascilite.org.au/ajet/ajet27/shroff.html

Solomon, G. & Schrum, L. (2010). *Web 2.0 how-to for educators: [the indispensable companion to Web 2.0: new tools, new schools]*. International Society for Technology in Education.

Spector, P. E. (1981). Research designs. Beverly Hills : Sage Publications.

Spielberger, C. (1966). *Anxiety and behavior. Edited by Charles D. Spielberger*. New York, Academic Press.

Spielberger, C. D., Gorsuch, R. L., Lushene, R., Vagg, P. R., & Jacobs, G. A. (1983). Manual for the State-Trait Anxiety Inventory. Palo Alto, CA: Consulting Psychologists Press

Strickland, K. K., Gray, C. C., & Hill, G. G. (2012). The use of podcasts to enhance research-teaching linkages in undergraduate nursing students. *Nurse Education in Practice*, *12*(4), 210-214. doi:10.1016/j.nepr.2012.01.006

Sugar, W., Crawley, F., & Fine, B. (2004). Examining Teachers' Decisions to Adopt New Technology. *Educational Technology & Society*, *7*(4), 201-213.

Sutton-Brady, C., Scott, K. M., Taylor, L., Carabetta, G., & Clark, S. (2009). The Value of Using Short-Format Podcasts to Enhance Learning and Teaching. *ALT-J: Research in Learning Technology*, *17*(3), 219-232. doi: 10.1080/09687760903247609

Tam, C. (2012). The Effectiveness of Educational Podcasts for Teaching Music and Visual Arts in Higher Education. *Research in Learning Technology*, *20*(1). doi: 10.3402/rlt.v20i0/14919

Tashakkori , A . & Teddlie, C. (2003). Handbook of Mixed Methods in Social & Behavioral Research. Thousand Oaks: Sage.

Teddlie, C., & Yu, F. (2007). Mixed methods sampling: A Typology with Examples. *Journal of Mixed Methods Research*, *1*(1), 77-100. doi: 10.1177/2345678906292430

Teddlie, C., & Tashakkori, A. (2010). Overview of Contemporary Issues in Mixed Methods Research. In A. Tashakkori, C. Teddlie (Eds.), *SAGE Handbook of Mixed Methods in Social and Behavioral Research* (pp. 1-41). Second edition. Los Angeles and London: Sage Publications.

Teo, T. (2009). Examining the Relationship between Student Teachers' Selfefficacy Beliefs and Their Intended Uses of Technology for Teaching: A Structural Equation Modelling Approach. *Turkish Online Journal of Educational Technology*, *8*(4), 7.

Teo, T. (2009). Modelling technology acceptance in education: a study of pre-Service teachers. *Computers & Education*, *52*(2), 302-312. doi:10.1016/j.compedu.2008.08.006

Teo, T., & Koh, J. H. L. (2010). Assessing the dimensionality of computer self-efficacy among pre-service teachers in Singapore: a structural equation modeling approach. *International Journal of Education & Development Using Information & Communication Technology*, *6*(3), 7-18. Retrieved September 25, 2014, from http://ijedict.dec.uwi.edu/viewarticle.php?id=1061

Tezci, E. E. (2009). Teachers' effect on ict use in education: the Turkey sample. *Procedia – Social and Behavioral Sciences*, *1*(1), 1285-1294. doi:10.1016/j.sbspro.2009.01.228

Ting, A. (2011). A Case Study of Using Podcasts in ESL Modules for Hong Kong Pre-Service Teachers and its Impact on their Attitudes toward Podcasting. In B. Facer & M. Abdous (Eds.), *Academic Podcasting and Mobile Assisted Language Learning* (pp. 160-175). New York.

Tokmak, H., & Karakuş, T. (2011). ICT Pre-service Teachers' Opinions about the Contribution of Initial Teacher Training to Teaching Practice. *Contemporary Educational Technology*, *2*(4), 319-332.

Toprakçı, E. (2006). Obstacles in Integration of the Schools into Information and Communication Technologies According to the Opinions of the Teachers and Principals of Primary and Secondary Schools in Turkey. *The E-Journal of Instructional Science and Technology*. Retrieved November 10, 2013, from http://ascilite.org.au/ajet/ejist/docs/vol9_no1/papers/commentary/toprakci.htm

Topu, F., & Göktaş, Y. (2012). Bilişim teknolojileri öğretmenlerinin üstlendikleri roller ve onlardan beklentiler. *Kuram ve Uygulamada Eğitim Bilimleri*, *12*(1), 461.

Torkzadeh, R., Pflughoeft, K., & Hall, L. (1999). Computer self-efficacy, training effectiveness and user attitudes: an empirical study. *Behaviour & Information Technology*, *18*(4), 299-309. doi:10.1080/014492999119039

Torkzadeh, G., & Van Dyke, T. (2002). Effects of training on Internet self-efficacy and computer user attitudes. *Computers in Human Behavior*, *18*(5), 479-494. doi:10.1016/S0747-5632(02)00010-9

Torkzadeh, G., Chang, J., & Demirhan, D. (2006). A contingency model of computer and Internet self-efficacy. *Information & Management*, *43*(4), 541-550. doi:10.1016/j.im.2006.02.001

Trucano, M. (2005). *Knowledge Maps: Ict in Education*. Washington, DC: InfoDev / World Bank.

