AN EVALUATIVE CASE STUDY ON PROFESSIONAL COMPETENCY OF PRESERVICE INFORMATION TECHNOLOGY TEACHERS

Isil KABAKCI YURDAKUL, Ph. D.
Assistant Professor
Department of Computer Education and Instructional Technology
College of Education
Anadolu University
Turkey
isilk@anadolu.edu.tr

ABSTRACT
The purpose of this study is to evaluate preservice Information Technology (IT) teachers' professional competency in the teaching process. The study was designed on the basis of evaluative case study. The participants of the study consisted of seven preservice IT teachers attending the department of Computer Education and Instructional Technologies (CEIT) at the College of Education of the higher education institution in Turkey in the spring semester of the 2008-2009 academic year, one participant researcher and one mentor teacher. In the study, the qualitative research data collection methods such as small-group interviews, observations and field notes were used, while the evaluation forms of the participant researcher and mentor teacher, the reflections of mentor teachers, and the researcher's journals were used as supplementary data sources. Inductive data analysis methods were employed in this study. The findings of the study indicated that the preservice IT teachers were competent in the preparation of instructional materials, in the use of instructional materials and technological tools and in the implementation of assessment and evaluation activities. However, the preservice IT teachers had a low level of competency in the use of technological concepts and in the observation of students' development. The findings of the study were discussed based on the handbook that was published by the MoNE. The research also has implications for future research, IT teachers and IT preservice teachers.
Keywords: Technology integration, Information Technology teacher, preservice teacher, teachers' competencies, professional competencies.

INTRODUCTION
The transformation in information and communication technologies (ICTs) requires students not only to become literate in technology but also become individuals who can adapt themselves to the new and advanced technologies. According to the students' competency with technology (NETS for Students) determined by the International Society for Technology in Education (ISTE, 2007), students are expected to become productive digital people, to effectively learn for a lifetime, to have higher order thinking skills, and to become competent in technology use. In this digital age, the training of individuals who have global learning skills requires the effective and productive integration of technology into the teaching process. Effective technology integration into educational systems does not only mean the acquisition of technology but also is a complex and multidimensional process that includes the teaching curriculum and pedagogy, institutional readiness, teacher competency and long-term financing (Tinio, 2003). In this process, it is emphasized that preservice teachers do not have all the skills necessary for the effective use of technology and for the integration of technology into future classrooms and that they are in need of acquiring the skills necessary especially for the integration of technology into the teaching process (Gülbahar, 2008). In this respect, one of the important variables influencing the integration of technology is the development of related teacher competency (Hew & Brush, 2007; Karal, Aydin & Ursavaş, 2009; Lim, 2007; Lim & Khine, 2006; Ozdemir & Kilic, 2007; Yalın, Karadeniz, & Şahin, 2007).

There are various approaches to the establishment of standards and competency regarding teachers' use of technology and the integration of technology into the teaching process. These approaches fall into three categories: describing national standards, determining the benchmark approach and taking the views and opinions of teacher training experts as the basis (Valcke, Rots, Verbeke & Braak, 2007). One of the best practices regarding the approach to the establishment of national standards is the educational technology standards for teachers defined in the USA within the scope of the National Educational Technology Standards (NETS•T) Project of the International Society for Technology in Education (ISTE). The development of ISTE NETS•T is an important phase for the improvement of teachers' competency in educational technology use on a national basis (Kelly & McAnear, 2002). A number of countries such as Australia, China and England considered the NETS•T standards as the basis for establishing their own standards depending on the benchmark approach for the teachers' educational technology standards and competency.

There is a limitation in establishing standards or competencies regarding teachers' use of technology in the classroom in Turkey (Çoklar & Odabaşı, 2009). In addition, it is seen that teachers' competency in technology use found among the sub-competencies of "Overall Competencies of Teachers" which started in 2002 within the scope of Support to the Basic Education Project, established as a draft in 2004, and put into force in 2008. Parallel to the study on overall competency of teachers, teachers' competency in the fields of teaching in elementary schools with the study on professional competency were put into practice with the approval of Ministry of National Education, on July 25, 2008, number 2391 (Turkish Ministry of National Education [MoNE], 2008). The establishment of generic and professional competency regarding the teaching profession could be said to depend on the views and opinions of teacher education experts. One of the professional abilities determined within the scope of the present study was "Information Technology Teachers' Professional Competency".

Information Technology Teacher and Professional Competency

Information Technology (IT) teachers are thought to be the resource of human force, which is expected to have a pioneering role in the integration of technology into the teaching process, in the training of students who have the necessary technological knowledge and skills and in the development of teachers' competency in technology use (Akkoyunlu, Orhan & Umay, 2005; Black, 2006; Kabakçı, Akbulut & Özoğul, 2009). In a study conducted by Cheng (2009), it was stated that the educational applications of IT teachers working in elementary schools constitute the basis of technology innovation in schools.

In Turkey, since 1980, there have been various studies conducted by MoNE regarding the training of teachers who could have a pioneering role in the use of information and communication technologies in education. Within the scope of these studies, the training of computer formative teachers was one of the important steps for the use of computers in educational environments, for the spread of computer-aided education, and for meeting the need for teachers who would give computer education (Akkoyunlu, 2002; Orhan & Akkoyunlu, 2003). Following this study, within the scope of restructuring of Education Faculties in 1998 by the Turkish Council of Higher Education (CHE, 1998), the departments of Computer and Instructional Technologies (CEIT) were opened in the body of Education Faculties, and it became the duty of these departments to train computer teachers for elementary and secondary school institutions (Akkoyunlu, 2002). In the next developmental phase, Computer Teaching was changed to IT teaching depending on the update of the programs of CEIT department as well as depending on the regulations made on the teacher training programs by CHE in 2006-2007.

Another development for IT Teachers was the development of IT Teachers' professional competency and performance indicators parallel to the determination of generic teacher competency in 2008. These professional competencies included the competence fields of "Designing, planning and organizing the teaching process and environment", "Technological concepts and applications", "Learning-teaching-program", "Following and evaluating the development", "School-family-society relationships and ethical and social issues" and "Professional development". For each competency in these competence fields, performance indicators were determined at three different levels as basic (A1), average (A2) and advanced (A3). The advanced level among these performance indicators covered the average and basic levels, and the average level covered the basic level (MoNE, 2008). It is seen that these competence fields include the fields similar to the technology standards developed for Technology Facilitators and Leaders considered by ISTE as another sharer for the integration of technology within the scope of NETS project in 2008.

In Turkey, a number of studies were conducted regarding the developmental process of IT Teachers. One of these studies was carried out by Orhan and Akkoyunlu (2003) to determine computer formative teachers' profiles and the difficulties they experienced during application. With the training of computer teachers in education faculties first in 1998, various studies have been conducted especially with computer preservice teachers as well as with computer teachers. Among these studies are those carried out to develop a self-efficacy scale for computer teachers (Akkoyunlu, Orhan & Umay, 2005) and to reveal computer preservice teachers' self-efficacy beliefs regarding computer use and to reveal computer teachers' self-efficacy beliefs (Orhan, 2005). Besides these studies, there were other studies conducted to determine the problems experienced by computer teachers in their first-year and in their professional lives (Deryakulu & Olkun, 2007; Kabakçı, Akbulut & Özoğul, 2009; Kıyıcı & Kabakçı, 2006). There are also various other studies carried out to determine the attitudes of computer preservice teachers towards computer-aided education, the problems they experience in the teaching process, and their anxieties regarding the future (Altun & Ateş, 2008; Başarıcı & Ural, 2008). A study conducted to determine the self-efficacies of preservice teachers regarding the dimension of assessment and evaluation in terms of educational technology standards, found out that the preservice IT teachers attending the CEIT department in Turkey felt more competent in technology use for assessment-evaluation purposes than those attending other departments (Çoklar & Odabaşı, 2009). In another study carried out to determine the views

of preservice IT teachers attending the CEIT department at Ankara University about their acquisition of "Generic Teacher Competency", it was concluded that the preservice teachers had a higher level of acquisition for the sub-competency of "Planning the Course" and "Preparing the Course Material" in terms of the main competency of the "Teaching and Learning Processes". They had a higher level of acquisition for the sub-competency of "Revising the Teaching-Learning Process Based on the Results" in terms of the main competency of "Monitoring and Evaluating Learning and Evaluation". However they had a lower level of acquisition for the sub-competency of "Determining the Methods and Techniques for Assessment and Evaluation" (Numanoğlu & Bayır, 2009). When studies in related literature are examined, it is seen that research on IT teachers in Turkey focuses generally on preservice teachers. In addition, a review of related literature reveals that there is no research investigating the professional competency of preservice IT teachers who are in the teacher training process.

