

Science and technology teachers' attitudes towards educational research in Turkey

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Abstract

This study reports on the attitudes of science and technology teachers' towards educational research that were investigated and analyzed with respect to certain demographic variables. The survey method was utilized as the research design. The study group consisted of 918 science and technology teachers working in middle schools in the Eastern Anatolia region of Turkey. The data were collected using the



Likert scale; 'Teachers Attitude Scale towards Educational Research (TASTER)'. The sub-scales of TASTER included the necessity of educational research, the value of educational research and applicability of educational research. The results of the study showed that female teachers have more positive attitudes towards the applicability of educational research to classroom practice. Valuing educational research and necessity of educational research increases with the number of years of teaching experience. Teachers who graduate from faculties other than education believe in the necessity of educational research more than teachers from education faculties. Furthermore, when compared with the views of teachers working in rural areas those teachers employed in urban areas consider educational research to be more necessary, and teachers with Master's degrees believe in the applicability of educational research more than teachers with graduate degrees.

Keywords: Science education, educational Research, attitudes

Introduction

Scientific research is conducted in the field of education in order to produce theoretical information about education, specify the problems, and propose solutions to these problems (McMillan & Schumacher, 2010; Yıldırım, Ilhan, Sekerci, & Sozbilir, 2014). However, many studies show that there is a gap between educational research and practice (Greenwood & Maheadly, 2001; McIntyre, 2005; Vanderlinde & van Braak, 2010). For example, Kempa (2002) argues that scientific research topics have mostly been those that generally receive little attention from teachers. However, education researchers and teachers have commented that formal school education is not sufficiently based on scientific research findings (McIntyre, 2005). These negative viewpoints of the implementers (such as teachers and school principals) towards educational research are regarded as one of the most important reasons for the gap between research and practice (Kaestle, 1993; Gore & Gitlin, 2004; Yıldırım et al., 2014).

According to Zeuli (1994), teachers can be classified into two groups with regard to their opinion of educational research. For the first group of teachers, in order to consider research valuable or to use the outcome of the study, it is necessary that the research focuses on their own problems directly or offer them solutions. Otherwise, they will neither find the research valuable nor think of using it at all. The second group of teachers find research valuable if it contributes to understanding the



problem regarding the relevant issue, rather than being related to their own problems. However, it has been observed that educational research makes very little contribution to solving problems especially those faced in practice, and implementers (such as teachers, directors and politicians) have negative attitudes towards educational research in general (Biesta, 2007; Everton, Galton, & Pell, 2002; Hemsley-Brown & Sharp, 2003; Yavuz, 2009). In addition, the implementers, in particular, are supposed to benefit from the research in terms of finding solutions to the problems they face, in practice in order for the research to reach its expected aim. It is possible to achieve this as long as the implementers are informed about the educational research, understand the results obtained, and adapt these results to their own situations (Yıldırım, Sozibilir, Ilhan, & Sekerci, 2010).

Teachers' attitudes towards educational research and the effects of such research on teachers have been discussed in a number of studies (De Jong, 2004; Ekiz, 2006; Everton, Galton, & Pell, 2002; Korkmaz, Sahin, & Yesil, 2011a; Vanderlinde & van Braak, 2010). In the study concerning the value of educational research for informing classroom practice by Everton, Galton, and Pell (2002), the mean rating on the five-point interval scale was 4.03 for middle school teachers and 4.02 for primary teachers. Similarly, Korkmaz et al. (2011a) conclude that the attitudes of candidate teachers towards scientific research are at a high level. An examination of the studies that revealed the attitudes of teachers towards educational research shows that they appear to be carried out by collecting qualitative data (De Jong, 2004; Gore & Gitlin 2004; Korkmaz, Sahin & Yesil, 2011b; Vanderlinde & van Braak, 2010; Yıldırım et al., 2014). These qualitative studies were conducted to reveal the attitudes of implementers of education (such as teachers, directors and politicians) show that attitudes towards scientific research in general or towards educational research in general (Cousins & Walker, 2000; Everton, Galton, & Pell, 2002; Isakson & Ellsworth 1978; Korkmaz, Sahin, & Yesil, 2011a; Papanastasiou, 2005; Walker, 2010). A qualitative study conducted by Gore and Gitlin (2004) showed that teachers find research studies incomprehensible, irrelevant to their problems, and unreliable. In a qualitative study by Korkmaz and colleagues (2011b), an important number of teachers have positive attitudes towards scientific research whereas one-third of teachers have negative attitudes.

