

INVESTIGATION OF PRESERVICE TEACHERS' REFLECTIVE THINKING TENDENCIES IN TERMS OF VARIOUS VARIANCES

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ABSTRACT

Education is a significant issue in social and economical development of countries. The most important element of education is "teacher". Having various thinking abilities is worthy for teachers. Especially development of knowledge and attitude intended to reflective thinking is the determinative factor in effective teacher education.

In this study, it was aimed to investigate the pre-service teachers' reflective thinking tendencies in terms of various variables. This study was practiced in 2011-2012 Academic year with 449 preservice teachers who studied in various departments of education faculty in a public university in Istanbul. The findings were analyzed with ANOVA and independent group t test with SPSS software.

At the end of the study, it was seen that preservice teachers' reflective thinking tendencies were significantly different by growing up place and gender. In addition to this; there were no significant differences found by mother and father education levels, number of siblings, the type of high school and the undergraduate program type. Based on the findings of the study, several recommendations were given.

Key Words: Reflective thinking, Teacher Education, Education and Teaching.

INTRODUCTION

Education has a significant role in the social and economic development of countries. The most important element in education is teacher. Teacher training is among the primary issues a country has to give importance to. The fact that teachers are provided with both field competence and teaching professional skills is an issue that needs to be given importance for raising generations needed today and in the future. Today, information production has gained much acceleration; the development of informatics and technology has made it easier to access produced information. Though it is quite easy to access information, information does not make much sense when reached in raw form. Today, individuals who will process, transform, structure and reproduce information are needed. Therefore, in today's world, teachers should not be in a role that conveys it, but one that guides how to access and benefit from information. For this reason, they have to be able to use proper

thinking strategies. It is necessary for teachers to be able to use proper thinking strategies at first for providing students with proper thinking skills. Hence, especially in preservice teachers' training, enabling them to understand and developing "thinking skills" such as critical, creative, reflective, analytical thinking should be among the important functions of teacher training institutions.

In the studies regarding to reflective thinking; it is seen that reflection, reflective thinking and reflective teaching concepts are expressed. The first among these concepts; reflection is a special thinking form. The act of reflection which forms the base of reflective thinking is both active and controllable. It is not a reflection when thoughts come to mind without purpose. Reflection means focusing attention; namely, it means weighing, calculating and making a choice. Reflection emerges as one of the doctrines which aim at learning in class environment with constructive learning approach which is tried to be put into practice in Turkish National Education system.

Reflective thinking is a way of thinking that searches for the reasons of believing, instead of believing in something; and necessitates asking questions. Dewey (1957) expressed reflective thinking as an active, consistent and careful way of thinking. According to Taggard and Wilson (1998), reflective thinking is a logical and information-based decision making process which involves the evaluation of the results in the issues related to education (Duban and Yelken, 2010). A teacher with reflective thinking can have more accurate approaches and approach the situations in a critical way while conveying the information to students and analyzing the situations he/she faces. Reflective thinking is both related to critical thinking and contains a theoretical critical level within (Semerci, 2007). Reflective thinking aims at reflection. In our country, reflective thinking has been determined as one of the general competence fields for teachers within the concept of Basic Education Support Project (Ministry of Education, 2005). For teachers to have that field of competence, it is necessary that studies related to the development of knowledge and attitudes regarding to reflective thinking should be done in teacher training programs; because reflective thinking can be a determining factor in the training of effective teachers (Tok, 2008).

Henderson (1996) defines reflective thinking, which has an important place in education system, as a questioning method that features caring others' feelings and pays attention to constructivism in learning and as a whole of creative problem solving activities. Reflective learning has three learning levels. Taggard and Wilson (1998) mentioned that these levels were technical, contextual and dialectic level (Duban and Yelken, 2010).

According to Taggard and Wilson (1998), *technical level* is the major level of reflective thinking. Teachers with little experience generally do reflection in the technical level. Teachers who do reflection in the technical level focus on choosing appropriate courses and carrying out them, and on that the courses reach at certain objectives. Since the attainment of the skills and technical information are seen very important, the teacher has the awareness of the methods and the skill of carrying out a predetermined course. The second level of reflection is the *contextual level*. This level involves the exposure of what underlies assumptions, detailing and reflections regarding to performing an application in the class by using some strategies. Contextual reflection in the application level enables the teachers carrying out the application to evaluate their beliefs, the meaning and results of their acts. The third level reflection, which is the highest level, is *dialectic (critical)* reflection. This reflection involves the acts of questioning moral and ethical issues directly or indirectly by teaching applications. The teachers doing critical reflection design all the works regarding the process of planning and application of the teaching (Duban and Yelken, 2010).

