# Perception of Prospective Teachers' Competencies about Information and Communication Technology (ICT)

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# ABSTRACT

In recent years, importance of Information and Communication Technologies (ICT) is gradually increasing day by day in many fields of area. In addition, one of the major areas affected by technology is education. Using ICT in education are indispensable tools such as computers, internet, projectors etc. for successful teaching and learning that the level of teachers' ICT competence directly affects the quality of education. (Akgül, Küpeli, & Kır, 2015) . In this context, investigation of teachers' ICT competence level is great importance for increasing quality of education.

The purpose of this study is to research the general competencies of prospective teachers' perceptions within the context of teaching profession about information and communication technologies (ICT). Furthermore, it was targeted to compare the differences between perception of prospective teachers' ICT competency levels and some variables which are, gender, grade, department, nationality, frequency of internet usage, computer-related courses receive status, ownership of personal computers, and purpose of using computer and internet. The study group consisted of 718 prospective teachers in 12 different programs in Eastern Mediterranean University in 2015-2016 fall academic year. In addition, 5-point Likert scale was used to collect data with 30 items, which was "Information and Communication Technology (ICT) Efficacy Scale for Prospective Teachers". It was developed by Şad & Nalçacı (2015) based on performance indicators for teaching profession, which was published in Turkey by The Ministry of National Education.

The findings indicated that in general, perceptions of prospective teachers' competencies about ICT was adequate level. Correlation analysis has identified significant differences in ownership of personal computers and purpose of using computer and internet variables, whereas there were no differences in terms of grade, gender, department, nationality, computer-related courses receive and frequency of internet usage.

**Keywords:** Prospective teachers, educational technology, perception of ICT competency, teacher competencies, information technology literacy.

# ÖZ

Son yıllarda, bilgi ve iletişim teknolojilerinin (BİT) önemi birçok alanda günden güne artmaktadır. Teknoloji tarafından etkilenen başlıca alanlardan biri ise eğitimdir. Bilgisayar, internet, projektör vb. gibi bilgi ve iletişim teknolojilerinin eğitimde kullanımı, başarılı bir eğitim için vazgeçilmez hale gelmiştir. Öğretmenlerin bilgi ve iletişim teknolojileri (BİT) yeterlilik seviyeleri doğrudan doğruya eğitimin kalitesini etkilemektedir. (Akgül, Küpeli, & Kır, 2015) . Bu kapsamda, öğretmenlerin bilgi ve iletişim teknolojileri (BİT) yeterlilik seviyelerinin araştırılması eğitimde kaliteyi artırma çabalarımız için büyük önem taşımaktadır.

Bu çalışma ile öğretmen adaylarının bilgi ve iletişim teknolojileri (BİT) yeterlilik algılarının araştırılması amaçlanmıştır. Diğer taraftan yeterlilik algılarının cinsiyet, uyruk, sınıf düzeyi, öğrenim gördüğü bölüm, bilgisayar ve interneti kullanma amacı, internet kullanma sıklığı, bilgisayar ile ilgili kurs alma durumu, bilgisayar sahibi olma durumu değişkenleriyle açısından karşılaştırılması hedeflenmiştir. Araştırma grubu Doğu Akdeniz Üniversitesi, 2015-2016 akademik güz dönemi, Eğitim Fakültesinde öğrenim gören 12 farklı programdan 718 öğretmen adayından oluşmaktadır. Bu araştırmada 30 maddeden oluşan 5'li Likert tipi ölçe kullanılarak veriler toplanmıştır. Ölçek, BİT ile ilgili performans göstergeleri seçilerek Şad & Nalçacı (2015) tarafından Milli Eğitim Bakanlığı'nın tanımladığı öğretmenlik mesleği için genel yeterlilikleri kullanılarak hazırlanmıştır.

Araştırmadaki bulgulara göre; genel olarak öğretmen adaylarının algılanan bilgi ve iletişim teknolojileri yeterlilik düzeylerinin yeterli olduğu tespit edilmiştir.

Değişkenlere göre yapılan analizlerde ise bilgisayar sahibi olma durumu, bilgisayar ve interneti kullanma hedefi ile ilgili algılanan bilgi ve iletişim teknolojileri yeterliliklerinde anlamlı fark tespit edilirken bölüm, cinsiyet, uyruk, bilgisayar ile ilgili kurs alma durumu ve internet kullanım sıklığı ile ilgili anlamlı farklılaşma tespit edilmemiştir.

**Anahtar Kelimeler:** Öğretmen adayları, eğitim teknolojileri, bilgi teknolojileri okuryazarlığı, bilgi ve iletişim teknolojileri yeterlilik algısı.

# DEDICATION

**To my loving family…**

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# Chapter 1

# INTRODUCTION

Nowadays, importance of information and communication technologies (ICT) is gradually increasing day by day in many fields of area. ICT defines to the variety of technologies that are applied in the process of collecting, storing, editing, retrieving, and transfer of information in various forms (Olakulehin, 2007). Information and communication technologies (ICT) are indispensable inventions in our life such as computers and internet. (İşçioğlu, 2011). Also, one of the major areas affected by technology is education that development of Information and Communication Technologies increases quality of education (Akgül, Küpeli, & Kır, 2015). ICT has influenced the national education system in which many states have been forced to change their educational policies based on Information and Communication Technologies (Tezci, 2011).

Classical education without technologies in recent years have become popular discussion topics in the world where visuals and auditory is gaining importance with educational technologies. ICT involve computers, printers, laptops LCD projector, iPad, mobile phones, internet etc. which are becoming more and more indispensable educational technologies in schools around the world (Martinovic & Zhang, 2012). Teachers are facing students who are able to use technology such as computers, internet, mobile phones etc. If teachers do not develop themselves, they can face many difficulties. Teachers should use primarily by accepting the role of technology

in education. They should have competencies to success in their professional life about ICT (Akgül, Küpeli, & Kır, 2015).

Teacher competencies is needed knowledge, skills, and attitudes for teaching effectively and efficiently. Technology competencies is also an integral part of teacher competencies. According to many research in Turkey, it is understood that the technology literacy of teachers is seen as an important feature for a teacher (Seferoğlu, 2009). In literature, computer literacy and technology literacy or information technology literacy is generally same term that is a necessity for teachers (Akgül, Küpeli, & Kır, 2015). Computer literacy is the ability to use basic software and hardware of a computer system, to check and use the application programs, to solve problems and to identify the difference about the most important social, economic and ethical implications of information technology (Akkoyunlu, 1995). It is extremely clear that computer literacy teachers success its mission effectively and solve problems of information technologies in short times. Therefore, computer literate teachers are more beneficial for students and schools (Akgül, Küpeli, & Kır, 2015).

Computer literacy teachers must be aware of their own competence in order to use skills effectively. According to Hignitie & Ecterhacht (1992) in education, the effective applications of information and communication technologies is directly related with teachers' having positive attitudes to technology. Self-efficacy of Bandura (1986) is the key concept of social learning theory. Zimmerman (1995) describes self-efficacy as individual judgements in his/her ability to complete a task. They must be aware of own ability (Demiralay & Karadeniz, 2010). Therefore, the

perceptions of computers self-efficacy is a key scale of using technology in education. Compeau & Higgins (1995) described perception of computer self-efficacy as "an individual's perceptions of his or her ability to use computers in the success of a mission."

## 1.1 Statement of the Problem

Many investigations have been researched about technology integration into process of education. The most important role is teachers and schools for integrating information and communication technologies into education and gaining basic skill about ICT. Moreover, teachers and schools are expected to have the necessary competence. The rapid developments of science and technology requires questioning and development of teachers' competences about ICT. Therefore, solutions were sought to provide using information and communication technologies of teachers in education. In-service training programs for teachers have gained importance in this process. Although teachers are willing to develop themselves in information technologies, findings show that it has not yet reached the desired level (Şad & Nalçacı, 2015).

Investigations of teachers' competences and schools' capability about ICT have gained importance to create educational polices in developing countries. Primary schools in Turkish Republic of North Cyprus (TRNC), Tezer & Karasel (2009) researched that:

> Teachers' proficiency and degree of using technology is not enough. Many teachers want to improve themselves in different technological fields. In-service education seminars should be organized by The Ministry of National Education and Culture to the teachers to improve their ability of using technology and performing educational services in these fields (Tezer & Karasel, 2009).

According to Mumtaz (2000), the basic factors affecting teachers' usage of information and communication technology are access to resources, quality of hardware and software, usability, incentives for change, competence sharing between colleagues, national policies, and formal computer training history. Therefore, financial and technical facilities are very important. Besides, many schools are conservative about maintaining the old system. They are not open to innovation (Mumtaz, 2000). Therefore, changing must be made by the policy maker and teachers must apply it. Teachers, about this subject must have positive attitudes and beliefs to use technology in education (Mumtaz, 2000; Cummings, 2008). According to Peralta & Costa (2007), in the research of five European countries, the main problem about teachers' usage of information technologies in education is lack of knowledge which teachers do not know how the teaching-learning activities and technologies should integrate each other. In-service and pre-service training is a basic way to gain these skills. However, Usun (2009) claims that application of in-service training is facing serious problems in Turkey who is developing countries in world. Therefore, pre-service training is a more effective solution for radical solutions.

ICT competency principles for teachers are developed by UNESCO to support teachers' technology literacy (Martinovic & Zhang, 2012). Importance of the ICT is increased in the process of teachers training in Turkey. Compulsory technology courses were added in teachers training programs (Usun, 2009) .Besides, general competences of the teaching profession were be defined by the Ministry of National Education in Turkey. Also, teachers' competencies about ICT have been given importance as detailed (MEB, 2006). Moreover, the quality of education in teachers

training programs and other variables are also effective using integration information and communication technologies in education (Şad & Nalçacı, 2015). Therefore, technology history, ownership of personal computers, purpose of computer usage, frequency of computer and internet usage can effect integration information and communication technologies in educations (Martinovic & Zhang, 2012; Kara, 2011; Tezci, 2011). Also, teaching departments is affecting the factor of ICT compatences. Acording to Akkoyunlu & Soylu (2010), the level of perceived ICT competencies of computer and science teachers are higer than others departments.

According to summarized information on the above, ICT competence is very important for teachers training. Şad & Nalçacı (2015) created a scale to measure perception of prospective teachers' competencies level about Information and Communication Technology (ICT) from general competences of the teaching profession which was defined by Ministry of National Education in Turkey. (MEB, 2006). In Turkish Republic of North Cyprus (TRNC), there is a need for researches to state perception of prospective teachers' competencies level about Information and Communication Technology (ICT) based on general competences of the teaching profession.

## 1.2 Purpose of the Study

The main purpose of this study was to research the general competencies of prospective teachers' perceptions about ICT based on teaching profession. Furthermore, it was targeted to compare the differences between perception of prospective teachers' ICT competency levels and some variables which are gender, frequency of internet usage, grade, and nationality, purpose of using computer and

internet, computer-related courses receive status, department, and ownership of personal computers. The findings are believed to have been used to develop programs of education faculties. Also, teachers and prospective teachers can use them to evaluate themselves.

## 1.3 Research Questions

1) What are the perceptions of prospective teachers' competency levels about Information and Communication Technology (ICT)?
2) What are the correlation of result between perceptions of prospective teachers' competencies in regards to
    a) Gender,
    b) Grade,
    c) Purpose of Using Computer and Internet,
    d) Computer-Related Courses Receive Status,
    e) Departments,
    f) Nationality,
    g) Ownership of Personal Computers,
    h) Frequency of Internet Usage?

## 1.4 Limitations

This research was done in 12 different programs of the Faculty of Education in 2015-2016 academic year fall semester which was located in Eastern Mediterranean University (EMU). Due to time limitations, the sample of this research has been gathered from universities in EMU, during only one semester.

## 1.5 Importance of the Study

Investigations of prospective teachers' perceived competence level about ICT have gained importance to create educational polices in developing countries. The research findings were believed to have been used to develop programs of education faculties for increasing quality of education. It will bring a new light to progress and careers in the future. Also, teachers and prospective teachers can use them to evaluate themselves.

## 1.6 Definition of Key Terms

**Information and Communication Technologies (ICT):** It defines the range of technologies that are used in the process of gathering, editing, storing, retrieving, and transmission of information in many forms (Olakulehin, 2007).

**Educational Technologies:** It is defined as using information and communication technologies (ICT) in education that involve computers, printers, projector, mobile devices, internet etc. (Martinovic & Zhang, 2012).

**Teacher competencies:** Teacher competencies is a needed knowledge, skills, and attitudes for teaching effectively and efficiently (Seferoğlu, 2009).

**Teacher information and communications technologies competencies:** Teacher competencies is needed technological knowledge, skills, and attitudes for teaching effectively and efficiently (Seferoğlu, 2009).

**Information technology literacy:** Computer literacy and technology literacy or information technology literacy is generally same term that computer literacy is the

ability to use basic software and hardware of a computer system, to check and use the application programs, to solve problems and to identify the difference about the most important social, economic and ethical implications of information technology (Akkoyunlu, 1995; Akgül, Küpeli, & Kır, 2015).

# Chapter 2

# LITERATURE REVIEW

There are many investigations that have been researched about using information and communication technologies in the education. Many of them were focused on general competencies teachers' perceptions about ICT based on teaching profession. This chapter consists of five parts as Information and Communication Technologies (ICT), importance of ICT in education, ICT competencies for teacher, research method, population, instrument, data collection procedure, perceptions of computers self-efficacy and related studies.