Ilhan, Sekerci, Sozibilir and Yıldırım (2013) developed a scale for measuring teachers' attitudes towards educational research. The literature review showed that there are no surveys with large samples revealing the variation in the attitudes of science and technology teachers towards educational research in terms of some



demographic variables. The aim of the current study, therefore, is to determine the attitudes of science and technology teachers working in Eastern Anatolia in Turkey towards educational research and to compare these attitudes with some demographic features (gender, years of teaching experience, teacher-training programme they graduated from, the location of the middle school they work, and educational background). This study sought to respond to the following research questions:

1. What is the level of science and technology teachers' attitudes towards educational research?
2. Do the attitudes of science and technology teachers towards educational research differ according to their gender, teacher-training program from which they graduated, years of teaching experience, according to the location of the middle school where they work, and their educational status?

Methodology

The survey method was selected; it is frequently used by educational researchers because it produces highly generalizable results (McMillan & Schumacher, 2010, p.233). Data was collected using the "Teacher Attitude Scale towards Educational Research (TASTER)" developed by Ilhan et al. (2013). The research population was drawn from science and technology teachers employed at middle schools in Eastern Anatolia, Turkey. All the teachers were invited to participate in the survey on a voluntary basis. The results gathered from 918 science and technology teachers responding to TASTER were analysed (Table I).

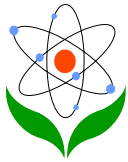
Table I. Demographic data of the participants

Gender	n	%
Male	493	53.7
Female	425	46.3
Total	918	100
Years of teaching experience		
1-5 years	645	70.3
6-10 years	107	11.7
11-15 years	91	9.9
16-20 years	37	4.0



21-25 years	12	1.3
26 years or more	26	2.8
Total	918	100
Graduated from the Department of		
Science and technology Teacher Training	713	77.7
Departments of Education Faculties (Total)	80	8.7
Physics Teacher Training	10	
Chemistry Teacher Training	21	
Biology Teacher Training	9	
Education Institute (Vocational Schools)	25	
Other Teacher Training Departments	5	
Departments of Other Faculties (Total)	125	13.6
Physics	36	
Chemistry	44	
Biology	40	
Others	5	
Total	918	100
Location		
City centre	260	28.3
District centre	347	37.8
Town/small town	102	11.1
Village	209	22.8
Total	918	100
Educational status		
Vocational degree (2 years)	24	2.6
Undergraduate degree (4 years)	843	91.8
Master's degree	51	5.6
Total	918	100

Data Analysis



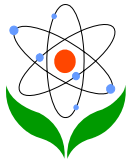
The data obtained from TASTER was analysed using descriptive and inferential statistical techniques. The statistical package for the social sciences was used for this purpose.

The teachers who took part in the survey were grouped according to demographic characteristics. Histogram, Box-plot, and normal Q-Q plots graphs were examined to identify whether the data in these groups showed normal distribution (Buyukozturk, Cokluk Bokeoglu & Koklu, 2012; Field, 2013). The data obtained from demographic data form is given in Table I as frequencies and percent values. Independent-samples t-test and one-way ANOVA were used to analyse the research data. The requirement for the 'Homogeneity of Variance' was met in all the one-way ANOVA analyses ($p > .05$). A LSD multiple comparison test was undertaken to determine the differences among the sub-groups and the statistical significance was set as ($p < .05$).

Data Collection Tools

TASTER used for data collection in the study was developed by Ilhan et al. (2013), and it consists of 3 factors and 20 items. The three factors are; 'necessity of educational research' (items; 1, 3, 7, 10, 14, 17, 20), 'value of educational research' (items; 2, 6, 9, 11, 12, 16), and 'applicability of educational research' (items; 4, 5, 8, 13, 15, 18, 19). In the current study, the Amos 21 data analysis software gave the following index values of the fit statistics formed in the model by confirmatory factor analysis: Ratio of chi square to its degrees of freedom $\chi^2(161, n=918) = 93.21$, $\chi^2/df = 3.06$; Root Mean Square Error of Approximation (RMSEA) = .047; Root Mean Square Residuals (RMR) = .030; Standardized Root Mean Square Residuals (SRMR) = .045, Goodness of Fit Index (GFI) = .95; Adjusted Goodness of Fit Index (AGFI) = .93; Normed Fit Index (NFI) = .92, and Comparative Fit Index (CFI) = .94. From the examination of the fit indices, it appears that the scale is compatible with the specified model (Brown, 2006; Hu & Bentler, 1999; Kline, 2010; Sumer, 2000). It was determined as a result of the confirmatory factor analysis carried out with Amos 21 program that the scale was composed of 20 items and 3 factors. In the present study, the first factor of the Cronbach's alpha reliability coefficient of TASTER was calculated as .802, the second factor was .820, and the third factor was .737, with .872 as the coefficient for the whole scale.

