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Attitudes of preservice teachers having pedagogical formation certificate training towards instructional technology and material design course

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Abstract

The purpose of this study was to determine the attitudes of the trainees registered in Pedagogical Formation Certificate Program (PFCP) towards the Instructional Technologies and Material Design (ITMD) course and to analyze whether these attitudes differed according to gender, department and level of grade. The data were obtained from totally 110 trainees including 78 females and 38 males. In addition to the personal information form, the Attitude Scale towards ITMD Course was used as the data collection tool. The scale had three sub-dimensions as effectiveness, admiration and denial, and the internal consistency coefficients calculated for the current implementation were between .99 and .77. It was understood that the trainees regarded the ITMD course effective enough to be considered good, admired the course at a moderate level, and did not neglect the course very much. It was noticed that female trainees found the course more effective and admired it more rather than the male trainees. The trainees in the English group were determined to consider ITMD course more effective than the trainees in the philosophy group. Moreover, it was proved that the students in the English group admired more rather than the trainees in the theology and philosophy groups. The graduate trainees regarded ITMD course more effective than the ones who were still students.

Keywords: instructional technologies, information technologies, instructional technologies and material design, attitude towards itmd course;

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1. Introduction

Instruction is the whole of teaching and learning activities carried out at schools. In other words, instruction includes teaching and learning together. Namely, it includes all the processes implemented for the realization of learning and development of desired behaviors in individuals (Varış, 1988). All of the theoretical knowledge taught to students in schools is called teaching, and implementation of this theoretical knowledge is called education. Instruction, on the other hand, is the process of deliberately creating desired change in individuals' behavior through their own experiences (Ertürk, 1984). According to Sönmez (2009), instruction is an open system including input, process, output and feedback.

The role of the teacher is remarkable as the role of students in realization of a effective teaching process. In other words, the source of the information is teacher while the receiver is students. Teachers are among the important inputs of education because their individual characteristics cannot be controlled. This input has a great effect upon educational system's creating desired behaviors (Delice, vd., 2009). In Complete Works (1924), Atatürk mentioned teachers had an important role in providing a qualified education possible to meet the needs of the age saying that "Teachers! The devoted teachers and trainers of the Republic, you will train the new generation, the new generation will be your masterpiece. The value of this masterpiece will be in accordance with your skill and dedication. The Republic demands intellectual, scientific, strong and high-character protectors. It is your mission to raise the new generation with such quality and skills. I have no doubt that you will devote your presence to fulfill your distinguished mission." The importance of teachers in the educational system increases the importance of training teachers. The programs administered in teacher training process are directly proportional to meet the requirements of the age and social and individual needs and to achieve creating a contemporary teacher attitude (Erarslan, 2008). Teacher quality is remarkable in progress and success of the educational system; and acquiring the expected result from the educational system depends largely upon the quality of teachers (Köseoğlu, 1994; Erişen and Çeliköz, 2003; Çam & Koç, 2019). Regardless of how well the goals are determined in education, no matter how functional the course curriculum is chosen, it is impossible to reveal desired outputs without having teachers with such goals and behaviors (Köseoğlu, 1994). The curriculums of Education Faculties should be strategically organized, and the content should be improved. Therefore, when reorganizing an educational system, focusing on the training of teachers seriously and carefully has become compulsory (Gültekin, 2002).

Preservice teachers acquire the basic behaviors related to teaching profession through teaching profession courses provided by Education Faculties. These courses are one of the most remarkable factors that prepare preservice teachers for teaching profession (Erden, 1995). Instructional Technologies and Material Design (ITMD) is one of the important courses among the teaching profession courses. ITMD (development) is a three-credit course that has been lectured as a teaching formation course in teacher training programs since 1998-1999 (Council of Higher Education *YÖK+, 2007; Seferoğlu, 2006). It is a special competence that teachers need to have related to acquiring the competences of using the existing technologies in teaching-learning processes and using new technologies at schools. This feature is intended to be acquired by preservice teachers with ITMD course (Gündüz and Odabaşı, 2004; Çelik, 2010; Demir, 2018). It is a special competence that teachers need to carry and gain the competences to use existing technologies in teaching-learning processes, and to use new technologies in schools. Both cognitive and affective characteristics should be considered in the learning processes in order to provide preservice teachers to acquire these competencies. Because learning includes cognitive and affective integration and providing this integration affects the permanence of learning positively. Affective reinforcement on learning increases the permanence of cognitive learning (Gömleksiz and Kan, 2012). According to Bloom, moreover, the affective