## 2.1 Information and Communication Technologies (ICT)

In the new century, knowledge are two different types of technology which are Communication Technology and Information Technology. Communication technology defines as "the hardware equipment, organizational structures and social values by which individuals or organizations collect, process, and exchange information with other individuals or organization". Also, Information Technology refers computer and electronics-based technology that generally encompassing the development, installation, and implementation of computer systems and applications (Locke, 2004).

ICT stands for "Information Communication Technologies". ICT describes the range of technologies that are used in the process of editing, gathering, retrieving, storing, and transmission of information in many forms (Olakulehin, 2007). After

1950, Information and communication technologies have shown a remarkable rapid development (Sağlam, 2007) that have become increasingly indispensable inventions in the world (Martinovic & Zhang, 2012).

## 2.2 Importance of ICT in Education

Globalization and innovations in technology have caused to increase usage of ICTs in all sectors that are continually growing worldwide (Yadav & Mehta, 2014). Information and communication technologies (ICT) is indispensable inventions such as computers, internet in our life (İşçioğlu, 2011). Also, the best key area affected by technology is education, development of information and communication technologies increase quality of education (Akgül, Küpeli, & Kır, 2015). ICT is generally only accepted as a catalyst for revolution whereas it is a change in teaching methods, and change in learning styles and also access to information (Watson, 2005).

The use of computers in education, is a versatile method that offers unique opportunities for teaching and learning. They are different from other teaching tools. The most important feature of computer and information technologies in education that can be used as teaching, management, presentation and communication tool (Yalın, 2002). According to Uşun (2004), computers in education began to be used for the following reasons:

- The rapid rise in the number of students,
- Teacher-student ratios arising from the lack of teachers,
- The result of the rapid increase in the amount of information that must be taught to individuals becoming more complex content.

Use of information technology resources provides significant benefits and eliminates the limitations of accessibility for students, teachers, administrators, programs and educational tools (Sağlam, 2007). Information and communication technologies (ICT) help by providing alternative possibilities for education (Casal, 2007). According to Özkul & Girginer (2001), use of information and communication technologies in education are used for the following reasons:

- To increase access to education and training
- To improve the quality of teaching,
- To reduce education costs,
- To ensure cost-effectiveness in education,
- To answer technological change requirement,
- To develop students' necessary skills with technologies for working and private life.

Learning or teaching can be provides anytime and anywhere with ICT such as online course materials, several resources are found on the Internet, like e- documents, video, audio, visual presentation so on (Castro Sánchez & Alemán, 2011). Computer training or ICT becomes immensely important. (Yadav & Mehta, 2014). More detailed advantages of using ICT in education are listed below:

- ICT is an assistant to students for accessing efficient and effective digital information that is used as a tool for students to discover learning topics and solve problems (Brush, Glazewski, & Hew, 2008).
- ICT support student-centred and self-directed learning systems. Learners build new knowledge by accessing, choosing, organizing, and interpreting information and data. Also, students are more capable of using information

and data from various sources, and critically assessing the quality of the learning materials based on learning with ICT (Castro Sánchez & Alemán, 2011)

- ICT provide a creative teaching / learning environment that improves students' new understanding (Chai, Koh, & Tsai, 2010).
- ICT allow distance education collaboratively each other that students can be educated from anywhere and anytime (Koc, 2005).
- ICT gives opportunities to improve critical thinking skills for learners. ICT supports learners focus on higher-level concepts rather than less meaningful tasks based on a constructive learning approach (Levin & Wadmany, 2006).
- ICT increase teaching and learning quality. According to Lowther et al. (2008), there are three important features to improve quality teaching and learning with ICT that are autonomy, creativity and capability, Autonomy means that when students use ICTD, they take control of their learning Therefore, they become more capable of working by themselves and with others. Teachers can also allow students to complete certain tasks in pairs or in groups. Besides, learners with ICT have more opportunity to build the new knowledge into their background knowledge, and become more confident to take risks and learn from their mistakes. In addition, ICT allows educators to create their own material, thus providing more control over course content than traditional classroom setting. Learners are more confident in learning processes also they can improve the capability to apply and transfer knowledge while using new technology with efficiency and effectiveness. Moreover, students' creativity can be maximized by using ICT in education (Serhan, 2009; Gee, 2011).

- ICT facilities learning and teaching by helping access to lessons materials. According to Reid (2002), ICT saves time to learners for exploring beyond the mechanics of lessons materials. The use of ICT allow them to better understand concepts and changes in the teaching and learning relationship.

## 2.3 ICT Competencies for Teacher

Competencies are described as the ability to success specific task that involve knowledge, values, skills, capabilities, and abilities. Also, in teacher competencies, a knowledge, values, skills, and attitudes are needed for teaching effectively and efficiently. Also, Technology competencies are an integral part of teacher competencies (Seferoğlu, 2009).

Information and Communication Technologies (ICT) literacy or computer literacy are the same terms and are an important part of teacher competencies (Akgül, Küpeli, & Kır, 2015). According to Akkoyunlu (1995), Computer literacy is defined as the ability to use basic software and hardware of a computer system, to check and use the application programs, to solve problems and identify the difference about the most important social, economic and ethical implications of information technology (Akkoyunlu, 1995). According to Yazıcı (2001). If people had the abilities listed below, they have become computer literate:

- Basic computer concepts and definitions
- The most widely used computer terms
- A brief history of computers
- The general classification of the computer
- The working principle of the computer
- The capacity of the computer

- Computer hardware and peripherals
- Basics of computer networks
- Internet use
- Programming concepts
- Classification of software
- Some application software and objectives
- Access to knowledge or to use for entertainment purposes;
- To discuss and monitor on computer-related innovations

Computer literacy concepts to understand the basic concepts of computer and basic computer programs in which individuals use in their professions (Lupo, 2001). This concept is important for the teaching profession as well as in other professions. Nowadays, expert teachers in the field cannot be seen enough that is expected to be technology literacy (Özdemir, Aksal, & Gazi, 2006). The rapid development and changes in computer technology, computer literacy training cannot be completed in a short period of time that is lifelong for all professions (Çelik, Kocaman, & Önal, 2008). It is extremely clear that computer literacy for teachers is a success which helps to effectively solve problems of information technologies in short times. Therefore, computer literate teachers are more beneficial for students and schools (Akgül, Küpeli, & Kır, 2015).

ICT competencies standards for teachers are stated to support teachers' technology literacy by many instaurations. Also in order, technology literacy skills are recommended with ICT competencies standards for teachers by UNESCO (Martinovic & Zhang, 2012). Importance of the ICT is increased in process of

teachers training in the world as well as in Turkey. It is focused on defining competencies standards for teachers about ICT in Education (Usun, 2009).

According to student-centred and learning oriented constructivist approach, the Ministry of National Education in Turkey published performance indicators that specifically indicate general competencies of the teaching profession. Teachers are expected to gain these performance indicators. General competences of the teaching profession or standards were created from 233 performance indicators as 6 main and 31 sub competency fields. According to this, rapid developments in science and technology has affected teaching and learning structure in Turkey (MEB, 2006).

## 2.4 Perceptions of Computers Self-Efficacy

Nowadays, the importance of self-efficacy in the teaching and learning process continues to be a subject attracting researchers' attention alike. Self-efficacy of Bandura (1986) is the key concept of social learning theory. According to Bandura (1977), success, is not just to have the necessary skills. If individuals would do any task skills, but s/he is not confident about doing the task, s/he cannot do it. Persons who had high self-efficacy, in the activities they perform mission more successfully. Also, they try to success until it is completed. However; individuals who had low self-efficacy are afraid to fail and tend to give up activities they forced. Therefore, if individuals feel confident about using information literacy skills effectively themselves, they increase motivation to obtain information to solve problems and they will fulfil these tasks successfully. Otherwise, they will avoid or try to perform this activity (Demiralay & Karadeniz, 2010). Consequently, the perceptions of computers self-efficacy is an important scale of using technology in education. According to Hignitie & Ecterhacht'a (1992) the effective implementations of

information and communication technologies in the classroom is directly connected with teachers' having positive attitudes to computers.

## 2.5 Related Studies

Şad & Nalçacı (2015) conducted a study to research the general competencies of prospective teachers' perceptions about information and communication technologies (ICT) based on teaching profession. It was targeted to compare the differences between perception of prospective teachers' ICT competency levels and some variables which are, ownership of personal computers, gender, departments and frequency of internet usage. Data was collected from 409 prospective teachers who are studying at 11 departments in Turkey. Accordingly; i) In general, perception of prospective teachers' ICT competency levels was adequate level. ii) Generally, there was not a statistically significant difference between men and women teachers about perception of prospective teachers' ICT competency levels. iii) According to the prospective teachers surveyed who studying at final year, there was statistical differences in terms of department about perceived competencies for Information and Communication Technology (ICT) in education. Accordingly, prospective elementary mathematics teachers' perceived competencies about information and communication technology (ICT) were found as slightly adequate. That is to say, it was significantly lower than others who was the computer and technology, classroom, music, English language, science and preschool teachers. Besides, perception of prospective Turkish language teachers' competency levels about information and communication technology (ICT) were found as slightly adequate. Perceptions of prospective music, computer and technology, English language teachers were higher than Turkish language teachers' competency levels about information and communication technology (ICT) iv) Perception of

prospective teachers' competency levels about ICT who no had own personal computer were slightly adequate. In addition to this, it was significantly lower than prospective teachers' competency levels about ICT who had own a computer.

Tezer & Karasel (2009) collected data from 228 primary school teachers to investigate primary school teachers' competencies of using technology during the technological integration process in education and to control the infrastructure problems related to schools in Turkish Republic of North Cyprus (TRNC). According to research findings i) When we look at teachers' using the technological tools in the teaching-learning process, they use the most books with 71.2%, at least the smart board with 5.6%, then the television with 10.7% and videos with 11.6%. ii) When viewed in the teachers' service, computer use of teachers working in government schools who have 0-5 years of experience are the highest in Northern Cyprus whereas teachers who do not use any computer are in the group 21 years and above. This result depends on the level of teachers' computer use which decreases progressively with years of service. iii) Approximately 6% of the second grade primary school government teachers indicated that they have competencies of using computers. Also, they have not competencies of using computer with 4.4 % in Turkish Republic of North Cyprus (TRNC).

Telli, Karahan, Aktaş, & Kuru (2009) conducted a study on the examination of teacher candidates' computer literacy according to some variables: Erzincan sample. The first and fourth grade 506 students participated from 4 different departments of faculty of education in Erzincan University. According to the findings; i) It was found that there were differences about level of computer literacy of teachers by

gender. Basic skills, programming, computer awareness and overall size in favour of male teachers appear to be significant differences. However, there was no significant difference about applying software skills size. ii) The relationship between levels of computer literacy and grade level was examined that there was only a difference in the basic skill of fourth grade students. iii) According to the prospective teachers surveyed that there was a statistically differences in terms of department about level of computer literacy. Differences are in favour of science teachers, music teachers, special skills exams students, physical education and sports teacher in the field of basic skills and programming. Social sciences, mathematics and Turkish teacher's basic programming skills and dimensions of the teachers' level of computer literacy was determined to be less. iv) Computer literacy level of prospective teachers were not found significant differences in the variables which are type of high school graduates and the living area.

Usta & Korkmaz (2010) aimed to identify correlations between prospective teachers' computer competencies, the perception of technology usage and the attitudes toward teaching career. Data was collected from 106 prospective teachers in the department of elementary education and social sciences education at Ahi Evran University Faculty of Education Accordingly i) When examined teachers' perceived level of competencies about computer, prospective teachers believe that 24.6% of them had beginner level. 39.6% of them was a moderate level and also the remaining 35.8% had an advanced level. Accordingly, approximately 25% of prospective teachers thought that they did not have sufficient computer skills, whereas 75% of them said that they have sufficient computer skills. ii) Prospective teachers' perceived competencies about computer according to departments

examined that 15.8% of classroom teachers and 29.4% of social studies teachers saw and thought themselves as beginners' levels. 42.1% of classroom teaching students and 38.2% of the social studies teacher student saw themselves as moderate level. 42% of the social studies classroom teaching students indicated that they had advanced level and only 32.4% of classroom teaching students saw themselves as experienced and advanced about level of computer competencies. Accordingly, it can be said that the level of prospective classroom teacher's perceived competencies about computers were higher than prospective social studies teacher. iii) When examined teachers' perception of using computers in education had a positive impact of technology in education and the impact of technology degree program was high for prospective teachers. Also, there was not statistical differences in terms of department for them.

Yavuz Mumcu, & Dönmez Usta (2014) conducted study with the aim to investigate students' attitudes towards computer and internet usage in faculty of education in Giresun University. The data was collected from 168 students who departments were elementary mathematics education, early childhood education, social studies teacher, classroom teaching programs and science teachers. Accordingly, i) 80.4% of students had a computer in total, while 73.9% have been observed that they have computers and internet access. Also, 17.3% of students had neither computers nor Internet access. According to the results, students who had computer and internet access exhibit more positive attitudes towards the use of internet. ii) When aims of students' use the Internet was investigated, maximum rate was observed that they use internet to research and do their homework (%80.3) in all departments. Also, according to data reported that the majority of the students use internet every day

and often (57.7%). iii) There were not significant differences between the prospective teachers' attitudes according to the variables of gender and education program. iv) The mean of prospective teachers' attitude scores towards the use of computers and internet was calculated as 3.01. Therefore, this value was in the interval of 3.25-2.51. It can be said that prospective teachers' attitudes towards the use of computers and internet is positive.