To determine the teachers' levels of attitudes and agreement with the statements in TASTER there were 5 options from totally disagree (1) to totally agree (5). The mean score interval of 1.00 - 2.59 obtained from TASTER indicated negative



attitudes, 2.60 - 3.40 indicated moderate attitudes and 3.40 - 5.00 indicated positive attitudes.

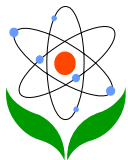
Findings

What is the level of science and technology teachers' attitudes towards educational research?

TASTER was completed by 918 teachers in order to specify science and technology teachers' attitudes towards educational research and the mean score was found 3.82. Thus, it can be assumed that in general, the science and technology teachers had positive attitudes towards science education research.

Table II. Items in each dimension in TASTER

Items	Mean	SD
1 Educational research provides beneficial information that I can use in class.	4.00	.65
2 Scientific publications regarding education (dissertations, articles, books etc.) contribute to an increase in the quality of education.	4.31	.72
3 I am happy to teach a lesson in the class according to the findings of educational research.	3.81	.77
4 Educational research conducted by academicians is undertaken only to enhance their own careers.	2.78	1.12
5 If I teach lessons according to the data obtained from educational research, the topics cannot be completed.	2.53	1.08
6 Teachers should benefit from the findings of educational research.	4.60	.056
7 I like attending seminars on educational research.	3.67	.91
8 I believe that the scientific publications regarding education (dissertations, articles, books etc.) are superficial.	3.14	1.02
9 Following educational research is part of the process of qualifying as a teacher	4.22	.74
10 Educational research contributes to the development and renewal of curricula.	4.05	.66
11 It is necessary to conduct scientific research regarding education.	4.46	.58
12 It is important to be informed about educational research.	4.61	.57
13 It is a waste of time to teach lessons according to the results of the educational research.	3.70	.94



14 Educational research generates solutions for the problems I encounter in teaching.	3.75	.81
15 I do not think that the educational research is applicable.	3.16	1.02
16 Educational research contributes to the development of the teaching profession.	4.40	.65
17 The findings of educational research that are recounted in seminars are beneficial.	3.91	.94
18 Educational research is not applicable in a school environment.	3.21	1.06
19 Teaching lessons according to the findings of educational research reduces the success of students.	3.82	.87
20 The findings of educational research are important for me in the selection of a teaching model, method and technique according to the topic in the teaching process.	4.09	.71

The mean scores of the items in each dimension in TASTER (Table II), the mean scores of the items with regard to the 'necessity of educational research' ($M = 3.89$, $SD = .54$) and the mean scores of the items with regard to 'value of educational research' ($M = 4.43$, $SD = .47$) show that teachers seem to have a positive attitude towards educational research. However, the mean scores of the items with regard to 'applicability of educational research' ($M = 3.19$, $SD = .65$) demonstrate that teachers have a moderate attitude towards educational research.

Do the attitudes of science and technology teachers towards educational research differ according to their gender?

According to the results obtained through TASTER, the independent sample t-test results that were carried out to compare male and female science and technology teachers' attitudes towards science education research demonstrated that there was no difference in terms of gender $t(916) = .842$, $p > .05$. However, when the subgroups of the scale were examined separately, there appeared to be a positive difference in favour of female teachers in the context of 'applicability of educational research' between genders $t(916) = 2.438$, $p = .015$, $d = .16$. This result indicates that female teachers ($M = 3.24$, $SD = .65$) have more positive viewpoint than their male colleagues ($M = 3.14$, $SD = .63$) in terms of applying the outcomes of educational research into classroom practice.

