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The relationship of self-efficacy of teaching thinking skills to effectiveness of classroom activities: A study on teachers

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Abstract. This study aims to analyse primary education teachers' perceptions of self-efficacy in teaching thinking skills and their views on the efficiency of activities they do in classes. The study, using relational survey model, was conducted with the participation of 386 teachers teaching in schools located in Ümraniye district of Istanbul. The participants were given the "Activity Work Evaluation Scale" and the "Teachers' Perceptions of Teaching Thinking Skills Scale". The data were analysed with t-test, ANOVA and regression analysis. While no significant differences were found according to gender, significant differences were found according to seniority, branches of teaching and the frequency of doing activities. Positive and significant correlations were found between teachers' activity work and their self-efficacy in the teaching of thinking skills. It may be recommended on the basis of research findings that educators who perform activities that support thinking skills successfully be identified and that they be appointed as mentor teachers.

Keywords: Activity work, self-efficacy, teaching thinking skills

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INTRODUCTION

Learning means gaining new knowledge, behaviours, skills, values, choices or insights. It also involves synthesising different types of knowledge. Moreover, it is a process, which brings together individuals' experiences of acquiring, increasing or modifying knowledge, skills and ideas through conceptual, emotional and environmental effects (Illeris, 2000). Learners need to be able to associate their knowledge with a life situation, to set up ties with previous learning and thus to generate their own knowledge (Garner, 1987).

Knowledge is re-structured effectively by learners themselves and is transformed into a new form according to the constructivist approach (Liang and Gabel, 2005). A learning environment should be the place where students can inquire and research and can have rich learning experiences in order for such re-structuring and transformation to occur (Demirel, 2005). Constructivist approach necessitates that activity-based teaching and student-centred pedagogy be used. Students should be made to participate in research, inquiry, problem-solving and decision-making processes through activities (Chen, Burry, Stock and Rovegno, 2000). Philosophical changes which will assure focussing on thinking instead of leaning are needed in schools in order for students' thinking skills to develop (Chun, 2010). Thinking skills are composed of critical thinking, problem-solving, reading comprehension, writing, scientific thinking, creative thinking and creative problem-solving skills (Özden, 2003). Turkey aims to develop various thinking skills in students with the constructivist approach-based curriculum that it has been using since 2005. The newly developed curriculum may be said to aim to make a transition from a mindset standardising students into a form of flexible thinking (Güryanak, Üstel and Gülgöz, 2008).

Activity-based learning environments in which thinking is supported should be created so that constructivist approach-based curricula could be effectively implemented. Teaching on the basis of thinking requires getting away from learning methods which are teacher-centred and which are based on loading knowledge. Active, activity-based and student-centred learning should be employed to provide thinking environments in classes. Being able to prepare such

classroom environments is dependent on teachers' ability to prepare and use activities which support thinking. Examining the theoretical explanations offered in the literature (Chen, Burry, Stock and Rovegno, 2000; Hugo, 1990; Ritchhard, Turner and Hadar, 2009; Zhang, 2006), it may be claimed that there is a strong correlation between teachers' self-efficacy in teaching thinking skills and the quality of activities they do. It is important to reveal the level of correlations between teachers' self-efficacy in the teaching of thinking skills and activity work. In this context, there is need for studies describing the degree of correlations mentioned.

Thinking Skills

Thinking means reaching something else by using the existing knowledge and thus going beyond knowledge at hand (Özden, 2003). Thinking is a process for remembering, for searching for and finding in mind, for reasoning, for problem solving and for criticising (Thomson, 1969). Skills making individuals active and securing that their sense of taking on responsibility develops and that they gain research methods are called thinking skills (Dağlıoğlu and Çakır, 2007). Thinking skills are classified in several ways. Fisher (1995), for instance, points out that thinking skills contain critical and creative thinking and problem solving- which is the application of these two forms of thinking. Presseisen (1995) claims that thinking skills are composed of five stages labelled as basic procedures, problem-solving, decision-making, critical thinking and creative thinking. We can divide thinking skills available in learning environments into two groups. Skills such as comparison, classification, ranking, guessing are the basic skills whereas skills such as decision-making, problem-solving, inference and critical thinking are the thinking skills directed to a certain domain.

