The Effects of Reflective Thinking-based Teaching Activities on Pre-service Teachers' Reflective Thinking Skills, Critical Thinking Skills, Democratic Attitudes, and Academic Achievement

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ABSTRACT The purpose of the present paper is to elicit the effects of reflective thinking-based teaching activities on pre-service teachers' reflective thinking skills, critical thinking skills, democratic attitudes, and academic achievement. The paper employed experimental design. The study group consisted of second year students from the Education Faculty of Gazi University in the 2010-2011 academic year. In total, 42 students (21 experimental; 21 control) were selected. Data were collected from:1) California Critical Thinking Scale, 2) Democratic Attitudes Scale, 3) Academic Achievement Test, 4) Reflective Thinking Tendency Scale for Teachers and Pre-service Teachers, 5) Reflective Journal, and 6) Rubric for portfolio.Though the experimental group obtained higher post-test, achievement, reflective thinking, critical thinking, democratic attitude, and academic achievement mean scores than the control group, these differences were found to be statistically not significant. The students were able to perform the behaviors required by reflection-on-action and reflection-in-action processes to a great extent.

INTRODUCTION

The most distinctive feature of humanity is their thinking skill. Thinking is a skill that can be taught and developed. In many educational programs, great emphasis is put on the development of thinking skills. In today's education system, great importance is attached to the development of individuals' thinking skills, because the future of society greatly depends on individuals having higher levels of thinking skills. At each level of schooling, efforts should be made for students to acquire thinking skills. Teachers having important roles in educating thinking individuals, and should be informed and trained about thinking skills.

Individuals determine their futures by giving directions to behaviors through thoughts. Effective use of thinking skills is of great impor-
tance for individuals to be successful in every field of their lives, find solutions to their problems, and produce new opinions. Therefore, individuals need to learn to apply higher level thinking skills such as problem solving, creative thinking, critical thinking, reflective thinking, scientific thinking, decision-making, analysis, synthesis, and evaluation. Contemporary education-instruction programs aim to develop students' thinking skills. One of these thinking skills is reflective thinking.

The concept of reflective thinking was first introduced by Dewey in his work "How Do We Think" in 1910 (Shermis 1999). Reflective thinking is a type of thinking comprising thinking about an issue and evaluating it seriously in the mind (Dewey 1933). As noted by Dewey (1997), everything that comes into the mind is called a thought. Thinking about something simply means being aware of it. Second, this perception of thought can be reduced by discarding the thing directly present; humans only think about the things that they do not directly see, hear, smell, or taste. Third, the meaning can be further reduced by limiting it to beliefs based on evidence. In this third revision, two levels need to be separated from one another. In some cases, a belief is ac-

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cepted without any effort to lay the ground to support it. In some other cases, a basis or ground is purposefully sought for a belief and its adequacy to support this belief is analyzed. This process is called reflective thinking. Dewey (1933) defines reflective thinking as "an active, persistent and careful investigation of a belief and assumed type of knowledge in light of the grounds supporting it and possible outcomes it may yield."

According to Schon (1987), the starting point of an individual's reflective thinking is an element of surprise such as pleasant or unpleasant moments, unexpected results, or unusual actions. This element of surprise usually contradicts the existing knowledge of the individual and this is called knowing-in-action (Hong and Choi 2011). Schon (1983, 1987) defined three types of reflection as reflection-on-action, reflection-in-action and reflection-for-action. Schon's analysis of reflection in three categories is related to the time the action is performed. After completing an action, if an individual turns back and thinks about the action carefully and systematically and evaluates the action in all its aspects, then he/she is reflecting on action. However, if an individual begins to reflect unexpectedly while completing an action and tries to solve the problem at that moment, then he/she is reflecting in action. As a result of the experiences lived during the processes of reflection-on-action and reflection-in-action, the individual's future thoughts and behaviors are shaped and come into being. In this way, he/she reflects for action. In recent years, in both international and national circles, there has been a great revival of interest in research on the development of reflective thinking skills of pre-service teachers. This is because of the fact that reflective thinking is very important for teachers. Reflective thinking is also the main topic of the current paper, and should be better dealt with in relation to teacher training.

Teacher training programs and teacher educators have always claimed that reflection is the cornerstone of the teaching profession (Amobi 2006). In America, Inter-state Novel Teacher Evaluation and Support Consortium (INTASC 1992) declared the basic content of professional teaching knowledge and the skills to be possessed by teachers. The ninth principle stated by the consortium is: "The teacher is a reflective practitioner continuously evaluating the effects of their actions on themselves and others and pursuing the opportunities of professional development."

