Investigation of Prospective Teachers' Information and Communication Technology Integration Practices in Terms of Transformative Learning Theory[*]

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Abstract

An examination of prospective teachers' information and communication technology (ICT) integration skills development in an undergraduate program indicated that the only course available to practice these skills was the teaching practice course. However, the practice and development of these ICT integration skills in the teaching practice course has not been clearly elucidated. In other words, while the contribution of the teaching practice course in terms of theoretical ICT integration knowledge is known, how this knowledge is applied is unknown. Under such uncertainties, it is impossible to determine the roles of teaching practice course stakeholders play in terms of ICT integration. Based on transformative learning theory at a micro level, the aim of this study was to analyze prospective Information Technology (IT) teachers' ICT integration transformati"ons. Methodological triangulation, a mixed methods research design, was adopted and designed as a survey method. Over an academic year, data was collected from 54 prospective IT teachers, two university supervisors, and six practice teachers. "Transformative Learning Data Collection Sets (questionnaire and interview form)" were used to analyze the ICT integration practice transformations, with interview forms, focus group interview forms, and the researcher's diary being used as the data collection tools. The results showed that though a majority of the prospective IT teachers were likely to experience transformative learning, approximately one-third were able to achieve an ICT integration transformation within the scope of the teaching practice course. In this context, a more efficient model is proposed for ICT integration practices in the scope of a teaching practice course.

Keywords

Information and Communication Technology Integration, Information and Communication Technology Integration in Adult Education, Teaching Practice Course, Transformative Learning Theory.

It could be argued that all actors in education, such as teachers, prospective teachers, instructors, and administrators, regarding issues such as infrastructure requirements and education programs, are now interactively involved in the process of information and communication technologies integration. When ICT integration in Turkey is examined in terms of its historical

developments, computers were first introduced to public schools in 1984 (Özar & Aşkar, 1997) and computer courses were added to the curriculum as elective courses (Deryakulu, 2008). Though such a start could be considered a precursor to ICT integration, the combination of hardware and software at that time restricted overall "integration" (Earle, 2002). ICT integration began with the training of teachers rather than with the setting up of its substructure (World Links, 2007), and so ICT was defined as a tool for students to gain access to course achievements (Koçak Usluel, Kuşkaya Mumcu, & Demiraslan, 2007; Fulton, Glenn, & Valdez, 2004). However, ICT integration has a very complex structure today, and needs to be viewed from the stakeholders' positions to allow for a more stringent examination. Semenov (2005) indicated teachers, students, and administrators as the ICT integration stakeholders in higher education. Teachers (Gorder, 2008; Okojie, Olinzock, & Okojie-Boulder, 2006; Summerville & Reid-Griffin, 2008), students (Chen, 2004; Davies, 2011; Dexter & Riedel, 2003) and administrators (Green & Gilbert, 1995; Hooper & Rieber, 1995; International Society for Technology in Education [ISTE], 2011; Schiller, 2003) have important duties in ICT integration, initiation, and implementation , and need to overcome the difficulties to encourage the use of ICT education as a part of school culture.

In spite of the many technological opportunities for ICT integration in education, the instructional use of ICT in the classroom is a less common practice than imagined (Surry & Land, 2000; Turkish Council of Higher Education-Yükseköğretim Kurulu [YÖK], 2007). In this context, each stakeholder has to assume their own responsibilities in relation to ICT integration, but these responsibilities are interlinked with the others, so decisions need a collective direction.

Information and Communication Technology Integration in Teacher Training

One of the global problems in teacher training is what opportunities should be offered to prospective teachers to encourage the effective use of ICT in educational activities (Organization for Economic Co-operation and Development [OECD], 2008, 2010; Woolard, 2012).A common belief is that the teacher-trainers should be able to effectively use ICT in the educational environment, so that the prospective teachers would also be able to integrate ICT in their own educational settings by example (Mandell, Sorge, & Russell, 2002).

