The Relationship Between The Attitude Towards Teaching As A Subject And Technology Perception

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ABSTRACT
Education is both the shaper and the shapee of the social life, culture, economy, development, and technology. It is both the subject and the object of the changes and trends, and educators should keep up with those trends and changes to stay alive and fulfil its purpose. In this sense, educators are expected to be on the same line with those changes if the quality of the education is meant. In this study, this expectation was tested by investigating pre-service teachers' attitudes towards teaching as a subject and their perceptions of technology in education via Attitudes towards Teaching as a Subject Scale (Üstüner, 2006) and Technology Perception Scale (Tınmaz, 2004). The study was designed as a quantitative study and junior students' (in four departments: Primary School Science Education, Primary School Education, Turkish Education, Primary School Mathematics Education) attitudes towards teaching as a subject and technology use in education are measured. While analyzing the data collected, SPSS (Statistics Program for Social Sciences) was used. Correlation and regression analyses was used to interpret the data to test if the technology perception of the pre-service teachers could be predicted from their attitudes towards teaching as a subject. It was expected that pre-service teachers eager to teach would be eager to use technology in their classrooms to fulfil the modern education means. As it is a grounded problem that teachers are not willing to use technology in their classrooms, an offering was made with this study where to start to make them more willing to use technology.

Keywords: technology integration, teaching attitude, technology beliefs, pre-service teachers

INTRODUCTION
Students of the era called 'technology' are found to be differentiating from the students of the previous decade in terms of clothing, language, perception, etc., still the most striking different difference of them is found to be their attitude towards technology (Prensky, 2001). Being born after 1980s, students from K-12 to college are described as under the effect of digital and rapidly changing world which started in 1970s (Palfrey & Gasser, 2013). Those students are found to be benefiting the integration of technology into classroom (Alexiou-Ray, Wilsion, Wight & Peirano, 2003). For a better learning environment for students, then, the authorities that could integrate technology into classroom would arrange learning environment and activities accordingly (Bates & Poole, 2003). Indeed, it is expected from institutions or teachers to reformulate their teaching styles accordingly with the learner characteristics (Kemp, Morrison & Ross, 2010). In this sense, it would not be dreaming to expect schools and teachers of 2000s to integrate technology into their classrooms.

Technology integration has been found to be advantageous for students in terms of motivation (Price & Kadi-Hanifi, 2011; Earle, 2002). The students in Detroit received education with two technologies (geographical information system and information assurance) are found to be benefiting technology use as their motivation and learning for science have increased (Xie & Reider, 2014). In an engineering class where metacognition software was used, students in the classroom with technology integration studied more and achieved better than the ones without technology integration (Mazumder, 2012). The study is designed with a pilot study before, and the experimental phase is tested before. The students with technology integration had a higher motivation level than the ones without technology integration. Also, it is found in the research that students without technology integration assessed themselves higher than supposed to be. However, some researchers suggest that it is not always true that all students are motivated by technology (Jacobs, 2012).

Also, it has been found in research that technology integration into classroom has a positive impact on achievement (Hancock, Knezek & Christensen, 2007; Protheroe, 2005; Keengwe & Hussein, 2014). Along with problem solving skills – a substantial element for constructivist approach -, writing skills of the students are found to be benefiting from technology integration into classroom (Lowther, Ross & Morrison, 2003). Also, a general overview of the impact of technology integration on student achievement has concluded that technology integration should be supported by teachers and schools as it brings positive outcomes besides (Cradler, McNabb, Freeman & Burchett, 2002). Instructions for teachers and scholars how to integrate technology has bee explained

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thoroughly by research (İşman, 2001). However, the authorities to integrate technology into classroom tend to ignore technology integration (Mumtaz, 2000; Fenty&Anderson, 2014). Even in districts like Silicon Valley where technology is expected to be highly used, it is observed that technology integration is not as much as expected (Hernández-Ramos, 2005).

There are numerous studies that signal the integration of technology into classrooms should be done effectively and in a systematic way (Gülbahar, 2007; Bitner & Bitner, 2002; Dockstader, 1999). Researchers note that too much time spent on technology does not affect the achievement positively (Lej & Zhao, 2007). The directive role of the teachers and school administration is regarded highly important for technology integration to be successful in classrooms (Muir-Herzig, 2004). On the other hand, it is reported by some researchers that achievement of students at higher education is not significantly affected by technology use and high-achievers are less satisfied when technology is used (Wurst, Smarkola & Gaffney, 2008). In this sense, teacher's role is rather significant for the way of integrating technology into classroom.

