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# An Investigation of Prospective Teachers' Reflective Thinking Tendency

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## Abstract

The basic objective of this study is to examine the reflective thinking tendencies of prospective teachers. The descriptive survey model has been adopted in the study. The universe of the study consists of prospective teachers attending the 4<sup>th</sup> grade of the Elementary Teacher Education Department at Balıkesir University in the 2011-2012 academic year. Sampling was conducted with a total of 278 prospective teachers in the departments of Elementary Mathematics, Social Sciences, Elementary Teacher Education and Science Education Departments by means of the random sampling method among probability sampling techniques. In line with the objective of the study, for the purpose of determining the reflective thinking tendencies of prospective teachers, the "Reflective Thinking Tendency" scale was utilized. Obtained data, was analyzed through arithmetic mean and standard deviation values, one way analysis of variance (ANOVA), and the Bonferroni test. As a result of the study it was determined that prospective teachers studying at the Elementary Teacher Education Department had the highest and the prospective teachers studying at the Social Sciences Teaching Department had the lowest reflective thinking tendency score means. Furthermore, it was concluded that the reflective thinking tendencies of prospective teachers differed according to the variable of the department they are studying in.

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*Keywords:* Reflective teaching, prospective teachers, prospective teachers' reflective thinking ability.

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## 1. Introduction

The capacity of thinking in an individual acquires qualification with the individual discovering correct manners of thinking. Accordingly, there is a need for teachers, who can guide students, direct students in

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utilizing the knowledge they have acquired in an effective manner, and contribute to them in problem solving and being successful both in their school life and daily life. Studies on teachers, who are the most important element of education in the world, and their training, are increasing day by day. One of these is the studies conducted in the field of reflective thinking. Reflective thinking is an essential element of the education process of teachers and students. So much so that, many institutions in the field of education and teacher development in Europe and America have determined reflection as a standard that needs to be complied with by teachers and students. This standard is expressed as; the teacher must contemplate on their practices in a systematic manner and must benefit from the experience they have acquired. They should be able to examine their practice from a critical perspective, consult the views of others, conduct studies with educational quality in order to deepen their knowledge, concretize his/her judgments, and adapt the method of teaching according to new findings and thoughts" (NCTAF, 1996; cited by: Rodgers, 2002). In this context, it would be appropriate to underline the definition of reflection and reflective thinking.

Dewey (1991) defines reflection as "the active, consistent, and careful thought on any belief or form of knowledge in light of reasons that support it and take it to the next conclusion". The concept of reflection has acquired its place in education in the form of "reflective teaching, reflective research, and reflecting on practice". Furthermore, it has become an important building block in the field of teacher training in becoming an effective teacher (Day, 2000). This is because, in the process of reflecting, teachers are able to develop their personal and professional knowledge. At the same time, together with reflective thinking, teachers are able to guide students in finding realistic solutions to problems and making sound decisions. In this context, reflection and reflective thinking are perceived to be important elements in teacher training.

Şahin (2011) expresses the reflective teacher as a teacher, who "constantly has a hold of control and is constantly open to education in the formation of school culture, directing and restructuring classroom practice processes, controlling and directing behavior and feelings, making inferences on alternative practices and events".

Norton (1997) lists the basic characteristics and behaviors that a reflective thinking teacher needs to have as: "a teacher who constantly evaluates the teaching process, can make effective decisions by reviewing the methods and instruments they use, is broad minded, can produce alternative solutions by considering criticism, is sincere, can take all sorts of short term and long term consequences of decisions made into consideration and organize planning accordingly, pays attention to reflection, is foresighted, and educates his/her students accordingly (cited by. Duban and Yelken. 2010).

In the training of teachers, it is important to determine the extent to which reflective teacher characteristics are acquired at faculties of education. In line with this, the basic purpose of the study is to examine the reflective thinking tendencies of prospective teachers. For this purpose, answers to the following research questions have been sought.

1. What are the reflective thinking tendency levels of prospective teachers?
2. Does the reflective thinking tendency levels of prospective teachers differ according to the variable of the department they are studying in?