Trucano, M. (2010, February 25). 1-to-1 educational computing initiatives around the world [Web log post]. Retrieved September 28, 2014, from http://blogs.worldbank. org/edutech/1-to-1- around-the-world

Turkish Statistical Institute [TÜİK]. (2005). Information and Communication Technology (ICT) Usage Survey on Households and Individuals. Retrieved January 15, 2014, from http://www.tuik.gov.tr/PreHaberBultenleri.do?id=1

Turkish Statistical Institute [TÜİK]. (2013). Information and Communication Technology (ICT) Usage Survey on Households and Individuals. Retrieved January 15, 2014, from http://www.turkstat.gov.tr/PreHaberBultenleri.do?id=13569

Tüm, D., & Kunt, N. (2013). *Speaking Anxiety among EFL Student Teachers*. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi, 28*(3), 385-399

Tweed, S. (2013). Technology implementation: Teacher age, experience, self-efficacy, and professional development as related to classroom technology integration. *Dissertation Abstracts International Section A*, *74*.

Uçar Yalın, M. (2012). Öğretmenlik uygulamasına ilişkin durum çalışması. *Kuram Ve Uygulamada Eğitim Bilimleri*, *12*(4), 2637-2660.

UNESCO ICT Competency Framework for Teachers. (2011). Retrieved September 25, 2014, from http://unesdoc.unesco.org/images/0021/002134/213475E.pdf

Usluel K, Y., Mumcu-Kuşkaya, F., & Demiraslan, Y. (2007). Öğrenme- Öğretme Sürecinde Bilgi ve İletişim Teknolojileri: Öğretmenlerin Entegrasyon Süreci ve Engelleriyle İlgili Görüşleri. *Hacettepe Üniversitesi Eğitim Fakültesi*, (32), 164-178.

Valdez, G., McNabb, M., Foertsch, M., Anderson, M., Hawkes, M., & Raack, L. (2000). Computer-Based Technology and Learning: Evolving Uses and Expectations, Revised Edition. North Central Regional Educational Lab. Retrieved September 24, 2014, from http://eric.ed.gov/?id=ED456816

Venkatesh, V., & Davis, F. D. (1996). A Model of the Antecedents of Perceived Ease of Use: Development and Test. *Decision Sciences*, *27*(3), 451-481.

Vidal, R. D., Mauro, Y. H., Borrini, M. E., & Jukna, E. I. (2006). Computing training teacher and its transfer to the classroom: A study in the province of Buenos Aires. *Revista Electronica De Investigacion Educativa*, *8*(2), 1-24.

Vitasari, P., Wahab, M., Othman, A., Herawan, T., & Sinnadurai, S. (2010). The relationship between study anxiety and academic performance among engineering students. *Procedia - Social and Behavioral Sciences*, *8*(International Conference on Mathematics Education Research 2010, ICMER 2010), 490-497. doi:10.1016/j.sbspro.2010.12.067

Vrasidas, C., & McIsaac, M. (2001). Integrating Technology in Teaching and Teacher Education: Implications for Policy and Curriculum Reform. *Educational Media International*, *38*(2/3), 127-132. doi:10.1080/0952398011004194

Walls, S. M., Kucsera, J. V., Walker, J. D., Acee, T. W., McVaugh, N. K., & Robinson, D. H. (2010). Podcasting in Education: Are Students as Ready and Eager as We Think They Are?. *Computers & Education*, *54*(2), 371-378. doi: 10.1016/j.compedu.2009.08.018

Wang, L., Ertmer, P. A., & Newby, T. J. (2004). Increasing Preservice Teachers' Self-Efficacy Beliefs for Technology Integration. *Journal Of Research On Technology in Education (International Society for Technology in Education)*, *36*(3), 231-250.

Wang, Y., Wu, M., & Wang, H. (2009). Investigating the determinants and age and gender differences in the acceptance of mobile learning. *British Journal of Educational Technology*, *40*(1), 92-118. doi:10.1111/j.1467-8535.2007.00809.x

Watson, G. (2006). Technology Professional Development: Long-Term Effects on Teacher Self-Efficacy. *Journal of Technology and Teacher Education*, *14*(1), 151-166.

Web 2.0. (2014a). In *Cambridge Dictionaries Online*. Retrieved September 28, 2014, from http://dictionary.cambridge.org/dictionary/british/web-2-0?q=web+2.0

Web 2.0. (2014b). In *Oxford Dictionaries*. Retrieved September 28, 2014, from
http://www.oxforddictionaries.com/definition/english/Web-2.0?q=web+2.0

Wilson, S. (2013). Investigating rural pre-service teachers' mathematics anxiety
using the Revised Mathematics Anxiety Scale (RMARS). *Australian and
International Journal of Rural Education*, *23*(3), 1.