(p. 31). INTASC principles were determined by teachers, teacher educators, and state agency staff, and reflect the common perception that reflection is an important skill to be possessed by teachers (Greiman and Covington 2007).

Reflective thinking is an important thinking skill affecting the quality of a teacher. Because teachers' reflective, careful, and systematic thinking reflect on their educational and instructional activities, it is possible to critically evaluate them so that they might realize their mistakes, seek different ways of solving problems, and follow the innovations in the field of education. They are researchers who try to adopt new approaches, include various activities in their classes, develop activities according to feedback given by students, and analyze teaching programs, and they make effort to continuously improve themselves.

As noted by Larrivee and Cooper (2006), reflective teachers spend a lot of time thinking on class interactions and seriously reflect on the targeted and unexpected outcomes of their actions. With a developmental point of view, they profoundly think about everything taking place in their classes. Teachers who are not reflective are usually unsuccessful in detecting dilemmas; they do not have much motivation to improve, and as a result, they cannot achieve their professional potential.

Reflective thinking is an important type of thinking to be possessed by any teacher. Institutions of education and teacher training stipulate that reflective thinking is one of the basic qualifications to be possessed by a teacher. When the teacher qualifications set by the Ministry of National Education in Turkey are examined, it is seen that there are some dimensions related to reflective thinking. When the skills, stated in the new teaching program to be acquired by students, are examined, it is seen that great importance is attached to thinking skills. In this line, the education program aims to impart critical thinking skills, creative thinking skills, communications skills, inquiry skills, problem solving skills, decision-making skills, information technologies skills, entrepreneurship skills, and skills required for the correct and effective use of Turkish to students. In order to be able to fulfill this goal, education given to pre-service teachers during their undergraduate training is of great importance. Pre-service teachers should be given special education about these thinking skills.

Education faculties should be able to instill reflective thinking skills in their students.

In teacher training programs, required attention should be paid for pre-service teachers to acquire reflective thinking skills, and necessary educational-instructional activities should be designed for students to acquire reflective thinking. Not only should theoretical information be taught, but also practice opportunities should be created. Teachers need to be taught how to reflect on their own experiences and applications. Pre-service teachers should be encouraged to conduct activities to systematically and carefully reflect on and question their experiences, generate links between old and new information, find solutions to problems they encounter, and create new ideas. In this way, they can be teachers adopting reflective thinking in their professional lives. There are continuous innovations and changes in the education system. As teachers thinking reflectively pursue the novelties and continuously improve themselves, they will be successful in their profession of teaching. In this connection, reflective thinking is a very important skill.

There is a great amount of research on pre-service teachers' reflective thinking. Gencer (2008) employed a framework consisting of reflective activities in teaching a practice course of biology pre-service teachers to improve their reflective thinking skills and found significant improvement. Erginel (2006) investigated how pre-service teachers perceive reflective thinking and the topics on which the pre-service teachers reflected throughout the application. It was found that while reflecting during the application, the pre-service teachers focused on issues such as teaching methods, student motivation, and classroom management.The goal of Guney (2008) was to determine the effects of micro-reflective teaching methods on pre-service teachers' presentation skills and reflective thinking. He found that when micro-reflective teaching was used, the presentation performance of the pre-service teachers improved and their reflective thinking skills developed. In a paper conducted by Dervent (2012), the purpose was to investigate the effects of reflective thinking activities on physical science pre-service teachers' professional applications and to determine the reflective thinking level of the pre-service teachers by using reflective thinking activities. At the end, it was found that a large majority of the teachers indi-

vidually enhanced their reflective thinking levels. Arrastia et al. (2014) investigated the reflection levels, the use of future-oriented reflection, and reflective writings of 90 pre-service elementary school teachers enrolled in two different classes of an field experience course. The level of reflection in the writings of 35 percent of the pre-service teachers improved in complexity within a semester and only 10 percent of the pre-service teachers demonstrated the deepest reflection in their writings. Future-oriented reflection only accounts for 6 percent of all the language used in the writings of the pre-service teachers. Weber (2013) looked at whether reflective thinking skills developed after giving students overt instruction about reflective thinking applications. Findings of the paper showed that after an instruction given about reflective thinking for a term, 66 percent of the pre-service teachers were able to increase their total scores. Hagevik et al. (2012) reported that conducting action research (a) encourages students to carry out research on their own applications, (b) shows them that reflecting on their applications is a means of determining the ways of changing them, and (c) demonstrates that a cooperative learning environment improves critical reflection. Lambe (2011) explored how participation in class-based qualitative research enhances pre-service teachers' reflective thinking skills. The findings of the paper indicate that participation in such class-based research supports knowledge-based professional dialog conducive to the development of reflective capacities of pre-service teachers.