It has been shown that if prospective teachers develop course materials using ICT this could be an important transition from theory to practice for ICT integration (Al-Ruz & Khasawneh, 2011; Anderson & Maninger, 2007). Generally, under the supervision of a teacher (practice teacher) and university staff (practice instructor), prospective teachers perform teaching activities in the teaching practice course in a certain setting. The practice teacher and practice instructor must work in collaboration (YÖK, 2007) to ensure success and consistent guidance. Along with the interaction between the practice instructor and practice teacher, Borko and Mayfield (1995) discussed how the prospective teacher and practice teacher should interact using different interaction tools, which give the prospective teacher time to practice the process, but also allow the practice instructor to monitor the candidate's development. However, failure to design environments which allow the prospective teachers to translate their theoretical knowledge into practice or to clearly establish the stakeholders' roles has emerged as a problem for ICT integration. To examine ICT integration in education, the transformative learning theory, an adult education theory, can provide an important framework (Allen, 2008; Griswold, 2007; King, 2002; Kitchenham, 2006).

Transformative Learning Theory

Theory is referred to as *past experiences'* guiding future events based on human communication (Mezirow, 1996). An individual's experiences lead them to make decisions about events, and, as a result of these decisions, when faced with a similar situation, they have a different reaction. Transformative learning, within the framework of educational practices, is considered a learner's exposure to a learning process, and thus a subsequent change in their life (Cranton, 1994). The 10-step process that Mezirow proposed as possible transformation phases that adults could experience is presented in Figure 1.

As a result of rapidly changing technology and student profiles, teachers are now expected to use ICT tools in the classroom and effectively integrate these tools in the learning process (Schrum, Shelly, & Miller, 2008). However, because of such factors as institutions' not attaching importance to pre-service and in-service training and the belief that work-related changes cannot be achieved as a result of training activities (Akbaba-Altun, 2006) it is difficult to judge whether teachers have successfully integrated ICT into their teaching practice.

Figure 1: Mezirow's 10 phases of Transformative Learning.

Research has shown that adults participating in educational activities undergo a transformation process concerning the related topic (Cranton, 1994; King, 2009; Mezirow, 1997). Hence a prospective IT teacher who has completed courses related to ICT integration in education during their undergraduate education is expected to undergo a transformation. However, no studies tracking these transformative steps have been done. Further, there has been no focus on how the teaching practice course, which provides prospective teachers with a real setting in which they can implement their theoretical knowledge, contributes to the development of ICT integration skills. In the educational environment, an individual's learning and transformation is not an individual act but a product of their interactions with the objects and social aspects in their respective environment (Winn, 2002). In the learning setting, as a result of extra-class activities or personal experiences, dimensions of this interaction could occur within the framework of educational activities (King, 1998). It has been found that several educational activities can positively affect ICT integration transformation, such as group projects, unconventional course structures, evaluation and assessment of personal learning, activities which require cooperation, classroom discussions about the interests of students, and self-expository writings (King, 2009). Teaching practice courses contribute to these educational activities and therefore to ICT integration transformation. For effective organization of professional development activities intended for adults and their ICT integration capabilities, two adult education theories are considered, one which focuses on the characteristics of the target audience (Knowles, 1980; Mezirow, 1996) and the other which focuses on a theoretical base in the subject area (ICT integration models) (e.g. Banister & Vannatta, 2006; Koehler & Mishra, 2005; Roblyer & Doering, 2010; Wang & Woo, 2007). The aim of this study is to analyze prospective IT teachers' ICT integration

transformation process at the micro level on the basis of transformative learning theory. The research questions are as follows:

IT teachers within the framework of transformative learning theory;

1. How is the ICT integration transformation characterized? *(i)* What are the dimensions of the transformation? *(ii)* To what extent is ICT integration transformation achieved? *(iii)* Does ICT integration transformation potential vary according to demographic characteristics (gender, doing double major, age, private tutoring or teaching at private schools? *(iv)* What factors affect the ICT integration transformation process?