Thinking is a natural process; but it is usually biased, distorted, sided and partially unconscious when it is left by itself (Scriven and Paul, 2004). Education should be offered so that activities which will cause individuals to gain thinking skills could be actualised. Scientists have been interested in the teaching of thinking skills since the 1980s and performed several studies in the area. As a result of the studies, educators began to claim that students' thinking skills could be improved through specially prepared programmes (MNE, 2011) because while everybody can think basically, the basic level can be exceeded through education in thinking skills and thus individuals can think effectively (Smith, 2002).

The Significance of Teachers' Levels of Efficacy in the Teaching of Thinking Skills

When thinking was considered as a skill, the issue of how to improve thinking skills was focussed on. Teaching a skill consists of such stages as introducing the skill, doing repeated exercises under the teacher's guidance, practising in different areas and using the skill independently through continuous exercises. Teaching thinking skills also contains such stages as demonstrating the skills with lesson plans, students' practising the skills with teacher's guidance and students' analysing the skills (Beyer, 1985-2008). One of the important stages of acquiring a skill is to practise the skill, and teachers should develop thinking skills through in-class activities and regular practice and exercises (Van Gelder, 2005). Teachers can teach thinking skills only by creating learning-teaching environments that lead students to thinking.

It is teachers who plays the key role in teaching thinking skills (Ennis, 1991). It can also be said that teachers are the greatest obstacles in front of students' learning the thinking skills (Ashton, 1988). Teachers as facilitators should support students in analysing the knowledge, in interpreting it and in evaluating it (Ozman and Craver, 2008; Dunn, 2005). Teachers should make learning easier and they should employ various teaching strategies to improve students' thinking and problem-solving skills. Teachers as educators should not only reveal students' abilities but they should also bring their abilities up to a good level. Different pedagogies that will improve students' thinking, that will deal with misunderstanding and that will motivate students to learn how to learn should be investigated by teachers (Clarke, 1991 cited in Valdezi Lomoljo, Dumrang and Didatar, 2015).

Teachers who are competent in thinking skills can transfer those skills into their professional life. Upper order thinking skills in particular are an important factor in the development of teachers' professional efficacy. Teachers with developed thinking skills are

more effective in classroom applications (Tok and Sevinç, 2012). On the other hand, no matter how well the programmes concerning thinking skills are prepared and how well the learning environments are organised, nothing will be meaningful unless teachers have good efficacy in thinking skills (Aybek, 2007). There are strong correlations between the development of teachers' thinking skills and developing students' thinking skills. Although several factors are influential in the process of teaching thinking skills, the teacher and the teacher's in-class activities are the most important of the factors (Hugo, 1990).

The Place and Importance of Activities in Teaching Thinking Skills

The concept of activity is one of the most important elements of constructivist approach (Hein, 1991). In-class activities can be defined as activities such as critical thinking, problem-solving, reading comprehension and researching enabling students to use and develop their cognitive, affective and psychometric skills (MNE, 2014). Students should be allowed to take part in educational processes and to process information through activities. Activities can make a lesson more enjoyable for the teacher and for students. More importantly, they can make students think critically (Duron, Limbach and Waugh, 2006). Through activities, students will learn to state their views clearly in an environment of mutual respect, to listen to others carefully, to ask polite questions and they will also learn that there can be disagreements between them and others (William, 1998, Cited in Valdez et al., 2015). Students need to be knowledgeable and well-equipped so that they can prepare and do activities effectively. Teachers who perform activity-based teaching in learning environments should be individuals who are open minded, who take individual differences into consideration, who provide learners with appropriate learning environments and who learn along with learners (Selley, 1999).

The student-centred and activity-centred approaches in the curriculum enable thinking systems to develop (Ozman and Craver, 2008; Dunn, 2005). Activities which are prepared in a flexible manner and are started by teachers on the basis of an experience, a problem or an instant event help students to display their imagination and they also contribute to an increase in their thinking skills (Edwards and Springate, 1995). The activities done by the teacher in the classroom rather than the books and materials used in teaching how to think are important (Hugo, 1990).