## **2. Methodology**

### *2.1. Model of the Study*

The descriptive survey model, which aims to demonstrate the existing circumstance as it is, has been adopted in the study. This model was selected as it attempts to describe the existing case with regards to reflective thinking tendencies of prospective teachers within the framework of the purpose of the study.

## 2.2. Study group

The universe of the study consists of prospective teachers studying in the 4<sup>th</sup> year of the Elementary Teacher Education Department at Balıkesir University during the spring semester of the 2011-2012 academic year. A total of 278 prospective teachers consisting of 76 from the Mathematics Teaching Department, 65 from the Social Sciences Teaching Department, 73 from the Elementary Teacher Education Department, and 64 from the Science Teaching Department were included in the study through the random sampling method under probability sampling techniques. A proportion of 35.97% (n=100) of the prospective teachers selected from the said departments as samples were males and 64.03% (n=175) were females.

## 2.3. Collection and Analysis of Data

In line with the purpose of study, for the purpose of determining the reflective thinking tendencies of prospective teachers, the “Reflective Thinking Tendency” scale developed by Semerci (2007) was used. The scale consists of 35 items, of which 15 are positive and 20 are negative. According to the applied factor analysis as a result of the reliability and validity works of the study, the KMO values were determined as 0.909 and Bartlett value was determined as 6811.461 ( $p < 0.05$ ). Furthermore, according to the result of the conducted item analysis, it was determined that the total item correlations varied between 0.308 and 0.607, test retest correlation is 0.742 ( $p < 0.01$ ), the correlation coefficient between two half points is 0.77 ( $p < 0.01$ ), and the Cronbach Alpha coefficient of the scale is 0.908. (Semerci. 2007: 1351). The themes of the seven factors obtained in the scale prepared as a 5 point likert scale have been determined as constant and purposeful thinking (reliability coefficient 0.794), open-mindedness (reliability coefficient 0.712), inquisitive and effective teaching (reliability coefficient 0.747), teaching responsibility and being scientific (reliability coefficient 0.776), investigative (reliability coefficient 0.742), being visionary and candidness (reliability coefficient 0.668), view towards the profession (reliability coefficient 0.357).

With regards to the data obtained through the implementation of the scale on prospective teachers, the SPSS 17.0 was used to find answers for the questions of the study. For this purpose, arithmetic mean and standard deviation of the data were analyzed through the one way variance analysis (ANOVA) and the Bonferroni test.

## 3. Findings and Interpretation

### 3.1. Findings on the Reflective Thinking Tendency levels of prospective teachers

Distribution of arithmetic mean and standard deviation according to the department studied in, with regards to the themes of the seven factors in the scale in accordance with the data obtained from the application of the “Reflective Thinking Tendency” Scale to prospective teachers in the sample under the scope of the first problem of the study, have been provided in Table 1.

Table 1. Average and standard deviation values in relation to the reflective thinking tendency levels of prospective teachers

Subdimensions (Factors)	Departments														
	Elem.. School Teaching			Elem. School Maths Teaching			Social Sciences Teaching			Science Teaching			General		
	n	$\bar{X}$	ss	n	$\bar{X}$	ss	n	$\bar{X}$	ss	n	$\bar{X}$	ss	n	$\bar{X}$	ss
Constant and Purposeful Thinking		4.19	.819		3.82	.658		4.18	.478		4.26	.607		4.11	.677
Open-mindedness		4.65	.482		4.26	.708		4.58	.377		4.45	.629		4.48	.585
Inquisitive and Effective Teaching		4.66	.375		4.25	.751		4.46	.590		4.41	.853		4.45	.676
Teaching Responsibility and Being Scientific	73	4.32	.666	76	3.94	.668	65	2.72	2.048	64	4.30	.615	278	3.85	1.287
Investigative		4.29	.600		3.95	.630		2.76	2.041		4.33	.671		3.86	1.269
Visionary and Candidness		4.46	.514		4.10	.593		2.80	2.095		4.41	.644		3.97	1.289
View Towards Profession		4.39	.759		4.11	.690		2.67	2.034		4.38	.740		3.93	1.342
Total		4.42	.396		4.06	.497		3.45	1.180		4.36	.528		4.09	.790