Wong, K., Teo, T., & Russo, S. (2012). Influence of Gender and Computer Teaching
Efficacy on Computer Acceptance among Malaysian Student Teachers: An
Extended Technology Acceptance Model. *Australasian Journal of
Educational Technology*, *28*(7), 1190-1207.

Yamamoto, J. (2009). Pedagogy and content knowledge based
podcasting project for preservice teachers. *Proceedings of the IADIS
International Conference on Cognition & Exploratory Learning in Digital
Age*, 189-195.

Yıldırım, S. (2000). Effects of an Educational Computing Course on Preservice and
Inservice Teachers: A Discussion and Analysis of Attitudes and Use. *Journal
of Research on Computing In Education*, *32*(4), 479-495

Yıldırım, A., & Şimşek, H. (2011). *Sosyal Bilimlerde Nitel Araştırma Yöntemleri* (8.
baskı). Ankara: Seçkin.

Yi, M. Y., & Hwang, Y. Y. (2003). Predicting the use of web-based information
systems: Self-efficacy, enjoyment, learning goal orientation, and the
technology acceptance model. *International Journal of Human Computer
Studies*, *59*(4), 431-449. doi:10.1016/S1071-5819(03)00114-9

Yoon, T. (2012). Teaching English though English: Exploring Anxiety in Non-native
Pre-service ESL Teachers. *Theory & Practice in Language Studies*, *2*(6), 1099.
doi:10.4304/tpls.2.6.1099-1107

Yuen, S. C. Y., Yaoyuneyong, G., & Yuen, P. K. (2011). Perceptions, interest, and
use: Teachers and Web 2.0 tools in education. International Journal of
Technology in Teaching and Learning, 7(2), 109-123

Yürük, N. (2011). The predictors of pre-service elementary teachers' anxiety about
teaching science. *Journal of Baltic Science Education*, *10*(1), 17-26.

Zajicek, M. M. (2007). Web 2.0: Hype or happiness?. *ACM International Conference
Proceeding Series*, *225*(International Cross-Disciplinary Conference on Web
Accessibility 2007, W4A), 35-39. doi:10.1145/1243441.1243453

Zelin II, R. C., & Baird, J. E. (2012). Using publicly available podcasts and vodcasts in the accounting curriculum: suggestions and student perceptions. *Academy of Educational Leadership Journal*, *16*(1), 87.

Zhao, J., & Jiao, J. (2012). A podcasting-based pre-service teacher training model. *Knowledge Management and E-Learning*, *4*(1), 123-128.

Zimmerman, B. J. (1995). Self-efficacy and educational development. In A. Bandura (Ed.), *Self-efficacy in changing societies* (pp. 202–231). New York: Cambridge Univ. Press. doi: 10.1017/CBO9780511527692.009

Zimmerman, B. J. (2000). Self-Efficacy: An Essential Motive to Learn. *Contemporary Educational Psychology, 25*(1), 82-91. doi:10.1006/ceps.1999.1016

APPENDIX A

EDUCATIONAL PODCASTING OPINION QUESTIONNAIRE

Educational Podcasting Opinion Questionnaire

Dear Participant,

This questionnaire aims to investigate pre-service teachers' opinions on educational podcasting in terms of podcasts, podcasting process/activities and podcasting experience. It consists of 5 parts and it takes about 10 minutes to complete. There are no right or wrong answers in the questionnaire. Please try to complete all of the items carefully. Your participation in this study is voluntary. The information you provide will only be used for research purposes and kept confidential.

Thank you so much for your help and participation in this research.

Researcher: Res. Asst.Berkan ÇELİK
cberkan@metu.edu.tr
METU-CEIT

PART I - Podcasts
Please indicate your level of agreement with the following statements about educational podcasts. (SD=Strongly Disagree, D=Disagree, N=Neutral, A=Agree, SA=Strongly Agree)

		SD	D	N	A	SA
	I think podcasts:					
1.	are simple to develop					
2.	are simple to publish					
3.	are more flexible than alternative materials (e.g. websites and handouts) for student learning					
4.	are useful for creating teaching materials					
5.	are effective teaching aids					
6.	can help improve students' learning					
7.	can be used as supplements to make lessons more effective					
8.	can extend teaching outside of classrooms					
9.	facilitate the comprehension of the content					
		SD	D	N	A	SA
10.	I think pre-service teachers should create podcasts frequently to be prepared for teaching					
11.	I think I will use podcasts in my future profession					

Part II - Podcasting Process/Activities

Please state your level of agreement with the items below in terms of educational podcasting process/activities. (SD=Strongly Disagree, D=Disagree, N=Neutral, A=Agree, SA=Strongly Agree)