Sahin (2011) stated in his study with Turkish preservice teachers that reflective thinking tendencies of preservice teachers who are in the fourth grade at the university are higher than those of the ones who are in the first grade, and that gender variance has no effect upon the tendency of reflective thinking. In Karadag(2010)'s study, while there is no meaningful difference in social sciences teachers' reflective thinking

levels in terms of occupational seniority and dwelling unit (province, county, village) where they are working; according to the variance of occupational seniority, reflective thinking tendency has been found higher among the teachers with 11-15 years of occupational seniority.

It is seen in the literature that reflective thinking tendency levels of preservice teachers attending various teaching programs and teachers who have already started their career have been analyzed in quantitative and qualitative dimensions. In this study, it is aimed to determine whether reflective thinking tendencies of preservice teachers attending a faculty of education differ or not, according to the variables of gender, parents' level of education, number of siblings, graduated high school, attended undergraduate program and grade. By this means, it is aimed to analyze the effects of different programs in Faculties of Education and other variables upon preservice teachers' reflective thinking tendencies comparatively, and to examine the causes of similar and different results. It is thought that the results of the study will contribute to the establishment of education programs for developing preservice teachers' reflective thinking skills.

METHOD

The Model, Population and Sample of the Study

In this research, survey (descriptive-survey) model was used. Survey model aims to describe the existing situation as it stands in the past or currently (Karasar, 2005). This research was conducted in one state university education faculty with 449 preservice teachers (302 female, 147 male) in İstanbul. Non-random sampling has been used in this study.

Data Collection Tools

- 1) In the study, Reflective Thinking Tendency Scale for Teachers and Preservice Teachers (**YANDE**) which was developed by Semerci (2007) was used. The scale was developed by applying upon 599 subjects. According to the results of factor analysis, KMO value of the YANDE scale is 0.909 and the Bartlett test value is 6811,461 (Sd: 595, $p < 0.05$). In the scale of 35 items, there exist 7 sub-dimensions (Continuous and purposeful thinking, open-mindedness, inquiring and effective teaching, teaching responsibility and being scientific, being inquisitor, prescient and frank, the view of the occupation). In the scale, five degrees score interval has been given ranging from "strongly agree" to "strongly disagree", the variance is 53.268 and reliability co-efficient is 0.908 (Meral and Semerci, 2009).
For this study, Cronbach alpha reliability coefficient of the scale has been calculated as 0,743.
- 2) As another data collection tool, "Demographic information survey" has been used in the study. Demographic information survey which was developed by the researchers following this study comprises of the questions which consist of the items of gender, grow-up place, father's level of education, mother's level of education, number of siblings, the type of graduated high school, the type of attended program and class level.

Data Analysis

In data analysis, SPSS (Statistical Package For The Social Sciences) packet program was used; and in the analysis of the data which was collected in accordance with the purpose of the study, "independent group t test", "variance analysis" and as one of the post-hoc techniques, "Tukey test" were used.

FINDINGS

In this study, reflective thinking tendencies of preservice teachers who attend seven different types of programs have been analyzed. In the study, it has been primarily observed whether preservice teachers' reflective thinking tendencies differ according to the programs they are attending in the Faculty of Education.

Table 1: The results of the one way variance analysis (ANOVA) which was done with the purpose of determining whether Reflective Thinking Tendency Scale Points of preservice teachers differ according to the program of class they are attending.

| | Sum of Squares | df | Mean square | F | Sig. |
|-----------------------|----------------|-----|-------------|------|-------------|
| Between Groups | 983,930 | 6 | 163,988 | ,593 | ,736 |
| Within Groups | 121987,133 | 441 | 276,615 | | |
| Total | 122971,063 | 447 | | | |

As a result of the one way variance analysis (ANOVA), it is seen that preservice teachers' reflective thinking tendencies do not differ according to the program they are attending. Though difference is not seen, it is seen that reflective thinking tendency points of the preservice teachers attending CEIT and Social Sciences Teaching programs are higher even with a slight difference.