When Table 1 is examined, it has been determined that prospective elementary teachers have the level of reflective thinking tendency at the rate of 4.42, elementary school prospective mathematics teachers at the rate of 4.06, social sciences teachers at the rate of 3.45, and prospective science teachers at the rate of 4.36. When the answers given within the scope of seven factors in the scale are examined, considering the items measuring the subdimension of the "Constant and Purposeful Thinking", prospective science teachers ( $X=4.26$ ) mostly prefer the topics of "Valuing students' views, critical thinking in the light of teaching objectives, helping other teachers with teaching, assessing the effectiveness of their own teaching, encouraging debates in the classroom, encouraging students to discover while giving the lesson whereas elementary school prospective mathematics teachers ( $X=3.82$ ) prefer less. When the items measuring the subdimension of "open-mindedness" are examined, it has been determined that elementary school prospective teachers ( $X=4.65$ ) are more sensitive to the topics of "Reviewing teaching acquisitions, being open to criticisms regarding teaching practice, looking at the practice in learning-teaching process in a multi directional manner, feeling responsibility in students' individual needs and cognitive behaviors, caring for the educational activities" and that they mostly selected the options of "Completely Agree" whereas elementary school prospective mathematics teachers ( $X=4.26$ ) prefer less. When the items measuring the subdimension of "Inquisitive and Effective Teaching" are examined, it has been determined that prospective elementary school teachers ( $X=4.66$ ) are more sensitive to the topics of "Using new materials, introducing the concept maps in the theoretical part of the lesson, valuing students' dreams, giving importance to cooperative learning and having a critical perspective" and that they mostly prefer the options of "Completely Agree" whereas prospective elementary school mathematics teachers ( $X=4.25$ ) prefer less. When the items measuring the subdimension of "Teaching Responsibility and Being Scientific" are examined, it has been determined that prospective elementary

school teachers ( $X=4.32$ ) are more sensitive to the topics of "Knowing who, what, when, why, and how to teach in education, establishing effective communication with students, presenting suitable teaching materials, paying attention to the expectations of the students, recognizing and explaining a new subject skillfully" and that they mostly prefer the options of "Completely Agree and Partly Agree" but prospective social sciences teachers prefer less ( $X=2.72$ ).

When the items measuring the subdimension of "researcher" are examined, it has been determined that prospective science teachers ( $X=4.39$ ) are more sensitive to the topics of "perceiving the problems regarding the learning environment and evaluating them in career development, having the spirit of research, evaluating their teaching objectively, being open for progress," and that they mostly prefer the options of "Completely Agree" whereas prospective social sciences teachers ( $X=2.76$ ) prefer less. When the items measuring the subdimension of "Visionary and Candidness" are examined, it has been determined that prospective elementary school teachers ( $X=4.46$ ) mostly give importance to the topics of "Helping the students see beyond the classroom, exchanging views on teaching practice, being open to criticisms, and developing empathy with students" and that they mostly prefer the option of "Completely Agree" whereas prospective social sciences teachers ( $X=2.80$ ) prefer less. When the items measuring the subdimension of "View Towards Profession" are examined, it was observed that on the subject of behaving more honestly in caring for teaching and self-assessment elementary school prospective teachers had the highest average ( $X=4.39$ ) but prospective social sciences teachers had the lowest average ( $X=2.67$ ).

When examined in general, it was determined that the score means of prospective teachers were mostly in the subdimension of "open-mindedness" ( $X=4.48$ ) and in the subdimension of "Teaching Responsibility and Being Scientific" minimally ( $X=3.85$ ). In addition, it was determined that reflective thinking scores of prospective teachers were high (144.07).

### 3.2. Findings Concerning the Reflective Thinking Tendencies According to the Variable of Department, in which They Studies.

In order to look for an answer for the second problem of the study one-way variance analysis (ANOVA) was performed to determine the state of difference of reflective thinking tendencies of prospective teachers according to the Variable of Department. The findings obtained are provided in Table 2.