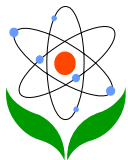


Table III. TASTER and subscale scores by gender for the independent sample t-test results

Sub-scales of TASTER	Group						95% CI for Mean Difference	t	df
	Male			Female					
	M	SD	n	M	SD	n			
Necessity of educational research	3.89	.55	493	3.90	.52	425	-.058, .081	.313	916
Value of educational research	4.45	.48	488	4.41	.45	419	-.105, .018	-1.386	905
Applicability of educational research	3.14	.63	493	3.24	.65	425	-.0203, .187	2.438*	916
TASTER	3.80	.46	493	3.83	.46	425	-.033, .084	.842	916

* $p < .05$.

Do the attitudes of science and technology teachers towards educational research differ according to the teacher-training programme from which they graduated?

The teachers in this study were classified into three groups according to the teacher training programmes from which they graduated as follows; primary science and technology teacher training (STT), other departments of education faculties (ODF) and other faculties (OF). The mean scores obtained from TASTER in terms of the teacher training programmes indicated that all the teachers from different fields appeared to have a positive attitude. When the mean scores of teachers training program from which they graduated were examined with regard to the sub-groups of TASTER, the mean scores received from the dimension regarding the 'applicability of educational research' sub-scale indicated that they had moderate attitudes. A one-way ANOVA analysis was performed to determine whether there was a statistically significant difference between the scores of the teachers' attitudes towards educational research according to the teacher-training program from which they graduated (Table IV).

Table IV. Science and technology teachers' attitudes towards educational research based on teacher training program from which they graduated

TASTER dimensions	Groups	n	Mean	SD
Necessity of educational research	STT	713	3.87	.54



	ODF	80	3.96	.56
	OF	125	4.03	.49
	Total	918	3.90	.54
Value of educational research	STT	713	4.43	.47
	ODF	80	4.39	.54
	OF	125	4.46	.44
	Total	918	4.43	.47
Applicability of educational research	STT	713	3.19	.64
	ODF	80	3.23	.76
	OF	125	3.16	.62
	Total	918	3.19	.65
TASTER	STT	713	3.80	.46
	ODF	80	3.83	.50
	OF	125	3.86	.40
	Total	918	3.81	.45

The one-way ANOVA test (Table V) indicated no significant difference among the teachers' attitudes towards educational research according to the teacher training program they graduated, $F(2,915) = .861$, $p = .423$. However, there was a significant difference in the sub-scale of 'necessity of educational research' according to the results of the one-way ANOVA test performed for each dimension of TASTER with respect to the teacher training program the teachers had graduated, $F(2,915) = 5.616$, $p = .004$, $\eta^2 = .012$.

Table V. TASTER and subscale scores by the department of graduation in the one-way ANOVA test results

	Source	df	SS	MS	F	p	Difference
Necessity of educational research	Between groups	2	3.218	1.609	5.616	.004*	STT- OF
	Within groups	915	262.170	.287			
	Total	917	265.388				
Value of educational research	Between groups	2	.220	.110	.498	.608	-
	Within groups	904	199.562	.221			
	Total	906	199.781				



Applicability of educational research	Between groups	2	.218	1.286	.260	.771	-
	Within groups	915	382.631	.416			
	Total	917	382.849				
TASTER	Between groups	2	.356	.178	.861	.423	-
	Within groups	915	189.156	.207			
	Total	917	189.512				

* $p < .05$.

Post-hoc analyses using the LSD test indicated that the significant difference in the dimension of 'necessity of educational research' stemmed from the difference between the graduates of Science Teaching (STT) and those of other faculties (OF). There was a statistically significant difference between the mean scores of the graduates of other faculties and those of Science Teaching, which was in favour of the graduates of other faculties ($p = .006$).

Do the attitudes of science and technology teachers towards educational research differ according to their years of teaching experience?

One-way ANOVAs analysis was performed to determine whether there was a significant difference among the scores of the teachers' attitudes towards educational research according to their years of teaching experience (Table VI).