In spite of the positive outcomes of technology integration, the practitioners of technology in the classroom are hesitant about the use of technology (Ritz & Martin, 2013). If teachers do not believe the positive effect of technology integration on the achievement of students, they do not prefer to use it (Wachira, Keengwe & Onchwari, 2008). Another reason teachers are reluctant to use technology is that they lack instruction about how to integrate technology effectively into classroom (Rabah, 2015). In Turkey, it is observed that teachers are found to be incompetent enough to utilize technology in the classroom although technology integration is encouraged by the government and educators (Kurt, 2014). However, it is found that teachers become more effective in integrating technology when they are instructed (Skoretz & Childress, 2013). Thus, pre-service teachers' views and the way they are instructed are highly significant for technology integration.

On the practice of technology integration, one influential element is the beliefs of teachers about technology use in the classroom (Honey & Moeller, 1990). It is not only that teachers use technology when they believe in its effectiveness; moreover, their beliefs are found to be affecting the way of technology integration into the classroom (Ertmer, Ottenbreit-Leftwich, Sadik, Sendurur & Sendurur, 2012). They integrate technology into classroom the way they regard instruction. It is found in a study in the United States that the teacher beliefs are determinant on the epistemological and instructional conceptions (Kim, Kim, Lee,Spector & DeMeester, 2013). A significant correlation was found in the study between the effective instruction and technology integration. Also, the study suggests that teachers' opinions about teaching conceptions are related with their epistemological views. That is to say, a teacher's opinions about teaching experience are related with his/her way to understand information, teaching practices, and technology integration.

To conclude, as students of this era are called as "native speakers of technology" (Prensky, 2010; Kennedy, Judd, Cruchward, Gray & Krause, 2008) and pre-service teachers are expected to speak in their language to deliver effective instructions, their technology integration beliefs are expected to be related with their attitudes towards teaching. Although the relationship between technology integration and i.success, ii.motivation, iii.teacher beliefs, and iv.effectiveness has been studied thoroughly, the relationship between technology integration beliefs and attitudes towards teaching as a subject has not been studied. Nonetheless, instruction theories and curriculum development programs are based on the features of the learners so that they would enhance the instruction designed according to their needs and skills (Sparmacher, 1950). From this point, this study aimed to illustrate the relationship between technology integration beliefs and attitudes towards teaching as a subject. Although the aspects of motivation and success were studied for students, pre-service teachers and in-service teachers, the investigation of attitudes towards teaching as a subject has been neglected in the literature. Although students are claimed as technology-fonders, the re-definition of teaching experience and attitude has not been studied. In this sense, there were two questions directing this study:

i. Is there a relationship between attitude towards teaching as a subject and technology beliefs of pre-service teachers?
ii. Is the attitude towards teaching as a subject predictable from technology beliefs of pre-service teachers?

THE STUDY

The study was designed as a quantitative study as group dispositions are better illustrated via quantitative methods (Black, 1999). Quantitative studies supply an overlook at the issues and draw the general features or relationships (Neuman, 2005). Among three types of quantitative research (descriptive, explorative and evaluative), explorative quantitative method was chosen as it gives the related features or reasons of a phenomena or issue (Black, 1999) and non-experimental quantitative method was used as the non-intervened attitudes and beliefs were investigated.

Though non-probability sampling, convenient sampling is chosen for this study to save time and energy for the researcher aligned with the 'practicality' element of researches. At the Faculty of Education at a state university in Istanbul, Turkey, 164 3rd year students consisted the sample. The departments of the pre-service teachers in the sample were: Primary School Science Education (36), Social Sciences Education (36), Primary School Education (45), Turkish Education (25), and Primary School Mathematics Education (22). There were 130 female and 34 male students.