2. What is the contribution of the teaching practice course to ICT integration transformation?

3. What are the responsibilities of stakeholders (practice teachers, practice instructors, and prospective teachers) in the teaching practice course?

Method

Model

This research, in which an existing situation is described as it is, was designed as a descriptive survey. Research using the survey model is interested in what the existing situation is and in a relational determination of the relationship between the variables rather than causes for the existing situation (Fraenkel & Wallen, 2003; Neuman, 2008). Methods were triangulated for the purpose of the study. In related literature, triangulation is used as a way of combining the researcher's findings, the methods, data, and the theories (Denzin, 1978; Niglas, 2004).

In this mixed design research, a triangulation technique (Creswell, 1994) was used. A questionnaire was employed as a quantitative approach and semi-structured interviews, focus group interviews and the researcher's diaries were used as qualitative approaches.

Participants

Participants were the stakeholders (YÖK, 1998a, 1998b) of the teaching practice courses, such as prospective teachers, practice instructors, and practice teachers. Two different instructors conducted teaching practice courses to three different groups in the Department of CEIT

(Computer Education and Instructional Technologies) at a state university in the Spring Term of the 2011–2012 academic year, and the prospective teachers went to six different schools of MEB (Ministry of Education) for teaching practice. 54 prospective IT teachers, two practice instructors, and six practice teachers participated in this study.

Prospective Teachers: 54 prospective IT teachers participated in this research. Semi-structured interviews were conducted with 12 and focus group interviews with eight. The 54 prospective IT teachers, along with the six practice teachers, did their teaching practice at six schools.

While undergoing teaching practice, the prospective teachers were under the supervision of six IT practice teachers holding a CEIT degree and who worked at the practice schools.

Practice Instructors: The teaching practice course was taught by two practice instructors. The teaching practice course had three different groups (Group A, B, and C) in the Department of CEIT in the Faculty of Education. Groups B and C's teaching practice courses were taught by the same practice teacher.

Data Collection Tools

The data collection tools were classified as primary data collection tools and secondary data collection tools.

Primary Data Collection Tools:

Transformative Learning Data Collection Set ICT Form: The Transformative Learning Data Collection Set ICT Form (TLDCS-ICT) consists of an educational activities questionnaire (EAQ-ICT) and an ICT interview form. These tests were customized following the necessary adaptation steps (Hambleton, 2005; Hambleton & Patsula, 1998) for measuring the same structure in different languages and cultures. In this research, when adapting the questionnaires into Turkish, the test translation and adaptation guide (Beller, Gafni, & Hanani, 2005; Hambleton & Patsula, 1998; Tran, 2009) of International Test Commission (ITC) (2010) was taken into account.

Educational Activities Questionnaire (EAQ) for ICT Integration Practices: EAQ is a data collection tool used to analyze the transformation at the end of an activity and is constructed according to transformative learning theory.

Interview Form for ICT Integration Practices: The ICT interview form is a sequel to the EAQ-ICT. The ICT interview form is constructed according to transformative learning theory and has been improved using the TLDCS interview form (King, 2009), which is the second of the TLDCS data collection tools.

Focus Group Interview Form for ICT Integration Practices: The ICT focus group interview form is a sequel to the EAQ-ICT and ICT interview forms.

Secondary Data Collection Tools: Secondary data collection tools were used to gather data from practice teachers and practice instructors to substantiate the aims of the research. There were three secondary Collection Tools; PT (Practice Teacher) interview form, PI (Practice Instructor) interview form, and the researcher's diary.

Interview Form for Practice Teacher and Practice Instructor: An interview was conducted with six practice teachers to examine whether the teaching practice activities made it easier or more difficult for the ICT integration transformation of the prospective teachers.

Interview Form for Practice Instructor: An interview was conducted with one practice instructor to examine whether the teaching practice activities made it easier or more difficult for the ICT integration transformation of the prospective teachers.

Researcher's Diary: In this research, a researcher's diary was kept from April 02, 2012 as seen in Table 1.