The IT Teacher is also called technology teacher, computer teacher, educational technology teacher, IT teacher, technology training teacher and ICT teacher depending on the differences in application in several countries. In a study conducted by Nagaran (1989) to determine the educational and professional characteristics of computer teachers working in secondary schools, it was revealed that although computer teachers had adequate education in the field of computer sciences, they did not have enough experience in computer teaching. In another study carried out by Hansen (1990) on Technology Teacher competency, with the organization and update of Technology Teachers' professional competency, the need for the development of new professional competency was emphasized. Similarly, in another study carried out with Technology Education secondary classroom teachers and Technology Teacher Educators, it was found out that cognitive and psychomotor competency especially for beginner Technology Education Teachers helped them use their teaching potentials effectively and that Technology Education Teachers' competency should be enhanced (Newberry, 1992). In another study conducted by Walton-Todd (2006) with IT teachers in the Chicago Public School System, it was found that they were aware of the requirements regarding the national technology skills standards (National Educational Technology Standards-NETS, National Standards for Business Education-NSBE and Secretary's Commission on Achieving Necessary Skills-SCANS) and that they thought their background regarding these skills was sufficient. However, it was concluded that they needed professional development in various subjects to develop their competency. Although research on IT teachers in international literature is limited, it is seen that contrary to studies conducted in Turkey, studies on IT teachers reported in international literature include preservice teachers as well. In addition, these studies also examine IT teachers in terms of professional or technological competency.

Along with the technological developments and the problems experienced in the integration process, it is seen that there are various studies, especially in international literature, conducted to determine the competency of IT teachers. Studies in related literature emphasize that professional competency of IT teachers should be updated and developed (Hansen, 1990; Newberry, 1992; Walton-Todd, 2006). Studies carried out with preservice IT teachers will contribute to the competency-based revision of IT teacher training programs and the development of competency. Because of the significance of this, the purpose of the present study is to evaluate preservice Information Technology (IT) teachers' professional competency in the teaching process. In line with this overall purpose, the following research questions were directed:

- What is the degree of professional competency of preservice IT teachers in terms of the instruction phase?
- What is the degree of professional competency of preservice IT teachers in terms of the evaluation phase?

METHOD
Since the purpose of the present study was to understand in detail the professional competency of preservice IT teachers, considering their situation in the phases of instruction and evaluation of teaching, the study was designed as a case study of the designs of qualitative research methods. As is well known, a case study is defined as a detailed examination of the current events or situations (Yin, 2003) and is generally carried out for three different purposes such as descriptive, interpretive and evaluative (Merriam, 1998). In the present study, since the professional competency of preservice IT teachers in the phases of instruction and evaluation of teaching were first described and interpreted and then evaluated with respect to the professional competency determined by the handbook published by the Turkish Ministry of National Education (MoNE) for IT teachers, the study was designed as an evaluative case study.

Participants

The participants of the present study were seven preservice IT teachers, a participant researcher, a mentor teacher and the members of the validity-reliability committee. In order to keep the participants' identities secret, their names were changed. They all attended voluntarily.

Preservice Information Technology (IT) Teachers: Seven preservice IT teachers were senior students attending the department of Computer Education and Instructional Technologies (CEIT) at the College of Education of the higher education institution in Turkey in the spring semester of the 2008-2009 academic year. Three of these preservice teachers were male and four of them were female students. Within the scope of the Teaching Practice course, the preservice IT teachers participated in applied activities in a state elementary school. The participating preservice teachers in the study (Tamer, Ayten, Meryem, Emine, İsmail, Mehmet and Fahriye) executed their teaching practices in Elementary School A. The participant researcher executed the Teaching Practice course with a total of 14 preservice IT teachers in three different state elementary schools in the 2008-2009 academic year. Among all the groups of teachers, the reason for involving seven preservice IT teachers taking the Teaching Practice course at Elementary School A for this research was the fact that the highest number of students belonged to this group.

Participant Researcher: The researcher is also a faculty member in the CEIT department at the College of Education of the higher education institution in Turkey. The researcher, also the conductor of the present study, had a 10 year teaching experience in the field of computer and instructional technologies and has been teaching the course of Teaching Practice since 2004. In addition, the researcher is experienced in the qualitative research method as a researcher and as an advisor for several related theses and offered the Qualitative Research Methods course at post-graduate level. Within the scope of the present study, the researcher had the responsibilities of a faculty member determined by the "Directive for Preservice Teacher Regarding Teaching Practice in the Educational Institutions of the Ministry of National Education". According to this directive, the duty of the participant researcher as an application faculty member was determined generally as preparing the teacher candidates for application activities and observing and evaluating the teacher candidates together with the mentor teacher (MoNE, 1998). In this respect, the researcher had an insider role since the present study was conducted by the participant researcher within the scope of the course of Teaching Practice. Also, the researcher had an outsider role in line with the purpose of the study during the observation processes in the elementary schools where the researcher attended as a participant observer.

Mentor Teacher: The mentor teacher participating in the study was an IT Formative teacher in the state elementary schools. The mentor teacher was a graduate of the CEIT department at the College of Education of the higher education institution in Turkey. The mentor teacher had a three-year experience as an IT teacher. He has also been-the mentor teacher of preservice IT teachers within the scope of the course of Teaching Practice for the last two years. In this respect, he was also experienced as a mentor teacher. Within the scope of the study, the teacher had the responsibilities of a mentor teacher mentioned in the "Directive for Preservice Teachers Regarding Teaching Practice in the Educational Institutions of the Ministry of National Education". According to this directive, the duty of the mentor teacher was generally determined as cooperating with the application faculty member for the execution of the application and guiding and evaluating teacher candidates in the process (MoNE, 1998).

Validity/Reliability Committee: The committee included three members. All of the committee members study in the CEIT department at the College of Education of the different higher education institutions. At the same time, one of the faculty members is a specialist in the field of qualitative research and is teaching the course of qualitative research at the post-graduate level. The other two faculty members have experience in qualitative research via various studies and courses.

Setting

There was only one IT Classroom in Elementary School A where the course of Teaching Practice took place. Figure 1 presents the layout of the IT Classroom in Elementary School A.
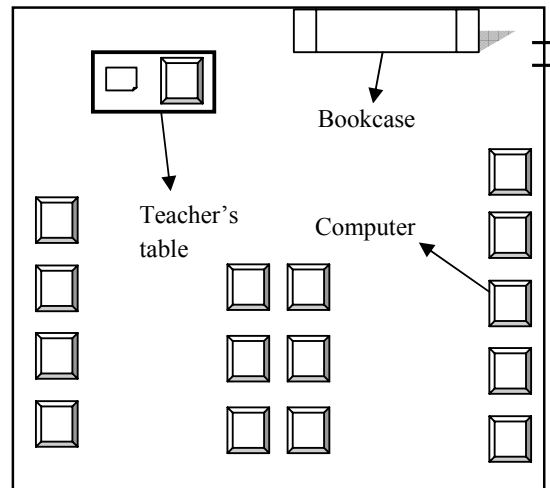
Figure 1: Layout of the IT Classroom in Elementary School A

In the IT Classroom in Elementary School A, there were 15 computers for students and one for the teacher. According to the layout in Figure 1, the students' computers in Elementary School A were put in four rows, two of which were in the middle. In addition, there was no blackboard in the IT classroom in Elementary School A. This IT classroom was about 30 meters square. When the physical features of the elementary school are taken into consideration, it could be stated that the physical environmental organization of the IT classroom had a narrow structure in terms of appropriateness to education.

Data Collection Process and Techniques
Collection of research data from more than one source in case studies helps to obtain a rich and affirmative variety of data (Creswell, 2005; Merriam, 1998; Yin, 2003). Merriam (1998) and Creswell (1994) mention an important point in case studies and suggest simultaneous data collection via different data collection techniques. Therefore, within the scope of the present study, among the qualitative data collection techniques were observation, field notes, small-group interviews, evaluation forms, mentor teacher's reflections and the researcher's journals.

Observation and Field Notes: In the data collection process of the study, for determining the course hours to be observed in line with the purpose of the study, the validity/reliability committee decided to choose the last course teaching among all six course teachings of the preservice IT teachers within the scope of the course of Teaching Practice. The observations regarding the one hour course teaching of the seven preservice teachers guided by the mentor teacher in Elementary School A during the time periods previously determined by consensus were video-recorded by the participant researcher. The video records of these observations in which the researcher participated as a participatory observer constituted the basic data collection sources of the study. During the observations, field notes were taken by the participant researcher. The observations were made in the IT Classrooms, where the preservice teachers taught the courses.

Evaluation Form: The participant researcher and the mentor teacher used the "Teaching Practice Evaluation Form" in order to evaluate the mentor teachers within the scope of the course of Teaching Practice. This evaluation form was prepared in order for the application faculty member and the mentor teacher to evaluate the applications of teacher candidates in the course of Teaching Practice within the scope of the Faculty-School cooperation project (CHE, 1998). Depending on this, this evaluation form is used within the scope of the course of Teaching Practice, which is an obligatory course in all the departments of education faculties. The evaluation form is made up of 46 items in four parts such as subject field and field education (knowledge of subject field and knowledge of field education), the teaching-learning process (planning, instruction process, class management and communication), evaluation and record keeping and other professional competencies. This form was filled out by the mentor teacher for each of the five course hour teachings of the preservice teachers within the scope of the course of Teaching Practice during the academic term and by the participant researcher for the last course hour teaching. Within the scope of the study, certain parts of these evaluation forms were taken as a supplementary data source to determine the development of the preservice teachers in line with the purpose of the study.