Table 2: The results of the one way variance analysis (ANOVA) which was done with the purpose of determining whether Reflective Thinking Tendency Scale Points of preservice teachers differ according to the type of class they are attending or not.

| | Sum of Squares | df | Mean square | F | Sig. |
|-----------------------|----------------|-----|-------------|-------|-------------|
| Between Groups | 864,270 | 3 | 288,090 | 1,050 | ,370 |
| Within Groups | 122130,202 | 445 | 274,450 | | |
| Total | 122994,472 | 448 | | | |

In the table 2, as a result of the one way variance analysis (ANOVA) which was done with the purpose of determining Reflective Thinking Tendency Scale Points of preservice teachers according to type of class they are attending, it is seen that no meaningful difference was found in the level of $[F(3-445)=1,050; p>,001]$ according to the variance of the class they are attending.

Table 3: The results of the one way variance analysis (ANOVA) which was done with the purpose of determining whether Reflective Thinking Tendency Scale Points of preservice teachers differ according to high schools types that they graduated.

| | Sum of Squares | df | Mean square | F | Sig. |
|-----------------------|----------------|-----|-------------|------|-------------|
| Between Groups | 39,590 | 2 | 19,795 | ,072 | ,931 |
| Within Groups | 122954,883 | 446 | 275,684 | | |
| Total | 122994,472 | 448 | | | |

In the study, with the purpose of finding out whether the high school program that preservice teachers attended prior to their coming to the Faculty of Education effects their reflective thinking tendencies or not, their reflective thinking tendencies were analyzed according to high schools types; however, it was seen hereby that there were not any meaningful difference $[F(2-446)=,072; p>,001]$.

Tablo 4: The results of the one way variance analysis (ANOVA) which was done with the purpose of determining whether Reflective Thinking Tendency Scale Points of preservice teachers differ according to the variance of their grow-up place.

| | Sum of Squares | df | Mean square | F | Sig. |
|-----------------------|----------------|-----|-------------|-------|-------------|
| Between Groups | 4761,274 | 3 | 1587,091 | 5,973 | ,001 |
| Within Groups | 118233,198 | 445 | 265,693 | | |
| Total | 122994,472 | 448 | | | |

In the table 4, as a result of the one way variance analysis (ANOVA) which was done with the purpose of determining Reflective Thinking Tendency Scale Points of preservice teachers according to the variance of their grow-up place, it is seen that meaningful difference was found in the level of [F (3-445)=5,973;p<,001] according to the variance of their grow-up place .

Table 5: The results of complementary post hoc test, which were used to calculate between which groups the meaningful difference that emerged as a result of the one way variance analysis.

|) Group | (J) Group | Mean Difference (I-J) | Std. Error | Sig. |
|-------------------|-------------------|-----------------------|------------|-------|
| Village | Town | 4,36324 | 3,44267 | ,584 |
| | City | -5,81854 | 2,73154 | ,145 |
| | Metropolis | -5,80760 | 2,51331 | ,097 |
| Town | Village | -4,36324 | 3,44267 | ,584 |
| | City | -10,18178 | 2,98227 | ,004 |
| | Metropolis | *-0,17083* | 2,78377 | ,002 |
| City | Village | 5,81854 | 2,73154 | ,145 |
| | Town | 10,18178* | 2,98227 | ,004 |
| | Metropolis | ,01095 | 1,83267 | 1,000 |
| Metropolis | Village | 5,80760 | 2,51331 | ,097 |
| | Town | 10,17083* | 2,78377 | ,002 |
| | City | -,01095 | 1,83267 | 1,000 |

In the table 5, the results of complementary post hoc test, which were used to calculate between which groups the meaningful difference that emerged as a result of the one way variance analysis is, are seen. As a result of this; in comparison of reflective thinking tendencies of the preservice teachers who grew up in a town and the ones who grew up in a city or a metropolis; it is seen that there is a meaningful difference (p<0.01 level) in favor of the ones who grew up in a city or a metropolis, and that there is no meaningful difference between the students who grew up in a village and the others.

Table 6: The results of the independent group t test which was applied with the aim of determining whether students' Reflective Thinking Tendency Scale Points of preservice teachers' differ according to the variance of gender.

| | N | Mean | Std. Deviation | df | t | Sig. |
|---------------|-----|----------|----------------|-------|---------|-------------|
| Female | 302 | 149,4735 | 15,53982 | 2,880 | 253,734 | ,004 |
| Male | 147 | 144,4626 | 18,09877 | | | |

When the table 6 is examined, as a result of the independent group t test which was applied with the aim of determining whether students' Reflective Thinking Tendency Scale Points differ according to the variance of gender, it is seen that there is a meaningful difference between female students ($X=149,47$) and male students ($X= 144,46$) in favor of female students [$t(2,880)=253,734; p<,001$].