Table 1
Information about Researcher's Diary Kept During the Research

Date	Page Number	Topic
04.02.2012	2	Research Process, data collection tools
05.10.2012	2	Before/after EAQ-ICT practice
05.14.2012	3	After EAQ-ICT practice, before PT the interview
05.15.2012	2	After ICT interview, before/after PT interview
05.16.2012	5	Before/after PT interview
05.17.2012	4	Before/after PT interview
05.18.2012	2	Before/after PT interview
05.21.2012	2	After ICT interview, before PT interview
05.22.2012	1	After ICT interview
05.23.2012	1	After ICT interview
05.24.2012	2	After ICT interview
05.25.2012	1	After ICT interview
05.27.2012	1	Before PT interview
05.28.2012	1	After PT interview
06.07.2012	3	Before/after PT the interview, before PTI interview
06.11.2012	1	After PTI interview

The researcher's diary was important to ensure interview consistency, for explanations regarding the asking of a new question, or the reasons for different interview conduct (Bogdan & Biklen, 1998).

Validity and Reliability

The researcher was one of the two practice instructors teaching on the teaching practice course discussed in this research. Since the researcher's working environment is also his research environment, he collected the data as an insider researcher. An insider researcher has two roles; a group member and a researcher (Coghlan, 2003; Rooney, 2005). Participant researchers may experience data blindness in some cases and may not see the big picture (Herrmann, 1989). Miles and Huberman's (1994) formula of [Consensus/(Dissidence+Consensus)]x100 was used for the reliability of the qualitative data. In this context, a researcher and an expert designed themes by independently analyzing the qualitative data. The reliability for the analysis of the qualitative data was calculated to be 97.17% for the first, 100% for the second, and 96.70% for the third questions. Therefore, the reliability of the qualitative analysis was high. The researcher and the expert came to a consensus by discussing the themes on which they had different opinions. The reported qualitative data were substantiated with direct quotations.

Data Analysis

The research data were obtained through qualitative and quantitative approaches and analyzed using qualitative and quantitative analysis methods. The data were computerized before the analysis. Descriptive statistics (percentage, frequency), a chi-square test, and Fisher's Exact Test (Field, 2009) for SPSS were used for the analysis of the quantitative data, and an inductive analysis method was used for the qualitative data.

The ICT integration transformation of prospective teachers at the micro level in the context of a teaching practice course can be discussed across three dimensions, as noted by King (2009). In this context, the prospective teachers' dimensions for ICT integration transformation at the micro level from the teaching practice course was labeled 3 (TD3), the transformation dimension due to another cause was labeled 2 (TD2), and zero transformation dimension was labeled 1 (TDB).

Findings and Discussion

Findings and Interpretation Regarding the ICT Integration Transformation

Transformation Dimensions for Prospective IT Teachers: The descriptive data related to the transformation dimensions of the Prospective IT teachers are presented in Table 2.

Table 2
Findings Related to Transformation Dimensions of Prospective IT Teachers

Transformation Dimensions		*f*	%
TD3	ICT integration transformation at micro level from teaching practice course	17	31.48
TD2	ICT integration transformation at micro level due to another cause	2	3.70
TD1	Zero transformation at micro level in the context of ICT integration	35	64.81
	Total	54	100

The results showed that most of the participant prospective IT teachers did not experience ICT integration transformation at the micro level. Critical thinking, discussion, self-evaluation, keeping a diary, watching videos, writing activities, and routine-breaking learning activities have been identified as course practices which support successful learning transformation (King, 2000, 2004, 2009). Also, given that a longer educational activity enhances transformative learning (Wansick, 2007), the failure of most of the prospective teachers in this study to achieve transformation might be caused by the shorter teaching practice course.

Prospective IT Teachers' Capability to Achieve Transformative Learning: Prospective IT teachers' answered the question "Do you reconsider your past behavior or previous decisions over and over?" (the sixth question on the EAQ-ICT questionnaire), as shown in Table 3.