Small-group Interviews: Following the courses observed by the participant researcher, small-group interviews were held with the preservice teachers who joined each other's course teachings. The small group interview was held for two purposes. One of these purposes was to evaluate how preservice teachers conducted the phases of instruction and evaluation of the teaching process. The other purpose was to enable each preservice teacher to evaluate himself or herself and other preservice teacher(s) that he or she has observed after course teaching. For this purpose, an interview form including a total of 12 questions, two of which were for individual and group evaluations and 10 of which covered the competency of the phases of instruction and evaluation of the teaching process. Depending on these purposes, small-group interviews were held as an evaluative meeting. The small group interviews were held in the IT Classrooms. These classrooms were preferred because there were no other lessons after the course teaching of the preservice teachers, because they were used under the control of the mentor teacher as IT Teacher. There was also no noise in these classrooms.

Table 1 presents information about the observation records and the small-group interviews.

Table 1: The Data Collection Process in the Present Research

Date	Data Type	Record Type	Record Duration
25.05.2009	Tamer's Lesson Observation	Video Record -1	40 minutes
25.05.2009	Ayten's Lesson Observation	Video Record -2	40 minutes
25.05.2009	Small-group interview with Tamer and Ayten	Audio Record-1	60 minutes
25.05.2009	Meryem's Lesson Observation	Video Record -3	40 minutes
25.05.2009	Emine's Lesson Observation	Video Record -4	40 minutes
25.05.2009	Small group interview with Meryem and Emine	Audio Record-2	67 minutes
28.05.2009	İsmail' s Lesson Observation	Video Record -5	40 minutes
28.05.2009	Mehmet's Lesson Observation	Video Record -6	40 minutes
28.05.2009	Fahriye's Lesson Observation	Video Record -7	40 minutes
28.05.2009	Small group interview with İsmail, Mehmet and Fahriye	Audio Record-3	90 minutes

As can be seen in Table 1, a total of 280-minute video record of observations of the preservice teachers and a 217-minute audio record of the small group interviews were obtained. Besides the small group interviews and the observations that constituted the basic data sources of the study, the journals of the participant researcher and the reflections of the mentor teacher during the research process constituted the supplementary data of the study. For the collection of the research data, written and oral permissions were taken from the principal of Elementary School A, the preservice teachers and the mentor teacher participating in the study.

Data Analysis
As in most qualitative research designs, in case studies, triangulation is carried out to confirm the validity and reliability processes of the study (Patton, 2002). For the analysis of the data obtained in seven different ways such as the records of the small-group interviews, observation records, evaluation forms, reflections of the mentor teacher, and researcher journals, triangulation was made. During data analysis, the themes and dimensions obtained were confirmed by constantly comparing them with the data obtained from different data collection techniques.

For the analysis of the data obtained in the study, the inductive technique was applied. In inductive analysis, first of all, the data were classified with respect to their types to prepare the data for analysis, and a backup of the data was made. Depending on this classification, the data were transcribed and organized. Following this, the accuracy of the transcribed data was checked by each faculty member in the validity/reliability committee. In this way, the data were made ready for analysis. For the analysis of the data, first, all the transcriptions were examined as a whole by the researcher to obtain a general meaning. After this, the data were divided into pieces, and the pieces were coded with names. The codes obtained were combined, and the number of the codes was reduced. In addition, themes and sub-themes were obtained from the codes. The themes and sub-themes were examined independently by each faculty member in the validity/reliability committee, and consensus was reached regarding the themes and sub-themes. The themes and sub-themes obtained were supported with direct quotations from the raw data, the researcher's journal and reflections thus forming the findings (Creswell, 2005;

Gay, Mills & Airasian, 2006; Maxwell, 2005). For the organization and analysis of the data, NVivo 8.0, qualitative data analysis software was applied.

For the interpretation of the findings obtained as a result of data analysis, the competency and indicators presented in the handbook of IT Teacher Professional Competency published by MoNE were used. The competency and indicators in the instruction and evaluation phases in the teaching process and the competency in this handbook were determined by the validity/reliability committee. Depending on this, the competency and indicators presented in Appendix A were taken as the basis for the interpretation of the data obtained. In the handbook of IT Teacher Professional Competency, it also was determined at three different levels as basic (A1 Level), average (A2 Level) and advanced (A3 Level) for performance indicators. At the same time, these indicators'' levels were used for interpreting the data.

FINDINGS

The themes and sub-themes obtained as a result of the analysis of the data collected in line with the purpose of the study are presented in Table 2 below. As can be seen in Table 2, the findings regarding the professional competency of the preservice IT teachers were gathered under two main themes, instruction and evaluation of the teaching process.

Table 2: Themes and Sub-Themes Obtained from Data Analysis

Instruction Phase
Using technological concepts
Using instructional material
Using technological tools
Evaluation Phase
Organizing assessment-evaluation activities
Monitoring student development

Under the first main theme, which was the instruction phase, the sub-themes of using technological concepts, using instructional material and technological tools were obtained. Under the main theme of the evaluation phase of the teaching process, the sub-themes of organizing assessment-evaluation activities and monitoring student development were obtained.

Instruction Phase

The theme of the IT preservice teachers' situations in the instruction phase is presented in Table 2. As can be seen in Table 2, the instruction phase included the sub-themes of using technological concepts, instructional material and technological tools.

Using Technological Concepts: The IT preservice teachers' use of technological concepts in the teaching process included the sub-themes of *the use of Turkish equivalents of concepts* and *correct use of concepts.*

In the study, it was revealed that the IT preservice teachers' use of *Turkish equivalents of concepts* included the dimensions of paying attention to the use of Turkish equivalents of concepts, habitually avoiding use of Turkish equivalents of concepts and taking the language of the program used as the basis. In terms of paying attention to the use of Turkish equivalents of concepts, one of the preservice teachers was observed during his course teaching to explain the concept of "www" and gave its Turkish equivalent saying "*The concept of www is the initials of World Wide Web. And it means geniş alan ağı in Turkish.*" (Video Record-6, 28.05.2009). Similarly, it was found out that another preservice teacher, while explaining the Adobe Photoshop program, gave the Turkish equivalents of all the menu buttons during the course saying "*The Magic Wand Tool has a feature like that. This is a magic tool for choosing*" (Video Record-5, 28.05.2009). One of the preservice teachers reported that he paid attention to the use of Turkish equivalents of technological concepts saying "*In my previous lessons, I used e-posta instead of e-mail. I pay attention to issues like this. I try to use the Turkish equivalents of concepts. Or when I ask the students what that is, I tell them to think about its English equivalent and I help them make inferences.*" (Audio Record-1, 25.05.2009). Similarly, another preservice teacher mentioned the same point saying "*I feel I'm competent knowing about such concepts, and I pay attention to using it.*" (Audio Record-2, 25.05.2009). Regarding habitual avoidance of the use of Turkish equivalents of concepts, one of the preservice teachers stated "*For example, today we taught the fourth-grade students. We use the concepts in English, and the children are just listening to us. They don't understand us. Well, we know about all the concepts, and we think they do also. We don't have any problem, but sometimes, we use the concepts in English out of habit.*" (Audio Record-1, 25.05.2009). Regarding the same point, another preservice teacher stated "*I experience problems because in everyday language, we say hard disc, but you should say `sabit disk` in class. We can't get rid of it in*

everyday language at all; to tell the truth, it is difficult for me, I use foreign words." (Audio Record-3, 28.05.2009). Similarly, another preservice teacher stated "*It is difficult to translate some words and phrases into Turkish. For example, the Turkish word for 'computer' is 'bilgisayar', and we always use this Turkish word. But, you know the word 'fax', it would be somewhat nonsense to use the phrase 'belge geçer' (document transmitter) because we are not used to it. But we should be using 'e-posta' for `e-mail`. Sometimes we use the correct word but sometimes we don't.*" (Audio Record-3, 28.05.2009). Regarding taking the *program language*, for the use of Turkish equivalents of technological concepts as the basis, one of the preservice teachers said, "*Now, all the features of the current software are in English. Well, there are Turkish equivalents of them, but these Turkish equivalents for some tools are really nonsense. It is no use teaching these to children because a child learning Photoshop will learn its English version more easily in this way and will not have any difficulty in the following step. For example, it is better to teach the child 'layer' instead of its Turkish equivalent 'katman'.*" (Audio Record-3, 28.05.2009). This preservice teacher first explained the meaning of 'layer' in Turkish and directly used the word 'layer' in his later course teachings. The preservice teacher stated "*the most basic part and even the backbone of Photoshop and Adobe is the 'layer' ...There is a layer, a ground, here, and there are other layers over it. Think about a building*" and added "*There is menu Create A New Layer below the layer component of that area. Can you see it? It is over there. When we click it, we add a new layer.*" (Video Record-5, 28.05.2009). Since the language of the program that this preservice teacher taught was English, during his course teaching, the preservice teacher was observed to use the English names of the program menus which he explained in Turkish (Field Notes, 28.05.2009). In this respect, it could be stated that this preservice teacher confirmed the use of foreign words and phrases appropriate to the program language used for the Turkish equivalents of technological concepts.