For data collection tool, questionnaire is selected for this research because it is efficient in terms of time, cost (Oppenheim, 1992) and identification of the underlying patterns (Bryman, 1988). As the technology integration beliefs and attitudes towards teaching as a subject were investigated, two questionnaires were used to compare these two tendencies. The questionnaire measuring attitudes towards teaching as a subject was a one-dimension scale and developed by Üstüner (2006). The original questionnaire was revised by two other experts and some items were omitted. For this study, Cronbach alpha score of attitudes towards teaching as a subject scale was found .89 (>.60) for 31 items. The questionnaire to measure technology tendencies of pre-service teachers was developed by Tınmaz (2004) as a two-dimension scale. One of the dimensions is 'belief of positive effect of technology' measuring pre-service teachers' beliefs of positive effects of technology integration while the other one is 'effects of undergraduate program' measuring the positive effects of undergraduate program on pre-service teachers' opinions about their technology integration skills. Factor and item analyses were carried out in the pilot test by Tınmaz. Reliability Cronbach alpha score was found as .94 (>.60) for 17 items in the belief of positive effect of technology sub-dimension while the same score was found .90 (>.60) for 11 items in the second sub-dimension of the technology integration scale (effects of undergraduate program) by the researchers. Researchers carried out the data collection themselves and explained the purpose of the study and the way of usage of the data to pre-service teachers before they filled in questionnaires. Two questionnaires were given to pre-service teachers at the same time to prevent any other variable affect the data.

As for the analysis of the data, quantitative methods and tools were benefited. "Statistical Package for the Social Sciences17 (SPSS17)" was used to analyze the data as SPSS gives a clear output of the data and the most often used tool for social sciences (Büyüköztürk, 2013). For the overall investigation of attitudes towards teaching and technology integration belief, descriptive statistics was used with minimum, maximum, mean and standard deviation scores. To measure the relationship between technology integration beliefs and attitudes towards teaching as a subject, Pearson correlation and Regression analyses were used. The assumptions of both tests were ensured.

FINDINGS

The answers of pre-service teachers were entered in SPSS program and data was analyzed according to dimensions of questionnaires. Regardless of their departments, students' answers to items were first analyzed descriptively to reach a comparison of technology and teaching attitudes of pre-service teachers (Table 1). It was observed from descriptive statistics that although with a high standard deviation, mean score of attitudes towards teaching as a subject is much higher than belief of positive effect of technology ($Mean_{teachingattitude}$=111.83 > $Mean_{positiveeffect}$=67.47, $Sd_{teachingattitude}$=22.79 > $Sd_{positiveeffect}$=13.48). The interval of minimum and maximum values of teaching attitude scale was wider than positive effect of technology scale. This showed that pre-service teachers had more different attitudes towards teaching as a subject that their beliefs of positive effects of technology. Also, the sub-dimension of 'effects of undergraduate program' is regarded rather lower than the positive effect belief sub-dimension ($Mean_{positiveeffect}$=67.47 > $Mean_{undergraduateeffect}$=33.42). When looked at the minimum and maximum values of undergraduate program effect on technology integration, the widest value interval was observed. This meant pre-service teachers had the lowest and highest degrees of beliefs of undergraduate positive effect on technology integration skills. It could be concluded that students had a higher positive attitude towards teaching as a subject than they believed in positive effect of technology. However, they did not believe the positive effect of undergraduate program on their technology integration skills.

Table 1: Descriptive Statistics of Two Questionnaires

	N	Minimum	Maximum	Mean	Std. Deviation
Attitudes Towards Teaching as a Subject	163	20.00	151.00	111.8322	22.79800
Belief of Positive Effect of Technology	163	18.00	85.00	67.4785	13.48448
Effects of Undergraduate Program	163	2.00	55.00	33.4214	11.16186

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The correlation analysis was carried out with Pearson correlation as the variables were found linear (Büyüköztürk, 2003). When the relationship between attitudes towards teaching as a subject and beliefs of technology integration was analyzed (Table 2), a low correlation was found between attitudes towards teaching as a subject and effects of undergraduate program on technology integration (r=.230<.30, p=.005<.05). Besides, a low and significant correlation was found between attitudes towards teaching as a subject and belief of positive effects of technology on education (r=.184 < .30, p=.025<.05). Although the mean score of effects of undergraduate program was lower than belief of positive effect of technology ($Mean_{positiveeffect}$=67.47 > $Mean_{undergraduateeffect}$=33.42), a higher correlation was found between positive effect of undergraduate program and attitudes towards teaching as a subject. Furthermore, a medium correlation was found between belief of positive effect and effects of undergraduate program (.30>r=.458<.70, p=.000<.05).