Danner & Pessu (2013) collected data from 100 prospective teachers in the University of Benin. The aims of the study was to investigate ICT usage habits and perceptions of competencies possessed by prospective teachers in the University of Benin. According to results, i) 81% of the students perceived themselves as a computer literate whereas 19% of them were not. 85% of prospective teachers had access to the computer at internet cafes whereas only 15% of them had access to computers in their homes. Only two percent (2%) of the respondents considered themselves to be excellent in the use of PowerPoint. iii) there was not a significant difference between students' ICT competency levels and gender. iv) There was no a significant between grade and perception of ICT competency levels.

Demiralay & Karadeniz (2010) conducted a study to examine perceptions of elementary prospective teachers' level about information literacy self-efficacy. Data was collected from 1801 last year elementary school prospective teachers in Atatürk, Dokuz Eylül, Marmara, Gazi and Ondokuz Mayıs Universities. According to results, i) Perceptions of elementary prospective teachers' information literacy self-efficacy level was high. ii) Elementary prospective teachers' perceived themselves as intermediate level with 57.5%, advanced level with 33.5% and beginner level with

9%. Besides, prospective teachers use internet often with 47%, use internet always with 31.9%, rarely with 20.5% and never with 0.6%. Accordingly, frequently of computer and internet usage was at intermediate level. Approximately, 45% of the prospective teachers contact computer and internet from multiple places that was university, internet cafe and home. iii) Computer experience of elementary prospective teachers' has a significant effect on their perceived information literacy self-efficacy scores. According to results, if prospective teachers' computer experience increase, similarly prospective teachers' perceived information literacy mean scores increase. iii) When influence of elementary prospective teachers' frequency of computer usage about information literacy self-efficacy was examined, it was found that there was significant differences in perception of elementary prospective teachers' levels about information literacy self-efficacy elementary prospective teachers who use computers always have a higher score than elementary prospective teachers who use computer frequently and rarely. iv) Access opportunities of elementary prospective teachers to computer had significant influence on perception of information literacy self-efficacy. Also, access opportunities of prospective teachers from multiple locations such as internet café, home, and university had the highest score. v) There was a significant difference in using internet as a beginner, intermediate and advanced level. Prospective teachers who saw themselves as advanced level. It was higher score than groups of intermediate and beginner level.

Omoniyi & Quadri (2013) collected data from 300 public secondary school teachers in the four geo-political zones in Nigeria. The purpose of the study was to investigate perceived competence of Nigerian secondary schools teachers in the use

of information and communication technology (ICT). According to findings, i) 7.47% of the teachers had a high competence in computer basics, 22.23% of them indicated average competence, 35.43% of them indicated low competence, and the remaining 34.95% of them was incompetence. In the use of internet 8.41% of teachers indicated high competence, 13.83% of them indicated average competence. Furthermore, 30.10% of teachers indicated low competence and 47.66% of them indicated incompetence. Besides, the data on teachers' use of computer software shows that 9.03% of teachers had high competence and 24.88% of them had average competence. Also 27.37% of teachers had low competence and the remaining 38.71% of them had incompetence. Accordingly, it is said that most teachers in Ogun State secondary schools do not have the required competence in ICT. ii) There was significant difference in ICT competence of teachers in the sciences and those in humanities. Teachers in humanities have more competence in ICT than teachers in the sciences. iii) There was no significant difference in the ICT competence of graduate and non-graduate teachers. Therefore, Academic qualification of a teacher does not have any effect on teacher's competence in ICT. vi) There was no significant difference in the ICT competence of experienced and less-experienced teachers. Teachers' competence in the use of ICT was not influenced by their teaching experience.

Menzi, Çalışkan & Çetin (2012) conducted a study to observe the technological competencies of prospective teachers in terms of various variables such as target of using computer and internet, gender, frequency of internet using, grade, the ownership the personal computer and network, department. Data was collected from 642 prospective teachers who was studying all grades of social sciences, primary

school and science teaching department. According to results, i) In using word processor and computer basically, prospective teachers saw themselves as competence. In addition, they saw themselves as about competence in network and telecommunication, calculation table, set up, maintenance and troubleshoot and media communication and as incompetence in databases and social, legal and ethical matters. ii) There was a significant difference in the ICT competence of male and female pre-service teachers. Male prospective teachers were more competence than females. iii) There was a significant difference between grade levels. That is to say, technological competencies of pre-service teachers' increases with grade level increasing, iv) There was a significant difference in the ICT competence of prospective teachers in terms of departments. Therefore, science teaching department had the highest level competence. Also, social science teaching department had the lowest level competence about ICT. v) There was a significant difference in the ICT competence of pre-service teachers in aim of using computer and internet. Accordingly, pre-service teachers professionally were higher than students who use for doing homework, socially and searching information. vi) There was a significant difference with prospective teachers' ownership of personal computer and network which was more competence than the others.

Mwalongo (2011) conducted a study to investigate the teachers' perceptions about ICT for teaching, professional development, administration and personal use. Data was collected from 74 teachers. Results indicate that i) The level of competence of ICT was influenced by computer training. Also 48.4% of teachers got training from former teacher training colleges and schools, 15.4% of them from private computer centres, 3.8% of them self-taught and 3.8% of taught by friends, 28.6% of them did

not receive any training at all. Accordingly, the level of teachers' competence who had received some form of computer training was those who did not receive any training. ii) The frequency of ICT resources was influenced by access.

Gürbüztürk, Demir, Karadağ & Demir (2015) conducted to determine the terms of primary school teacher's perceptions of computer and internet using self-efficacy in terms of some variables. Data was collected from 165 primary school teachers who have worked in Malatya, Şanlıurfa, Kahramanmaraş Province in Turkey. According to findings, i) Teachers generally saw themselves efficient at skills like selecting from a menu screen, starting and closing a program, benefiting from the internet while researching information and resources, using educational content web sites. However, they saw themselves inefficient at finding the source of the error in a web page, reinstall crashed operating systems. ii) There were no significant difference between teachers who having in-service training or not about perceptions of computer and internet using self-efficacy iii) According to seniority, there were generally significant difference between teachers' perception of computer and internet using self-efficacy. Accordingly, when the teachers' professional seniority increases, their computer and internet using self-efficacy decreases. vi) According to graduation there was a significant difference between teachers' perception of computer and internet using self-efficacy. In this context it, graduates of four-year colleges regard themselves more efficient than graduates of two-year colleges.

Akgül, Küpeli & Kır (2015) aimed to examine computer literacy levels of class teachers who work in primary schools according to various parameters. Data was collected from 367 class teachers who were selected from 2241 class teachers

working in the central districts of Kahramanmaraş in Turkey. According to findings, i) Gender of responders were female (47%), and male (53%). According to seniority, they had experience between 0-5 years (16.3%), between 6-10 years (28.3%), between 11-15 years (22.3%), between 16-20 years (14.2%) and more than 21 years (18.5%). Besides, class teachers' graduation statutes were postgraduate (4.4%) graduate (86.1%) and undergraduate (9.5%).In addition to this, they had in-service training (77.9%) and not had in-service training (22.1 %) Also, generally, level of class teacher's perceived competencies about computers were high. ii) There was a significant difference in the ICT competence of male and female teachers. It was seen that male teachers were more competence than females about computer literacy levels iii) According to seniority, there was a significant difference between them. Accordingly, computer literacy level of new young class teachers was higher than others. vi) According to graduation there were significant difference between computer literacy levels of class teachers. Accordingly, the highest average of computer literacy levels of class teachers was postgraduate which was followed by graduate and undergraduate. v) According to teachers having in-service training or not, there was a significant difference between computer literacy levels of class teachers. Accordingly, computer literacy levels of class teachers who having in-service training about ICT were higher than others.

Yılmaz , Üredi & Akbaşlı (2015) conducted a study to examine the identification of preservice teachers' level of computer competency and their perception of technology use in teaching with regard to different variables (gender, class level, possessing a computer, possessing internet). Data was collected from 360 students studying at the morning and evening classes of Classroom Teaching in Mersin

University. According to findings i) Preservice teachers saw themselves at a moderate level in terms of computer competency. ii) Preservice teachers' perception toward technology use in teaching was at an adequate level. iii) Average of preservice teachers on computer competency was high, also high average on technology perception. iv) It was seen that preservice teachers know the basic concepts about computers, word and PowerPoint, use of e-mail at a good level; and they know Excel, hardware, operating system and use of the internet at a moderate level. It was seen that they were insufficient about Access and developing a website. v) %81.4 of the students had computers at home and %18.6 of them had no computers at home. Besides, 268 (%74.4) of preservice teachers had the internet access at home and %25,6 of them had no internet access at home. vi) According to genders, there were a significant difference between preservice teachers' computer competency levels that was seen on behalf of the male students in terms of the computer competency. In terms of technology use in teaching according to the gender, there was not a significant difference between preservice teachers' computer competency levels. vii) According to the availability of computer at home with regard to the computer competency and technology use in teaching, a significant difference was identified on behalf of students who have a computer at home. viii) According to the availability of the internet at home, a significant difference was identified on behalf of the students who have the internet at home. Besides, there was no significant difference according to the class level.

Akgün, Akgün & Şimşek (2014) conducted a study to control the perception of self-efficacy Social Studies teachers' training on how to use the PC. Data was collected from 62 4$^{th}$ grade students who were studying in Adiyaman University, faculty of

education, social studies teacher. According to results, i) Social studies teachers' computer-assisted training on self- efficacy was good level ii) According to gender, age attend college before the settlement and having a computer case, there was no a statistically significant difference. iii) In the use of computers years, according to long-time computer users in favour significant has been found to be noticeable.

Çakır & Önal (2015) conducted a study to investigate middle school mathematics teachers' competencies in using information technology in education. Data was obtained from 95 middle school mathematics teachers who were teaching in 2013-2014 spring semester in city center and nearby districts of Nigde province. According to the study results, i) In general, mathematics teachers perceive themselves adequate in using IT. ii) Mathematics school teachers have been found out to be very adequate in storing data by using devices such as flash drive, external hard drive. They have been concluded to be at the minimum level of competency in providing connection between interactive board and computer skill. iii) Elementary school mathematics teachers' operating system skills was very competent in using cut, copy and paste commands on computer desktop. However, they have been concluded to be at the minimum level of competency in file sharing on network. vi) Teachers' office application skills were very competent in organizing a document by using MS Word. Also, they have been concluded to be at the minimum level of competency in using software such as planner, MS Outlook. v) Mathematics teachers' competencies of internet, communication and Web skills in seeking for information by using search engines such as Google, Yandex were very competent in organizing a document by using MS Word. However, they have been concluded to be at the minimum level of competency in creating and updating a Website.

Cüra & Özdener (2008) conducted to determine level of teachers' success in using Information and Communication Technologies (ICT) and to examine their attitudes towards ICT. Data was collected from 163 teachers in Kocaeli and İstanbul province. According to findings, i) Teachers have considerable deficiencies in the use of ICT. In word processors, teachers' success average was the highest. However, in educational software applications, teachers were the least successful. ii) General attitude of the teachers' towards use of ICT in education was positive whereas they thought using ICT in crowded classrooms would increase their responsibilities. iii) There was a high level, positive and significant relation between teachers' ICT using achievement points and their points of attitude towards ICT.

# Chapter 3

# METHODOLOGY

This chapter consist of five parts as research method, population, instrument, data collection procedure, and data analysis.

## 3.1 Research Method

The best way to collect data from large groups of prospective teachers was a survey method that was carefully chosen by the researcher. The survey was conducted through the means of quantitative descriptive research. In addition to this, casual-comparative model was used to analyse relationships between perceptions of prospective teachers' the competency levels according to gender, ownership of personal computers, grade, department, nationality, purpose of using computer and internet, computer-related courses receive status and frequency of internet use. Besides, in this study, descriptive screening model is used to investigate perception of prospective teachers' competencies about information and communication technology (ICT) based on quantitative approach. Descriptive screening model is most common used in field of education because individuals, groups, or the physical environment characteristics (skills, preferences, behaviour, etc.) are investigated by researchers. Descriptive research defines a given situation as precisely and carefully (Büyüköztürk, Çakmak, Akgün, Karadeniz, & Demirel, 2012).

## 3.2 Population

The study group consisted of first, second, third and fourth grade prospective teachers in different programs of the faculty of education in Eastern Mediterranean University (EMU) in 2015-2016 fall academic year. In the research, the sampling path has been applied that all grade students in all teacher programs of the Faculty of Education have tried to reach. Demographic variables are demonstrated in Table 1.

In Eastern Mediterranean University (EMU) in total 718 prospective teachers from 12 different programs of the faculty of education constituted the prospective teachers during 2015-2016 fall academic year.

