Attitudes of pre-service teachers towards the instruction technologies and material design course

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Abstract

The objective of the present study is to analyze the attitudes of pre-service teachers towards the Instruction Technologies and Material Design course. Descriptive survey model was used in the study. Study group included junior and senior students that attend Fırat University, Faculty of Education, Primary School Social Studies, Classroom Teaching, Mathematics Teaching and Sciences Teaching departments. Sampling was not conducted in the study since it was possible to reach all the students. Attitude Scale for Instruction Technologies and Material Design Course developed by Çetin, Bağçeci, Kinay and Şimşek, (2013) and personal information form (gender, seniority, department, and academic success score) were used as data collection tools in the study. Explanatory factor analysis (EFA and confirmatory factor analysis (CFA) were conducted to determine the structural validity of the scale, and three sub-dimensions were identified for the scale. Internal consistency (Cronbach Alpha) reliability coefficient was found as .94 for the whole scale and varied between .78 and .95 for the sub-dimensions of the scale. Collected data were analyzed with SPSS 17 software. Conducted analyses demonstrated that there was no significant difference between the attitude of pre-service teachers based on gender variable, while there were statistically significant differences based on academic standing and departments that the participants attended.

Keywords: Pre-service teachers, instruction technologies, material design.

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1. Introduction

One of the most important foundations of the societies is education. Hence, education is the most important constituent for the nations to maintain their existence and development. The best example for such significance is emphasized by the 18th century French philosopher Helvetius, with his words "Education made us what we are."

An array of definitions is made on the concept of education. However, in general education is defined as the process that provides the desired situation for a country,that brings up individuals that are useful for the society, and that changes the individual's behavior into a desirable way (Bilen, 2002; Kucukahmet, 2008; Erturk, 1998). The environments in which education takes place are commonly divided into two groups. These are informal and formal education. While informal education is a kind of education that is casual, in other words does not have a plan, is shaped by the environment, and could cause the development of negative behavior along with the positive behavior; formal education on the other hand aims to deliver the positive and desired behavior to the individual through a planned and controlled process and training from the start to the end (Taspinar, 2012). Although various definitions on education concept are made, it is a systematic and gradual process that provides knowledge on certain areas and subjects in accordance with predetermined teaching activities for a cluster of students in the school and classroom environment (Guven, 2006; Hesapcioglu, 2011). Educational activities include guidance of the student work, necessary methods, techniques and tools as well. In this context, selected instructional strategies by the instructors according to the determined objective reveal the way of utilizing the knowledge (Kaya, 2006).

It is an undebatable fact that utilization of tools in instruction increases learning. Tools help the realization of permanent learning through increasing the number of senses involved in the learning process. According to the conducted research, individuals remember 10% of what they read, 20% of what they hear, 30% of what they see, 50% of what they both hear and see, 70% of what they say, and 90% of what they do and say in a fixed time frame (Yilmaz, 2007). This situation reveals the need for use of technological materials and tools in instruction.

In the light of these information, the aim of this study is to determine the level of attitude of teacher candidates attending to Faculty of Education on the instruction technologies and material design course.

2. Methodology

2.1. Model

In this study, screening model in accordance with the nature of quantitative research methods is used to evaluate the attitudes of teacher candidates on the instruction technologies and material design course. Screening models are defined as approaches that aim to describe an existing condition as it is (Karasar, 2009).

2.2. Population and Sample

While the population of the study is composed of the students attending the Firat University Faculty of Education, the sample is composed of 284 students, who are being educated for social studies teaching, classroom teaching, science teaching and mathematics teaching, attending the same faculty.

2.3. Data Collection and Analysis

Instructional Technologies and Attitude towards the Material Design Course Scale prepared by Cetin, Bagceci, Kinay and Simsek (2013) and personal information (gender, class, department and academic achievement points) form are used as the data collection tools. The scale's internal consistency (Cronbach's alpha) reliability coefficient is .94 for the total of the scale and varies between .78 and .95 for the sub-dimensions of the scale. Cronbach's alpha value was obtained as .925 for this study.

The data obtained from this study were analyzed by SPSS 17 software. A five point Likert-type scale was used for the survey and assessments were made accordingly. For the analysis of the data obtained in this research arithmetic mean, percentage and frequency were used. Independent samples t-test and ANOVA were used to test the degree of influence of the students' opinions based demographic variables.

3. Findings and Comments

Table 1. Distribution Regarding the Personal Information of the Teacher Candidates Participating the Study

Independent variables		f	%
Gender	Female	152	59,8
	Male	102	40,2
Grade	3.	112	43,2
	4.	147	56,8
Academic GPA	1,51-2,00	9	3,7
	2,01-2,50	35	14,3
	2,51-3,00	100	40,8
	3,01-3,50	86	35,1
	3,51-4,00	15	6,1
Department	Social Studies Teaching	95	35,4
	Elementary Teaching	76	28,4
	Science Teaching	52	19,4
	Mathematic Teaching	45	16,8

Table 2. T-test results demonstrating the relationship between the attitude towards the instructional technologies and material design course and gender variable for teacher candidates

Gender	N	$\bar{x}$	SS	t	P*
Female	152	120,15	21,02		
				1,848	,066
Male	101	115,28	19,82		

p>.05

As the data in Table 2 are scrutinized, no evidence of a statistically significant difference was observed between the attitude of teacher candidates towards the Instructional Technologies and Material Design Course and gender variable.