Valdez et al (2015), comparing the classes in which critical thinking-based lessons were taught with other classes, found that the students in classes in which lessons were taught on the basis of critical thinking improved their conceptual thinking and that they could explain the reasons for their thoughts. It was demonstrated that activity-based learning environments improved students' upper order cognitive skills such as critical thinking, making evaluations and analytical skills (Kugamoorthy, 2012). Duron and Waugh (2006) point out that activity-based learning approach can be used effectively in classes so as to encourage thinking. Duran and Dökme (2016) state that the thinking skills of students who join the science and technology classes supported with activities which are prepared in inquiry-based learning approach increased in positive ways. The report entitled "A Nation at Risk" prepared by the Commission of National Excellence in Education in the USA in 1983 declared that the great majority of children aged 17 did not have high intellectual skills. The report also claimed that approximately 40% of children of that age group could not make inferences from written materials and that only 1/5 of them could make efforts to write persuasive texts. Designing curricula aiming to teach students thinking skills became very popular following the publication of the report "A Nation at Risk". Teachers were encouraged to implement critical thinking-based curricula in their classes. However, it is still apparent today that students are devoid of thinking skills (Willingham, 2007).

Studies concerning the activities teachers do in learning environments (Açıl, 2001; Öcal, 2012; Öztürk, 2016) in addition to studies concerning teachers2 self-efficacy in the teaching of thinking skills (Gelen, 1999; Narin, 2009; Palavan, Gemalmaz and Kurtoğlu, 2015) are available in the literature. Studies performed by Babacan (2017), Ersözlü (2008), Turan (2012), Yağcı (2008) and Yağız (2008) are remarkable in that their subject of research is similar to the subject of this paper. Babacan (2017), Ersözlü (2008) and Yağız (2008) investigated how activities

influenced the development of students' thinking skills. Turan (2012) and Yağcı (2008) researched teachers' use of activities supporting critical thinking. However, no studies directly analysing the relationship between teachers' self-efficacy in teaching thinking skills and activity work according to a number of variables were found in the literature. This study aims to primary education teachers' perceptions self-efficacy in teaching thinking skills and their views on the efficiency of the activities they do in their classes according to a number of variables. Hence, it seeks answers to the following questions:

1. Do teachers' views on their levels of self-efficacy in teaching thinking skills and on the efficiency of activity work differ according to gender, seniority, branch of teaching and frequency of doing activities?
2. Are teachers' levels of self-efficacy in teaching thinking skills a significant predictor of the efficiency of their activity work?

METHODS

Research Model

This study, using a relational survey model, makes an attempt at describing the findings through comparison. The likelihood of findings to be valid increases in such models since researchers do their analyses in a natural environment (Karasar, 2016). The study presents teachers' views on their self-efficacy in teaching thinking skills and on the efficiency of the activity work they do in classes as they are and then it tries to find whether or not there are any significant correlations between the two.

The Population and Sampling

The research population was composed of 3220 teachers teaching in the state primary and secondary schools located in Ümraniye district of Istanbul in the spring semester of 2017-2018 academic year. Accordingly, the sample size to be reached was determined as 343. The teachers to be included in the research were chosen in cluster sampling method. The method of cluster sampling is used when all the clusters in the population have equal chances to be chosen (Karasar, 2016). The scale was distributed to 472 teachers working in five primary schools and five secondary schools in Ümraniye in proportional cluster sampling method. Of the scales distributed, 407 were returned. 21 scales were excluded from analysis since they had been mistaken or incorrectly completed. Thus, the data coming from 386 teachers were put to analysis. The demographic properties of the participants are shown in Table 1.

Data Collection Tools

Written legal permissions were received from Istanbul Provincial Directorate of National Education for data collection. The research data were collected with the "scale for evaluating activity work" (SEAW) developed by Koç (2018) and with the "scale of teachers' perception of self-efficacy in teaching thinking skills" (STPSP) developed by Dilekli (2015). The items in the scale were graded between "hardly ever" (1) and "always" (5).