Table VI. Descriptive statistics for TASTER and subscale scores according to the years of teaching experience

TASTER dimensions	Groups	n	Mean	SD
Necessity of educational research	1-5 years	645	3.88	.53
	6-10 years	107	3.80	.57
	11-15 years	91	4.00	.52
	16-20 years	37	4.03	.46
	21-25 years	12	4.25	.47
	Over 26 years	26	3.93	.50
	Total	918	3.90	.54
Value of educational research	1-5 years	641	4.45	.44
	6-10 years	106	4.26	.58
	11-15 years	90	4.46	.43



	16-20 years	36	4.47	.62
	21-25 years	10	4.65	.40
	Over 26 years	24	4.41	.38
	Total	907	4.43	.47
Applicability of educational research	1-5 years	645	3.19	.64
	6-10 years	107	3.19	.61
	11-15 years	91	3.23	.63
	16-20 years	37	3.05	.70
	21-25 years	12	3.20	.68
	Over 26 years	26	3.11	.78
	Total	918	3.19	.64
TASTER	1-5 years	645	3.82	.45
	6-10 years	107	3.73	.51
	11-15 years	91	3.88	.43
	16-20 years	37	3.82	.44
	21-25 years	12	3.98	.45
	Over 26 years	26	3.79	.42
	Total	918	3.82	.45

The one-way ANOVAs (Table VII) showed that there was no significant difference among the teachers' attitudes towards educational research in terms of different length of teaching experience, $F(5, 912) = 1.511$, $p = .184$. There was a significant difference in the dimension of 'necessity of educational research' according to the results of the one-way ANOVA undertaken for each dimension of TASTER with respect to teachers' years of teaching experience, $F(5, 912) = 3.032$, $p = .01$, $\eta^2 = .016$. Furthermore, there was a significant difference in the dimension of 'value of educational research' according to the results of the one-way ANOVAs performed for each dimension of TASTER with respect to teachers' years of teaching experience $F(5, 901) = 3.569$, $p = .003$, $\eta^2 = .019$. Moreover, the difference among the mean scores for each dimension in TASTER was examined with regard to the teachers' years of teaching experience (Table VI).

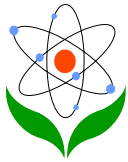


Table VII. TASTER and subscale scores according to the years of teaching experience in the results of the one-way ANOVAs

	Source	df	SS	MS	F	p	Difference
Necessity of educational research	Between groups	5	4.340	.868	3.032	.01*	Between 1-5 and 11-15 years Between 1-5 and 21-25 years Between 6-10 and 11-15 years Between 6-10 and 16-20 years Between 6-10 and 21-25 years
	Within groups	912	261.048	.286			
	Total	917	265.388				
Value of educational research	Between groups	5	3.880	.776	3.569	.003*	Between 1-5 and 6-10 years Between 6-10 and 11-15 years Between 6-10 and 16-20 years Between 6-10 and 21-25 years
	Within groups	901	195.901	.217			
	Total	906	199.781				
Applicability of educational research	Between groups	5	1.028	.206	.491	.783	
	Within groups	912	381.821	.419			
	Total	917	382.849				
TASTER	Between groups	5	1.557	.311	1.511	.184	
	Within groups	912	187.955	.206			
	Total	917	189.512				

* $p < .05$.

Post-hoc analyses using LSD indicated that the significant difference in the dimension of 'necessity of educational research' arose from the difference in teaching experience between 1-5 years with 11-15 years ($p = .036$), 21-25 years ($p = .20$), and between 6-10 years with 11-15 years ($p = .008$), 16-20 years ($p = .027$), and 21-25 years ($p = .007$). This finding shows that teachers with a greater number of years of teaching experience consider that educational research is necessary. Moreover, post-hoc analyses using LSD indicated that the significant difference in the dimension of 'value of educational research' stemmed from the difference in teaching experience between 1-5 years with 6-10 years ($p = .000$), and between 6-10 years with 11-15 years ($p = .000$), 16-20 years ($p = .003$), and 21-25 years ($p = .013$). From this finding, it can be assumed that teachers with greater years of teaching



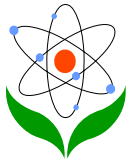
experience value educational research more than those with fewer years of experience.

Do the attitudes of science and technology teachers towards educational research differ according to the location of the middle school where they work?

The one-way ANOVA analyses were performed to determine whether there was a significant difference among the scores of the teachers' attitudes towards educational research according to location of the middle schools they work. Consequently, the one-way ANOVAs (Table IX) show that no significant difference was observed among the scores of the teachers' attitudes, $F(3, 914) = .727, p > .05$. However, there was a significant difference in the dimension of 'necessity of educational research' according to the results of the one-way ANOVA test undertaken for each dimension of TASTER with respect to different locations of middle schools where the teachers worked, $F(3, 914) = 3.464, p = .016, \eta^2 = .011$. Furthermore, the difference among the mean scores for each dimension in TASTER was examined with regard to the location of the middle schools where the teachers worked (Table VIII).