Though it is not given here since the results are not meaningful; in the study, it is been observed that whether parents' level of education and the number of siblings affect reflective thinking level or not. It is seen in the variance analysis results (ANOVA) that there are not meaningful differences in father education level [$F(3-445)=1,724; p>,001$], mother education level [$F(4-443)=,955; p>,001$] and the level of sibling number [$F(4-444)=,097; p>,001$].

CONCLUSION AND DISCUSSION

It has been seen in the study that preservice teachers' reflective thinking tendencies show meaningful differences according to the variance of their dwelling place prior to coming to the Faculty and gender. As for the variances of program type, graduated high school, attended class, parents' level of education and number of siblings; meaningful differences have not been found. In this section, evaluations regarding the results of the study and various suggestions are included.

In the study, it is seen that preservice teachers living in a city or a metropolis have more reflective thinking tendency than the ones living in towns, yet, the ones who grew up in a village do not show a meaningful difference. That's reason might be the fact that there is much stimulus diversity and that students face with more problem solving behaviors. Also, it might be thought that the advantage of communicating with more individuals with different personalities and cultures leads to this situation. Although any meaningful difference between the preservice teachers who grew up in a village and the other variances have not been found, it is seen that they have more points than the ones living in town. According to Massialas (1963), students' reflective thinking is not by chance or accidentally; on the contrary, teachers and students ought to mobilize all the tools and sources consciously and directly for reflective thinking (cited. Tarman and Acun, 2010). Even though the ones living in villages do not encounter technological stimulus as often as the ones living in cities and metropolises, it is thought that their being much closer to the nature and their endeavors together with the family in the struggle for life might contribute to their maturity earlier and accordingly to the development of reflective thinking skills. This finding shows parallelism with the literature above. Considering there are lots of natural sources for developing students' reflective thinking, it can be thought that development of students' reflective thinking tendencies is not a coincidence. In addition, primary school education is given in smaller schools and teachers pay more attention especially to successful students. This can be interpreted as that teachers might have been involved in more activities with them to develop reflective thinking.

When the literature is looked over, comparisons regarding gender may give different results. For instance; in her study done with a total of 89 teachers working in the Province of Hatay to determine whether there is difference among classroom teachers' and branch teachers' reflective thinking skills and the variances of graduated school type, seniority year and branch; Erguven (2011) reached the finding that teachers' reflective thinking skills do not differ according to gender, age, branch and seniority qualities. And Dolapcioglu (2007); in her study intended to assess the use level of classroom teachers' reflective thinking skills; had the purpose of describing the using conditions of teacher behaviors involving reflective thinking skills by classroom teachers and the purpose of determining whether teacher views differ according to gender, occupational seniority and graduated school type. In the study, the finding indicating that there is not a meaningful difference between reflective thinking using level and teachers' gender, occupational seniority and graduated school type was reached. In this study, in contrast to Erguven (2011) and Dolapcioglu (2007), females' and males' reflective thinking tendency shows a meaningful difference, which is in favor of females. The fact that females have a

higher reflective thinking tendency can be interpreted as that it might be a result of the fact that their motivation for empathizing, understanding others, teaching others is high. In their work called "The Effect of Pre-service Teacher Training Programs in the Training of Reflective Teachers", Wubels and Korthagen (1990) developed the ALACT Model which consists of five stages which are action, looking back on the action, awareness of the essential parts, trial and creating alternative methods of action. In the related work, activities such as role-play, game, discussion are included in reflective practices. It is stated that these kind of activities allows students to develop their empathic understanding, to express their feelings and to solve their cooperative study problems (Keskin and Demirel, 2008). Therefore, with more use of activities regarding reflective thinking in programs, it can be thought that male students' reflective thinking tendencies may increase. In the literature, it is seen that gender comparisons give different results generally in some other studies, too. For example, on the topic of success, it was determined in some studies done with primary school students that girls are more successful (Poyraz and the others) while in some others there is not a meaningful difference in terms of the gender variance (Ekizoglu and Tezer, 2007).