The Scale for Evaluating Activity Work (SEAW)

The SEAW scale developed by Koç (2018) consisted of 12 items. The total variance explained by the SEAW was 61.6%. Alpha was calculated as 0.96 for the SEAW. Some of the samples for the items in the scale are as in the following: "it leads students to doing research", "it inculcates students upper order thinking skills" and "it helps students to socialise". Following the

confirmatory factor analysis, the fit indices were found as X^2/sd =1.95, RMR= .26, RMSEA=.079, GFI=.89, IFI=.99 and CFI=.96 for the scale. Accordingly, it was found that the one-factor structure of the scale was confirmed and that the scale had good fit (Hu and Bentler, 1999).

The Scale of Teachers' Perception of Self-efficacy in Teaching Thinking Skills (STPSP)

The STPSP scale developed by Dilekli (2015) contains 3 factors labelled as "academic competence", "application" and designing" and 20 items. Alpha was found to be 0.95 for the scale. The factor of academic competence contained 8 items, and it explained 22.63% of the total variance. An example for the items in this factor was as in the following: "I can cope with problems to be encountered in teaching how to think." The factor of designing contained four items and it explained 12.259% of the total variance. An example for the items in the factor was "I can prepare in-class activities which teach thinking." The fit indices for the scale were found as X^2/sd=2.87, RMSEA=.06, GFI=.89, IFI=.98 ve CFI=.98 following the confirmatory factor analysis. Accordingly, the one factor structure of the scale was confirmed and the scale had good fit.

Tablo 1. *Teachers' demographic properties*

Gender	**Frequencies**	**Percentages**	**Branches**	**Frequencies**	**Percentages**
Female	281	%32.9	Primary education	138	%35.7
Male	105	%27.1	Turkish	42	%10.8
Experience	**Frequencies**	**Percentages**	Mathematics	62	%16.1
1-5 Years	88	%22.6	English	28	%7.3
6-10Years	79	%20.3	Physical sciences	24	%6.3
11-15 Years	74	%19.1	Social studies	42	%10.8
16-20 Years	72	%18.4	Other	50	%13
21-25 Years	41	%10.5	**Frequency of doing activities**	**Frequencies**	**Percentages**
26 Years and above	32	%8.1	Regularly	171	%44.3
			At certain intervals	170	%44.1
			Rarely	45	%11.6

Data Analysis

Whether or not the data met normality assumption to check the fit of the data for multi-variable analyses. Skewness and kurtosis coefficients were examined to analyse multi-variable normality. Thus, it was found that the skewness and kurtosis coefficients ranged between -1 and +1. The SPSS programme was used in analysing the data. Whether or not there were any significant differences between the variables in the research was tested with unrelated samples t-test and with one-way Anova. Linear regression analysis was used to find the effects of teachers' self-efficacy in teaching critical thinking skills on activity work (Büyüköztürk, 2010).

FINDINGS

Findings for the variable of Gender

The findings for the variable of gender in the SEAW and the STPSP are shown in Table 2. It is clear from Table 2 that the teachers in the sample do not differ statistically significantly in the SEAW scale [$t_{(459)}$= 1.043; p>.05] and in academic competence [$t_{(459)}$= .091; p>.05], application [$t_{(459)}$= 1.032; p>.05] and designing [$t_{(459)}$= .646; p>.05] factors of the STPSP scale according to gender.

Findings for the variable of Seniority (Experience)

The differences between the participants in the SEAW scale and in academic competence and application factors of the STPSP scale were found to be significant according the variable of seniority. The statistical data for the factors which were found to be significant according to seniority are shown in Table 3.

Table 2. *The t-test results for gender*

Factors		Gender	N	$\overline{X}$	Ss	*Sd*	*t*	*p*
Evaluating activity work		Female	281	4.15	.62	384	1.043	.298
		Male	105	4.08	.57			
STPSP	**Academic competence**	Female	281	4.02	.75	384	.091	.927
		Male	105	4.02	.67			
	Application	Female	281	4.22	.66	384	1.032	.303
		Male	105	4.14	.67			
	Designing	Female	281	4.25	.65	384	1.434	.152
		Male	105	4.14	.65			

p>.05

On examining the arithmetic averages of the participants in the SEAW scale, it was found that the teachers with 1-5 year experience and the teachers with 21-25 year experience had higher averages than those with 16-20 year experience and that the teachers with 26 year or more experience had higher averages than those with 1-5 year, 11-15 year and 16-20 year experience. In the STPSP scale, however, teachers with 1-5 year experience were found to have lower averages than those with 6-10 year, 16-20 year, 20-25 year and 26 year or more experience and teachers with 11-15 year experience were found to have lower averages than those with 21-25 year experience in the factor of academic competence; teachers with 1-5 year, 6-10 year and 11-15 year experience were found to have lower averages than those with 21-25 year experience in the factor of application.