Table 3
The Findings Concerning Prospective IT Teachers' reconsideration of their past behavior and decisions

Question	Answer	*f*	%
Do you reconsider your past behaviors or previous decisions over and over?	Yes	49	90.74
	No	5	9.26
	Total	54	100

(n = 54)

Mezirow (1991) emphasized the importance of critical reflection to prepare learners for the transformative learning experience. 31.48% of the participants achieved ICT integration transformation at the micro level. As a result,

although they were able to achieve some transformative learning, the failure of most prospective IT teachers to achieve transformation might have been caused by ineffective content in the teaching practice course.

Analysis of the Variability of ICT Integration Transformation Capabilities due to Demographic Characteristics: The cross-table findings regarding the relationship between the prospective teachers' transformation within the context of teaching practice course and gender are presented in Table 4.

According to the result of the chi-square analysis, prospective IT teachers' ICT integration at the micro level due to the teaching practice course did not differ according to gender ($c^2(1) = .07$, $p > .05$). In other words, the transformation experiences due to the teaching practice course were independent of gender.

The cross-table findings regarding the relationship between prospective teachers' ICT integration transformation at the micro level due to the teaching practice course and whether they held a double major are presented in Table 5.

Table 4
The Cross-Table Findings Regarding the Relationship between Prospective IT Prospective teachers' Transformation within the Context of Teaching Practice Course and Gender

			Transformation within the Context of Teaching Practice		
			Positive (TD3)	Negative (TD1+TD2)	Total
Gender	Female	F	8	16	24
		%	33.33	66.67	100
	Male	F	9	21	30
		%	30	70	100
	Total	f	17	37	54
		%	31.48	68.52	100

($c^2 = .07$; sd = 1; $p = .793$)

Table 5
The Findings Regarding Prospective IT Teachers' ICT Integration Transformation within the Context of Teaching Practice Course and the Holding of a Double Major Degree

			Transformation in the Context of Teaching Practice Course		
			Positive (TD3)	Negative (TD1+DB2)	Total
Double Major	Yes	f	2	8	10
		%	20	80	100
	No	f	15	29	44
		%	34.09	65.91	100
	Total	f	17	37	54
		%	31.48	68.52	100

($p = .476$ for Fisher's Exact Probability Test) Fisher's Exact Probability Test produces only p-value in 2x2 tables)

Since the expected value was smaller than 5 in one of the slots in the 2x2 table, whether the prospective teachers' transformation differed if they held a double major degree was tested with Fisher's Exact Probability Test (Büyüköztürk, 2010). As a result, it was found that experiencing ICT integration transformation at the micro level due to the teaching practice course did not differ if teachers had a double major ($p > .05$).

The cross-table findings regarding the relationship between prospective teachers' ICT integration transformation in the context of the teaching practice course and age are presented in Table 6.

From the result of chi-square analysis, it was found that the ICT integration transformation at the micro level due to the teaching practice course varied according to age ($c^2(1) = 5.05$, $p < .05$). The ICT integration transformation of prospective IT teachers between 20 and 22 years was found to be significantly higher than the 23 to 30 year olds (six 23 and 25 year olds and one at the age of 30. Therefore, the slots were combined.). In other words, the younger the prospective IT teachers, the more possible it is that transformation occurs.

Table 6
Cross-Table Findings Regarding the Relationship Between Prospective IT teachers' ICT Integration Transformation in the Context of Teaching Practice Course and Age

			Transformation in the Context of Teaching Practice Course		
			Positive (TD3)	Negative (TD1+TD2)	Total
Age	20–22	f	10	10	20
		%	50	50	100
	23–30	f	7	27	34
		%	20.59	79.41	100
	Total	f	17	37	54
		%	31.48	68.52	100

($c^2 = 5.05$; sd = 1; $p = .025$)

The cross-table findings regarding the relationship between prospective teachers' ICT integration transformation in the context of the teaching practice course and teaching experience as a private tutor or at a private school are presented in Table 7.

From the result of chi-square analysis, it was found that the ICT integration transformation at the micro level did not differ with teaching experience as a private tutor or at a private school ($c^2(1) = 2.75$, $p > .05$).