		SD	D	N	A	SA
	I think podcasting:					
12.	is a boring process					
13.	requires too much time					
14.	requires too much effort					
15.	requires available technological resources (ie. technological equipment)					
16.	requires advanced technological knowledge					
17.	improves speaking skills					
18.	improves presentation skills					
19.	improves pronunciation skills					
20.	improves teaching skills					
21.	can be used as an instructional strategy					
22.	helps me get ready for my teaching profession					
23.	has the potential to add value to pre-service teachers' content presentation experience					
24.	contributes to my professional learning					
		SD	D	N	A	SA
25.	I am aware of the mobile potential of podcasting					
26.	It is easy for me to learn podcasting					

PART III – Podcasting Experience

Please indicate your level of agreement with the statements about your podcasting experience. (SD=Strongly Disagree, D=Disagree, N=Neutral, A=Agree, SA=Strongly Agree)

		SD	D	N	A	SA
	Podcasting experience:					
27.	was an instructive experience for me					
28.	provided opportunity to gain teaching skills regarding content presentation					
29.	helped me reflect on content presentation performance					
30.	helped me recognize my potential in teaching					
31.	helped me gain new knowledge and skills that are useful in my future profession					
32.	helped me evaluate my performance continuously					
33.	provided an opportunity to learn about new teaching strategies					
34.	increased my interest in teaching					

35. In general, how would you rate your experiences with podcasting during 4 weeks?				
[ ] Extremely Unsatisfactory	[ ] Unsatisfactory	[ ] Neutral	[ ] Satisfactory	[ ] Extremely Satisfactory
36. In general how useful were these podcasting experiences for increasing your presentation effectiveness?				
[ ] Completely Useless	[ ] Useless	[ ] Neutral	[ ] Useful	[ ] Extremely Useful
37. What do you think about the role of podcasts in preparing pre-service teachers for teaching profession?				
[ ] Not Effective	[ ] Somewhat Effective	[ ] Neutral	[ ] Effective	[ ] Very Effective

PART IV- Internet, Web 2.0 Technologies Usage and Mobile Device Access

38. How many hours **a day** do you use Internet?
: [ ] Never
[ ] Less than 1 Hour
[ ] 1-2 Hours
[ ] 2-3 Hours
[ ] 3-4 Hours
[ ] More than 5 Hours

39. Which mobile devices do you have access to?
(You can select more than one item.)
: [ ] I don't have access to any mobile devices
[ ] MP3 player (plays audio only)
[ ] MP4 player (plays audio and video)
[ ] Mobile Phone (including smartphones)
[ ] Tablet
[ ] Notebook
[ ] Other (please specify):

Please indicate how often you use the following Web 2.0 technologies.

40.	How often do you use the following Web 2.0 technologies?	Never	Rarely	Sometimes	Usually	Always
	Wiki					
	Podcast					
	Blog					
	Facebook					
	Twitter					
	Skype					
	Instagram					
	LinkedIn					
	Other(s) (please specify):					

PART V- Demographic Information

41.	ID	:
42.	Gender	: [ ] Female [ ] Male
43.	Age	: _____
44.	Grade Level	: [ ] 1st [ ] 2nd [ ] 3rd [ ] 4th
45.	GPA	: _____
46.	What is your high school type?	: [ ] Vocational High School [ ] General High School [ ] Anatolian High School [ ] Science High School [ ] Other (please specify):

Thank you very much for your participation ☺

STAI INVENTORY (TURKISH)

STAI FORM TX – 1

YÖNERGE: Podcast oluşturmadan hemen önce hissettiklerinizi ifadelerden uygun olanını işaretleyerek belirtin. Doğru ya da yanlış cevap yoktur. Verdiğiniz cevaplar kesinlikle saklı tutulacaktır ve kimseyle paylaşılmayacaktır. Anketi cevaplamak yaklaşık olarak 5 dakikanızı alacaktır.

*Required

ID *

[   ]

Tarih:

[   ]

*

	HİÇ	BİRAZ	ÇOK	TAMAMİYLE
1. Şu anda sakinim	○	○	○	○
2. Kendimi emniyette hissediyorum	○	○	○	○
3. Su anda sinirlerim gergin	○	○	○	○
4. Pişmanlık duygusu içindeyim	○	○	○	○
5. Şu anda huzur içindeyim	○	○	○	○
6. Şu anda hiç keyfim yok	○	○	○	○
7. Başıma geleceklerden endişe ediyorum	○	○	○	○
8. Kendimi dinlenmiş hissediyorum	○	○	○	○
9. Şu anda kaygılıyım	○	○	○	○
10. Kendimi rahat hissediyorum	○	○	○	○

	HİÇ	BİRAZ	ÇOK	TAMAMİYLE
11.Kendime güvenim var	○	○	○	○
12.Şu anda asabım bozuk	○	○	○	○
13.Çok sinirliyim	○	○	○	○
14.Sinirlerimin çok gergin olduğunu hissediyorum	○	○	○	○
15.Kendimi rahatlamış hissediyorum	○	○	○	○
16.Şu anda halimden memnunum	○	○	○	○
17.Şu anda endişeliyim	○	○	○	○
18.Heyecandan kendimi şaşkına dönmüş hissediyorum	○	○	○	○
19.Şu anda sevinçliyim	○	○	○	○
20.Şu anda keyfim yerinde	○	○	○	○

STAI FORM TX – 1

YÖNERGE: Video Podcast oluşturmadan hemen önce hissettiklerinizi ifadelerden uygun olanını işaretleyerek belirtin. Doğru ya da yanlış cevap yoktur. Verdiğiniz cevaplar kesinlikle saklı tutulacaktır ve kimseyle paylaşılmayacaktır. Anketi cevaplamak yaklaşık olarak 5 dakikanızı alacaktır.