Table 3. *The One-way variance analysis results for the variable of seniority*

Factors		Experience	N	$\overline{X}$	Ss	Sd	F	p	Significant differences
SEAW		(1) 1-5 years	88	4.17	.72	5;380	3.055	.01*	between1-5 and 4 between 6 and 1-2-3-4
		(2) 6-10 years	79	4.14	.81				
		(3) 11-15 years	74	4.09	.80				
		(4) 16-20 years	72	3.95	.74				
		(5) 21-25 years	41	4.22	.69				
		(6) 26 years and above	32	4.42	.63				
STPSP	Academic competence	(1) 1-5 years	88	3.79	.35	5;380	3.565	.00*	between1and 2-4-5-6 between 3 and 5
		(2) 6-10 years	79	4.13	.39				
		(3) 11-15 years	74	3.96	.41				
		(4) 16-20 years	72	4.04	.43				
		(5) 21-25 years	41	4.30	.35				
		(6) 26 years and above	32	4.12	.33				
	Application	(1) 1-5 years	88	4.04	.72	5;380	5;380	.02*	Between 5 and1-2-3
		(2) 6-10 years	79	4.17	.81				
		(3) 11-15 years	74	4.20	.80				
		(4) 16-20 years	72	4.22	.74				
		(5) 21-25 years	41	4.48	.69				
		(6) 26 years and above	32	4.28	.63				

p>.05

Findings for the Variable of Branch

While the differences between the teachers' arithmetic averages in the SEAW were found to be statistically significant according to their branches of teaching, the differences were not found to be significant in the factors of STPSP. The statistical data for the significant differences in the SEAW according to branches of teaching are shown in Table 4.

An examination of the arithmetic averages in the SEAW shown in Table 4 demonstrates that the branch of primary education has higher averages than the branches of Turkish and mathematics; that the branch of social studies has higher averages than the branches of Turkish, mathematics and physical sciences and that other branches have higher averages than the branch of mathematics. Accordingly, the branch of mathematics can be said to be the branch that makes the least use of activities.

Table 4. *The one-way variance analysis results for the variable of branch*

Factors	Branches	N	$\overline{X}$	Ss	Sd	F	p	Significant differences
SEAW	**1.** Primary education	138	4.22	.592	6;379	2.527	.021	Between 1 and 2-3 Between 5 and 2-3-4 Between 7 and 3
	2. Turkish	42	3.98	.780				
	3. Mathematics	62	3.96	.687				
	4. Physical sciences	28	3.99	.419				
	5. Social studies	24	4.33	.505				
	6. English	42	4.12	.530				
	7. Other	50	4.21	.553				

p>.05

The Findings for the Variable of Frequency of doing Activities

Significant differences were found between teachers in the SEAW scale and in all factors of the STPSP scale according to the frequency of doing activities. The relevant statistical data are shown in Table 5.

Table 5. *The One-way Variance Analysis Result for the Frequency of Doing Activities*