characteristics of a student alone explain a significant part of the success, 25%, in the relevant field (Tan, 2006; Tan and Erdoğan, 2004). All these reveal that affective characteristics are as remarkable as not to be neglected. However, the studies and researches revealing the relationship between affective characteristics and learning have been neglected for many years (Gömleksiz and Kan, 2012). In scientific researches, not only the cognitive dimension but also the affective dimension guiding the cognition should be discussed (Tuan, Chin & Shieh, 2005).

One of the most important affective characteristics of students about a course is attitude (Erden, 1995). Attitude is defined as a emotional, mental and behavioral reaction bias that individuals organize against themselves or any object, social issue, or event around them depending upon their experiences, knowledge, emotion and motivation (İnceoğlu, 2010:13). As can be understood from the definition, attitude is an important descriptor of behavior with its cognitive, affective and behavioral dimensions (Ekici, 2002). Various studies have proved that student attitudes affect and are affected by achievement (Papanastasiou, 2002). Furthermore, determining the attitudes towards certain activities is vital in determining the achievement in those activities (Ekici, 2002).

When the literature is reviewed, it is possible to find scales of attitude related tp teaching profession courses (Karaca, 2006; Erden, 1995; Ekici, 2008; Bakır, 2020; Dilci & Eranıl, 2019). However, there has been no scale related to the attitude towards ITMD course which has an important place among teaching profession courses. Therefore, the need for a tool that will measure the attitude towards ITMD course has been noticed. In line with the need, the purpose of this research was to develop a measurement tool possible to be used for determining the attitudes of preservice teachers towards instructional technology and material design course and to make its validity and reliability studies.

1.1. Purpose of the Study

It was aimed to analyze the attitudes of the trainees registered in the PFCP towards the ITMD course according to their gender, department and level of grade. For this purpose, answers to the following questions were sought.

1. What is the distribution of effectiveness, admiration and denial scores of the trainees registered in the PFCP?

2. Do effectiveness, admiration and denial scores of the trainees registered in the PFCP differ significantly according to gender, graduated or registered undergraduate program, or the status of being a student?

2. Method

2.1. Study Group

In the study group, there were totally 110 Pedagogical Formation students including 78 females and 38 males. Among the students, 44 were graduates and 66 were fourth grade students. The data were obtained from students registered in the PFCP in Erzincan Binali Yıldırım University Education Faculty in the spring semester of 2018-2019 academic year.

2.2. Data Collection Tool

As data collection tools, personal information form and Attitude Scale towards ITMD Course (ASITMDC) developed by Çetin et al. (2013) were used. The scale including totally 33 items had three sub-dimensions as Effectiveness, Admire and Denial.

Table 1. Internal consistency (Cronbach's Alpha) coefficients calculated for the original scale and the current implementation

Sub-dimension	Number of items	Original Scale N: 358	Current Implementation N: 110
Effectiveness	18	.95	.99
Admiration	9	.87	.93
Denial	6	.78	.77

Table 1 indicated the internal consistency coefficients calculated for the original scale and the current implementation related to the dimensions of Effectiveness, Admiration and Denial. The calculated internal consistency coefficients of the original scale were found to be .95 for the effectiveness sub-dimension, .87 for the admiration sub-dimension, and .78 for the rejection sub-dimension (Çetin et al., 2013). The internal consistency coefficients calculated for the current implementation were .99 for the effectiveness sub-dimension, .93 for the admiration sub-dimension, and .77 for the denial sub-dimension. It was possible to mention that the internal consistency coefficients calculated for the sub-dimensions had similarities with the original scale. The relevant references (Büyüköztürk, 2011; Fraenkel, Wallen & Hyun, 2012; Bentler, 1980; Hu and Bentler, 1999; Bentler and Bonett, 1980; Marsh, et., 2006; Schermelleh-Engel, Moosbrugger & Müller 2003; Raykov & Markoulides, 2006; Phan & Zhu, 2021) revealed that the reliability coefficients of .70 and higher indicated the scale to be reliable enough. In the current implementation, the reliability coefficients calculated for the sub-dimensions were noticed to be higher than .70, and therefore they were reliable enough.