* Required

ID *

[   ]

*

☐ Bu çalışmaya katılmayı kabul ediyorum.

*

	HİÇ	BİRAZ	ÇOK	TAMAMİYLE
1. Şu anda sakinim	○	○	○	○
2.Kendimi emniyette hissediyorum	○	○	○	○
3.Su anda sinirlerim gergin	○	○	○	○
4.Pişmanlık duygusu içindeyim	○	○	○	○
5.Şu anda huzur içindeyim	○	○	○	○
6.Şu anda hiç keyfim yok	○	○	○	○
7.Başıma geleceklerden endişe ediyorum	○	○	○	○
8.Kendimi dinlenmiş hissediyorum	○	○	○	○
9.Şu anda kaygılıyım	○	○	○	○
10.Kendimi rahat hissediyorum	○	○	○	○

	HİÇ	BİRAZ	ÇOK	TAMAMİYLE
11.Kendime güvenim var	○	○	○	○
12.Şu anda asabım bozuk	○	○	○	○
13.Çok sinirliyim	○	○	○	○
14.Sinirlerimin çok gergin olduğunu hissediyorum	○	○	○	○
15.Kendimi rahatlamış hissediyorum	○	○	○	○
16.Şu anda halimden memnunum	○	○	○	○
17.Şu anda endişeliyim	○	○	○	○
18.Heyecandan kendimi şaşkına dönmüş hissediyorum	○	○	○	○
19.Şu anda sevinçliyim	○	○	○	○
20.Şu anda keyfim yerinde	○	○	○	○

STAI FORM TX – 2

Öğrenci Numarası:... Cinsiyet:.................

YÖNERGE:Aşağıda kişilerin kendilerine ait duygularını anlatmada kullandıkları bir takım ifadeler verilmiştir. Her ifadeyi okuyun, sonra da o anda nasıl hissettiğinizi ifadelerin sağ tarafındaki parantezlerden uygun olanını işaretlemek suretiyle belirtin. Doğru ya da yanlış cevap yoktur. Herhangi bir ifadenin üzerinde fazla zaman sarf etmeksizin **anında** nasıl hissettiğinizi gösteren cevabı işaretleyin.

		Hemen hemen hiçbir zaman	Bazen	Çok zaman	Hemen her zaman
21.	Genellikle keyfim yerindedir	(1)	(2)	(3)	(4)
22	Genellikle çabuk yorulurum	(1)	(2)	(3)	(4)
23	Genellikle kolay ağlarım	(1)	(2)	(3)	(4)
24	Başkaları kadar mutlu olmak isterim	(1)	(2)	(3)	(4)
25	Çabuk karar veremediğim için fırsatları kaçırırım	(1)	(2)	(3)	(4)
26.	Kendimi dinlenmiş hissediyorum	(1)	(2)	(3)	(4)
27.	Genellikle sakin, kendine hakim ve soğukkanlıyım	(1)	(2)	(3)	(4)
28	Güçlüklerin yenemeyeceğim kadar biriktiğini hissederim	(1)	(2)	(3)	(4)
29	Önemsiz şeyler hakkında endişelenirim	(1)	(2)	(3)	(4)
30.	Genellikle mutluyum	(1)	(2)	(3)	(4)
31	Herşeyi ciddiye alır ve endişelenirim	(1)	(2)	(3)	(4)
32	Genellikle kendime güvenim yoktur	(1)	(2)	(3)	(4)
33.	Genellikle kendimi emniyette hissederim	(1)	(2)	(3)	(4)
34	Sıkıntılı ve güç durumlarla karşılaşmaktan kaçınırım	(1)	(2)	(3)	(4)
35	Genellikle kendimi hüzünlü hissederim	(1)	(2)	(3)	(4)
36.	Genellikle hayatımdan memnunum	(1)	(2)	(3)	(4)
37	Olur olmaz düşünceler beni rahatsız eder	(1)	(2)	(3)	(4)
38	Hayal kırıklıklarını öylesine ciddiye alırım ki hiç unutamam	(1)	(2)	(3)	(4)
39.	Aklı başında ve kararlı bir insanım	(1)	(2)	(3)	(4)
40	Son zamanlarda kafama takılan konular beni tedirgin ediyor	(1)	(2)	(3)	(4)

APPENDIX C

SELF-EFFICACY BELIEFS QUESTIONNAIRE

Podcast Self-Efficacy Beliefs Questionnaire

Dear participant,

This questionnaire aims to investigate pre-service teachers' self-efficacy beliefs regarding educational usage and integration of podcasts. It consists of 10 items and takes about 5 minutes to complete. Please read the items carefully and select the option that reflects your opinion.