Factors		Frequency of doing activities	N	$\overline{X}$	Ss	Sd	F	p	Significant differences
SEAW		(1) Regularly	171	4.24	.622	2;383	9.601	.000*	Between 1 and 2-3 Between 2 and 3
		(2) at certain intervals	170	4.11	.630				
		(3) rarely	45	3.81	.324				
DBÖA	**Academic competence**	(1) Regularly	171	4.22	.646	2;383	19.951	.000*	between1 and 2-3 between2 and 3
		(2) at certain intervals	170	3.95	.677				
		(3) rarely	45	3.51	.939				
	Application	(1) Regularly	171	4.38	.567	2;383	27.232	.000*	between1 and 2-3 between 2 and 3
		(2) at certain intervals	170	4.17	.605				
		(3) rarely	45	3.61	.878				
	Designing	(1) Regularly	171	4,36	.615	2;383	9.781	.000*	between1 and 2-3 between2 and 3
		(2) at certain intervals	170	4,18	.678				
		(3) rarely	45	3,88	.788				

p>.05

According to the arithmetic averages in the SEAW shown in Table 5, the teachers who do activities regularly have higher averages than those whose who do activities at certain intervals and those who rarely do activities. An examination of the arithmetic averages in all factors of STPSP shows that teachers who do activities regularly have higher averages than those who do activities at certain intervals or than those who rarely do activities and that the teachers who do activities at certain intervals have higher averages than those who rarely do activities.

Findings that Teachers' STPSP Predicts SEAW

Regression analysis was done to describe and predict the correlations between teachers' perceptions of self-efficacy in teaching thinking skills and the efficiency of the activities they do in their classes. Researchers can be informed of the existence of correlations between variables and the power of correlations through regression analysis (Akgül and Çevik, 2005). The results for the prediction of SEAW according to STPSP are shown in Table 6.

Table 6. *The results for the prediction of SEAW according to STPSP*

Variables	B	SH	β	t	p	Paired r	Partial R
Constant	1.482	.300	-	4.933	.000	-	.138
Academic competence	.220	.128	.223	1.710	.089	.547	.075
Application	.140	.151	.135	.924	.357	.556	.231
Designing	.286	.099	.297	2.901	.004	.556	.138
R=.602	R^2= 362						
F= 28.393	p=.000						

On examining Table 6, it is apparent that the STPSP is a significant predictor of the SEAW (R=0.602, R^2= 0.362, F= 28.393, p<.01). Thus, the STPSP explains 36.2% of the total variance for the efficiency of teachers' activity work. The findings demonstrate that there are medium level correlations between the efficiency of activity work and teachers' self-efficacy in teaching thinking skills. Accordingly, it may be said that teachers' self-efficacy in teaching thinking skills is influential in the efficiency and effectiveness of activity work in classes. Thus, the quality of activities done in classes increases as the quality of teachers' self-efficacy in teaching thinking skills increases.

The relative order of importance of predictive variables on job satisfaction is designing, academic competence and application according to standardised regression coefficient (β). An examination of the results o t-test which was done to see the significance of regression coefficients showed that only the factor of designing had significantly predictive of activity work.

DISCUSSION AND CONCLUSION

This study aimed to analyse teachers' perceptions of self-efficacy in teaching thinking skills and their views on the efficiency of the activities they did in classes. Thus, their self-efficacy in teaching thinking skills and the efficiency of the activities were analysed on the basis of gender and it was found that gender did not lead to a significant difference. The results obtained in this study are in parallel to the ones obtained in studies investigating teachers' efficacy in inculcating thinking skills in relevant literature (Dilekli, 2015; Demirtaş, Sönmez, 2008; Gelen, 1999; Kaya, 2008). Turan (2012), in a study researching the frequency of activities

recommended to inculcate in students critical thinking skills, concluded that there were no differences according to gender. In that case, it may be concluded that gender is not a significant variable in teaching thinking skills and in the increase of the quality of activities done in classes.

Significant differences were found between teachers in the SEAW and in the academic competence and application factors of the STPSP according to seniority. On examining the arithmetic averages of the teachers, it was found that teachers with 1-5 year experience and teachers with 21-25 year experience had higher averages than those with 16-20 year experience and that teachers with 26 year or more experience had higher averages than those with 1- year, 6-10 year, 11-15 year and 16-20 year experience. It was also found that teachers with 1-5 year experience had higher averages than those with 6-10 year, 16-20 year, 20-125 year and 26 year or more experience and teachers with 11-15 year experience had higher averages than those with 21-25 year experience in the academic competence factor of the STPSP scale and that teachers with 1-5 year, 6-10 year and 11-15 year experience had higher averages than those with 21-25 year experience in the factor of application. Accordingly, teachers with more experience in teaching (21 year or more experience) can be said to be better in the SEAW and in the STPSP than those with less experience. In a similar way, Narin (2009) concluded that there were significant differences between teachers' critical thinking skills according to seniority in favour of those with more seniority. Jonina (2014) found that teachers with more seniority made more efforts to teach thinking skills. The fact that more senior teachers were found to be more efficient in their class activities and to have higher self-efficacy in this study can be interpreted as that more senior teachers make more efforts to teach thinking skills.