Table 7

The Cross-Table Findings Regarding the Relationship between Prospective IT Teachers' Transformation in the Context of Teaching Practice Course and Teaching Experience as a Private Tutor or at a Private School

			Transformation in the Context of Teaching Practice Course		
			Positive (TD3)	Negative (TD1+TD2)	Total
Teaching Experience as a Private Tutor or at a Private School	Yes	f	14	22	36
		%	38.89	61.11	100
	No	f	3*	15	18
		%	16.67	83.3	100
	Total	f	17	37	54
		%	31.48	68.52	100

(c^2 = 2.75; sd = 1; p = .097)
* expected value is 5.7.

No significant relationship between a prospective teachers' gender and their ICT integration transformation at the micro level was found. Similarly, in literature, it was observed that there was no significant relationship between gender and transformative learning (Wansick, 2007).

Factors Affecting ICT Integration Transformation:

The factors affecting prospective IT teachers' ICT integration transformation were collected under two themes (Table 8).

Table 8

The Findings Regarding the Factors Affecting ICT integration Transformation

Transformation in the Context of Teaching Practice Course (TD3)

> Attracting student attention
>
> Supplementary tools for learning
>
> Student feedback
>
> An unexpected situation
>
> Student willingness
>
> Benefitting from the advantages of technology
>
> Practice teachers' ICT integration

Transformation due to another reason (TD2)

> Other courses taken at university
>
> Activities done at university
>
> Taking family seniors as a model

Transformation within the Scope of the Teaching Practice Course (TD3): This theme was one of the measures used to assess the reasons for the prospective IT teachers' ICT integration transformation at the micro level.

Prospective teachers within the scope of TD3 stated that they tried to integrate ICT into their classes to "attract students' attention" and that this situation helped them achieve ICT integration transformation at the micro level. One of the prospective teachers (EAQ-ICT, participant 19) said, *"It makes the students really bored to try to teach an IT course in ordinary and simple (traditional) ways. In order to overcome this problem, I preferred using ICT while teaching and realized its benefits."*

Transformation Due to another Reason (TD2): This was one of the measures used to assess the reasons for the prospective IT teachers' ICT integration transformation at the micro level.

In the scope of TD2, "other courses taken at university" other than the teaching practice course helped prospective teachers achieve ICT integration at the micro level. One of the prospective teachers stated, *"… For example we had a learning management system course. In this course, there was an instruction via videoconference. It was really different, really different for me. As a matter of fact, I didn't have such an opportunity before in terms of remote access. I think, you know, because it was so different, it was a great experience for me"* (ICT interview form, participant 8).

Findings and Discussion on the Contribution of the Teaching Practice Course to ICT Integration Transformation

The theme "providing an opportunity to improve/ practice ICT integration" was related to the contribution of the teaching practice course to ICT integration transformation. Practice teachers stated that the teaching practice course contributed to their ICT integration transformation by "providing them with opportunities to improve/practice ICT integration." One of the teachers stated, *"Of course our students (prospective teachers) are certainly very close to the use of ICT … of course they have a command of ICT but there is a huge difference between the use of ICT and the use of ICT in the classroom because in the classroom you cannot use everything you do… Therefore, students (prospective teachers) have to learn this by experience. I mean you cannot simulate it at university."* (PT interview form, participant 6).

Kangro and Kangro (2004) remarked that it was necessary to train practitioners as a preliminary preparation for ICT integration. Further research has shown that training ICT integration practitioners within the context of professional development activities is important and in-service training has become necessary (Akbaba-Altun, 2006; Kangro & Kangro, 2004; Tondeur, Van Keer, Valcke, &

van Braak, 2008). Therefore, it can be argued that for prospective teachers to experience an ICT integration transformation, they should be trained in ICT integration and application in the pre-service period, meaning that teaching practice courses need to provide opportunities for prospective teachers to develop and practice their ICT integration skills and to gain experience in relation to ICT integration. These findings are in parallel with previous research where it was found that experience was needed for an efficient ICT integration (Kangro & Kangro, 2004; Sessoms, 2007). At the same time, however, providing experiential and hands-on educational opportunities for prospective teachers also has been found to support learning transformation (Doering, 2006; Griswold, 2007; Rowley, 2010).