[ ] I accept to join this research

ID: _____
(Your ID is required to compare your previous responses)

Please state your level of agreement with the items regarding educational usage of podcasts.
(SD=Strongly Disagree, D=Disagree, N=Neutral, A=Agree, SA=Strongly Agree)

		SD	D	N	A	SA
1.	I can prepare audio presentations via podcasts					
2.	I can publish audio diaries on podcasts					
3.	I can transfer audio data which was downloaded via podcasts to portable devices					
4.	I can create podcasts for lessons					
5.	I can publish various contents (lesson, homework, panels etc.) via podcasts					

Please state your level of agreement with the items regarding integration of podcasts.
(SD=Strongly Disagree, D=Disagree, N=Neutral, A=Agree, SA=Strongly Agree)

When using Web 2.0 tools in teaching, I feel confident that I can…

		SD	D	N	A	SA
1.	I can use computers to create podcast such as mp3 file					
2.	I can use necessary programs such as Audacity, Camtasia to record, edit and convert audio file into mp3 file					
3.	I can upload and download podcast files online					
4.	I can use RSS feed to subscribe podcast files					
5.	I can download and upload video clips/segments online					

Thank you very much ☺

APPENDIX D

PODCAST FAMILIARITY FORM

PODCAST FAMILIARITY FORM

Dear Students,

We want to determine if you are knowledgeable about podcasts to provide necessary training. This questionnaire only takes about 5 minutes of your time. The information you will provide will be kept confidential and the data will only be used for research purposes.

Thank you.

ID: **Gender:**   [ ] Female   [ ] Male

	YES	NO
1. Have you ever listened to a podcast?	[ ]	[ ]
2. Have you ever subscribed to a podcast?	[ ]	[ ]
3. Have you ever downloaded a podcast?	[ ]	[ ]
4. Have you ever created a podcast?	[ ]	[ ]
5. Do you know what RSS is?	[ ]	[ ]
6. Have you ever used a podcast for educational purposes?	[ ]	[ ]
7. Have any of your instructors ever used educational podcasts during the courses you took?	[ ]	[ ]
8. I would like to learn podcasting.	[ ]	[ ]

Please provide a definition for a podcast below if you have any idea.

_____
_____
_____
_____
_____
_____
_____

APPENDIX E

INTERVIEW QUESTIONS (TURKISH)

Görüşme Protokolü

Merhaba ……………,

Öncelikle çalışmada katılımcı olarak yer aldığınız için teşekkür ederim. CEIT225 dersi kapsamında yaptığınız podcast etkinlikleri deneyiminiz üzerine bir görüşme yapacağız. Görüşme yaklaşık 10-15 dakika sürecektir. Bu sorulara içtenlikle cevap vermeniz çalışmanın geçerlik ve güvenilirliği açısından önemlidir. Görüşme sırasında vereceğiniz cevaplar ses kayıt cihazı ile kaydedilecektir. Bu kayıtlar ve kimliğiniz gizli tutulacaktır. Hiçbir şekilde üçüncü şahıslar ile paylaşılmayacaktır. Kendinizi hazır hissettiğinizde görüşmeye başlayabiliriz.

Görüşme Soruları

1. 4 hafta süresince eğitsel podcast hazırladınız. Bu süreçte olumlu veya olumsuz neler yaşadınız? Açıklayabilir misiniz?

2. Podcastlerin eğitimde kullanılmasının olumlu yönleri neler olabilir? Neden, açıklayabilir misiniz?

3. Podcastlerin eğitimde kullanılmasının olumsuz yönleri neler olabilir? Neden, açıklayabilir misiniz?

4. Hazırladığınız 3 podcast çeşidinden hangisinin veya hangilerinin eğitsel açıdan daha faydalı olacağını düşünüyorsunuz? Neden, açıklayabilir misiniz?

5. Hazırladığınız podcastlerin süre uzunluklarını karşılaştırdığınızda hangi uzunluktaki podcastler eğitsel açıdan daha etkili olabilir? Açıklar mısınız?

6. Podcast kullanımı etkili bir öğretim stratejisi olabilir mi? Neden, açıklayabilir misiniz?

7. Podcastlerin ne tür öğrenme ihtiyaçlarını karşılamada daha etkili olacağını düşünüyorsunuz? Neden, açıklar mısınız?

8. Etkili bir eğitsel podcastin özellikleri sizce neler olmalıdır? Neden, açıklar mısınız?

9. Podcastleri hazırlarkenki deneyiminizi nasıl değerlendiriyorsunuz? Podcastler öğretmenlik deneyimi kazanmanıza yardımcı oldu mu? Neden, nasıl, açıklar mısınız?