Table 1: Demographic variables of prospective teachers

| Variables | Group | f | % |
|---|---|---|---|
| Gender | Male | 412 | 57,4 |
| | Female | 306 | 42,6 |
| | Total | 718 | 100,0 |
| Grade | 1. | 200 | 27,9 |
| | 2. | 130 | 18,1 |
| | 3. | 177 | 24,7 |
| | 4. | 211 | 29,4 |
| | Total | 718 | 100,0 |
| Departments | Computer And Instructional Technology Teacher Education | 22 | 3,1 |
| | Elementary School Mathematics Teacher (Turkish) | 15 | 2,1 |
| | English Language Teaching | 60 | 8,4 |
| | Music Teaching | 96 | 13,4 |
| | Pre-School Teacher Education | 123 | 17,1 |
| | Secondary School Mathematics Teacher | 6 | 0,8 |
| | Guidance and Psychological Counselling | 95 | 13,2 |
| | Elementary School Teacher Education | 54 | 7,5 |
| | Social Sciences Teacher Education | 27 | 3,8 |
| | Turkish Language and Literature Teacher | 30 | 4,2 |
| | Turkish Language Teaching | 85 | 11,8 |
| | Teaching The Mentally Handicapped | 105 | 14,6 |
| | Total | 718 | 100,0 |
| Nationality | Republic of Turkey | 556 | 77,4 |
| | Turkish Republic of North Cyprus | 158 | 22,0 |
| | Other | 4 | 0,6 |
| | Total | 718 | 100,0 |
| Purpose of Using Computer and Internet | Educational (homework, research, presentations, etc.) | 280 | 39,0 |
| | Social Purpose (Facebook, Twitter, YouTube, etc.) | 353 | 49,2 |
| | Professional Purposes | 32 | 4,5 |
| | Playing Games | 33 | 4,6 |
| | E-Mail | 10 | 1,4 |
| | Other | 10 | 1,4 |
| | Total | 718 | 100,0 |
| Frequency of Internet Use | Less than 1 hour | 74 | 10,3 |
| | Between 1-2 hours | 220 | 30,6 |
| | More than 2 hours | 424 | 59,1 |
| | Total | 718 | 100,0 |
| Computer-Related Courses Receive Status | Yes | 184 | 25,6 |
| | No | 534 | 74,4 |
| | Total | 718 | 100,0 |
| Ownership of Personal Computers (Pc) | Yes | 661 | 92,1 |
| | No | 57 | 7,9 |
| | Total | 718 | 100,0 |

According to Table 1, 57.4% (412) of the prospective teachers were male, 42.6 % (306) of them were female. When prospective teachers' grade was examined, it was seen that 27.9 % (200) of prospective teachers was first grade, 18.1% (130) of them was second grade, 24.7% (177) of them was third grade and 29.4% (211) of them was fourth grade.

According to prospective teachers' departments, 3.1% (22) of prospective students in computer and instructional technology education, 2.1% (15) of them elementary school mathematics teacher, 8.4% (60) of them English language teaching, 13.4% (96) of them music teaching, 17.1% (123) of them pre-school teacher education, 0.8% (6) of them secondary school mathematics teacher education, 13.2% (95) of them guidance and psychological counselling, 7.5% (54) of them elementary school teacher education, 3.8% (27) of them social sciences teacher education, 4.2% (30) of them Turkish language and literature teacher education, 11.8% (85) of them Turkish language teaching, 14.6 % (105) of them teaching the mentally handicapped.

When the prospective teachers' nationality was examined it was seen that 77.4% (556) of the prospective teachers were Republic of Turkey, 77.4% (158) of them were Turkish Republic of North Cyprus and 0.6 % (4) of them were other.

In survey, question of "What is your purpose for using a computer and internet?" was asked to prospective teachers. It was requested to point the most dominant option. Accordingly, 39.0% (280) of prospective teachers use computer and internet for educational purpose (homework, research, presentations, etc.), 49.2% (353) of them Social Purpose (Facebook, Twitter, YouTube, etc.), 4.5% (32) of them

professional purposes, 4.6% (33) of them playing games, 1.4% (10) e-mail, 1.4% (10) of them other.

When the prospective teachers' frequency of internet usage was investigated, it was found that 10.3% (74) of the prospective teachers were less than 1 hour, 30.6% (220) of them were between 1-2 hours and 59.1 % (424) of them were more than 2 hours.

When the prospective teachers' computer-related courses receive status were examined it was seen that 25.6% (184) of prospective teachers who said "Yes" and 74.4% (534) of them said "No" to this item. Besides, When the prospective teachers' ownership of Personal Computers (Pc) status were examined it was seen that 92.1% (661) of prospective teachers who said "Yes" and 7.9% (57) of them said "No" to this item.

## 3.3 Instrument

In the research, data was collected using "Demographic Questionnaire" and "Information and Communication Technology (ICT) Efficacy Scale for Prospective Teachers". Also, "Demographic Questionnaire" was used to collect data about gender, frequency of internet usage, grade, and nationality, purpose of using computer and internet, computer-related courses receive status, department, and ownership of personal computers.

General competences of the teaching profession or standards were created from 233 performance indicators as 6 main and 31 sub competency fields by The Ministry of National Education in Turkey. Furthermore, these performance indicators involve ICT competencies to use in education. Teachers were expected to gain these

performance indicators for teaching profession (MEB, 2006). "Information and Communication Technology (ICT) Efficacy Scale for Prospective Teachers" was developed by Şad & Nalçacı (2015) based on these performance indicators about ICT. 5-point Likert scale was used to collect data with 30 items in "Information and Communication Technology (ICT) Efficacy Scale for Prospective Teachers". The items were included '1-Quite Inadequate, 2-Inadequate, 3-Slightly Adequate, 4-Adequate, 5-Quite Adequate."

In this study, total correlations of the scale were found between 0.488 and 0.733 for items. The Cronbach's Alpha of the scale was 0.962. Also, Guttman two half consistency coefficient was 0.938. Moreover, according to these results, the level of reliability and validity is enough for research (Şad & Nalçacı, 2015).

The highest score of scale is 150 points and the lowest score is 30 points. When score of the scale increases, perception of prospective teachers' general competency levels about ICT based on teaching profession is high likewise when score of scale decreases, it is said to be low. The range of score and level of corresponding competency are shown in Table 2 for the interpretation of each item and total scores.

Table 2: Frequency for the level of perceived competence level about ICT

| The Range Of Score | | The level of perceived competencies |
|---|---|---|
| Item Score of Scale | Total Score of Scale | |
| 1.00 – 1.80 | 30.00 - 54.00 | Quite Inadequate |
| 1.81 – 2.60 | 54.01 - 78.00 | Inadequate |
| 2.61 – 3.40 | 78.01 – 102.00 | Slightly Adequate |
| 3.41 – 4.20 | 102.01 – 126.00 | Adequate |
| 4.21 – 5.00 | 126.01 – 150.00 | Quite Adequate |

## 3.4 Data Collection and Procedure

The scale was used to study first, second, third and fourth grade prospective teachers in 12 different programs of the faculty of education in Eastern Mediterranean University (EMU) in 2015-2016 fall academic year. In the research, sampling path has been applied that all grade students in all teacher programs of the Faculty of Education have tried to reach by researcher.

The application of survey was performed with the instructors' permission in the class time. Before collecting the data, prospective teachers were given information about research. Necessary information about survey was stated at the beginning of the questionnaire.

## 3.5 Data Analysis

In research, data was analysed with SPSS 21.0 statistic software for quantitative and descriptive data analyses. Prospective teachers' perceived competencies level about ICT was interpreted according to descriptive statistics which was examined according to arithmetic average, frequencies and standard deviations. Besides, one-way ANOVA test was used order to control if there is any difference in prospective teachers' perceived competence level about ICT for different grade, nationality, departments, purpose of using computer and internet, and frequency of internet use. In addition to this, independent sample t-test was used to control significantly gender and ownership of personal computers (Pc) status differences about perceptions of general competency levels about ICT for analysing data.

# Chapter 4

# RESULTS

This chapter has served to demonstrate findings and discussion of the study. The purpose of this study was to research the general competencies of prospective teachers' perceptions within the context of teaching profession about information and communication technologies (ICT). Furthermore, it was targeted to compare the differences between the perception of prospective teachers' ICT competency levels and some variables which are, gender, grade, department, nationality, frequency of internet usage, computer-related courses receive status, ownership of personal computers (PC), and purpose of using computer and internet. The findings were demonstrated into 15 tables for analysing research questions.

## 4.1 Perceptions of Prospective Teachers' Competency Levels about ICT

In this section, perception of prospective teachers' competency level about Information and Communication Technology (ICT) was examined. Table 3 shows general frequency the prospective teachers' perceived competence level about ICT in education.

Table 3: General Frequency of perceived competence level about ICT in education

| | | |
|---|---|---|
| N | Valid | 718 |
| | Missing | 0 |
| $\bar{X}$ | | **113,36** |
| Std. Deviation | | 18,54 |
| Minimum | | 30,00 |
| Maximum | | 150,00 |

Table 3 shows that prospective teachers' general scores obtained from the scale has been calculated as $\bar{X}$=113.36 (s=18.54). Perception of prospective teachers' competencies about Information and Communication Technology (ICT) was adequate level in general according to Table 2 (Frequency for the level of perceived competence level about ICT). In other words, according to specific general competencies or standards which were published a list of performance indicators by the Turkish Ministry of National Education, they perceived themselves as adequate level. Similar findings were attained in the Demiralay & Karadeniz (2010), Yılmaz, Üredi & Akbaşlı (2015), Şad & Nalçacı (2015), Menzi, Çalışkan & Çetin (2012), Usta & Korkmaz (2010) studies that targeted to examine perceptions of prospective teachers' competencies about ICT based on teaching profession.

In Table 4, arithmetic average scores and standard deviations for each item of prospective teachers' competencies about ICT was demonstrated.

Table 4: Perceptions of Prospective teachers' competencies about ICT based on items

| Items | Quite Inadequate | | Inadequate | | Slightly Adequate | | Adequate | | Quite Adequate | | $\bar{X}$ | Sd. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | f | % | f | % | f | % | f | % | f | % | | |
| 1-) Knowledge of the legal and moral responsibility for using information and communication technology. | 23 | 3,2 | 56 | 7,8 | 210 | 29,2 | 260 | 36,2 | 169 | 23,5 | 3,69 | 1,02 |
| **2-) Legal and ethical responsibilities related to information and communication technologies to be able to give to students.** | **14** | **1,9** | **94** | **13,1** | **238** | **33,1** | **261** | **36,4** | **111** | **15,5** | **3,50** | **0,96** |
| 3-) Finding the basic concepts and practices related to technology. | 13 | 1,8 | 52 | 7,2 | 212 | 29,5 | 296 | 41,2 | 145 | 20,2 | 3,71 | 0,93 |
| 4-) Use of technology during teaching in an appropriate manner. | 7 | 1,0 | 40 | 5,6 | 163 | 22,7 | 326 | 45,4 | 182 | 25,3 | 3,89 | 0,88 |
| 5-) To follow developments in information and communication technologies related to my teaching branch. | 10 | 1,4 | 65 | 9,1 | 199 | 27,7 | 311 | 43,3 | 133 | 18,5 | 3,69 | 0,92 |
| 6-) As a teacher being able to advantage from information and communication technologies to improve myself. | 5 | 0,7 | 38 | 5,3 | 166 | 23,1 | 325 | 45,3 | 184 | 25,6 | 3,90 | 0,87 |
| 7-) As a teacher being able to benefit from information and communication technology facilities whilst delivering the lessons. | 8 | 1,1 | 42 | 5,8 | 149 | 20,8 | 338 | 47,1 | 181 | 25,2 | 3,89 | 0,86 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8-) Teachers are able to benefit from information and communication technology to increase efficiency. | 31 | 4,3 | 87 | 12,1 | 169 | 23,5 | 265 | 36,9 | 166 | 23,1 | 3,62 | 1,10 |
| 9-) Students' interests and needs to take advantage of information and communication technology in the preparation for an appropriate teaching environment. | 8 | 1,1 | 48 | 6,7 | 192 | 26,7 | 312 | 43,5 | 158 | 22,0 | 3,79 | 0,90 |
| 10-) Using information and communication technologies to prepare special material for different learners in my class. | 9 | 1,3 | 81 | 11,3 | 210 | 29,2 | 289 | 40,3 | 129 | 18,0 | 3,62 | 0,95 |
| 11-) The lesson plans, course I will be able to give place to use information and communication technologies. | 10 | 1,4 | 47 | 6,5 | 167 | 23,3 | 319 | 44,4 | 175 | 24,4 | 3,84 | 0,92 |
| **12-) Preparing my lesson material in Word, Excel, PowerPoint and so on. To be able to benefit from software.** | **18** | **2,5** | **36** | **5,0** | **129** | **18,0** | **264** | **36,8** | **271** | **37,7** | **4,02** | **0,99** |
| **13-) Lecture notes, presentations, worksheets, etc. To prepare materials on the computer.** | **12** | **1,7** | **29** | **4,0** | **122** | **17,0** | **260** | **36,2** | **295** | **41,1** | **4,11** | **0,94** |
| **14-)Benefiting from the internet for preparing lesson material** | **8** | **1,1** | **18** | **2,5** | **95** | **13,2** | **247** | **34,4** | **350** | **48,7** | **4,27** | **0,86** |
| 15- ) Course materials, interactive whiteboards, projectors, overhead projectors etc. to present to such vehicles. | 13 | 1,8 | 48 | 6,7 | 148 | 20,6 | 281 | 39,1 | 228 | 31,8 | 3,92 | 0,97 |
| 16- ) Access to databases and Internet resources related to the teaching of the course. | 14 | 1,9 | 29 | 4,0 | 177 | 24,7 | 294 | 40,9 | 204 | 28,4 | 3,90 | 0,93 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 17- ) Analysing my teaching field while using sources from the internet and putting them into practice. | 13 | 1,8 | 39 | 5,4 | 216 | 30,1 | 303 | 42,2 | 147 | 20,5 | 3,74 | 0,91 |
| 18- ) Being able to analyse my teaching field with published thesis's and being appropriate. | 9 | 1,3 | 61 | 8,5 | 61 | 8,5 | 286 | 39,8 | 136 | 18,9 | 3,67 | 0,92 |
| 19-) Being aware of the use of computers, projectors and smartboards while preparing the teaching area | 14 | 1,9 | 48 | 6,7 | 172 | 24,0 | 296 | 41,2 | 188 | 26,2 | 3,83 | 0,96 |
| 20- ) Being able to organise the teaching area while being aware of teaching resources. | 15 | 2,1 | 49 | 6,8 | 203 | 28,3 | 328 | 45,7 | 123 | 17,1 | 3,69 | 0,91 |
| 21- ) Taking the correct precautions in my class for the knowledge and communication technology equipment. | 8 | 1,1 | 53 | 7,4 | 167 | 23,3 | 361 | 50,3 | 129 | 18,0 | 3,77 | 0,87 |
| **22- ) Being able to service computers, projectors and smartboards**. | **72** | **10,0** | **161** | **22,4** | **187** | **26,0** | **206** | **28,7** | **92** | **12,8** | **3,12** | **1,19** |
| 23- ) Being a role model to my students in delivering information on the use of ICT. | 11 | 1,5 | 71 | 9,9 | 206 | 28,7 | 297 | 41,4 | 133 | 18,5 | 3,65 | 0,94 |
| 24- ) Being able to teach my students how to use the ICT equipment efficiently. | 8 | 1,1 | 46 | 6,4 | 193 | 26,9 | 305 | 42,5 | 166 | 23,1 | 3,80 | 0,90 |
| 25- ) Being able to use teaching strategies which support the use of technology. | 8 | 1,1 | 48 | 6,7 | 187 | 26,0 | 311 | 43,3 | 164 | 22,8 | 3,80 | 0,90 |
| 26- ) Being able to use ICT equipment to meet various student’s needs. | 11 | 1,5 | 44 | 6,1 | 203 | 28,3 | 308 | 42,9 | 152 | 21,2 | 3,76 | 0,91 |
| 27- ) Taking the precautions for use of technology while considering the student's health and safety. | 10 | 1,4 | 50 | 7,0 | 207 | 28,8 | 287 | 40,0 | 164 | 22,8 | 3,76 | 0,93 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 28- ) Making use of ICT while marking and analysing students examinations. | 15 | 2,1 | 51 | 7,1 | 174 | 24,2 | 282 | 39,3 | 196 | 27,3 | 3,83 | 0,98 |
| 29- ) Using ICT for preparation of data charts for the students examination results. | 19 | 2,6 | 59 | 8,2 | 176 | 24,5 | 296 | 41,2 | 168 | 23,4 | 3,75 | 0,99 |
| 30- ) Using ICT to measure and analyse the exam results with school director, parents and other academics. | 22 | 3,1 | 34 | 4,7 | 176 | 24,5 | 286 | 39,8 | 200 | 27,9 | 3,84 | 0,98 |