In the study, it was revealed that the preservice teachers preferred to explain the concepts with a concept already known in everyday life and to define the concepts for *correct use of technological concepts*. One of the preservice teachers first explained the technological concept in question and then preferred to give an example from everyday life. Fahriye stated, "*It says 'capturing an audio or video on your computer from a video recorder, from a web camera or from another video source'. What do you think 'capturing a video' means? Capturing means choosing and cutting a part from a video film or a video clip. Did you understand? You can choose and cut a certain scene of a film that you like, and you can watch it again later.*" (Video Record-7, 28.05.2009). Mehmet explained the concept of an internet web address by giving an example from everyday life saying "*If you consider Internet Explorer as a postman, you can consider internet addresses as home addresses. Postmen deliver the documents sent to your home addresses. When you enter internet addresses, you can use such internet browsers as Internet Explorer or Mozilla Firefox. These will direct you to the internet addresses.*" (Video Record-6, 28.05.2009). Ayten, while teaching the menu of 'format' in Word, tried to clarify her explanations regarding the technological concepts. She stated "*If we are making changes in written texts, we use the 'font type', and if we are making changes regarding the paragraphs, we use the 'paragraph' option.*" (Video Record-2, 25.05.2009).

In the study, the preservice IT teachers were also observed to make certain mistakes in using the technological concepts. Fahriye, who taught how to prepare a presentation in PowerPoint used the word "page" instead of "slide" saying "*Now, in the presentation that we will prepare, I want to include three pages.*" (Video Record-7, 28.05.2009); however, in her later course teaching, she corrected her mistake saying "*For example, I will choose this and prepare a three-slide presentation for you*" (Video Record-7, 28.05.2009). In addition, in her later explanation, Fahriye used the word 'presentation' instead of 'slide' saying "*In the third presentation, Ankara… well, let's put a picture of Ankara.*" (Video Record-7, 28.05.2009). In her following explanation, she corrected this mistake saying "*Ok, now we prepared a very simple three-slide presentation together.*" (Video Record-7, 28.05.2009). Depending on this, it could be stated that Fahriye sometimes experienced problems with the use of such concepts as "presentation, slide and page" in PowerPoint. It was observed that the preservice IT teachers showed effort to use technological concepts correctly yet made some mistakes in explaining and using these concepts and that they tried to correct these mistakes during the teaching process (Field Notes, 28.05.2009).

In the study, depending on the findings regarding the use of technological concepts during the teaching process, it could be stated that the IT teachers were competent, at a basic level (A1 Level), in "using the concepts regarding Information Technologies correctly and appropriately".

Using Instructional Material: The materials used by the preservice IT teachers during the teaching process were examined based on the introduction, presentation and evaluation phases of teaching. Figure 2 below presents the instructional materials that preservice teachers used in the phases of teaching process.
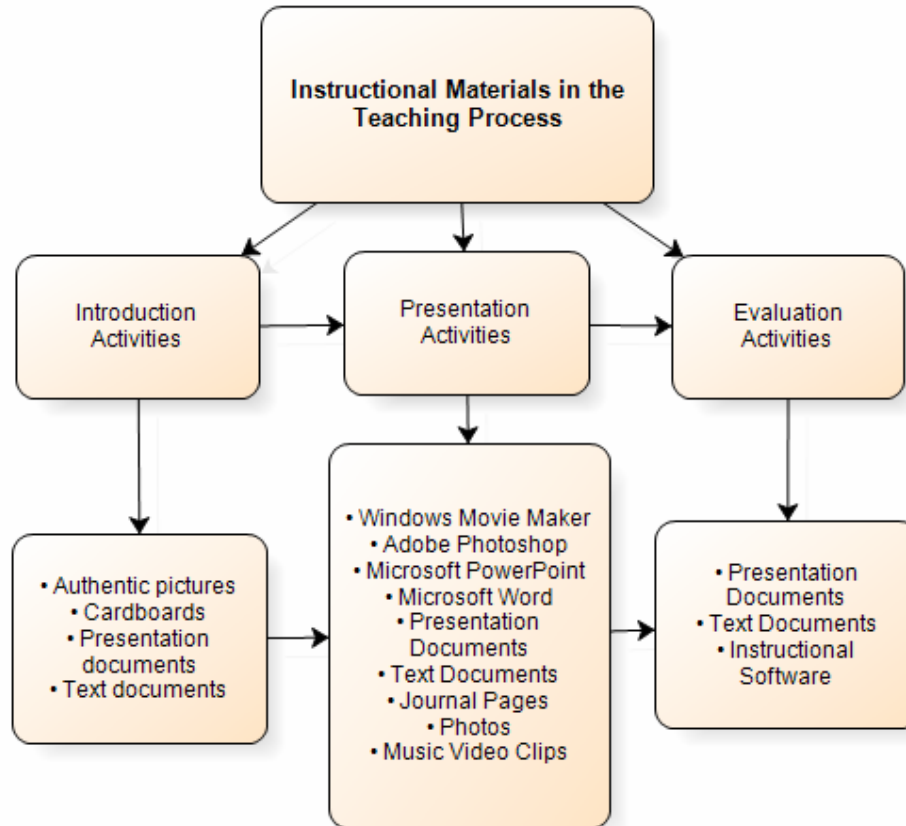
Figure 2: Instructional Materials Used by Preservice Teachers in the Teaching Process

In the study, it was revealed that the preservice teachers used authentic pictures, cardboards, various presentation and text documents as instructional materials during their introduction activities. Fahriye, who taught how to prepare a presentation with Microsoft PowerPoint program, emphasized the importance of visual quality by showing the students the instructional material about seasons, that she prepared as a cardboard at the beginning of the lesson and then by showing them the same content material that she prepared on a cardboard with pictures and written texts (Field Notes, 28.05.2009). Following this, in order to draw attention to a presentation activity prepared in Microsoft PowerPoint, Fahriye showed her students a text document as an introduction activity that she prepared in Microsoft Word including the same texts and showed them the presentation document that she prepared in Microsoft PowerPoint. Regarding this point, Fahriye stated "*Think about a presentation prepared in the same way regarding Ataturk's Principles. This was prepared in Word, and this was a presentation prepared in PowerPoint. A presentation on Ataturk's Principles. And there are pictures again, and there is an animated written text, isn't there? And the scrolling text. Yes, that's it. I wanted to show you that it is more visual in this way.*" (Video Record-7, 28.05.2009). Fahriye showed the presentation document that she prepared in Microsoft PowerPoint. Ayten, another preservice teacher who taught the menu of 'format' in Microsoft Word, used the text documents that she prepared as instructional material at the beginning of the lesson. Ayten stated, "*Look, in fact, what is written in this document is the same as what is written in the other one. Ok? Now, you don't need to read what is written. I just want you to have a look at the document. Now, you have seen this document and that one as well. Now, you will tell me the differences between the font types and the paragraphs of these written texts*" (Video Record-2, 25.05.2009). In this way, by showing the students two documents, one of which was organized as instructional material with the use of the menu of 'format' in the same program and the other of which was not formatted, the preservice teacher tried to draw attention to the function of the menu of 'format'. Tamer, who used the presentation document that he had prepared with the use of Microsoft PowerPoint program in the introduction activity, tried to draw attention to the function of the menu of 'table' in the Word program with the help of the information in the presentation. Tamer stated, "*There are people with their names, surnames and numbers. The written text is above, and it is put in order as a table below. Well, which one do you think looks more beautiful?*" (Video Record-1, 25.05.2009). İsmail, who taught the Adobe Photoshop program, emphasized the function of the program by showing a few authentic pictures prepared with this program saying "*These men*

sat down and tried to do these. All the pictures you will see now were prepared in Photoshop. Well, normally, it is not possible to gather these two." (Video Record-5, 28.05.2009). It was observed that instructional materials such as authentic pictures, cardboards, text documents and various presentations were used by the preservice teachers as introduction activities especially for the purpose of drawing students' attention to the subject, establishing a relationship between the subject and the daily life of the subject.