Table 2. The scores of reflective thinking tendencies of prospective teachers according to the variable of department, in which they received education

Department	n	$\bar{X}$	ss	F	p*
Elem. School Teaching	73	4.42	.396		
Elem. School Maths Teaching	76	4.06	.497		
Social Sciences Teaching	65	3.45	1.180	26.34	.000
Science Teaching	64	4.36	.528		
Total	278	4.09	.790		

p\* < .05

When Table 2 was examined, it was determined that there was a significant difference between the scores of reflective thinking tendency of prospective teachers according to the variable of department

[ $F(3-275)=26,34$ ,  $p<.05$ ]. That is, it was found that the scores of reflective thinking tendency of prospective teachers were associated with their departments. In order to specify the source of this difference the homogeneity of the variances were examined and as Leven was ( $p<.05$ ), Bonferonni test was performed. The data obtained is provided in Table 3.

Table 3. The results of Bonferonni test regarding the significance of differences between the scores of reflective thinking tendency of prospective teachers

Departments		Average Difference (I-J)
(I)	(J)	
	Social Sciences Teaching	.975*
Elem. School Teaching	Elem. School Maths Teaching	.358*
	Science Teaching	.057
Science Teaching	Elem. School Maths Teaching	.617*
	Social Sciences Teaching	-.918*
Elem. School Maths Teaching	Social Sciences Teaching	-.301

\* $p<.05$

According to the results of the Bonferonni test, it is observed that the difference of reflective thinking tendency of prospective teachers is significant in favor of Elementary School Teaching between Elementary School Teaching ( $X=4.42$ ) and Social Sciences Teaching ( $X=3.45$ ), Elementary School Teaching and Elementary School Mathematics Teaching ( $X=4.06$ ), Elementary School Teaching and Science Teaching ( $X=4.36$ ) and in favor of Science Teaching between Science Teaching and Elementary School Mathematics Teaching, Science Teaching and Social Sciences Teaching, and in favor of Elementary School Mathematics Teaching between Elementary School Mathematics Teaching and Social Sciences Teaching ( $p<.05$ ).

#### 4. Result and Suggestions

The following results have been obtained in this study aiming to examine the reflective thinking tendencies of prospective teachers.

1. It has been concluded that the score averages of the reflective thinking tendencies of prospective teachers are high. These results obtained demonstrate similarities to the results of some researches performed (Duban, Yelken, 2010; Lee, 2000; Şahin, 2011; Semerci and Kılınc, 2010; Good and Whang, 2002). When seven subdimensions in the scale of reflective thinking tendency were examined, it was determined that the score averages of prospective teachers were mostly in the subdimension of “open-mindedness” and in the subdimension of “Teaching Responsibility and Being Scientific” minimally. In addition, it was determined that mostly prospective Elementary School teachers had the score averages of the reflective thinking tendencies and prospective Social Sciences teachers had the score averages of the reflective thinking tendencies minimally.

2. It was found that the reflective thinking tendencies the prospective teachers possessed changed according to the variable of department, in which they studied. Also, the results of the study performed by Duban and Yelken (2010) have similar characteristics. It was determined that this difference so as to be in favor of elementary school teaching, science teaching, and elementary school mathematics teaching occurred between the prospective teachers that receive education in elementary school -science, elementary school- elementary school mathematics, elementary school-social sciences and sciences -

elementary school mathematics, sciences- social sciences, and elementary school mathematics-social sciences.

In the study it was observed that the reflective thinking tendencies of elementary school and prospective science teachers were high but the average scores of reflective thinking tendencies of prospective social science teachers were below the average. In this sense, in order to remove this difference among the departments teaching practice that may develop the reflective thinking tendencies may be conducted in faculties of education. Studies conducted abroad indicate that training reflective teachers is emphasized relatively in faculties of education. Within this scope the gap regarding this subject may be closed by removing this deficiency in our country, training teaching staff that may teach reflective thinking, and adding reflective thinking and reflective educational courses to faculty of education programs. This research with a quantitative characteristic may be widened and thus, reflective thinking processes of prospective teachers may be examined extensively and to what extent the prospective teachers that are trained in this direction use their skills may be researched when they start to execute their professions.

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