2.3. Statistical Procedures

Independent group t-test was performed for paired comparisons in addition to descriptive statistics to answer the research questions. Kruskal Wallis H test was performed for the comparisons of graduate or registered undergraduate program due to not meeting the required parametric test conditions. Mann Whitney U-test was used to determine the source of the difference in cases where a significant difference was found according to the Kruskal Wallis H test results.

3. Findings

The average scores and standard deviations of the trainees related to the effectiveness, admiration and denial sub-dimensions were presented in Table 2. Since the number of questions related to each sub-dimension was different, the highest and lowest scores possible to be obtained from each sub-dimension were also different from each other. In order to understand the average scores of the sub-dimensions better and compare them more easily, the scores that the trainees took from each sub-dimension were converted into a hundred percent system and presented in Table 2.

Table 2. The descriptive statistics related to the scores of trainees on sub-dimensions

Dimensions	N	Possible score		$\bar{X}$	Ss	Average score according to hundred system
		The lowest	The highest			
Effectiveness	110	18.00	90.00	67.66	21.13	68.98

Admiration	110	9.00	45.00	28.45	7.84	54.02
Denial	110	6.00	24.00	12.95	4.09	38.64

According to the hundred system, the trainees obtained the highest average score from the effectiveness dimension (68.98). It was understood that the average score related to the admiration dimension was at a medium level (54.02).

The average score for the denial dimension was possible to be mentioned at a low level (38.64). Depending upon these results, it could be said that the trainees regarded the ITMD course as effective. Although they regarded the course as effective, it was understood that they admired ITMD course at a moderate level. Low denial score should be considered as positive. Because low denial score indicated that the trainees did not deny this course or denied at a very low level. Depending on this finding, it was possible to notice that the course and the activities related to the lesson did not strain the trainees much, they did not regard the course as a waste of time, they were willing to take the lesson and they did not consider the activities in the course as tiring.

Independent group t-test results related to effectiveness, admiration and denial sub-dimensions of the trainees according to gender were presented in Table 3. The analysis results revealed that the difference between the average scores related to effectiveness (t_{108}=2.788, p<.01) and admiration (t_{108}=2.072, p<.05) sub-dimensions according to gender was significant, but the difference between the average scores for the denial sub-dimension was not significant (t_{108}=1.312, p>.05).

In the effectiveness sub-dimension, the average score of females (71.15) was significantly higher than the average score of males (59.16). Based on this result, it was possible to mention that female trainees regarded ITMD course more effective than the male trainees.

As in the effectiveness sub-dimension, the average score of female trainees (29.42) in admiration sub-dimension was significantly higher than the average score of male trainees (26.06). Based on this finding, it could be said that female trainees admired the Instructional Technology and Material Design course more than male trainees.

Table 3. Independent group t-test results on Effectiveness, Admiration and Denial sub-dimensions of the trainees according to gender

Sub-dimension		**Female N: 78**	**Male N: 32**	**t**	**df**	**p**
Effectiveness	$\bar{X}$	71.1538	59.1563	2.788	108	.006**
	Ss	18.47995	24.81949			
Admiration	$\bar{X}$	29.4231	26.0625	2.072	108	.041*
	Ss	6.51775	10.12164			
Denial	$\bar{X}$	12.6282	13.7500	1.312	108	.192
	Ss	4.07115	4.07985			

*p<.05 **p<.01

In denial dimension, the difference between the average scores of female (12.63) and male (13.75) trainees was not found to be significant. Although males seemed to deny this course more than females, t-test results indicated this difference not to be significant.