In the study, it was revealed that various application programs, such as Windows Movie Maker, Adobe Photoshop, Microsoft PowerPoint and Microsoft Word, various presentation and text documents, journal pages, photos and music video clips were used by the preservice IT teachers as instructional materials in the phase of presentation activities of the teaching process. The preservice teachers used some of these instructional materials as basic instructional materials and some of them as supplementary instructional materials. Ayten, one of the preservice teachers, taught her students the function of the 'format' menu of the same software via a text document that she prepared by using Microsoft Word. Ayten stated "*Well, I do it from the 'format' menu, friends. Now, I will show you the things in the 'format' menu. Now, friends, I will show you how to do these*" (Video Record-2, 25.05.2009). Ayten, while teaching the function of "columns and drop cap" in the 'format' menu of Microsoft Word, showed two different journal pages. Ayten stated, "*I want to show you two documents. Now, what do you think this page is? Well, it is a journal page, isn't it? What do you see on the page? It says 'title'. Look! Did you see the letter 'M' here, capital letter?*" (Video Record-2, 25.05.2009). Ayten, who used journal pages as supplementary material, tried to show the students everyday use of the function with this option of the program. Meryem, who used Windows Movie Maker as an instructional material, explained the functions of the program and of the menus after helping the students find the location of the program within the Windows operating system and open it. Meryem stated, "*Now, how will we do it? Let's practice together, OK? Let me do it first and then we will do it all together. Now, where is Movie Maker located, friends? Do you know?*" (Video Record-3, 25.05.2009). The preservice teacher, while showing the students how to prepare a video clip by using the program, used the photos and music clips that she previously found via the internet and saved on her computer, as supplementary material. Fahriye, who used Microsoft PowerPoint in the phase of presentation activities, taught preparation of a presentation directly by using the related program. Fahriye stated, "*Now, is there anybody who knows how to open PowerPoint? OK, we found the program and we open it with one-click. This is the overall screen-view of the program. As you see, there is one page, isn't there? In the previous presentations, there were several pages. There were new pages. Now, let's first see how to multiply these pages together with you.*" (Video Record-7, 28.05.2009). Fahriye, while using Microsoft PowerPoint as a basic instructional material, used the photos that she previously saved on her computer, as supplementary instructional material. The preservice teacher stated, "*I wanted to add a photo here. Well, I could use a picture from 'Add' or from a file, or it could be a photo smaller in size, but there was a photo of Eskişehir that I found previously. I will add it. And I added it here.*" (Video Record-7, 28.05.2009). Mehmet, another preservice teacher, stated that he benefited from a Microsoft PowerPoint presentation as a basic instructional material saying "*Today, we will learn the structure and elements of internet addresses. We will benefit from a PowerPoint presentation while teaching the lesson. We will go on in that way.*" (Video Record-6, 28.05.2009). Seven of the preservice teachers were observed using a Microsoft PowerPoint presentation as basic instructional material in the phase of presentation activities. In the phase of presentation activities of the teaching process, the preservice IT teachers were observed using application programs, such as Windows Movie Maker, Adobe Photoshop, Microsoft PowerPoint and Microsoft Word and various other presentation documents as basic instructional materials. While four of the preservice teachers used various application software as basic instructional materials, they used journal pages, photos and various text documents as supplementary instructional materials in the teaching process.

As for the evaluation activities, the preservice teachers were observed using instructional software and presentation and text documents as instructional materials. Emine, one of the preservice teachers who taught equipment components and their functions in a computer, asked her students to *match* the statements in the last slide of the presentation document she used in presentation activities *with* the concepts that she numbered. Emine stated, "*Now, we'll match each statement with an appropriate equipment component, OK? Now, we'll call those with a main board as 1, those with screen cards as 2, RAM as 3, the hard disk as 4, the processor as 5, and the sound card as 6. Is it OK?*" (Video Record-4, 25.05.2009). Similarly, Mehmet, who taught the structure of internet addresses and its elements, asked his students 5 questions that he added to the last slide of the presentation document he used as a presentation activity, and in line with the responses of the students, he showed the students the correct answer to the related question. In addition, in the evaluation phase, Mehmet carried out a matching activity by using instructional software that he prepared with Adobe Flash. Mehmet stated, "*Now, you can turn on your computers. Did everybody see the 'extensions' file on the desktop? Well, everybody, look at the board! OK, now, what I want you to do is this, there are internet addresses on the second page. You will match the internet websites with the extensions. OK?*" (Video Record-6, 28.05.2009). For the

evaluation activity, Tamer, who taught preparation of a table by using the 'table' menu in Microsoft Word, used a text document that he prepared as a table. Tamer stated, "*Now, here, we set up a table, a sample table. What does it include? There are keyboard keys and their functions. We will write down what the functions of these keys are in Microsoft Word.*" (Video Record-1*, 25.05.2009). Following this evaluation activity, Tamer asked the students to prepare a table by using Microsoft Word with the help of the information given in a text document that he prepared. Tamer stated, "*Well, there are four living aquatic beings. All have certain characteristics and a way of nutrition. Here, considering the characteristics here, we will prepare that table, OK? I will show you the table.*" (Video Record-1*, 25.05.2009). In addition, it was revealed in the study that the other preservice teachers did not use instructional material in the evaluation phase of teaching. It was found out that the preservice teachers who did not use instructional material for the evaluation activities carried out various other activities by providing students with oral explanations and by using the blackboard.

In the study, it was revealed that the preservice IT teachers used instructional materials that they themselves prepared by hand using paper and cardboard or via computer software and that they also benefitted from the application software they taught during the phases of the teaching process. Parallel to this situation, one of the preservice teachers reported her views about the instructional material saying "*We sometimes exaggerate materials. I don't think everything can be used as a material. In fact, I might not be competent in this subject at all. I don't think everything we show the students or everything we do is not a material. As I said before, I expect it to be a more comprehensive thing.*" (Audio Record-1*, 25.05.2009). Another preservice teacher reported his thoughts about the instructional material saying "*I believe materials are misunderstood. Paper or cardboard is not always necessary. To me, now, the computer is the best material to use.*" (Audio Record-1*, 25.05.2009). Depending on this, it was seen that some of the preservice teachers perceived instructional materials as the representation of an object with cardboard and paper and that some of them perceived instructional materials as any kind of technological tools that support and facilitate the teaching process. In addition, one of the preservice teachers reported her thoughts about the teaching process saying "*Well, we really experience difficulty in this subject, material use, because we first teach the subject and then we want our students to do an activity regarding the material.*" (Audio Record-1*, 25.05.2009). The statement of the application faculty member that, "*I believe except for only one preservice teacher, all the others were not successful at all in integrating instructional materials and technologies into the teaching process.*" (Researcher Journal, 28.05.2009) is parallel to the preservice teacher's view above.

The preservice teachers considered material use as a necessity for the teaching process, yet their perceptions of instructional materials were different. This situation is parallel to the fact that some of the preservice teachers used a number and variety of instructional materials in the teaching process and that some of them used the application software they taught as instructional materials. Furthermore, it could be stated that the preservice teachers experienced difficulty in integrating the instructional material into the teaching process. In other words, they experienced some problems in combining the instructional materials with the teaching process.

Depending on the IT preservice teachers' use of application software in the teaching process, it could be stated that they were competent, at a basic level (A1 Level), in "using application software developed for certain purposes", which is among the professional competencies of an IT teacher (Appendix A). In addition, depending on these findings, it could be stated that the preservice teachers were competent, at a basic level (A1 Level), in "preparing effective teaching-learning material", which is among the professional competencies of an IT teacher (Appendix A).