10. Podcast etkinliklerine başlamadan hemen önce endişe ve kaygı duydunuz mu? Neden, açıklayabilir misiniz?

11. Podcast etkinliklerini düşündüğünüzde, kaygı ve endişelerinizde birinci etkinlikten son etkinliğe kadar değişiklik gözlemlediniz mi? Neden, açıklayabilir misiniz?

APPENDIX F

PRINCIPAL COMPONENT ANALYSIS

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,814
Bartlett's Test of Sphericity	Approx. Chi-Square	805,614
	df	45
	Sig.	,000

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4,572	45,720	45,720	4,572	45,720	45,720
2	2,687	26,866	72,586	2,687	26,866	72,586
3	,831	8,307	80,892			
4	,493	4,932	85,824			
5	,379	3,787	89,611			
6	,308	3,084	92,695			
7	,282	2,816	95,511			
8	,195	1,946	97,457			
9	,156	1,556	99,014			
10	,099	,986	100,000			

Extraction Method: Principal Component Analysis.

Scree Plot
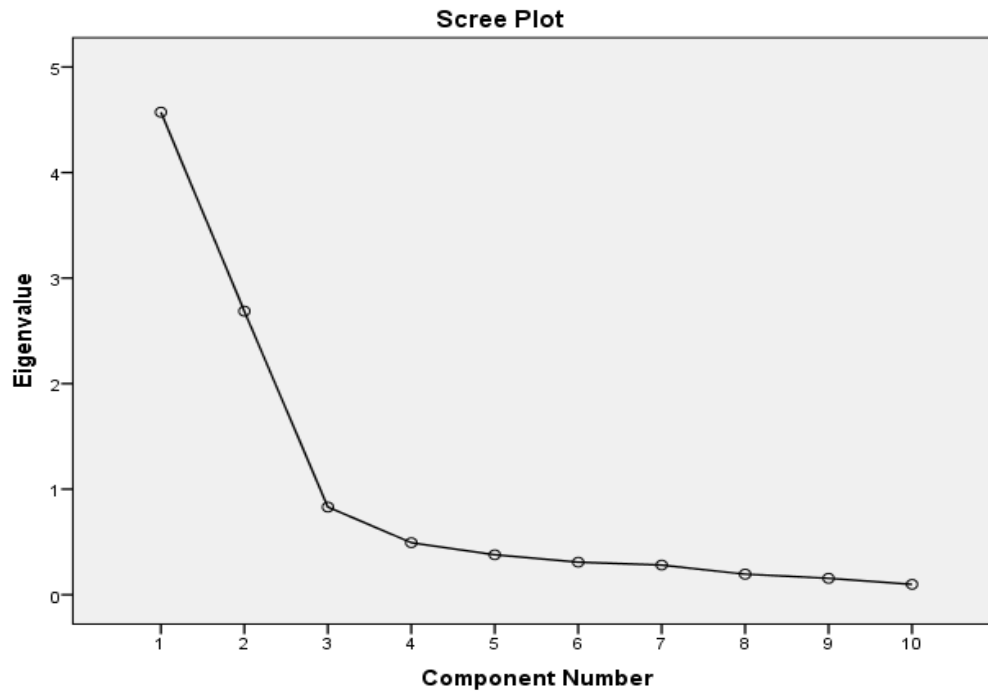
Rotated Component Matrix[a]

	Component	
	1	2
Item5-SE-EduUse	,908	
Item1-SE-EduUse	,896	,163
Item2-SE-EduUse	,886	,111
Item4-SE-EduUse	,876	,172
Item3-SE-EduUse	,782	
Item3-SE-Integration		,905
Item5-SE-Integration		,851
Item2-SE-Integration	,134	,837
Item1-SE-Integration	,169	,834
Item4-SE-Integration	,136	,616

Extraction Method: Principal Component Analysis.
 Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

230

APPENDIX G

THEMES AND CODES IN THE INTERVIEW

Positive Aspects	As a Learning Material		
		Mobility	
		Useful	
		Real Life Like Context	
		Permanency	
		Individual Differences	
	Development		
		Easy to Develop	
Negative Aspects	As a Learning Material		
		Drop Out	
		Negative Effects on Student	
		Loss of Attention	
		Economical Reasons for Access	
		Boredom	
			For Pre-service Teacher
			Student
	Development		
		Difficult	
		Time Consuming	
Challenges			
		Not Having Sufficient Time	
		Recording Place	
		Technical Issues Lack of Confidence	

		Lack of Podcast Experience Lack of Technical Knowledge	
Solutions		Place Solutions	
			Night Record
			Request from Friends
		Appropriate Time	
		Trial-error	
		Technical Solutions	
			Borrowing Microphone
			Finding Another Computer
		Trial Podcast	
Type Preference		Video Podcast	
		Enhanced Podcast	
Duration Preference			
		Ideal Time	
		Minimum Time	
		Maximum Time	
Assessment of Podcasts for Teaching Profession		Self-evaluation	
			Voice Control
			Body Language
		Preparation for	