In this study, it is seen that preservice teachers' high school types prior to their faculty education do not make a meaningful difference in their reflective thinking tendencies. When the variance of graduated high school type is analyzed, the findings of this study support the findings of Erguven (2011) and Dolapcioglu's (2007) studies. Yorulmaz (2006) studied with 450 classroom teachers with the purpose of evaluating first level primary school classroom teachers' views and practices about reflective thinking. In the study, the teachers' views were collected with a questionnaire developed. The analysis results of the collected teacher views are summarized as: the classroom teachers expressed that they did not receive any in-service training related to reflective thinking; that activities for students' individual development are not paid attention because of crowded classrooms; that strategies for enriching students' thinking cannot be practiced sufficiently in classroom; and that teachers cannot avoid the effects of teacher-centered education. Moreover, the teachers expressed that they were having trouble with lots of practices from planning to evaluation in their practices related to reflective thinking. And in order to cope with these troubles, they proposed that the physical condition of the schools should reach modern standards, the curriculums should be prepared in a way to develop individual's reflective thinking, and the in-service training should be carried out effectively and continuingly. That preservice teachers' reflective thinking tendencies do not differ in this study according to the graduated high school types may result from the facts that the high schools in Turkey, similar to the findings of the studies above, have crowded classrooms; that teachers are unable to use activities related to reflective thinking professionally; and that teaching practices far away from constructivism are applied predominantly.

On the other hand, whichever high school type preservice teachers graduate from, the ones having very close points have the right to attend the Faculties of Education. So as to attain high scores in the exams, students go into private teaching institutions as well as high school education. Hence, in the formation of reflective thinking tendency, high school difference may not have been effective. In addition to that, there is not a difference in the assignment of teachers according to high school types in Turkey. Therefore, it can be discussed that high school variance do not affect students' thinking styles much because of an almost lack of teacher and curriculum differences, even though they receive education in different high schools.

In the study, it has been determined that parents' education level and number of siblings do not make a meaningful difference in reflective thinking tendencies. Whatever parents' education level and the number of siblings are, the fact that the ones who pass an elimination examination become preservice teachers can be shown as the reason of this situation. Moreover, since the sample group can be accepted as an adult group considering their age, it can be said that the influence of their families in the shaping of their thinking tendencies has relatively decreased. It can be thought that different factors such as peer interaction, difference of interests, a change in environment and stimulus might have affected preservice teachers' reflective thinking tendencies. Kerimgil (2008) researched about the effect of a curriculum based on constructive learning in preservice teachers' reflective thinking and democratic behavior. In the related study, the observation result

that a curriculum based on constructive learning had positive and permanent effect in democratic attitudes in classroom was obtained; and while constructive curriculum was being applied, it was mentioned that extending the duration of the application could be more convenient for the development of reflective thinking. In this study, when assumed that children from families with similar qualities come to the faculty of education, considering the fact that the variance of parents' education level does not produce a meaningful difference results from that the study group is a selected group, the importance of creating a democratic environment in the family, showing respect to individual's ideas in this environment and expressing their ideas freely can be mentioned. In addition, parents' education level may affect the number of siblings and these effects may vary. In this study, though it was expected that there would be a difference in the reflective thinking tendencies of preservice teachers who attend different programs in the faculty, a meaningful difference was not seen. However, it is thought that some programs use reflective thinking activities more because of the curriculum they follow. Besides curriculum, it is seen that there is not a meaningful difference in classroom levels, either. This situation gives the notion that the education in the Faculty of Education cannot create the difference of reflective thinking. It is determined that reflective thinking activities have the effect of increasing academic success in Science course and attitudes towards the course (Tok, 2008), and it is thought that these kind of activities should be included in the curriculums more. In this way, the activities may contribute to the creation of a more effective education environment in different curriculums.

SUGGESTIONS

It is important to include activities that develop reflective thinking in the training of preservice teachers. Hence, reflective thinking activities should take parts more in the curriculums of the faculties of education.

Education environment should be organized with various scenarios regarding to the events that preservice teachers might encounter in their career. In this way, preservice teachers can show tendencies such as reflective thinking, making reflection and developing positive attitudes towards this type of thinking.

Also, diversifying the stimulus preservice teachers face in education environment and getting technological support when needed may increase preservice teachers' reflective thinking tendencies.

If similar studies are carried out with students in the same education level and with students from different classes but attending the same program, much more information may be obtained about the role of reflective thinking in the education system and students' tendencies for reflective thinking.

More different studies analyzing the effects of the socio-cultural environment where the students are in their reflective thinking can be done.

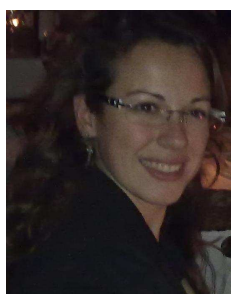
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