Table VIII. Descriptive statistics for TASTER and subscale scores related to location where the teacher worked

TASTER dimensions	Groups	n	Mean	SD
Necessity of educational research	City Centre	260	3.98	.52
	District centre	347	3.84	.57
	Borough	102	3.89	.46
	Village	209	3.88	.52
	Total	918	3.89	.53
Value of educational research	City Centre	255	4.43	.46
	District centre	342	4.41	.49
	Borough	101	4.42	.39
	Village	209	4.45	.47
	Total	907	4.43	.47
Applicability of educational research	City Centre	260	3.17	.65



	District centre	347	3.18	.65
	Borough	102	3.22	.63
	Village	209	3.20	.64
	Total	918	3.18	.64
TASTER	City Centre	260	3.84	.43
	District centre	347	3.79	.48
	Borough	102	3.82	.40
	Village	209	3.82	.46
	Total	918	3.81	.45

Table IX. TASTER and subscale scores by location of working from the results of the One-way ANOVAs

	Source	df	SS	MS	F	p	Difference
Necessity of educational research	Between groups	3	2.984	.995	3.464	.016*	City Centre-District Centre City Centre- Village
	Within groups	914	262.404	.287			
	Total	917	265.388				
Value of educational research	Between groups	3	.163	.054	.246	.864	
	Within groups	903	199.618	.221			
	Total	906	199.781				
Applicability of educational research	Between groups	3	.221	.074	.176	.913	
	Within groups	914	382.628	.419			
	Total	917	382.849				
TASTER	Between groups	3	.451	.150	.727	.536	
	Within groups	914	189.061	.207			
	Total	917	189.512				

* p < .05.



Post-Hoc analyses using LSD indicated that the significant difference in the dimension of 'necessity of educational research' arose from the difference between the teachers working in a city centre, district centre ($p = .001$), or a village ($p = .047$). It can be assumed that teachers working in a city centre consider educational research as more necessary than those working in a district centre or a village.

Do the attitudes of science and technology teachers towards educational research differ according to their educational status?

One-way ANOVAs were performed to determine whether there was a significant difference among the scores of the teachers' attitudes towards educational research according to their educational status. As a result of the one-way ANOVA (Table XI), no significant difference was observed among the groups $F(2, 915) = 1.103, p = .332$. There was a significant difference in the dimension of 'Applicability of educational research' according to the results of the one-way ANOVA test performed for each dimension of TASTER with respect to the teachers' educational status, $F(2, 915) = 3.095, p = .046, \eta^2 = .006$.

Table X. Descriptive statistics for TASTER and subscale scores according to their the teachers educational achievement

TASTER dimensions	Groups	n	Mean	SD
Necessity of educational research	Vocational Degree	24	4.02	.58
	Undergraduate Degree	843	3.89	.53
	Master's Degree	51	3.96	.53
	Total	918	3.89	.53
Value of educational research	Vocational Degree	23	4.33	.69
	Undergraduate Degree	833	4.43	.45
	Master's Degree	51	4.40	.59
	Total	907	4.43	.47
Applicability of educational research	Vocational Degree	24	3.18	.86
	Undergraduate Degree	843	3.17	.63
	Master's Degree	51	3.40	.69

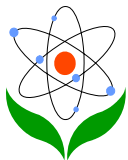


	Total	918	3.18	.64
TASTER	Vocational Degree	24	3.85	.54
	Undergraduate Degree	843	3.81	.44
	Master's Degree	51	3.92	.53
	Total	918	3.81	.45

In addition, the difference between the mean scores for each dimension in TASTER was examined with regard to the teachers' educational status (Table X). Post-hoc analyses using LSD indicated that the significant difference in the dimension of 'Applicability of educational research' arose from the difference between teachers having a master's degree and undergraduate degree ($p = .013$). It can be assumed that teachers with the higher degree consider educational research to be more applicable more than teachers with only an undergraduate degree.

Table XI. One-way ANOVAs results according to educational achievement.