Table 3. T-test results demonstrating the relationship between the attitude towards the instructional technologies and material design course and class variable for teacher candidates

Class	N	$\bar{x}$	SS	t	P*
3. class	112	118,70	20,73		
				,442	,659
4. class	147	117,55	20,88		

P>.05

When the data in Table 3 are scrutinized, no evidence of a statistically significant difference was discovered between the attitude of teacher candidates towards the Instructional Technologies and Material Design Course and class variable.

Descriptive statistics on the relationship between the attitude of teacher candidates towards the Instructional Technologies and Material Design Course and department variable are presented in Table 4; the ANOVA results of the analysis according to the variable are presented in Table 5.

Table 4. Descriptive statistics on the relationship between the attitude of teacher candidates towards the instructional technologies and material design course and department variable

Department	N	$\bar{x}$	SS
a) Social Studies T.	95	111,39	24,52
b) Elementary T.	76	124,74	14,84
c) Science T.	45	123,20	13,89
d) Mathematic T.	52	117,44	19,60

Table 5. Anova results for the relationship between the attitude of teacher candidates towards the instructional technologies and material design course and department variable

Department	Sum of squares	sd	Mean Rank	F	Sig.*	Tukey
Intergroups	8807,181	3	2935,727	7,663	**,000**	**a-b*,a-d***
Within group	101136,675	264	383,093			
Total	109943,856	267				

As the data in Table 5 are examined, it is possible to observe that there is a statistically significant difference [F(7,663)= p< .05] between the attitude of teacher candidates towards the Instructional Technologies and Material Design Course and department variable. The results of the Tukey test, which is conducted to determine which groups presented such difference, demonstrated that the difference was between the department of social sciences teaching ($\bar{x}$ =111,39) and department of classroom teaching ($\bar{x}$ =124,74) in favor of those who study classroom teaching; between the department of social sciences teaching ($\bar{x}$ =111,39) and department of mathematics teaching ($\bar{x}$ =117,44) in favor of those who study mathematics teaching degree.

Descriptive statistics on the relationship between the attitude of teacher candidates towards the Instructional Technologies and Material Design Course and Academic Achievement Score variable

are presented in Table 6; the ANOVA results of the analysis according to the variable are presented in Table 7.

Table 6. Descriptive statistics on the relationship between the attitude of teacher candidates towards the instructional technologies and material design course and academic achievement score variable

Academic Achievement Score	N	$\bar{x}$	SS
a) 1,51-2,00	9	118,71	23,74
b) 2,01-2,50	35	106,95	20,33
c) 2,51-3,00	100	117,99	19,52
d) 3,01-3,50	86	120,97	21,48
e) 3,51- 4,00	15	127,64	20,22

Table 7. Anova results for the relationship between the attitude of teacher candidates towards the instructional technologies and material design course and academic achievement score (a. a. s) variable

A. A. S	Sum of Squares	sd	Mean Square	F	Sig.*	Tukey
Intergroups	6434,025	4	1608,508	3,813	**,005**	**b-d*,b-e***
Within group	101247,369	240	421,864			
Total	107681,395	244				

P<.05

When tha data in Table 7 are studied, a statistically significant difference [F(3,813)= p< .05] between the attitude of teacher candidates towards the Instructional Technologies and Material Design Course and Academic Achievement Score variable. The results of the Tukey test, conducted to determine which groups presented such difference, demonstrated that the difference was between those who have an academic achievement score of 2,01-2,50 ($\bar{x}$ =106,95), those who have 3,01-3,50 ($\bar{x}$ =120,97) and those who have 3,51-4,00 ($\bar{x}$ =127,64), and was in favor of those who have 3,01-3,50 and 3,51 to 4,00, respectively.

Table 8. Standard deviation values for the attitude of teacher candidates towards the instructional technologies and material design course

n	$\bar{X}$	ss
284	3.47	.61

As the data in Table 8 are examined, it is possible to observe that 284 teacher candidates, who participated in this study, exhibited a good level of attitude towards the Instructional Technologies and Material Design Course ($\bar{x}$ =3,47).

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4. Conclusion and Recommendations

The teacher candidates participated in this study generally exhibited a positive attitude towards the Instructional Technologies and Material Design Course. The highest level of attitude towards the Instructional Technologies and Material Design Course was observed in classroom teaching and it is followed by the students of mathematics, science and social sciences teaching departments. Students with higher academic achievement scores are in a more positive attitude towards the Instructional Technologies and Material Design Course. Teacher candidates argue that the activities in the ITMD Course contribute in the development of psychomotor skills. Teacher candidates who participated the study state that existing technologies could effectively be used in teaching-learning processes through ITMD Course. Teacher candidates state that ITMD Course develops the creativity and relevant materials on the subject area. Teacher candidates declare that they could select appropriate material for the objectives via the ITMD Course.

Following recommendations might be given based on the results of the study:

- In departments with lower attitudes, a re-planning is necessary in order to enhance the attitude towards the course.
- Activities that would make the course more desirable should be organized.
- The student motivation should be elevated by organizing the courses being more activity-oriented.
- More comprehensive studies could be conducted by increasing the sample size.
- Other departments of Faculty of Education (pre-school, counseling and computer teaching) could as well be included in the study to evaluate the attitude towards the course.

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