Table 2: Correlation of Attitudes towards Teaching as a Subject and Technology Integration Beliefs

		Belief of Positive Effect of Technology	Effects of Undergraduate Program	Attitudes Towards Teaching
Belief of Positive Effect of Technology	Pearson Correlation	1	,458**	,184*
	Sig. (2-tailed)		,000	,025
	N	163	163	163
Effects of Undergraduate Program	Pearson Correlation	,458**	1	,230**
	Sig. (2-tailed)	,000		,005
	N	163	163	163
Attitudes Towards Teaching	Pearson Correlation	,184*	,230**	1
	Sig. (2-tailed)	,025	,005	
	N	163	163	163

As a correlation was found between attitudes towards teaching and technology integration beliefs, regression analysis was available to test the second question of this study. The predictability of attitudes towards teaching as a subject from beliefs of technology integration was tested via linear multi-regression analysis in SPSS17. The assumptions of regression analysis were justified. Although the mean score of effects of undergraduate program was lower than belief of positive effect of technology ($Mean_{positiveeffect}$=67.47 > $Mean_{undergraduateeffect}$=33.42), the predictability of attitudes towards teaching as a subject is possible from beliefs of effects of undergraduate program, not beliefs of positive effect of technology ($p_{positiveeffect}$=.262>.05, $p_{undergraduateeffect}$=.046<.05). Pre-service teachers' beliefs of positive effects of technology over education did not predict their attitudes towards teaching as a subject. However, pre-service teachers' beliefs of undergraduate program effect on technology integration skills predicted their attitudes towards teaching as a subject.

Table 3: Regression Analysis

Model	Unstandardized Coefficients		Standardized Coefficients	t	p	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
Belief of Positive Effect of Technology	.171	.152	.103	1.127	.262	.794	1.260
Effects of Undergraduate Program	.378	.188	.184	2.012	.046	.794	1.260

CONCLUSIONS

When the two questionnaires were analyzed descriptively, it was observed that students believed least in the positive effects of undergraduate program on their technology integration skills. When the program in Faculties of Education was analyzed, no course about technology integration was confronted in the university where data was collected. Also, Turkish Republic Higher Education Council Presidency (Türkiye Cumhuriyeti Yüksek Öğretim Kurulu Başkanlığı) does not open a must course about technology integration at universities (2007). Thus, it aws understandable that pre-service teachers did not have high beliefs about the positive effect of undergraduate program on their technology integration skills. However, pre-service teachers' attitudes towards teaching as a subject and their beliefs of positive effects of technology were high as expected.

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In addition, technology beliefs of pre-service teachers and their attitudes towards teaching were compared and it was assumed that pre-service teachers would have beliefs that are convenient for the students of this age. From this point of view, pre-service teachers would have positive beliefs of technology as students of this age are called as 'net generation' (Tapscott, 2008). As it is suggested that education should be adjusted according to learner characteristics (Tobias, 1994), it would not be dreaming to expect pre-service teachers have correlated their teaching attitudes with technology integration. However, it was found that there was a low correlation between attitudes towards teaching as a subject and both sub-dimensions of technology integration belief questionnaire.

Belief of positive effect of technology on teaching and education dimension of technology integration scale provided insight of pre-service teachers' opinions about the possible positive effect of technology on their instruction and students' learning. This dimension was correlated with attitudes towards teaching as a subject (r=.184) although this correlation was rather low. Actually, this result showed pre-service teachers did not regard technology integration as a component of their future teaching activities. That was why they did not have a bond between positive effect of technology on education and their attitudes towards teaching as a subject. For the sample of this study, it would be possible to say that they did not regard technology integration as a fundamental part of teaching activity. Or, it also would be possible to state that pre-service teachers did not believe in the positive effects of technology on students' learning as Howard suggests (2013). Another explanation why the correlation between attitudes teaching as a subject and beliefs of positive effects of technology on teaching or student learning would be that pre-service teachers did not regard students of this era as 'native speakers of technology' and thus, they did not see technology integration as a need for education (Bennett, Maton & Kervin, 2008).

Also, a low and significant correlation(r=.230, p=.005) was found between positive effect of undergraduate program and attitudes towards teaching as a subject although it was higher than the correlation between belief of positive effect of technology on education and attitudes towards teaching as a subject. Although there was a need for qualitative analysis to explain this issue, it could be asserted that pre-service teachers saw a relationship between undergraduate program and teaching attitudes. As they learned teaching at university, it is possible that they imaged teaching as a subject according to the education they received at the Faculty of Education. However, as in many studies (Plowman & McPacke, 2013; Fenty & Anderson, 2014; Rehmat & Bailey, 2014) the fact that the correlation was higher for undergraduate program effect could be suggested that pre-service teachers needed a course for technology usage in classrooms to regard technology integration as a part of their subject.

To conclude, although correlation and regression analyses pointed a higher bond between effect of undergraduate program and attitudes towards teaching as a subject, the explanation of this issue needs a further qualitative analysis.

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