According to Table 4, prospective teachers saw themselves slightly adequate involved "Being able to service computers, projectors and smartboards" ($\bar{X}$=3.12). The second lowest point of performance indicators that prospective teachers perceived themselves adequate but it is slightly adequate too close involved "Legal and ethical responsibilities related to information and communication technologies to be able to give to students" ($\bar{X}$=3.50). Prospective teachers saw themselves quite adequate involved "benefiting from the internet for preparing lesson material" ($\bar{X}$=4.27). The second and third highest score of performance indicators that prospective teachers perceived themselves adequate but it is quite adequate too close involved "Lecture notes, presentations, worksheets, etc. To prepare materials on the computer" ($\bar{X}$=4.11), and "Preparing my lesson material in Word, Excel, PowerPoint and so on. To be able to benefit from software" ($\bar{X}$=4.02). Prospective teachers perceive themselves adequate level at the other items.

In reviewing the literature on the subject, it was found in a studies involving the same findings. For example, Şad & Nalçacı (2015) conducted a study to examine the perceptions of prospective teachers' competence about information and

communication technologies (ICT). Similarly with this study, students saw themselves slightly adequate involved "being able to service computers, projectors and smartboards." and "legal and ethical responsibilities related to information and communication technologies to be able to give to students", prospective teachers saw themselves as quite adequate involved "benefiting from the internet for preparing lesson material", "Lecture notes, presentations, worksheets, etc. To prepare materials on the computer" and "Preparing my lesson material in Word, Excel, PowerPoint and so on. To be able to benefit from software". Menzi, Çalışkan & Çetin (2012) conducted a study to research the technological competencies of prospective teachers in terms of various variables. According to this study, prospective teachers saw themselves as adequate in using word processor and computer basically, as about competence in repairs and troubleshoot and media communication and as incompetence in databases and social, legal and ethical matters. According to Yılmaz, Üredi & Akbaşlı (2015), preservice teachers know the basic concepts about computer, Word and PowerPoint, use of e-mail at a good level; and they know excel, hardware, operating system and use of the internet at a moderate level. It was seen that they were insufficient about access and developing a website.

## 4.2 Perceptions of Prospective Teachers' Competence Level about ICT in Term of Some Variables

In this section, it was targeted to compare the differences between perception of prospective teachers' ICT competency levels and some variables which are gender, frequency of internet usage, grade, and nationality, purpose of using computer and internet, computer-related courses receive status, department, and ownership of personal computers.

### 4.2.1 Gender Variable Differences

Independent sample t-test was conducted to test significantly differences among female and male respondents.

Table 5: Perceived competence level about ICT depending on their gender

| Gender | N | $\bar{X}$ | S | sd | t | p |
|---|---|---|---|---|---|---|
| Male | 306 | 113,67 | 18,74363 | 716 | 0,376 | 0,707 |
| Female | 412 | 113,14 | 18,41047 | | | |

According to Table 5, there was no a significant difference in perceived competence level about ICT for women and men ($t_{(716)}$=0.376 and p>0.05). When average of male ($\bar{x}$=113.67) and female ($\bar{x}$=113.14) prospective teacher' perceived competence level were examined, both of group perceived themselves as adequate level similarly. It can be understood that, there was no a statistically significant difference between men and women prospective teachers about perceptions of competencies level for information and communication technologies (ICT). These finding matching with the results of some studies which were to examine perception of prospective teachers' competence level about ICT according to their gender (Şad & Nalçacı, 2015; Yavuz Mumcu & Dönmez Usta, 2014). However, it was found dissimilarly that there was a statistically difference about level of computer literacy of teachers by gender (Telli, Karahan, Aktaş, & Kur, 2009; Menzi, Çalışkan, & Çetin, 2012; Akgül, Küpeli, & Kır, 2015; Yılmaz, Üredi, & Akbaşlı, 2015).

### 4.2.2 Grade Variable Differences

One-way Analysis of Variance (ANOVA) test was used in order to control if there is any difference in prospective teachers' perceived competence level about ICT for different grade levels presented in Table 6 and Table 7.

Table 6: Descriptive statistics of prospective teachers' perceived competence level about ICT based on grade

| Grade | N | $\bar{X}$ | Std. Deviation |
|---|---|---|---|
| 1. | 200 | 110,77 | 20,40 |
| 2. | 130 | 114,81 | 15,42 |
| 3. | 177 | 113,07 | 18,11 |
| 4. | 211 | 115,18 | 18,62 |
| Total | 718 | 113,36 | 18,54 |

Table 7: Anova test results of prospective teachers' perceived competence level about ICT based on grade

| Variance Source | Sum of Squares | df | Mean Square | F | p |
|---|---|---|---|---|---|
| Between Groups | 2325,285 | 3 | 775,095 | 2,266 | ,080 |
| Within Groups | 244183,646 | 714 | 341,994 | | |
| Total | 246508,930 | 717 | | | |

According to Table 6, the arithmetic average of prospective teachers' perceived competence level about ICT depending on grade are different. First grade prospective teachers' perceived competence level ($\bar{x}$=110.77) was lower than second ($\bar{x}$=114.81), third ($\bar{x}$=113.07) and fourth ($\bar{x}$=115.18) grade prospective teachers. The highest level was final grade and the lowest level was first grade prospective teachers. However, according to p-value in Table 7, there was no a significant difference between the prospective teachers' perceived competence level about ICT according to the variables of grade ($F_{(3;714)}$=2.266 and p>0.05). It can be said that four grade groups of prospective teachers perceived themselves adequate level in general. The average of the first and final grade level is different from each other but there was no a significant difference in prospective teachers' perceived competence level about ICT for grade levels.

There were similar findings with these results which was to the identification of prospective teachers' level of computer competency and their perception of technology use in teaching with regard to different grades (Yılmaz, Üredi, & Akbaşlı, 2015). However, there were dissimilar findings in the results of some researches. The relationship between levels of computer literacy and grade level was examined by Telli, Karahan, Aktaş, & Kuru (2009) that there was only a difference in the basic skill of fourth grade students. According to Menzi, Çalışkan & Çetin (2012), there were significant differences between grade levels. That is to say, technological competencies of pre-service teachers' increases with grade level increasing.

### 4.2.3 The Purpose of Using Computer and Internet Variable Differences

ANOVA (One-way Analysis of Variance) test was conducted in order to control if there is any difference in prospective teachers' perceived competence level about ICT for a different purpose of using computer and internet. Findings were demonstrated in Table 8, Table 9 and Table 10. In survey, question of "What is your purpose for using a computer and internet?" was asked to prospective teachers. It was requested to point the most dominant option.

Table 8: Descriptive statistics of prospective teachers' perceived competence level about ICT depending on purpose of using computer and internet

| Aims | N | $\bar{x}$ | Std. Deviation |
|---|---|---|---|
| Educational (homework, research, presentations, etc.) | 280 | 114,3429 | 18,13856 |
| Social Purpose (Facebook, Twitter, YouTube, etc.) | 353 | 112,7734 | 17,72196 |
| **Professional Purposes** | **32** | **122,0938** | **16,45004** |
| **Playing Games** | **33** | **102,6061** | **25,70255** |
| E-Mail | 10 | 114,5000 | 19,80600 |
| Other | 10 | 113,5000 | 22,21736 |
| Total | 718 | 113,3677 | 18,54201 |

Table 9: Anova test results of prospective teachers' perceived competence level about ICT depending on purpose of using computer and internet

| Variance Source | Sum of Squares | df | Mean Square | F | p |
|---|---|---|---|---|---|
| Between Groups | 6662,377 | 5 | 1332,475 | 3,956 | ,002 |
| Within Groups | 239846,553 | 712 | 336,863 | | |
| Total | 246508,930 | 717 | | | |

Table 10: Post Hoc test results of prospective teachers' perceived competence level about ICT depending on the purpose of using computer and internet

| (I) Aim | (J) Aim | Mean Difference (I-J) | Std. Error | p |
|---|---|---|---|---|
| **Educational (homework, research, presentations, etc.)** | Social Purpose (Facebook, Twitter, YouTube, etc.) | 1,56949 | 1,46880 | ,286 |
| | **Professional Purposes** | **-7,75089*** | **3,42492** | **,024** |
| | **Playing Games** | **11,73680*** | **3,37803** | **,001** |
| | E-Mail | -,15714 | 5,90672 | ,979 |
| | Other | ,84286 | 5,90672 | ,887 |
| **Social Purpose (Facebook, Twitter, YouTube, etc.)** | Educational (homework, research, presentations, etc.) | -1,56949 | 1,46880 | ,286 |
| | **Professional Purposes** | **-9,32038*** | **3,38840** | **,006** |
| | **Playing Games** | **10,16731*** | **3,34100** | **,002** |
| | E-Mail | -1,72663 | 5,88563 | ,769 |
| | Other | -,72663 | 5,88563 | ,902 |
| **Professional Purposes** | **Educational (homework, research, presentations, etc.)** | **7,75089*** | **3,42492** | **,024** |
| | **Social Purpose (Facebook, Twitter, YouTube, etc.)** | **9,32038*** | **3,38840** | **,006** |
| | **Playing Games** | **19,48769*** | **4,55356** | **,000** |
| | E-Mail | 7,59375 | 6,64931 | ,254 |
| | Other | 8,59375 | 6,64931 | ,197 |
| **Playing Games** | **Educational (homework, research, presentations, etc.)** | **-11,73680*** | **3,37803** | **,001** |
| | **Social Purpose (Facebook, Twitter, YouTube, etc.)** | **-10,16731*** | **3,34100** | **,002** |
| | **Professional Purposes** | **-19,48769*** | **4,55356** | **,000** |
| | E-Mail | -11,89394 | 6,62528 | ,073 |
| | Other | -10,89394 | 6,62528 | ,101 |
| E-Mail | Educational (homework, research, presentations, etc.) | ,15714 | 5,90672 | ,979 |
| | Social Purpose (Facebook, Twitter, YouTube, etc.) | 1,72663 | 5,88563 | ,769 |
| | Professional Purposes | -7,59375 | 6,64931 | ,254 |
| | Playing Games | 11,89394 | 6,62528 | ,073 |
| | Other | 1,00000 | 8,20808 | ,903 |
| Other | Educational (homework, research, presentations, etc.) | -,84286 | 5,90672 | ,887 |
| | Social Purpose (Facebook, Twitter, YouTube, etc.) | ,72663 | 5,88563 | ,902 |
| | Professional Purposes | -8,59375 | 6,64931 | ,197 |
| | Playing Games | 10,89394 | 6,62528 | ,101 |
| | E-Mail | -1,00000 | 8,20808 | ,903 |

According to Table 9, there was found significant differences between the prospective teachers' perceived competence level about ICT according to the variables of the purpose of using computer and internet ($F_{(5;712)}$=2.266 and p<0.05).

The follow-up post-hoc analysis was conducted by using LSD Multiple to control which aims was different from the others, the result was showed in Table 10. Accordingly, prospective teachers' perceived competencies level about ICT who use computer and internet for playing games were adequate ($\bar{x}$=102.60) whereas the arithmetic average was too close to slightly adequate ($\bar{x}$>102.00) which was significantly lower than prospective teachers' perceived competencies level about ICT who use computer and internet for educational purpose such as homework, research, presentations, etc. ($\bar{x}$=114.34), social purpose such as Facebook, Twitter, YouTube, etc. ($\bar{x}$=112.77) and professional purposes ($\bar{x}$=122,09). Besides, prospective teachers' perceived competencies level about ICT who use computer and internet for professional purposes were adequate ($\bar{x}$=122.09) whereas the arithmetic average was too close to quite adequate ($\bar{x}$<126.00) which was significantly higher than prospective teachers' perceived competencies level about ICT who use computer and internet for educational purpose such as homework, research, presentations, etc. ($\bar{x}$=114,34) , social purpose such as Facebook, Twitter, YouTube, etc. ($\bar{x}$=112.77) and playing game ($\bar{x}$=102.60).