Using Technological Tools: The technological tools used by the IT teachers during the teaching process, as seen in Figure 3, were examined considering the introduction, presentation and evaluation phases of teaching.
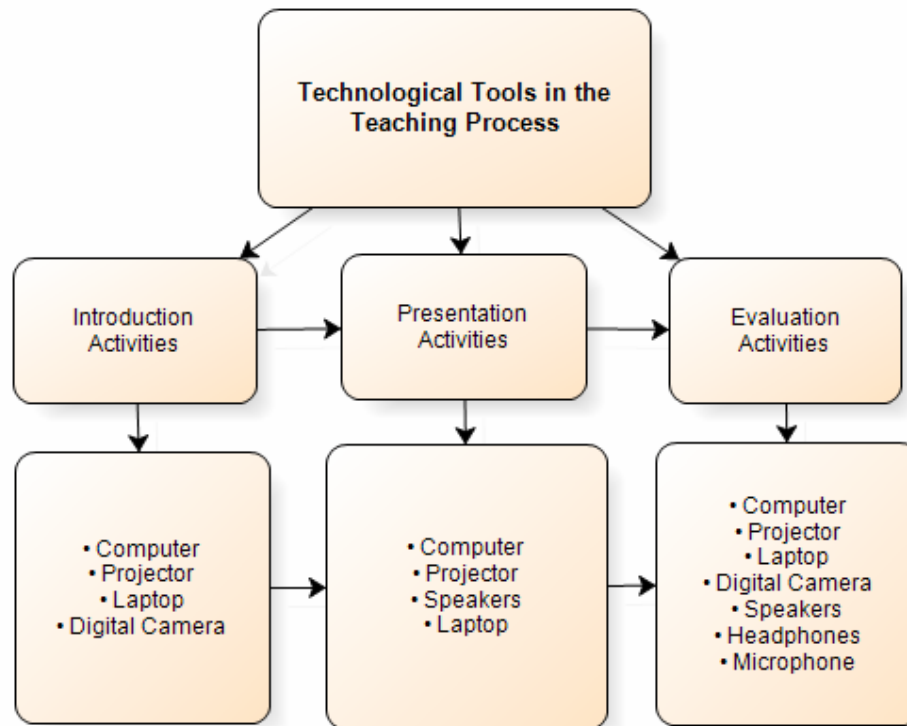
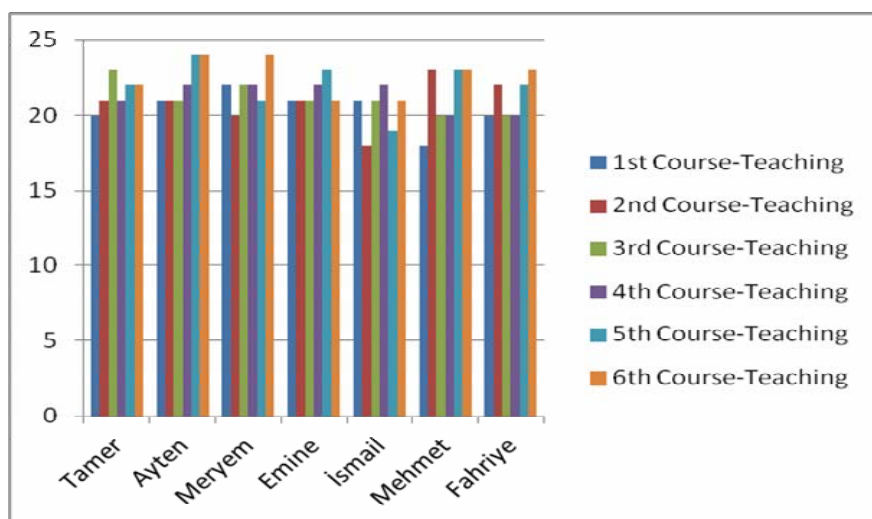Figure 3: Technological Tools Used by the Preservice Teachers in the Teaching Process

Five of the preservice teachers used a computer and a projector as technological tools in the introduction phase of teaching, two of them used their own laptops, and one of them used a digital camera. Meryem, who taught how to prepare a video-clip with Windows Movie Maker, took the pictures of her students with a digital camera to draw their attention to the function of the software at the beginning of the lesson. Meryem stated, "*Now, first, I will take pictures of you. Well, summer is coming, and you know we'll not be together on holiday and I will miss you so much. I'll have a look at these pictures, OK? Now, children, I will upload these photos onto the computer. Then, I'll look at them one by one. I'll watch them. And, I'll play music in the background. It will be good. Well, how can I do this in a different way? Yes, very good. Do you know Movie Maker Program, friends?*" (Video Record-3, 25.05.2009). Ismail, one of the preservice teachers, used his own laptop, which he connected to the projector before the lesson started, to show the students authentic photos as instructional material in the introduction phase of the teaching process (Field Notes, 28.05.2010). One of the preservice teachers did not use any technological tools in the introduction phase of the teaching process.

It was revealed in the study that one of the preservice teachers used speakers as a technological tool. While the preservice teachers did not generally experience any difficulty in using a computer and a projector, Meryem, a preservice teacher, received help from the mentor teacher in turning on the speakers. The preservice teacher stated, "*Are you ready to watch the video-clip, friends? Sir, the speakers?*" (Video Record-3, 25.05.2009). Ismail, another preservice teacher who taught Adobe Photoshop, used his own laptop to carry out the presentation activities just as he did for the introduction activities (Field Notes, 28.05.2010). It was found out in the study that all the preservice teachers used the teacher's computer and the projector as technological tools in the IT classrooms in the presentation phase of the teaching process.

In the study, it was also revealed that four of the preservice teachers used the teacher's computer and the projector in the IT classrooms to show the students the instructional materials, which they prepared, in the evaluation phase of the teaching process. Meryem, a preservice teacher who used these technological tools, used a microphone, headphones, speakers, and laptop as supplementary technological tools as well as a digital camera for the evaluation activity. Meryem, who carried out a video-clip preparation activity by using Windows Movie Maker as an evaluation activity, transferred the students' pictures that she took with the digital camera and the help of a memory card first into her own laptop computer and then with the help of USB memory into the teacher's desktop computer, with which she carried out the activity. In this activity, the sound to be used in the video-clip was recorded by using the headphones and the microphone of the teacher's computer. This preservice

teacher used the speakers and the projector to let the students watch the video-clip in the classroom (Field Notes, 25.05.2009). It was revealed in the study that since all the preservice IT teachers carried out their teachings in the IT classrooms, they benefitted especially from the tools found in these classrooms and that two of the preservice teachers used their own technological tools such as a digital camera and a laptop computer. It was also found out that although the preservice teachers did not experience any difficulty in using technological tools in the introduction, presentation and evaluation phases of the teaching process, they sometimes received support from the mentor teachers. The findings obtained regarding the IT preservice teachers' use of technological tools in the teaching process support the findings regarding the organization of technological tools by the preservice teachers to set up the teaching environment. Depending on these findings, it could be stated that the preservice IT teachers were competent, at a basic level (A1 Level), in "choosing and using technological sources appropriate to the teaching objective", which is among the professional competencies of an IT preservice teacher (Appendix A).

Graphic 1 presents the results of the evaluations based on the sub-dimension items of the teaching process under the teaching-learning process dimension of the "Teaching Practice Evaluation Form". This allowed evaluation of the six course-teachings of the preservice teachers in Elementary School A within the scope of the course of Teaching Practice.

Graphic 1: IT Preservice Teachers' Development in the Instruction Phase

In Graphic 1, it is seen that especially Ayten increasingly developed her competency in executing the teaching process. In addition, it is also seen that Mehmet and Fahriye showed significant development in executing the teaching process especially in their last two course teachings. This situation was also supported by the mentor teacher, who mentioned Fahriye`s last course teaching saying "*Considering her previous course teachings, she was obviously more successful in her last course teaching.*" (Reflection-2, 29.05.2009). In general, it was seen that although the preservice teachers had a low level of competency in executing the teaching process in their first course teachings, they had higher levels of competency in their third and fourth course teachings.

Considering the findings regarding IT preservice teachers' use of technological concepts in the teaching phase, their use of instructional materials, technological tools and the findings, obtained depending on the supplementary data source regarding their development in the teaching phase, it could be stated that the preservice teachers were generally competent, at a basic level, in executing the teaching process.

Evaluation Phase
The theme of the IT preservice teachers' evaluation of the teaching process, as can be seen in Table 2, included such sub-themes as organizing assessment-evaluation activities and monitoring student development.

Organizing Assessment-Evaluation Activities: The assessment-evaluation activities carried out by the preservice IT teachers in the teaching process occurred in two groups as individual and group activities. Two of the preservice teachers carried out only individual activities as assessment-evaluation activities, two of them carried out group activities, and two of them carried out both individual activities and group activities. In addition, one of the preservice teachers could not carry out any evaluation activities regarding the evaluation of the teaching