Reflective thinking skill encompasses critical thinking, metacognitive thinking, problem solving, and creative thinking. An individual thinking reflectively thinks critically at the same time. "Critical thinking is a type of thinking about an issue, a problem or a content in which the thinker improves his/her thinking quality by skillfully analyzing, evaluating and re-constructing it. Critical thinking is defined as thinking in which the person direct, control and correct himself/herself" (Paul and Elder 2006). According to Wilson and Jan (1993), reflective thinking is associated with critical thinking because it entails questioning and evaluation, organization, reasoning, developing hypotheses, and predicting.

While an individual is reflecting, he/she also makes use of critical thinking skills. For a teacher it is of great importance to think reflectively and critically because a teacher who can think re-

flectively and critically pays attention to students' opinions, is not prejudiced, creates a democratic classroom environment, and displays democratic attitudes toward students. In this way, he/she can be a good model for students. Students who can express their opinions in a democratic manner in the classroom environment grow as individuals having democratic attitudes. Thus, a democratic society can be formed. When the related literature is examined, it is seen that there is no research aiming to enhance pre-service teachers' reflective thinking skills, democratic attitudes, and critical thinking skills by using a teaching design based on the activities of reflective thinking.

Purpose of the Paper

The purpose of the present paper is to reveal the effects of teaching activities designed based on reflective thinking on pre-service teachers' reflective thinking skills, critical thinking skills, democratic attitudes, and academic achievement.

For this purpose, the following hypotheses were tested.

Hypotheses

1. There is no significant difference between the posttest reflective thinking mean scores of the experimental group and the control group.
2. There is no significant difference between the posttest critical thinking mean scores of the experimental group and the control group.
3. There is no significant difference between the posttest democratic attitude mean scores of the experimental group and the control group.
4. There is no significant difference between the posttest academic achievement mean scores of the experimental group and the control group.

METHODOLOGY

Research Model

The study employed an experimental design. It was designed according to a pretest-posttest control group model.

Study Group

The study group of the present paper consists of second-year Turkish language pre-service teachers taking the course of Principles and Methods of Instruction at the Faculty of Education, Gazi University, in the 2010–2011 academic year.

Data Collection Instruments

1. *Academic Achievement Test:* The reliability of the test was calculated with KR-20 formula and the internal consistency coefficient was found to be 0.80.
2. *Reflective Journal Items:* Reflective journal items were developed, and the opinions of three experts were sought about the items.
3. *Expert Form of Graded Scoring Key for Portfolio (Rubric):* Ten criteria in this form were submitted to the scrutiny of the experts. As a result of the expert feedback, the form was reduced to eight items. The formula developed by Miles and Huberman (1994) was used in the calculation of the reliability of the form.
   Reliability = [(number of agreements / (number of agreements + number of disagreements)]. As a result, the reliability was found to be 0.80 percent.
4. *California Critical Thinking Tendency Scale:* Internal consistency of the scale (alpha) was found to be 0.88 (Kokdemir 2003).
5. *Democratic Attitude Scale:* The reliability coefficient of the scale was found to be 0.87 (Gozutok 1995).
6. *Reflective Thinking Tendency Scale for Teachers and Pre-service Teachers:* As a whole, the reliability of the scale was found to be 0.908 (Semerci 2007).

Experimental Application Process

Two classes were selected from the Department of Turkish Language Teacher Education of Gazi Education Faculty through a clustering analysis method. One of these classes (n=21) was assigned as an experimental group and the other (n=21) was assigned as a control group. The application lasted for six weeks. The course was taught in line with teaching activities based on reflective thinking in the experimental group and according to traditional method in the control

group. In the experimental group, cooperation, discussion, reflective journaling, and portfolios were used as reflective thinking activities. The experimental and control groups came to the class ready for the application of the methods. Study groups in the experimental and control groups carried out the presentation of the topic (for five minutes) and application of the method (for ten minutes).

Data Analysis

In order to collect the quantitative data, the reflective thinking tendency scale, critical thinking tendency scale, democratic attitude scale, and academic achievement test were employed. The analysis of the data was performed through a software package program. In cases where the distributions were normal, independent samples t-test depending on the type of the data were run in binary group comparisons as a requirement of parametric test hypothesis.In cases where distributions were not normal, the Mann Whitney U test was conducted. The qualitative data collected through the responses given to ten questions of the reflective journal were evaluated through descriptive analysis method. Student portfolios were evaluated by three experts using a Graded Scoring Key Expert Form.