Kruskal Wallis H-test results related to effectiveness, admiration and denial scores of the trainees according to the graduated or registered undergraduate program were presented in Table 4. It was found that the difference between the average scores of the effectiveness sub-dimension according to the graduated or registered undergraduate program was significant ($X^2_{(Sd:4)}$=17.648, p<.01). Mann-Whitney U-test results indicated that the significant difference was between the English group and Philosophy group. It was determined that the average rank of those in the English group was much higher than the average rank of those in the Philosophy group; therefore, the trainees in the English group regarded ITMD course more effective than the trainees in the Philosophy group.

Table 4. Kruskal Wallis H-test results related to effectiveness, admiration and denial scores of the trainees according to the graduated or registered undergraduate program

	Average rank								Mann Whitney
	1	2	3	4	5				
Dimensions	N:33	N:16	N:23	N:17	N:21	X^2	Sd	p	U-test
Effectiveness	60.45	49.91	33.43	70.24	64.21	17.648	4	.001**	1-3.
Admiration	62.59	39.63	33.35	74.35	65.45	24.879	4	.000**	1-2. 1-3
Denial	62.18	57.53	43.13	50.44	61.10	6.118	4	.190	1-3.
**p<.01	1. English		2. Theology		3. Philosophy	4. Business Administration			5. Other

The average rank of the trainees varied between 33.35 and 74.35 in admiration dimension. The difference between the average rank for this dimension was found to be significant ($X^2_{(Sd: 4)}$=24.879, p<.01). The Mann-Whiney U-test was performed to determine the source of the difference. The difference between the average rank of the English group and Theology and Philosophy groups was noticed to be significant. The score average of the English group (62.59) was significantly higher than the rank average of the Theology (39.63) and Philosophy (33.35) groups. Depending on these findings, it was possible to mention that the trainees in the English group admired ITMD course more than the trainees in the Theology and Philosophy groups.

In terms of the denial dimension, it was noticed that the average score of the trainees varied between 62.18 and 43.13. The differences between the average scores of the trainees related to this dimension were determined not to be significant ($X^2_{(Sd: 4)}$ =17.648, p<.01).

Table 5. Independent group t-test results on Effectiveness, Admiration and Denial sub-dimensions of the trainees according to the status of being a student or graduate

Sub-dimension		**Student N:66**	**Graduated N:44**	**t**	**df**	**p**
Effectiveness	$\bar{X}$	64.2879	72.7273	2.084	108	.040*
	Ss	22.46417	18.02887			
Admiration	$\bar{X}$	27.4697	29.9091	1.610	108	.110
	Ss	8.24102	7.04081			

Denial	$\bar{X}$	12.5606	4.20669	1.241	108	.217
	Ss	13.5455	3.87271			

*p<.05

The independent group t-test results related to effectiveness, admiration and denial sub-dimensions according to the trainees' status of being a student or graduated were presented in Table 5. According to the status of being student or graduated, the difference between the average scores of the trainees related to the effectiveness sub-dimension was significant (t_{108}=2.084, p<.05). It was observed that the average scores of the graduated trainees related to the effectiveness sub-dimension were higher than the scores of the trainees who were still students.

No significant difference was determined between the average scores of the trainees in terms of effectiveness sub-dimension according to the status of being a student or graduated (t_{108}=1.610, p>.05). The average scores of the students who were still students and graduates related to admiration sub-dimension were similar.

The difference between the average scores of the trainees related to the denial sub-dimension according to the status of being a student or graduated was not significant (t_{108}=1.241, p>.05). It was possible to mention that the denial scores of the trainees did not differ depending on their status of being graduated or student.

4. Conclusion and Discussion

The trainees regarded ITMD course effective enough to be considered good. When the literature on the subject was reviewed, it was noticed that the results of various studies carried out on both preservice teachers and teachers who were still on duty were positive, and in this respect, the results of this study and the ones in the literature were consistent (Bozpolat and Arslan, 2018; Kolburan Geçer, 2010; Çevik Kılıç, 2016; Özer and Tunca, 2014; Uzunöz et al., 2017; Saka and Saka, 2005; Çuhadar and Yücel, 2010; Güneş and Aydoğdu İskenderoğlu, 2014; Duruhan and Şan, 2013; Kaya, 2006).