It can be said that, the purpose of using computer and internet was an important factor for prospective teachers' perceived competence level about ICT. There were similar findings with these results which, was to investigate the technological

competencies of prospective teachers in terms of various variables (Menzi, Çalışkan, & Çetin, 2012).

### 4.2.4 Received Computer-Related Courses Status Variable Differences

Independent sample t-test was conducted to test significantly received computer-related courses status differences about perceptions of prospective teacher's ICT competencies.

Table 11: Perceived competence level about ICT depending on their received computer-related courses status

| Received Computer-Related Courses Status | N | $\bar{X}$ | S | sd | t | p |
|---|---|---|---|---|---|---|
| Yes | 184 | 113,14 | 117,92 | 716 | 3,903 | ,179 |
| No | 534 | 113,67 | 111,79 | | | |

According to Table 11, there was not a significant difference in perceived competence level about ICT for received computer-related courses status ($t_{(716)}$=3.903 and p>0.05). When the arithmetic average of "yes" answer ($\bar{x}$=113.14) and "no" answer ($\bar{x}$=113.67) prospective teacher' perceived competence level were examined, both of group perceived themselves as adequate level similarly.

There were similar findings with this results which was to examine computer literacy levels of class teachers who work in primary schools according to various parameters (Akgül, Küpeli, & Kır, 2015).

### 4.2.5 Departments variable Differences

ANOVA (One way Analysis of Variance) test was conducted in order to control if there is any difference in prospective teachers' perceived competence level about ICT for different grade levels. Results were shown in Table 12 and Table 13.

Table 12: Descriptive statistics of prospective teachers' perceived competence level about ICT depending on their department

| Departments | N | $\bar{X}$ | Std. Deviation |
|---|---|---|---|
| **Computer And Instructional Technology Teacher Education** | **22** | **124,7273** | **17,72859** |
| Elementary School Mathematics Teacher Education (Turkish) | 15 | 114,2000 | 21,53469 |
| English Language Teaching | 60 | 112,4667 | 14,47320 |
| Music Teaching | 96 | 112,7083 | 17,67360 |
| Pre-School Teacher Education | 123 | 115,3902 | 18,05757 |
| **Secondary School Mathematics Teacher Education** | **6** | **109,3333** | **16,42762** |
| **Guidance and Psychological Counselling** | **95** | **110,0421** | **19,35553** |
| Elementary School Teacher Education | 54 | 114,2593 | 23,51409 |
| Social Sciences Teacher Education | 27 | 115,0370 | 13,88270 |
| Turkish Language and Literature Teacher Education | 30 | 113,1000 | 16,06098 |
| Turkish Language Teaching | 85 | 114,6471 | 16,65097 |
| Teaching The Mentally Handicapped | 105 | 111,0095 | 20,68932 |
| Total | 718 | 113,3677 | 18,54201 |

Table 13: Anova test results of prospective teachers' perceived competence level about ICT for department

| Variance Source | Sum of Squares | df | Mean Square | F | p |
|---|---|---|---|---|---|
| Between Groups | 5434,531 | 11 | 494,048 | 1,447 | ,147 |
| Within Groups | 241074,399 | 706 | 341,465 | | |
| Total | 246508,930 | 717 | | | |

According to Table 12, the department which has the highest arithmetic average for prospective teachers' perceived competence level was computer and instructional

technology teacher education ($\bar{x}$=124.72) which were adequate level whereas its arithmetic average was too close to quite adequate ($\bar{x}$<126.00). In addition to this, secondary school mathematics ($\bar{x}$=109.33) and guidance and psychological counselling ($\bar{x}$=110.04) prospective teachers' perceived competencies level about ICT were lower than the perceptions of computer and instructional technology ($\bar{x}$=124.72), elementary school mathematics ($\bar{x}$=114.20), English language teaching($\bar{x}$=112.46), music teaching($\bar{x}$=112.70), pre-school($\bar{x}$=115.39), elementary school($\bar{x}$=114.25), social sciences($\bar{x}$=115.03), Turkish language and literature($\bar{x}$=113, 10), Turkish language teaching($\bar{x}$=114,64) and teaching the mentally handicapped ($\bar{x}$=111,00), prospective teachers' levels. However, according to Table 13, there was not found significant differences between the prospective teachers' perceived competence level about ICT according to the variables of departments ($F_{(11;706)}$=1.447 and p>0.05).

It can be said that 12 departments groups of prospective teachers perceived themselves adequate level in general. The most successful department was computer and instructional technology teacher education. The arithmetic average of the departments' level was different from each other but there was no significant differences in prospective teachers' perceived competence level about ICT for the departments.

There were similar findings with this results which was to examine perceptions of the prospective teachers' competencies about ICT (Usta & Korkmaz, 2010; Kocasaraç, 2003). On the other hand, there were also some researches showing that department factor cause a significant differentiation. For example; prospective

elementary mathematics teachers' saw themselves as slightly adequate about information and communication technology (ICT) that was significantly lower than classroom, preschool, English language computer and technology, music and science teachers (Şad & Nalçacı, 2015). Besides, according to the prospective teachers survey, there was a statistically differences in terms of department about level of computer literacy. Differences were in favour of science teachers, music teachers, special skills exams students, physical education and sports teacher in the field of basic skills and programming. Social sciences, mathematics and Turkish teacher's basic programming skills and dimensions of the teachers' level of computer literacy was determined to be less (Telli, Karahan, Aktaş, & Kur, 2009). Besides, the highest arithmetic average for the prospective teachers' perceived competence level of the computer and instructional technology teacher students were expected due to taking technology lessons.

### 4.2.6 Nationality variable Differences

ANOVA (One-way Analysis of Variance) test was conducted in order to control if there is any difference in prospective teachers' perceived competence level about ICT for different nationality levels. Findings were demonstrated in Table 6 and Table 7.

Table 14: Descriptive statistics of prospective teachers' perceived competence level about ICT depending on nationality

| Nationality | N | $\bar{X}$ | Std. Deviation |
|---|---|---|---|
| Republic of Turkey | 556 | 113,2338 | 18,73252 |
| Republic of Turkish North Cyprus | 158 | 114,0633 | 18,01368 |
| Other | 4 | 104,5000 | 11,67619 |
| Total | 718 | 113,3677 | 18,54201 |

Table 15: Anova test results of prospective teachers' perceived competence level about ICT depending on nationality

| Variance Source | Sum of Squares | df | Mean Square | F | p |
|---|---|---|---|---|---|
| Between Groups | 400,959 | 2 | 200,479 | ,582 | ,559 |
| Within Groups | 246107,971 | 715 | 344,207 | | |
| Total | 246508,930 | 717 | | | |

According to Table 15, there was not found significant differences between the prospective teachers' perceived competence level about ICT according to the variables of nationality ($F_{(2;715)}$=0.582 and p>0.559). It can be said that, nationality was not an important factor for prospective teachers' perceived competence level about ICT.

### 4.2.7 Ownership of Personal Computers (PC) Variable Differences

Independent sample t-test was conducted to test significant ownership of personal computers status differences.

Table 16: Perceived competence level about ICT depending on their ownership of personal computers (Pc) status

| Ownership of Personal Computers (PC) | N | $\bar{X}$ | S | sd | t | p |
|---|---|---|---|---|---|---|
| Yes | 661 | 114,2995 | 117,92 | 716 | 4,651 | 0,000 |
| No | 57 | 102,5614 | 111,79 | | | |

According to Table 16, there was found significant differences between the prospective teachers' perceived competence level about ICT according to the variables of ownership of personal computers (PC) ($t_{(716)}$=4.651 and p<0.05). The prospective teachers who do not own a personal computer saw themselves as adequate ($\bar{x}$=102.56) whereas its arithmetic average was too close to slightly

adequate ($\bar{x}$>102.00), that was significantly lower than perception of prospective teachers' ICT competency level who do own a computer.

It can be said that, ownership of personal computers status was important factor for prospective teachers' perceived competence level about ICT. There were similar findings with this results which was to examine the prospective teachers' ICT competency levels (Şad & Nalçacı, 2015; Tezci, 2011; Kara, 2011; Menzi, Çalışkan, & Çetin, 2012; Yılmaz, Üredi, & Akbaşlı, 2015). On the other hand, there were also some researches showing that department factor cause a significant differentiation (Kocasaraç, 2003). In this sense, it was not considered to be decisive was the only owner of the computer. The important thing was to develop the computer skill to be able to spend their computer skills. Accordingly, ownership of personal computers status will provide a significant advantage in this point.

### 4.2.8 Frequency of Internet Usage Variable Differences

ANOVA test was conducted in order to control if there is any difference in prospective teachers' perceived competence level about ICT for different frequency of internet use shown in Table 17 and Table 18 depicted the results.

Table 17: Descriptive statistics of prospective teachers' perceived competence level about ICT depending on their frequency of internet use

| Variance Source | N | $\bar{X}$ | Std. Deviation | Std. Error |
|---|---|---|---|---|
| Less than 1 hour | 74 | 111,0946 | 20,54542 | 2,38836 |
| Between 1-2 hours | 220 | 114,2636 | 17,74743 | 1,19653 |
| More than 2 hours | 424 | 113,2995 | 18,58817 | ,90272 |
| Total | 718 | 113,3677 | 18,54201 | ,69198 |

Table 18: Anova test results of prospective teachers' perceived competence level about ICT depending on purpose of their frequency of internet use

| Variance Source | Sum of Squares | df | Mean Square | F | p |
|---|---|---|---|---|---|
| Between Groups | 560,924 | 2 | 280,462 | ,815 | ,443 |
| Within Groups | 245948,007 | 715 | 343,983 | | |
| Total | 246508,930 | 717 | | | |

According to Table 18, there was not found significant differences between the prospective teachers' perceived competence level about ICT according to the variables of departments ($F_{(2;715)}$=0.85 and p>0.05). Descriptive statistics of prospective teachers' perceived competence level about ICT depending on their frequency of internet use was shown in Table 17. Prospective Techers' perceived competence level about ICT who use internet less than 1 hour ($\bar{x}$=111.09), between 1-2 hours ($\bar{x}$=114.26) and more than 2 hours ($\bar{x}$=113.29) perceived themselves adequate level in general.

There were similar findings with this results which was to examine the prospective teachers' ICT competency levels. (Şad & Nalçacı, 2015; Tezci, 2011; Menzi, Çalışkan, & Çetin, 2012). On the other hand, there were also some researches showing that frequency of internet use factor causes a significant differentiation (Kara, 2011; Sağlam, 2007).

# Chapter 5

# CONCLUSION

This chapter has served to demonstrate conclusion and recommendation of the study.

## 5.1 Conclusion

The purpose of this study was to research the general competencies of prospective teachers' perceptions according to the context of teaching profession about information and communication technologies (ICT). Furthermore, it was targeted to compare the differences between the perception of prospective teachers' ICT competency levels and some variables that are gender, frequency of internet usage, grade, and nationality, purpose of using computer and internet, computer-related courses receive status, department, and ownership of personal computers.

Data was collected from 718 prospective teachers in 12 different programs of the Faculty of Education in Eastern Mediterranean University (EMU) in 2015-2016 fall academic year. Survey method was chosen by the researcher. Survey was conducted through the means of quantitative descriptive research. In addition, 5-point Likert scale was used to collect data with 30 items, which was "Information and Communication Technology (ICT) Efficacy Scale for Prospective Teachers". It was developed by Şad & Nalçacı (2015) based on performance indicators for teaching profession, which was published by The Ministry of National Education in Turkey.

The findings of this research showed that It was consistently similar with the literature that the prospective teachers perceive themselves as adequate in general. Prospective teachers saw themselves slightly adequate involved “Being able to service computers, projectors and smart boards”. On the other hand, they saw themselves quite adequate in “benefiting from the internet for preparing lesson material”. In addition to this, according to other items, the prospective teachers saw themselves as adequate level.

This study has also investigated to control gender, nationality, department, purpose of using computer and internet, computer-related courses receive status, grade, ownership of personal computers, and frequency of internet usage differences in general competencies of prospective teachers’ perceptions level about ICT. There was found significant differences between the prospective teachers’ perceived competence level about ICT according to the variables of purpose of using computer and internet. Accordingly, prospective teachers’ perceived competencies level about ICT who use computer and internet for playing games were significantly lower than prospective teachers’ perceived competencies level about ICT who use computer and internet for educational purpose such as homework, research, presentations, etc., social purpose such as Facebook, Twitter, YouTube, etc. and professional purposes. Besides, prospective teachers’ perceived competencies level about ICT who use computer and internet for professional purposes were significantly higher than prospective teachers’ perceived competencies level about ICT who use computer and internet for educational purpose such as “homework, research, presentations, etc.”, “social purpose such as Facebook, Twitter, YouTube, etc.” and “playing game”. In addition to this, it was consistent with the literature, which was found

significant differences between the prospective teachers' perceived competence level about ICT according to the variables of having personal computers. Accordingly, prospective teachers' perceived competencies level who do not own personal computer about ICT was significantly lower than the perception of prospective teacher's ICT competency level who had a computer. Furthermore, findings demonstrated that, prospective teachers' gender, grades, received computer-related courses status and departments, nationality and frequency of internet do not seem to be a significant difference in the prospective teachers' perceived competence level about ICT.