		Teaching Practice	
		Learning	
			About Educational Material
			About Programs
			About Lecture and Lecture Skills
		Teaching Skills	
		Confidence to be a Teacher	
		Realization of Difficulties of Teaching	
Emotions		Anxiety	
		Worry	
		Excitement	
		Enjoyment	

APPENDIX H

ETHICS COMMITTEE OF MIDDLE EAST TECHNICAL UNIVERSITY RESEARCH CENTER FOR APPLIED ETHICS APPROVAL FORM (TURKISH)

UYGULAMALI ETİK ARAŞTIRMA MERKEZİ
APPLIED ETHICS RESEARCH CENTER

ORTA DOĞU TEKNİK ÜNİVERSİTESİ
MIDDLE EAST TECHNICAL UNIVERSITY

DUMLUPINAR BULVARI 06800
ÇANKAYA ANKARA/TURKEY
T: +90 312 210 22 91
F: +90 312 210 79 59
ueam@metu.edu.tr
www.ueam.metu.edu.tr

Sayı: 28620816/ 188 — 483

29 Mayıs 2013

Gönderilen: Prof. Dr. Zahide YILDIRIM
Bilgisayar ve Öğretim Teknolojileri Eğitimi

Gönderen : Prof. Dr. Canan Özgen
IAK Başkanı

İlgi   : Etik Onayı

Danışmanlığını yapmış olduğunuz Bilgisayar ve Öğretim Teknolojileri Eğitimi Bölümü Yüksek Lisans öğrencisi Berkan Çelik'in "Pre-Service Teachers' Opinions,Experiences, State Anxiety and Self-Efficacy Beliefs in relation to Educational Podcasting" isimli araştırması "İnsan Araştırmaları Komitesi" tarafından uygun görülerek gerekli onay verilmiştir.

Bilgilerinize saygılarımla sunarım.

Etik Komite Onayı

Uygundur

29/05/2013

Prof.Dr. Canan ÖZGEN
Uygulamalı Etik Araştırma Merkezi
(UEAM) Başkanı
ODTÜ 06531 ANKARA

ORTA DOĞU TEKNİK ÜNİVERSİTESİ
MIDDLE EAST TECHNICAL UNIVERSITY

SAYI:54850036-300-2282 - 419

08.03.2013

EĞİTİM FAKÜLTESİ DEKANLIĞINA

Üniversitemiz Bilgisayar ve Öğretim Teknolojileri Eğitimi Anabilim Dalı Yüksek Lisans Programı öğrencisi Berkan Çelik'in 24 Nisan – 29 Mayıs 2013 tarihleri arasında "*Pre-Service Teachers Opinions, Experiences, State Anxiety and Self-Efficacy Beliefs in Relation to Educational Podcasting* " başlıklı araştırma çalışmasına ilişkin hazırlanan anketi Orta Doğu Teknik Üniversitesinde Bilgisayar ve Öğretim Teknolojileri Eğitimi binasındaki sınıflarda uygulama yapmak için, öğrencinin isteği doğrultusunda görevlendirilmesi Etik Komite onayı ile uygun görülmüştür.

Uygulamanın yapılabilmesi için gereğini arz ederim.

Saygılarımla.

Nesrin Ünsal
Öğrenci İşleri Daire Başkanı

Ekler:
1- İAEK Başvuru Formu
2- İAEK Değerlendirme Sonucu
3- İAEK Başvuru Kontrol Listesi
4- Anket

SSD/

236

APPENDIX I

PERMISSION FOR INSTRUMENTS

```
------------------------------ Özgün Mesaj ------------------------------
Konu:     Re: Requesting Permission to Use Your Questionnaire (Only 5 items) in my
Masters Thesis
Gönderen: "Sophia  Pan" <sophiaco@gmail.com>
------------------------------------------------------------------------


Hi

You can use my survey. Please cite the resources properly.

Shu-chien (Sophia) Pan
Sent from my iPad



------------------------------ Özgün Mesaj ------------------------------
Konu:     Re: Requesting Permission to Use Your Questionnaire (Only 5 items)
in my Masters Thesis
Gönderen: "Teresa Franklin" <franklit@ohio.edu>
Alıcı:    cberkan@metu.edu.tr
Cc:       "Sophia Pan" <sophiaco@gmail.com>
------------------------------------------------------------------------


Hello Berkan Celik,


If Dr. Pan is agreeable, I am fine with you using the parts of the survey
that you need.  Please be sure to properly cite the journal and
dissertation.

Wishing you much success in your masters thesis.

Sincerely,
Dr. Teresa Franklin
------------------------------ Özgün Mesaj ------------------------------
Konu:     Re: Web 2.0 çalışmanız hakkında
Gönderen: Mehmet Barış Horzum <mhorzum@sakarya.edu.tr>
Alıcı:    cberkan@metu.edu.tr
------------------------------------------------------------------------

tekrar merhaba;

biz ölçekten yararlanmandan mutluluk duyarız. süreç içinde herhangi bir
soru ya da sorunla karşılaşırsan yine mail yazmaktan çekinme lütfen.
çalışmalarında kolaylıklar dilerim.

MBH
```