The trainees admired ITMD course at medium level. Similarly, in the study carried out by Vatansever Bayraktar and İşleyen (2018) with the contribution of preservice teacher who took the ITMD course and registered in the Education Faculty or PFCP in some universities in Turkey, a medium-level significant difference was determined in terms of pleasure and denial sub-dimensions related to preservice teachers' attitudes towards ITMD course, and there was a strong important difference in the average of the pre-service teachers' attitudes towards ITMD course according to the effectiveness subscale and the overall scale (Erdemir, Bakırcı and Eyduran, 2009).

The trainees slightly denied ITMD course. Bakaç and Özen (2016) stated in their study that there was no important difference between the scores obtained in the denial sub-dimension when the attitude scores towards the ITMD course were analyzed.

Female trainees regarded ITMD course more effective rather than the male trainees. In his study, Bakır (2020) determined a statistically important difference in the average scores that female preservice teachers took from the effectiveness sub-dimension in favor of female pre-service teachers. Therefore, it was possible to reveal that female preservice teachers were better than male preservice teachers in terms of designing educational materials and using technology. Female trainees admired ITMD course more than male trainees. In terms of admiration sub-dimension, a statistically important difference was found in the average scores of female preservice teachers when compared to male preservice teachers (Bakır, 2020).

Scores of the trainees related to the dimension of denial differed according to gender. It was found in the researches carried out by Altınok (2012) and Yenilmez and Uygan (2009) upon preservice teachers that female preservice teachers had a additional positive attitude rather than males in integrating technologies into educational processes.

The trainees in the English group regarded ITMD course more effective rather than the ones in the Philosophy group. Johson and Howell (2005) partially obtained the same result. In general sense, although it was observed in some researches that the effect of ITMD course upon professional achievements differed according to departments, there were also researches that did not reveal differences according to departments. Bakaç (2015) proved that that there was no important difference between the creativity perception scores of the preservice teachers who took the ITMD course according to the department they studied.

Similarly, it was possible to mention that the trainees in English group admired ITMD course more than the trainees in Theology and Philosophy groups. The scores of the trainees related to the denial sub-dimension were similar according to the type of registered or graduated undergraduate program.

Bakaç and Özen (2016) found in their study that the attitude scores of pre-service teachers towards the ITMD course did not differ remarkably according to the departments they studied in terms of the denial sub-dimension. Score averages of the graduated trainees related to the effectiveness sub-dimension were higher than the trainees who were still students.

Aktepe et al. (2018) found a significant difference in favor of third and fourth grade preservice teachers between the average scores of the first and second grade preservice teachers and the average scores of the third and fourth grade preservice teachers.

Yaman (2007) and Kinay et al. (2015), on the other hand, could not determine a statistically significant difference according to the grade-year variable of preservice teachers studying in different grades. Similarly, in the study carried out by Vatansever Bayraktar and İşleyen (2018) with the accession of preservice teachers registered in Education Faculties and preservice teachers registered in the PFCP, a statistically significant difference was found according to the variables of gender, grade-year and marital status. Admiration and denial scores of the trainees who were still students and graduated had similarities.

5. Recommendations

Although the trainees admired the course at a moderate level, they were understood to consider the course as necessary and not to deny it. It was offered to take measures possible to make the courses such as Information Technologies and Instructional Technologies, which was included in new teacher training programs, more interesting for students. The size of student groups, insufficient support for equipment and lack of student infrastructure related to material development could be the reasons for the moderate level of interest in the course. It was understood that the attraction of the course varied according to the branches that the students were registered or graduated from. In this context, in addition to the reasons affecting the interest in such courses, researching the reasons for this in programs and groups with low interest in such courses could be a further separate study topic.

Although the names of the courses in teacher training undergraduate programs have changed, courses with ITMD content have continued to take place. In this context, it was noticed that three-credit Information Technology course and two-credit Instructional Technologies course were included in the programs as professional knowledge courses in teacher training undergraduate programs that have

been implemented since 2018. It was considered that the results obtained from this study on ITMD course was possible to contribute upon the perception of students related to the instructional technologies course and information technologies course. However, researching these issues can still be a separate study topic.

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