	Source	df	SS	MS	F	p	Difference
Necessity of educational research	Between groups	2	.638	.319	1.103	.332	
	Within groups	915	264.750	.289			
	Total	917	265.388				
Value of educational research	Between groups	2	.282	.141	.639	.528	
	Within groups	904	199.499	.221			
	Total	906	199.781				
Applicability of educational research	Between groups	2	2.573	1.286	3.095	.046*	Between MSc and Undergraduate degree
	Within groups	915	380.276	.419			
	Total	917	382.849				
TASTER	Between groups	2	.643	.321	1.556	.211	



	Within groups	915	188.870	.206			
	Total	917	189.512				

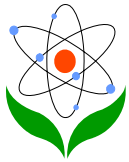
* $p < .05$.

Conclusion, Discussion and Suggestions

An analysis of the data obtained from TASTER suggests that science and technology teachers, in general, have a positive attitude towards educational research ($M = 3.82$). Looking at the mean scores of items in each dimension in TASTER, it is concluded that science and technology teachers have positive attitudes for 'necessity of educational research' ($M = 3.89$), positive attitudes for 'value of educational research' ($M = 4.43$), and moderate attitude for 'applicability of educational research' ($M = 3.19$). These results coincide with Everton et al. (2002) and Korkmaz et al. (2011a, b) results.

In the current study, the data obtained from the total points of the scale did not present a significant difference in terms of gender. However, there was a significant difference in favor of female teachers in terms of 'applicability of educational research' in the sub-dimensions of TASTER. This situation reveals that female teachers have a more positive attitude on the 'applicability of educational researches'. This result is parallel to the result obtained by Yavuz (2009). However, there were no significant differences between male and female teachers with regard to the value of educational research for classroom practice in the study by Everton et al. (2002). The results obtained from a study by Korkmaz and colleagues (2011a) show that the attitude scores of female pre-service teachers are significantly lower than those of male pre-service teachers with respect to the item of 'Negative Attitudes towards Research'. On the contrary, the attitude scores of the male pre-service teachers are significantly higher than those of the female pre-service teachers with respect to the item of 'Positive Attitudes towards Research'. Since our research does not present a detailed analysis of this aspect, the reason for the positive attitude of female teachers can not be found.

There was no significant difference between the general averages obtained from TASTER by the teachers who had graduated from different teacher training programs. On the other hand, there was a significant difference between the averages on the 'necessity of educational research' in the sub-dimension of TASTER. When the results are examined, it is seen that the graduates of other faculties (Faculty of

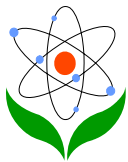


Science and Letters and Faculty of Engineering) have more belief in the necessity of educational research compared with the teachers that graduated from the departments of science and technology teacher training. The reason for this result might be that the teachers, who graduated from faculties other than education faculties, realize that they do not have sufficient knowledge of the field of educational sciences and thus, attach more importance to the necessity of educational research. As the faculties of education put great emphasis on educational research and novel developments in education during the educational process, this might be leading to the development of self-confidence in those teachers. Therefore, it would be beneficial for future research studies to focus on a detailed examination of the reason for this situation.

Another result obtained from the study is that there was no statistically significant difference in the attitudes of science and technology teachers towards educational research with respect to their years of experience. However, there was a statistically significant difference in the subscales of TASTER which are the 'Necessity of educational research', and 'Value of educational research'. This significant difference means that teachers with a greater number of years of experience value educational research and consider it to be more necessary than the other teachers. This result was in parallel with the study conducted by Everton et al. (2002).

In the presented study, when attitudes of science and technology teachers towards educational research were observed according to the middle school in which they work, there were no significant differences in any items of TASTER whereas there was a statistical difference in the 'Necessity of educational research' dimension of TASTER. This finding shows that teachers working in city centres consider educational research to be more necessary than those working in districts and villages.

The study reveals that there was no statistically significant difference in the attitudes of science and technology teachers towards educational research in all the sub-scales of TASTER with respect to the academic degree they achieved. However, the average score of the teachers with Master's Degrees was higher in the sub-scale of 'applicability of educational research', thus these teachers consider educational research applicable to be more than the other teachers. This result signifies that graduate education does not influence teachers' attitudes towards educational research in general but changes their opinions positively towards the applicability of educational research.



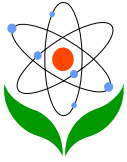
In the presented study, attitudes of science and technology teachers towards educational research were analyzed according to certain variables. We suggest that teacher-training workshops could be organized for teachers to explore and discuss the ideas/results of researchers.

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