process due to a lack of time. Ayten who taught the 'format" menu of Microsoft Word as an individual evaluation activity, wanted each of the students to make the arrangements, mentioned in the document, by using the 'format' menu of Microsoft Word. She said, "*Now, I want you to turn on your computers and to carry out the criteria I will give you. I want you to change the font type as Verdana, the font size as 12, its color as black, and the space between lines as 1.5. Open a Word document from the class folder, and it should include a written text.*" (Video Record-2, 25.05.2009). Mehmet, prepared instructional software as a different individual evaluation activity, by using the Flash program, and uploaded it on the students' computers before the lesson. In the evaluation phase of the teaching process, he first wanted the students to open this file on their computers. Later, he explained how they could carry out the activity saying, "*Now, you can turn on your computers. Can everybody see the extensions file on their desktops? Yes, everybody look at the blackboard. OK, now, what I want you to do is see that there are internet addresses on the second page; you will match the internet websites with the extensions, OK?*" (Video Record-6, 28.05.2009).
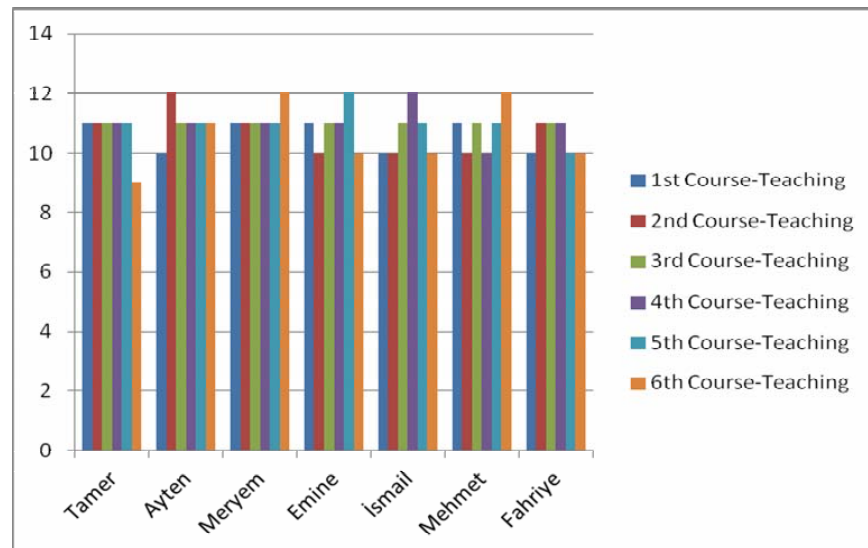
Meryem, who carried out a group evaluation as an assessment-evaluation activity, first taught the subject and then carried out the evaluation activity. She stated, "*Now, we'll do our job. Are you ready? Ready to prepare a video clip? Turn off the monitors; we will do it all together.*" (Video Record-3, 25.05.2009). Meryem, who taught how to prepare a video clip with Windows Movie Maker, first gave a role of a 'player' to all the students in the group activity as an assessment-evaluation activity, and then chose three students for duties such as that of a producer and responsibilities for the generics, sound and titles. She asked the student who was chosen as a producer to take several pictures with the digital camera. Following this, she, as a director, uploaded these photos on to the computer, and the student, who was the producer, transferred these photos into the film strip of Windows Movie Maker. After this, the student responsible for the generics sat in front of the computer and added titles and animations in to the video clip, and the student responsible for the sound recorded the sound, uploaded it on the computer and then transferred it into the film strip. As for the student responsible for titles, the student added a title into the video clip, animated this title, and added it to the film strip. Finally, Meryem, as director, made the necessary arrangements and asked the whole class to watch the video clip (Field Notes, 25.05.2009). Emine who carried out a group activity for evaluation used an evaluation activity that she prepared on a presentation activity and stated "*Now, 3,4,5,6, OK? Now, we'll match each statement with the correct equipment part, OK? We'll call the main board as 1, the screen card as 2, RAM as 3, hard disc as 4, processor as 5 and sound card as 6, OK?*" (Video Record-4, 25.05.2009). Later, she helps the students she chose do the matching correctly for each question by making explanations for them. Similarly, another preservice teacher who carried out a group activity as an evaluation activity asked the students she chose for the evaluation activity that she prepared on a presentation document to respond to each question. In this process, the preservice teacher made explanations regarding the related questions following the responses of the students and helped the students understand the subject better (Field Notes, 25.05.2009).

Tamer who carried out both individual and group activity as an assessment-evaluation activity used a material that he prepared as a table on a text document as the first evaluation activity. He asked the students to write down the functions of the keyboard keys, found in the first column, in the second column (Field Notes, 25.05.2009). For this activity, Tamer, who carried out a group activity, stated "*Now, the friend I choose will say the function of the key and come and write it down here.*" (Video Record-1, 25.05.2009). In this way, he showed the students a sample table prepared with Microsoft Word parallel to the subject before the individual evaluation and prepared an environment for transition to the individual evaluation. Following this activity, he showed the students the materials that he prepared as two different text documents for individual evaluation. He used the features of the first text document and asked the students to prepare a table in the second document. He stated "*Considering the features here, we'll prepare that table, OK?*" (Video Record-1, 25.05.2009). For this individual evaluation activity, he made certain arrangements to help students understand the directives of the activity and showed both Word documents on the screen at the same time. It was found out that he made effective use of technology in order to show the product he prepared for the individual evaluation activity (Field Notes, 25.05.2009). In the evaluation phase of the teaching process, the preservice teachers who carried out a group activity as an assessment-evaluation activity used technology more effectively, while those who carried out an individual activity used technology less. Depending on this finding, it could be stated that the preservice teachers were competent, at a basic level (A1 Level), in "assessing and evaluating information technology learning", which was among the professional competencies of an IT teacher (Appendix A).

Monitoring Student Development: The way the preservice IT teachers followed to monitor the students in the process of evaluation of teaching differed with respect to the individual or group activities the preservice teachers carried out as an assessment-evaluation activity. One of the preservice teachers who carried out individual evaluation reported that the students could start the activity saying "*Children, you'll do this and then when you finish, tell me.*" (Video Record-2, 25.05.2009). In this way, all the preservice teachers who carried out

an individual evaluation activity in the teaching process, walked around the classroom and observed the students at their own computer screens. In this process, the preservice teachers made explanations, for the students who experienced difficulty in doing the activity or for those who did the activity wrongly, and tried to monitor the students' development. Ayten, who taught the 'format' menu of Microsoft Word, started the individual evaluation activity saying *"Now, I want to see all you did in a single place. Click on the related option for this. When you are done tell me that you have finished."* (Video Record-2, 25.05.2009). In this process, she helped the students complete the activity by monitoring them via the option of "show format" in the 'format' menu. She stated *"Line-space is 1.5. You'll make a line-space of 1.5."* (Video Record-2, 25.05.2009). Thus, it was revealed that this preservice teacher, who carried out an individual evaluation activity, benefited from the related feature of the application software to monitor the students in the evaluation process. Mehmet, who carried out a group activity with PowerPoint presentation in the evaluation process, showed the correct answer for each of the evaluation questions by using the presentation after each of the students' answers. In this way he helped the other students evaluate themselves (Field Notes, 28.05.2009). It was revealed in the study that generally, the preservice teachers who carried out an individual evaluation activity walked around the classroom and monitored their students' participation in the activity. As for the group activities, it was found that the preservice teachers monitored students' participation in the activity on the teacher's computer and helped them complete the activity. In addition, the preservice teachers who carried out a group activity in the evaluation process projected the screen by using the projector and enabled all of the students to see how the students the preservice teacher had chosen carried out the activity. One of the preservice teachers who carried out an individual activity projected the results with the projector from the teacher's computer after all the students completed the activity. In this way, the preservice teacher made it possible for all the students to see the correct answers and to evaluate themselves. In addition, only one of the preservice teachers who carried out an individual evaluation activity benefitted from technology to observe students' development. Depending on this finding, it could be stated that the preservice IT teachers were competent, at a basic level (A1 Level), in "Assessing and evaluating information technology learning", which was among the professional competencies of an IT teacher (Appendix A).

Graphic 2 presents the evaluation results based on the items of the evaluation and record-keeping dimension of the "Teaching Practice Evaluation Form". This allowed evaluation of the six course teachings of the preservice teachers within the scope of the course of Teaching Practice in Elementary School A.

Graphic 2: Development of the IT Preservice Teachers' Evaluation of the Teaching Process

As can be seen in Graphic 2, it is revealed that Meryem and Mehmet showed an increase in their development in evaluation of the teaching process in their last course teachings. In general, it was seen that the preservice teachers showed a decrease in their evaluation of the teaching process in their last course teachings.

Considering the findings obtained, regarding the IT preservice teachers' development in evaluation of the teaching process, depending on the supplementary data source and on their monitoring student development and their organizing the assessment-evaluation activities in the phase of evaluation of the teaching process, it could

be stated that the preservice teachers generally had a low level of competency in evaluation of the teaching process.

DISCUSSION
It was found out that the preservice IT teachers were, at a basic level, competent in terms of the following professional competencies of an IT teacher:

- Preparing-effective teaching-learning material
- Choosing and using technological sources appropriate to the teaching objective
- Using application software prepared for certain purposes
- Assessing and evaluating Information Technology learning
- Using concepts related to Information Technologies correctly and appropriately

In addition, the preservice teachers had a low level of competency in terms of the following professional competencies of an IT Teacher:

- Developing and applying basic maintenance strategies for software, equipment and network systems.
- Assessing and evaluating learning by using information technologies

The findings obtained in this study are contrary to the findings of a study carried out by Numanoğlu and Bayır (2009) with preservice IT teachers attending another higher education institution, that "preservice teachers have a higher level of competency in preparing instructional material". It could be stated that this difference is due to the fact that the preservice teachers were attending different higher education institutions. The undergraduate Program of Computer Education and Instructional Technologies in Turkey is a program determined by the Council of Higher Education and applied in all universities. In other words, the curriculum applied in higher education institutions where IT teachers are trained has a standard structure. Therefore, the fact that the IT preservice teachers' competency differed with respect to their higher education institution is dependent on several factors such as the number of faculty members in the institutions, the specialization fields of the faculty members, the facilities and the limitations of the institutions.

The findings obtained in the study that the preservice teachers had a low level of competency in "measuring and evaluating learning by using Information Technologies" differed from the findings of a study conducted by Çoklar and Odabaşı (2009) that the preservice teachers attending the Department of Computer and Instructional Technologies found themselves more competent in using technology for assessment-evaluation purposes compared to the other preservice teachers in other departments. Depending on this, it could be stated that although the preservice IT teachers considered themselves more competent in technology use for assessment-evaluation purposes when compared to other preservice teachers attending other teacher-training departments, they did not have enough experience to transfer their knowledge into the teaching process.