Findings Related to the Responsibilities of the Teaching Practice Course Stakeholders for ICT Integration Transformation

The themes regarding the responsibilities of the teaching practice course stakeholders for prospective teachers' ICT integration transformation within the scope of transformative learning theory are presented in Table 9.

Table 9
Findings related to the Responsibilities of the Stakeholders of Teaching Practice Course

Responsibilities of practice instructor
Checking-Supervision
Guidance
Giving challenging tasks
Giving feedback on course materials
Giving examples of ICT integration
Being a role model
Responsibilities of practice teacher
Guidance
Giving feedback on course materials
Being a role model
Observing the lecture
Sharing his own ICT integration experiences
Responsibilities of prospective teachers
Being prepared for the class
Practicing knowledge gained at university
Preparing course materials
Having a high awareness and willingness

One of the practice instructors in reference to his interview with a prospective teacher stated that practice instructors have a responsibility to check and supervise the ICT integration transformation at the micro level. "… *(prospective teacher) especially foregrounds the importance of checking and supervision. He stressed that the practice instructor should be* *involved in the process and should be checking. He stated that the practice instructor shouldn't give up the checking and supervision in order for this process to be more effective.*" (Researcher's diary, 05.25.2012)

It was found that the all stakeholders; the practice instructor, practice teacher, and prospective IT teachers; all had some responsibilities for the realization of ICT integration transformation at the micro level. This has been highlighted in previous research where it was found that the relationship between stakeholders should be high for effective ICT integration to occur (Kangro & Kangro, 2004; Vanderlinde, van Braak, & Dexter, 2012).

Previous research has indicated that there is an expectation that prospective IT teachers should be able to put their theoretical knowledge into practice within the context of ICT integration, and this is a responsibility of the prospective teachers (Al-Ruz & Khasawneh, 2011; Anderson & Maninger, 2007). This study also found that prospective teachers had a responsibility to put the theoretical ICT integration knowledge acquired at university into practice. In this sense, the findings support previous research findings in that the practice of ICT integration theoretical knowledge can be said to contribute to ICT integration transformation at the micro level.

Conclusion and Suggestions

The current study was analyzed prospective IT teachers' ICT integration transformation based on transformative learning theory. It was determined that although a majority of prospective IT teachers could potentially experience transformative learning, only around one-third were found to achieve effective ICT integration transformation within the scope of the teaching practice course. Moreover, it was also found that prospective IT teachers' ICT integration transformation did not differ according to their demographic backgrounds (gender, double major, teaching experience as a private tutor or at a private school). It was further found that prospective IT teachers were able to contribute to the ICT integration transformation not because of their demographic backgrounds but because the teaching practice course allowed for the development and practice of ICT integration. It was also concluded that practice teachers, practice instructors and prospective IT teachers all have responsibilities for the ICT integration transformation of prospective IT teachers

In the light of the findings, a model was proposed regarding teaching practice course instruction to achieve ICT integration transformation for prospective IT teachers, as seen in Figure 2.

- Instructions for teaching practice courses "Teaching Practice I" and "Teaching Practice II" in the departments of CEIT in Faculty of Education

- Practice schools require technical infrastructure such as hardware, software, and internet connections

- Practice instructors and practice teachers' interact within a technology based communication network on topics such as the prospective IT teacher development, the pre-teaching preparation for ICT integration Technology based evaluations and the desired interactions between the practice instructor and practice teacher to ensure rapid feedback and the archiving of that feedback.

- Apart from these suggestions, when the findings related to the responsibilities of teaching practice stakeholders are analyzed, it can be seen that prospective teachers should be directed by both the practice teacher and the practice instructor.

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