## 5.2 Recommendation

Prospective teachers' perceived competence level about ICT is paramount importance for increasing quality of education in the future. Teachers should use ICT primarily by accepting the role of technology in education. They should have competencies in their life about ICT. The research findings were believed to have been used to develop programs of education faculties. Also, teachers and prospective teachers can use them to evaluate themselves.

It found that extra training is needed to improve prospective teachers' ICT competency level about "Being able to service computers, projectors and smart boards" and "legal and ethical responsibilities related to information and communication technologies to be able to give to students". Prospective teachers should take practical courses about being able to service computers, projectors and smart boards.

Also, the purpose of using computer and internet affects prospective teachers' perceived themselves as adequate level about ICT. For these reasons, prospective teachers should also be encouraged to use computer for educational purposes.

Ownership of personal computers (Pc) status was an important factor for prospective teachers' perceived competence level about ICT. Therefore, it should be ensured that the prospective teachers have a computer.

Application of in-service training is facing serious problems in Turkey who is a developing country in the world (Usun, Information and communications technologies (ICT) in teacher education (ITE) programs in the world and Turkey (a comparative review ), 2009). Therefore, prospective teacher training is a more effective and radical solution to increase teachers' competencies level about ICT.

Comprehensive research can be done to large groups of prospective teachers who are from many universities. Also, a similar study can be conducted to active teachers in the private and governmental schools. In this way, correlation can be investigated between perceptions of prospective teachers' and active teachers' competency level about ICT.

Different studies should be carried out in different groups. Also, measurements should be made with different methods like online test of prospective teacher ICT competence which is practical examinations to evaluate the actual ICT knowledge. In addition to this, different methods in studies should be tried to use such as case study. Also, more specific comprehensive research should be done by using more

than two variables for comparison. For example, to investigate ICT competency levels depending on grade differences for teacher education programs.

This study is a great value to future teachers that believed to have been used to decide new educational policies for increasing quality of education. It will bring a new light to progression and careers in the future.

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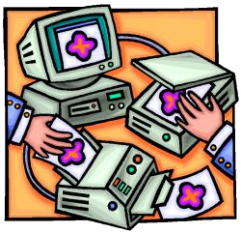
# APPENDICES

## Appendix A: Questionnaire



### Information and Communication Technologies Efficiency

### Questionnaire for Prospective Teachers (ICT)

Dear Prospective Teacher,

The information we gain from teacher candidates, in regards to general requirements for the level of competence for information and communication technology is of paramount importance. The teaching profession in general and the measurement of competencies defined under the perception they have of the future. As future teachers, your feedback to the questions below is of great value to us. Your response will bring a new light to progress and careers in the future.

The survey consists of two parts. The first section contains demographic information about you. You will need to select one option for each question. The second part of the questionnaire contains teaching profession in your perception of your qualification level for information and communication technology.

Each item in this section, the information and communication technology (ICT) degree with statements about efficiency, 5 = Quite Adequate, 4 = Adequate 3 = Slightly Adequate, 2 = Inadequate, 1 = Quite Inadequate are ranked in the survey. Expected from you, the information and communication technology (ICT) to specify your qualifications as you think about which option is the best place to cross (x) to specify is your putting.

Please fill answer all questions fully and sincerely, thank you for your contribution.

Ata Taşpolat

## A- Demographic Information

1. What is your gender?
   - □ Female
   - □ Male
2. What class are you in?
   - □ 1.
   - □ 2.
   - □ 3.
   - □ 4.
3. What is the programme you are learning?
   - □ Computer And Instructional Technology Teacher Education
   - □ Elementary School Mathematics Teacher Education (Turkish)
   - □ English Language Teaching
   - □ Music Teaching
   - □ Pre-School Teacher Education
   - □ Secondary School Mathematics Teacher Education
   - □ Guidance and Psychological Counselling
   - □ Elementary School Teacher Education
   - □ Social Sciences Teacher Education
   - □ Turkish Language and Literature Teacher Education
   - □ Turkish Language Teaching
   - □ Teaching The Mentally Handicapped
4. Nationality?
   - □ T.R.
   - □ T.R.N.C
   - □ Other (Please State)----------
5. What is your purpose for using a computer and internet? (Please tick the most predominant option.)
   - □ Educational (Homework, research, and presentations.)
   - □ Social purposes (Facebook, twitter, YouTube, etc.)
   - □ Professional purposes
   - □ Playing games
   - □ E-mail
   - □ Other (please specify) ----------
6. What is your frequency of internet use per day?
   - □ Less than 1 hour.
   - □ Between 1-2 hours.
   - □ More than 2 hours.

7. Have you received computer-related courses?

□ Yes

□ No

8. Do you own a computer?

□ Yes

□ No

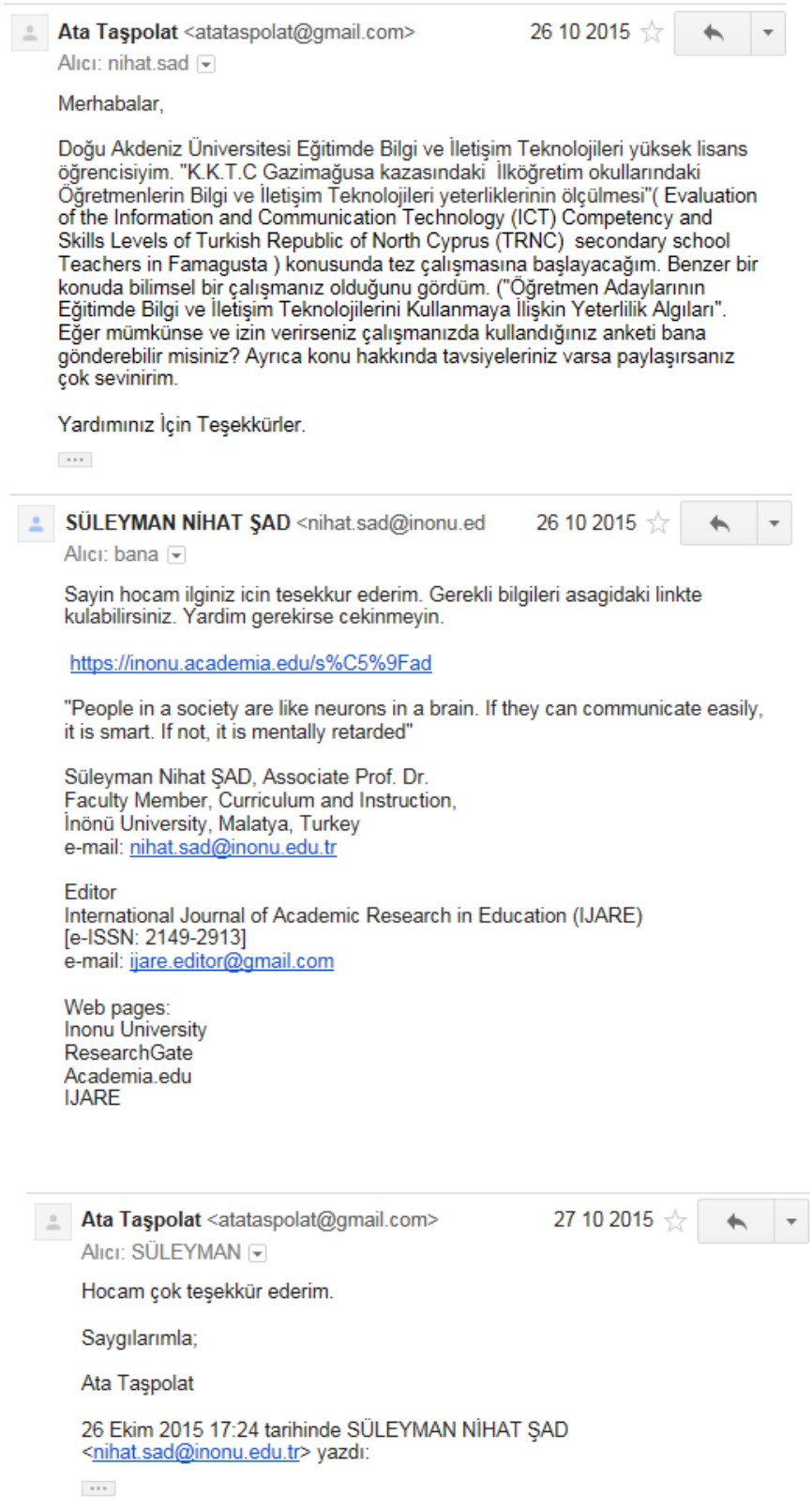
## B-Scala Items

| No | **To what extent do you perceive yourself enough in terms of knowledge and skills listed below? Mark the appropriate option you specify.** | Quite Inadequate | Inadequate | Slightly Adequate | Adequate | Quite Adequate |
|---|---|---|---|---|---|---|
| 1. | Knowledge of the legal and moral responsibility for the use of information and communication technology. | ① | ② | ③ | ④ | ⑤ |
| 2. | Legal and ethical responsibilities related to information and communication technologies to be able to give to students. | ① | ② | ③ | ④ | ⑤ |
| 3. | Finding the basic concepts and practices related to technology. | ① | ② | ③ | ④ | ⑤ |
| 4. | Use of technology during teaching in an appropriate manner. | ① | ② | ③ | ④ | ⑤ |
| 5. | To follow developments in information and communication technologies related to my teaching branch. | ① | ② | ③ | ④ | ⑤ |
| 6. | As a teacher being able to benefit from information and communication technologies to improve myself. | ① | ② | ③ | ④ | ⑤ |
| 7. | As a teacher being able to benefit from information and communication technology facilities whilst delivering the lessons. | ① | ② | ③ | ④ | ⑤ |
| 8. | Teachers are able to benefit from information and communication technology to increase efficiency. | ① | ② | ③ | ④ | ⑤ |
| 9. | Students' interests and needs to take advantage of information and communication technology in the preparation for an appropriate teaching environment. | ① | ② | ③ | ④ | ⑤ |
| 10. | Using information and communication technologies to prepare special material for different learners in my class. | ① | ② | ③ | ④ | ⑤ |
| 11. | The lesson plans, course I will be able to give place to use information and communication technologies. | ① | ② | ③ | ④ | ⑤ |
| 12. | Preparing my lesson material in Word, Excel, PowerPoint and so on. To be able to benefit from software | ① | ② | ③ | ④ | ⑤ |
| 13. | Lecture notes, presentations, worksheets, etc. To prepare materials on the computer | ① | ② | ③ | ④ | ⑤ |
| 14. | Benefiting from the internet for preparing lesson material | ① | ② | ③ | ④ | ⑤ |
| 15. | Course materials, interactive whiteboards, projectors, overhead projectors etc. to present to such vehicles. | ① | ② | ③ | ④ | ⑤ |
| 16. | Access to databases and Internet resources related to the teaching of the course. | ① | ② | ③ | ④ | ⑤ |
| 17. | Analysing my teaching field while using sources from the internet and putting them into practice. | ① | ② | ③ | ④ | ⑤ |
| 18. | Being able to analyse my teaching field with published thesis's and being appropriate. | ① | ② | ③ | ④ | ⑤ |

| No | **To what extent do you perceive yourself enough in terms of knowledge and skills listed below? Mark the appropriate option you specify.** | Quite Inadequate | Inadequate | Slightly Adequate | Adequate | Quite Adequate |
|---|---|---|---|---|---|---|
| 19. | Being aware of the use of computers, projectors and smart boards while preparing the teaching area, | ① | ② | ③ | ④ | ⑤ |
| 20. | Being able to organise the teaching area while being aware of teaching resources. | ① | ② | ③ | ④ | ⑤ |
| 21. | Taking the correct precautions in my class for the knowledge and communication technology equipment. | ① | ② | ③ | ④ | ⑤ |
| 22. | Being able to service computers, projectors and smartboards . | ① | ② | ③ | ④ | ⑤ |
| 23. | Being a role model to my students in delivering information on the use of ICT. | ① | ② | ③ | ④ | ⑤ |
| 24. | Being able to teach my students how to use the ICT equipment efficiently. | ① | ② | ③ | ④ | ⑤ |
| 25. | Being able to use teaching strategies which support the use of technology. | ① | ② | ③ | ④ | ⑤ |
| 26. | Being able to use ICT equipment to meet various student's needs. | ① | ② | ③ | ④ | ⑤ |
| 27. | Taking the precautions for use of technology while considering the student's health and safety. | ① | ② | ③ | ④ | ⑤ |
| 28. | Making use of ICT while marking and analysing student's examinations. | ① | ② | ③ | ④ | ⑤ |
| 29. | Using ICT for preparation of data charts for the student's examination results. | ① | ② | ③ | ④ | ⑤ |
| 30. | Using ICT to measure and analyse the exam results with school director, parents and other academics. | ① | ② | ③ | ④ | ⑤ |

***Thank you for your time and consideration.***

# Appendix B: Permissions of Using Survey



**Ata Taşpolat** <atataspolat@gmail.com> 26 10 2015

Alıcı: nihat.sad

Merhabalar,

Doğu Akdeniz Üniversitesi Eğitimde Bilgi ve İletişim Teknolojileri yüksek lisans öğrencisiyim. "K.K.T.C Gazimağusa kazasındaki İlköğretim okullarındaki Öğretmenlerin Bilgi ve İletişim Teknolojileri yeterliklerinin ölçülmesi"( Evaluation of the Information and Communication Technology (ICT) Competency and Skills Levels of Turkish Republic of North Cyprus (TRNC) secondary school Teachers in Famagusta ) konusunda tez çalışmasına başlayacağım. Benzer bir konuda bilimsel bir çalışmanız olduğunu gördüm. ("Öğretmen Adaylarının Eğitimde Bilgi ve İletişim Teknolojilerini Kullanmaya İlişkin Yeterlilik Algıları". Eğer mümkünse ve izin verirseniz çalışmanızda kullandığınız anketi bana gönderebilir misiniz? Ayrıca konu hakkında tavsiyeleriniz varsa paylaşırsanız çok sevinirim.