In the study, it was found out that the preservice IT teachers were competent at a basic level in the instruction phase, but they had a low level of competency in evaluation. Regarding this finding, it could be stated that this situation occurred because the preservice IT teachers were in the process of preservice training and because they focused more on the transfer of content within this process. In addition, it is reported in related literature that the course of Information Technologies is given in institutions as a one hour course on a weekly basis and that accordingly, teachers experience various problems in transferring content in the teaching process and in carrying out assessment-evaluation activities (Altun & Ateş, 2008; Deryakulu & Olkun, 2007; Kabakçı, Akbulut & Özoğul, 2009; Kıyıcı & Kabakçı, 2006). It could be stated that the low level of preservice teachers' competency in the evaluation process in the present study could result from the fact that the number of course hours of the course of Information Technologies is limited and from the fact that the preservice teachers focused more on transferring content into the teaching process.

Studies reported in related literature show that problems experienced by teachers in their early years of teaching regarding class management, preparation of a teaching plan, transfer of content, and organization of instructional activities negatively influenced teachers' effective use of technology (Clausen, 2007; Kabakçı, Akbulut & Özoğul, 2009). Furthermore, the increasing knowledge and skills of new teachers regarding technology use and content teaching in the teaching process in their early years of teaching also influence their gaining experience in benefitting effectively from technology in the teaching process (Clausen, 2007). In this respect, it could be stated that the IT preservice teachers' competency in phases of instruction and evaluation of the teaching process will develop depending on their increasing knowledge and skills regarding their technology use and professional experience.

CONCLUSION

 The present study, which was designed as a case study aimed at determining the professional competency of a group of preservice IT teachers who were attending the CEIT department at the College of Education of the higher education institution in Turkey, considered the phases of their instruction and evaluated the teaching process. The results obtained in the present study are important for the development and improvement of IT Teacher Training programs depending on the professional competency of IT preservice teachers.

It is reported in related literature that among the primary critical problems regarding technology based education are such issues as the recruitment of student teachers into teacher education programs and insufficient quantities of qualified technology education teachers (Wicklein, 2005). Therefore, considering the findings obtained in the present study, the improvement of the IT Teacher Training programs in Turkey, in terms of professional competency of an IT Teacher, will contribute to the training of qualified IT teachers. However, because the curriculums applied in these undergraduate programs are determined by the Council of Higher Education in Turkey and because these curriculums are compulsory in higher education institutions, the program could be enriched with optional courses. Therefore, supporting the undergraduate programs of CEIT with optional applied courses regarding the development of such competency for carrying out advanced technology applications, benefitting from information technologies for assessment and evaluation purposes and doing planning appropriate to teaching could contribute to the development of the professional competency of IT preservice teachers.

Effective technology integration requires teachers not only to use their knowledge about technology use in the teaching-learning process but also to combine their content knowledge with their technology and pedagogy knowledge (Harris, Mishra & Koehler; 2009; Mishra & Koehler; 2006). Depending on this, helping preservice teachers gain technological and pedagogical content knowledge in the process of preservice education is quite important for effective technology integration. In addition, since their content knowledge is technology education, preservice IT teachers are different from other preservice teachers studying in the fields of mathematics, science, social sciences and pre-school education. In other words, helping preservice IT teachers acquire information and skills regarding the use of their knowledge about technology and pedagogy together with the process of teaching technology in the process of teaching training will contribute to their acquisition of technology integration skills. Furthermore, in the process of technological teacher education, conducting studies on field-based reflective practice appropriate to the context and content of the curriculum that preservice teachers will apply and they provides them with professional self-awareness for technology integration (Choy, Wong & Gao, 2009; Hansen, 1995; Hansen, 1993). Therefore, the content of the teaching training program applied for preservice IT teachers and the courses in the program could be rearranged and updated in a way to help preservice teachers gain technological and pedagogical content knowledge via reflective practice.

The revision of the IT teacher training program in line with the needs for technology integration and professional competency of an IT Teacher could help IT teachers, who are expected to act as the leaders of technology integration, become competent in doing technology leadership and technology counseling, guiding other teachers from other fields in terms of using technologies, determining the technological needs of the institution by being aware of the current technologies and in training individuals who can effectively use information and communication technologies.

The present study was carried out with a group of preservice IT teachers attending the College of Education of the higher education institution in Turkey. Depending on this, studies to be conducted with qualitative and quantitative research methods for the purpose of determining the professional competency that preservice IT teachers in other higher education institutions have, could contribute to the generalization of the findings obtained in the present study. In addition, studies of a follow-up type that aim at determining the professional competency of preservice IT teachers in their early years of teaching are likely to reveal findings regarding the development of IT preservice teachers' professional competency. Moreover, applied studies of an action research type to be carried out with preservice IT teachers could also contribute to the development of the professional competency of preservice teachers.

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Appendix A: IT Teachers' Professional Competencies and Performance Indicators in the Study

COMPETENCY	Choosing and using technological sources appropriate to the teaching goals		
PERFORMANCE INDICATORS			
A1 LEVEL	A2 LEVEL	A3 LEVEL	
• Evaluating, choosing and using equipment types to support learning. • Evaluating, choosing and using the software developed for teaching-learning purposes.	• During the planning process, benefitting from the findings of research on the use of technology in teaching-learning environments and from the experiences of other information technology teachers. • Evaluating the technological sources present in the school environment and organizing educational activities based on these sources.	Guiding colleagues for choosing and using the technological sources appropriate to the teaching goals.	
COMPETENCY	Using concepts related to Information technologies correctly and appropriately		
PERFORMANCE INDICATORS			
A1 LEVEL	A2 LEVEL	A3 LEVEL	
• Using basic concepts related to information technologies in written and oral communication correctly and appropriately. • Recognizing Turkish equivalences of technological terms and paying attention to using these.	• Designing activities related to learners' correct and appropriate use of concepts regarding information technologies. • Helping learners acquire the habit of using Turkish equivalences of technological terms.	• Guiding other teachers for the correct and appropriate use of concepts regarding information technologies. • Researching Turkish equivalences of technological terms; contributing to translating the terms into Turkish that have no equivalence in Turkish; and generalizing the use of these terms.	
COMPETENCY	Using application software prepared for certain purposes		
PERFORMANCE INDICATORS			
A1 LEVEL	A2 LEVEL	A3 LEVEL	
• Using ready databases and web design programs with certain drafts, electronic charts, desktop publishing with ready templates, presentation and word processor. • Benefitting from information technologies for such purposes as communication, problem solving and information sharing.	• Developing data collection, data classification and data verification by using information technologies to help students prepare projects.	• Using such application programs at an advanced level as animation, graphics and desktop publication. • Developing effective methods appropriate to the purpose by automating frequently-used processes such as macros, templates in counting programs and control methods.	
COMPETENCY	Preparing effective teaching-learning materials		
PERFORMANCE INDICATORS			
A1 LEVEL	A2 LEVEL	A3 LEVEL	
• Preparing teaching-learning materials by using information technologies.	• Developing learning materials by using desktop publication programs including ready	• Developing materials – that will enrich learning activities – by using programs developed	

• Enriching the materials – that are used in the teaching process – by evaluating them with respect to their appropriateness to the design principles, practicality, updatedness, and effectiveness.	templates, website design, electronic charts, database, and word processor. • Helping learners share their studies by using different environments such as e-mail, poster, forum, exhibitions, network and web.	specifically for preparing educational software, web design, graphics and animation. • Preparing web-aided instructional materials by using different coding systems effectively.

COMPETENCY	Assessing and evaluating Information Technology learning

PERFORMANCE INDICATORS

A1 LEVEL	A2 LEVEL	A3 LEVEL
• Defining the products that students will develop by using information technologies; and defining measurement-evaluation tools and methods to be used for the evaluation these products. • Providing students with feedback regarding the purposes, tools, methods and results of measurement and evaluation.	• Measuring learners' gains in technology use and providing them with opportunities to share these experiences with their teachers, peers and others. • Using the measurement and evaluation tools developed by testing their validity and reliability. • Informing the teachers, students, and their parents about the purposes, tools, methods and results of measurement and evaluation.	• Guiding the applications of individual and peer evaluation to allow learners to criticize the technological products – they have developed – and the preparation processes for these products. • Reorganizing the teaching strategies, learning environment and measurement and evaluation methods in line with the results of evaluation. • According to the results of evaluation, guiding students and their parents for determining new learning goals.

COMPETENCY	Measuring and evaluating learning by using information technologies

PERFORMANCE INDICATORS

A1 LEVEL	A2 LEVEL	A3 LEVEL
• Benefitting from information technologies to measure learners' learning and to observe and report their development. • Benefitting from information technologies to collect qualitative and quantitative data that will help evaluate the results of measurement.	• Developing various electronic evaluation methods to evaluate individual product files and products. • Using appropriate communication tools such as e-mail and web-based sources to provide learners with feedback regarding their achievements.	• Developing and using criteria that measure students' processes that they developed with technology use. • Benefitting from information technologies to analyze group performance and compare and share the findings with the data of other groups.