While the differences between teachers' arithmetic averages for branches were found to be significant in the SEAW scale, they were found to be no significant in all factors of the STPSP scale. On examining the arithmetic averages for activity work, it was found that the branch of primary education had higher averages than Turkish and mathematics; that the branch of social studies had higher averages than Turkish, mathematics and physical sciences; that other branches had higher averages than mathematics. Accordingly, it may be said that the branch of mathematics is the branch which uses the SEAW the least. Demirtaş and Sönmez (2008), Hayran (2000), Karadeniz (2006) and Şentürk (2009) did not find any significant differences between teachers' views on their thinking skills according to branches. Alkın (2012) concluded that primary school teachers displayed behaviours supporting critical thinking more than other branches did and that there were significant differences between primary school teachers and mathematics teachers in favour of primary school teachers. Activities promoting thinking skills should be planned and implemented by teachers for the development of students' thinking skills (Ritchhard, Turner and Hadar, 2009; Zhang, 2006; Zohar and Schwartzer, 2005). Unless classroom environment is supported with activities teaching how to think, it is difficult to attain the intended goals fully (Wilks, 2005). Activities developing students' thinking skills should be designed and used more especially in courses such as Turkish and mathematics- which play key roles in teaching thinking skills.

The differences between teachers' arithmetic averages in the SEAW and in all factors of the STPSP were found to be significant according to the variable of frequency of doing activities. On examining the teachers' arithmetic averages in the SEAW and in all factors of the STPSP, it was found that teachers who regularly do activities had higher averages than those who do activities at certain intervals and those who rarely do activities and that teachers who do activities at certain intervals had higher averages than those who rarely do activities. Various research has shown that teachers do not sufficiently use activities supporting critical thinking

(Şengül and Üstündağ, 2009). However, it was found that learning based on activities developed students' upper order cognitive skills such as critical thinking, evaluation-making skills and analytical skills (Burbach, Matkin and Fritz, 2004; Despain and Gray, 2007; Kurnaz, 2007; Kugamoorthy, 2012). Therefore, activities should be used sufficiently in classes in developing thinking skills (Duron and Waugh, 2006; McGregor, 2007; Tebbs, 2000).

The findings demonstrated that there were positive correlations between the efficiency of teachers' activities in their classes and their self-efficacy in teaching thinking skills. It can be said that teachers' self-efficacy in teaching thinking skills is influential in shaping the activities they do in their classes. Thus, it can be argued that the quality of activities done increases as teachers' self-efficacy in teaching thinking skills increases. Dilekli (2015) also states that high self-efficacy encourages teachers to do more activities and better-quality activities. Ersözlü (2008) states that activities promoting thinking affect students' academic achievement and their attitudes in positive ways. There are several studies demonstrating that activities contribute to the increase in students' academic achievement (Batdı, 2014; Burbach, Matkin and Fritz, 2004; Duvarcı, 2010; Paul, 2014). It is observed that students' thinking skills rise in lessons which are supported with activities prepared in inquiry-based learning approach (Duran and Dökme, 2016; Karataş and Özcan, 2010).

Based on the research findings, the following recommendations can be made:

1. Educators who make use of the activities supporting thinking should be identified and they should be appointed as mentor teachers or coordinator teachers.
2. Teachers should be offered in-service training to enable them to do activities which promote students' thinking skills in learning environments. In addition to that, books specific to branches containing activities that support students' thinking skills should be prepared.
3. It is apparent that the more teachers do activities in learning environments the more qualified their activities become in their classes. Therefore, teachers could be recommended to do more activities in learning environments.
4. Teachers of other branches were found to include activities less in their classes than primary education teachers. Studies investigating the reasons for it could be performed.

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