Yardımınız İçin Teşekkürler.

**SÜLEYMAN NİHAT ŞAD** <nihat.sad@inonu.ed 26 10 2015

Alıcı: bana

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"People in a society are like neurons in a brain. If they can communicate easily, it is smart. If not, it is mentally retarded"

Süleyman Nihat ŞAD, Associate Prof. Dr.
Faculty Member, Curriculum and Instruction,
İnönü University, Malatya, Turkey
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**Ata Taşpolat** <atataspolat@gmail.com> 27 10 2015

Alıcı: SÜLEYMAN

Hocam çok teşekkür ederim.

Saygılarımla;

Ata Taşpolat

26 Ekim 2015 17:24 tarihinde SÜLEYMAN NİHAT ŞAD <nihat.sad@inonu.edu.tr> yazdı:

# Appendix C: Faculty Research Authorization

20.11.2015

K.K.T.C.
Doğu Akdeniz Üniversitesi
Bilgisayar ve Öğretim Teknolojileri Bölümü Başkanlığı'na

Doğu Akdeniz Üniversitesi, Eğitim Fakültesi, Bilgisayar ve Öğretim Teknolojileri Bölümü, Eğitimde Bilgi ve İletişim Teknolojileri yüksek lisans programında öğrenim gören, 135389 numaralı Ata Taşpolat adlı öğrenciyim. 2015-2016 Güz akademik dönemi içinde "Öğretmen Adaylarının Eğitimde Bilgi ve İletişim Teknolojilerini Kullanmaya İlişkin Yeterlilik Algıları" konulu yüksek lisans tezimde kullanılmak üzere Doğu Akdeniz Üniversitesi'ne bağlı Eğitim Fakültesi öğretmenlik programlarında, öğrenim gören öğretmen adaylarına, Ek'te yer alan anket çalışmasını yapmak istiyorum

Gerekli iznin verilmesini bilgilerinize arz ederim.

**Ek:** Öğretmen Adayları için Bilgi ve İletişim Teknolojileri (BİT) Yeterlilik Algısı Anketi

Saygılarımla,
Ata Taşpolat

doğu akdeniz üniversitesi | eastern mediterranean university

İç Yazışma

Inter-Office Memorandum

**Gönderilen/To** :Prof. Dr. Ülker Vancı OSAM
Eğitim Fakültesi Dekanı (v)

**Tarih/Date** : 23/11/2015

**Gönderen/From** :Doç. Dr. Ersun İŞÇİOĞLU
Bilgisayar ve Öğretim Teknolojileri Eğitimi
Bölüm Başkanı

**Sayı/Ref No.:EGF05-2015-0150**

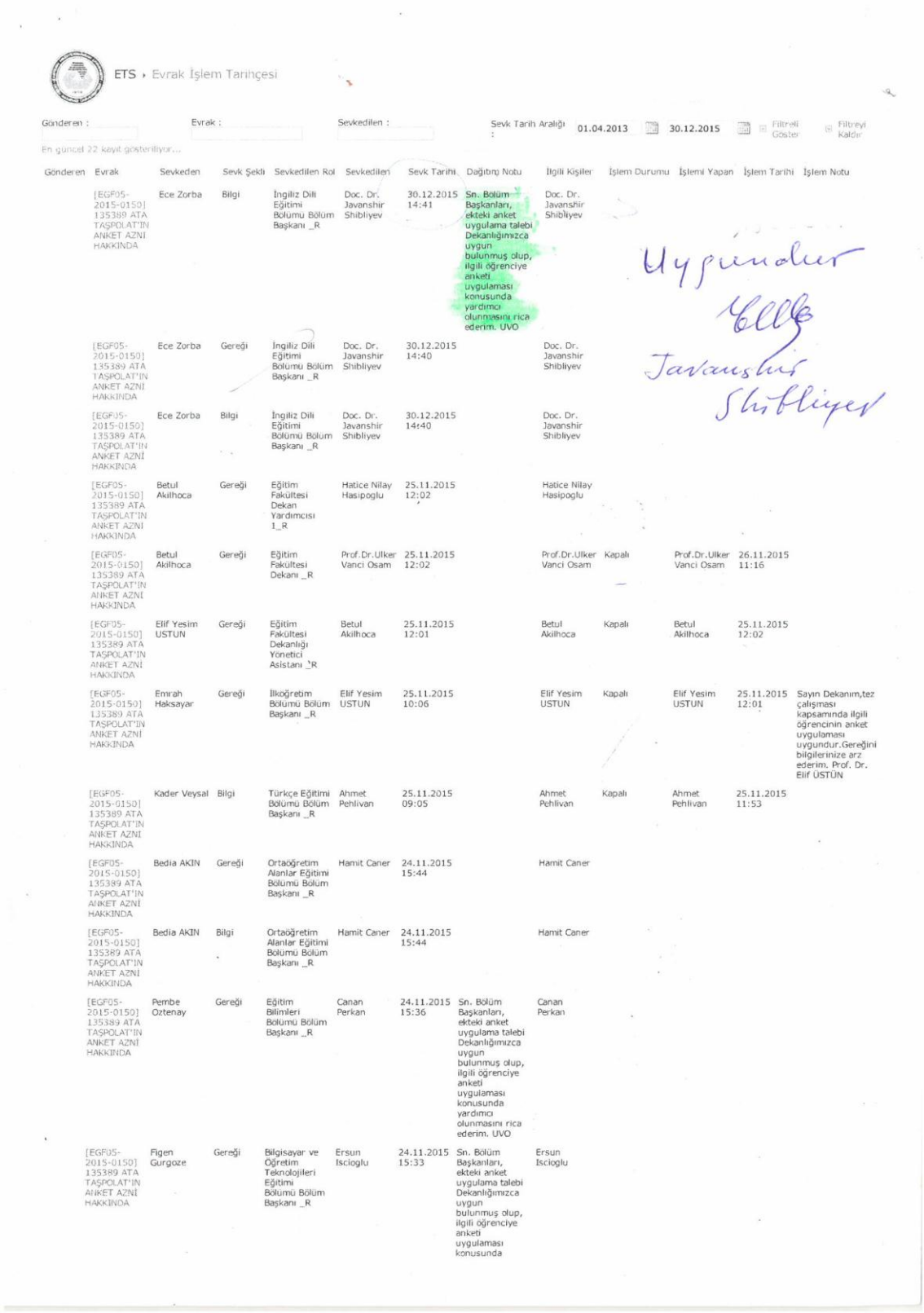
**Konu/Subject** :**135389 numaralı öğrencimiz Ata Taşpolat'ın anket izni hk.**

Bilgisayar ve Öğretim Teknolojileri Eğitimi Bölümü, Eğitimde Bilgi ve İletişim Teknolojileri Yüksek Lisans Programı, 135389 numaralı öğrencisi Ata Taşpolat, tez çalışması kapsamında Eğitim Fakültesi Öğrencilerine anket uygulaması için izin talebinde bulunmuştur. Uygulayacağı anket soruları ve izin talebi ekte sunulmuştur

Konu ile ilgili olarak, gereğini olurlarınıza saygılarımla arz ederim.

**Ek:** 1- Ata Taşpolat'ın Dilekçesi
2- Anket Formu.

Eİ/fg.



ETS › Evrak İşlem Tarihçesi

Gönderen : Evrak : Sevkedilen : Sevk Tarih Aralığı : 01.04.2013 30.12.2015 Filtreli Göster Filtreyi Kaldır

En güncel 22 kayıt gösteriliyor...

| Gönderen | Evrak | Sevkeden | Sevk Şekli | Sevkedilen Rol | Sevkedilen | Sevk Tarihi | Dağıtınç Notu | İlgili Kişiler | İşlem Durumu | İşlemi Yapan | İşlem Tarihi | İşlem Notu |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | [EGF05-2015-0150] 135389 ATA TAŞPOLAT'IN ANKET AZNİ HAKKINDA | Ece Zorba | Bilgi | İngiliz Dili Eğitimi Bölümü Bölüm Başkanı _R | Doc. Dr. Javanshir Shibliyev | 30.12.2015 14:41 | Sn. Bölüm Başkanları, ekteki anket uygulama talebi Dekanlığımızca uygun bulunmuş olup, ilgili öğrenciye anketi uygulaması konusunda yardımcı olunmasını rica ederim. UVO | Doc. Dr. Javanshir Shibliyev | | | | |
| | [EGF05-2015-0150] 135389 ATA TAŞPOLAT'IN ANKET AZNİ HAKKINDA | Ece Zorba | Gereği | İngiliz Dili Eğitimi Bölümü Bölüm Başkanı _R | Doc. Dr. Javanshir Shibliyev | 30.12.2015 14:40 | | Doc. Dr. Javanshir Shibliyev | | | | |
| | [EGF05-2015-0150] 135389 ATA TAŞPOLAT'IN ANKET AZNİ HAKKINDA | Ece Zorba | Bilgi | İngiliz Dili Eğitimi Bölümü Bölüm Başkanı _R | Doc. Dr. Javanshir Shibliyev | 30.12.2015 14:40 | | Doc. Dr. Javanshir Shibliyev | | | | |
| | [EGF05-2015-0150] 135389 ATA TAŞPOLAT'IN ANKET AZNİ HAKKINDA | Betul Akilhoca | Gereği | Eğitim Fakültesi Dekan Yardımcısı 1_R | Hatice Nilay Hasipoglu | 25.11.2015 12:02 | | Hatice Nilay Hasipoglu | | | | |
| | [EGF05-2015-0150] 135389 ATA TAŞPOLAT'IN ANKET AZNİ HAKKINDA | Betul Akilhoca | Gereği | Eğitim Fakültesi Dekanı _R | Prof.Dr.Ulker Vanci Osam | 25.11.2015 12:02 | | Prof.Dr.Ulker Vanci Osam | Kapalı | Prof.Dr.Ulker Vanci Osam | 26.11.2015 11:16 | |
| | [EGF05-2015-0150] 135389 ATA TAŞPOLAT'IN ANKET AZNİ HAKKINDA | Elif Yesim USTUN | Gereği | Eğitim Fakültesi Dekanlığı Yönetici Asistanı _R | Betul Akilhoca | 25.11.2015 12:01 | | Betul Akilhoca | Kapalı | Betul Akilhoca | 25.11.2015 12:02 | |
| | [EGF05-2015-0150] 135389 ATA TAŞPOLAT'IN ANKET AZNİ HAKKINDA | Emrah Haksayar | Gereği | İlköğretim Bölümü Bölüm Başkanı _R | Elif Yesim USTUN | 25.11.2015 10:06 | | Elif Yesim USTUN | Kapalı | Elif Yesim USTUN | 25.11.2015 12:01 | Sayın Dekanım,tez çalişması kapsamında ilgili öğrencinin anket uygulaması uygundur.Gereğini bilgilerinize arz ederim. Prof. Dr. Elif ÜSTÜN |
| | [EGF05-2015-0150] 135389 ATA TAŞPOLAT'IN ANKET AZNİ HAKKINDA | Kader Veysal | Bilgi | Türkçe Eğitimi Bölümü Bölüm Başkanı _R | Ahmet Pehlivan | 25.11.2015 09:05 | | Ahmet Pehlivan | Kapalı | Ahmet Pehlivan | 25.11.2015 11:53 | |
| | [EGF05-2015-0150] 135389 ATA TAŞPOLAT'IN ANKET AZNİ HAKKINDA | Bedia AKIN | Gereği | Ortaöğretim Alanlar Eğitimi Bölümü Bölüm Başkanı _R | Hamit Caner | 24.11.2015 15:44 | | Hamit Caner | | | | |
| | [EGF05-2015-0150] 135389 ATA TAŞPOLAT'IN ANKET AZNİ HAKKINDA | Bedia AKIN | Bilgi | Ortaöğretim Alanlar Eğitimi Bölümü Bölüm Başkanı _R | Hamit Caner | 24.11.2015 15:44 | | Hamit Caner | | | | |
| | [EGF05-2015-0150] 135389 ATA TAŞPOLAT'IN ANKET AZNİ HAKKINDA | Pembe Oztenay | Gereği | Eğitim Bilimleri Bölümü Bölüm Başkanı _R | Canan Perkan | 24.11.2015 15:36 | Sn. Bölüm Başkanları, ekteki anket uygulama talebi Dekanlığımızca uygun bulunmuş olup, ilgili öğrenciye anketi uygulaması konusunda yardımcı olunmasını rica ederim. UVO | Canan Perkan | | | | |
| | [EGF05-2015-0150] 135389 ATA TAŞPOLAT'IN ANKET AZNİ HAKKINDA | Figen Gurgoze | Gereği | Bilgisayar ve Öğretim Teknolojileri Eğitimi Bölümü Bölüm Başkanı _R | Ersun Iscioglu | 24.11.2015 15:33 | Sn. Bölüm Başkanları, ekteki anket uygulama talebi Dekanlığımızca uygun bulunmuş olup, ilgili öğrenciye anketi uygulaması konusunda | Ersun Iscioglu | | | | |

Uygundur
Javanshir Shibliyev

# Appendix D: Turnitin Originality Report

Turnitin Originality Report

Thesis_V04 by Ata Taspolat

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