FINDINGS

Findings Related to Reflective Thinking Tendency

As observed in Table 1, there was no significant difference found between posttest reflec-

tive thinking tendency mean scores of the experimental and control groups (t$_{(40)}$ = -0.788; p > 0.05). In light of this finding,thefirst hypothesis is supported. Though there is a difference of 0.07 points between the mean scores of the control group ($\bar{X}$= 4.30) and the experimental group ($\bar{X}$= 4.37) favoring the experimental group, this difference is not significant. That is, it can be argued that a learning environment designed according to reflective thinking-based activities does not make much difference in the reflective thinking tendencies of the students when compared to a traditional teaching environment. Yet, both of the groups reached the level of "Strongly Agree" according to their posttest reflective thinking tendency scores.

Findings Related to Critical Thinking Tendency

As can be seen in the Table 2, no significant difference was found between the posttest critical thinking tendency mean scores of the control and experimental groups (t$_{(40)}$ = -0.322; p > 0.05). In light of this finding, the second hypothesis is accepted. There is a difference of 0.05 points between the posttest mean scores of the control_grouP ($\bar{X}$=4.30) and the experimental group ($\bar{X}$= 4.35) favoring the experimental group, but this difference is not significant.These results reveal that the learning environment designed according to reflective thinking-based activities does not make much difference in the critical thinking tendencies of the students when compared to the control group taught in a traditional teaching environment. Both of the groups

Table 1: t-Test results related to posttest reflective thinking tendency scores of the groups

Levene test groups	*t-test*							
	N	*X*	*SS*	*Sd*	*F*	*p*	*t*	*p*
Control group	21	4.30	0.26	40	0.058	0.811	- 0.788	0.436
Experimental group	21	4.37	0.29					

Table 2: t-Test results related to posttest critical thinking tendency scores of the groups

Levene test groups	*t-test*							
	N	*X*	*SS*	*Sd*	*F*	*p*	*t*	*p*
Control group	21	4.30	0.44	40	0.041	0.841	- 0.322	0.749
Experimental group	21	4.35	0.43					

reached the medium critical thinking level according to their posttest critical thinking tendency scores.

Findings Related to Democratic Attitude

The findings obtained in relation to democratic attitudes are presented in Table 3, which shows that no significant difference was found between the posttest democratic attitude scores of the groups ($t_{(40)}$ = -0.894; p > 0.05). In light of this finding, the third hypothesis is approved. There is a difference of 0.81 points between the posttest attitude mean scores of the control grouP ($\overline{X}$=36.23) and the experimental group ($\overline{X}$= 37.04) favoring the experimental group, but this difference is not statistically significant. This shows that the learning environment designed according to reflective thinking-based activities does not make much difference in the students' democratic attitudes when compared to the control group taught in a traditional teaching environment. Both of the groups have a democratic attitude level higher than medium.

Findings Related to Academic Achievement

Findings related to academic achievement are presented in Table 4. No significant difference was found between the posttest academic achievement mean scores of the groups (M.W.U.$_{(40)}$ = 219.00; p<0.05). Based on this finding, the fourth hypothesis is accepted. The posttest academic achievement mean rank of the control group students was found to be 21.57 and that of the experimental group students was found to be 21.43. Thus, though there is a remarkable improvement in the academic achievement of the groups, it can be argued that a learning environment designed according to reflective thinking-based activities does not make much difference in the academic achievement of the students when compared to a traditional teaching environment.

Findings Related to Daily Journals

a. Reflection on Action

When the students' opinions about the application they conducted are examined, it can be argued that they exhibited the required behaviors of reflecting on theiraction to a great extent. The students evaluated the methods they used objectively in terms of being successful. They explained in which methods they were successful and in which they were not. They evaluated themselves in relation to the objectives of the methods, compared the data, and made a decision on the implementation of the methods.

The students explained their opinions by analyzing easy and difficult aspects of applying the methods. If the method was easy to implement due to its characteristics and if the students did their work successfully in groups, then they described the method as easy. They defined coming together in groups and continuing the works and thorough application of methods as the difficult sides of the application. After performing the implementation of each method, the

Table 3: t-Test results related to posttest democratic attitude scores of the groups

Levene test groups	t-test							
	N	X	SS	Sd	F	p	t	p
Control group	21	36.23	4.27	40	3.693	0.062	- 0.894	0.377
Experimental group	21	37.04	3.24					

Table 4: Mann Whitney U test results related to posttest academic achievement scores of the groups

Levene test groups	t-test						
	N	Mean rank	Sd	F	p	M.W.U.	p
Control group	21	21.57	40	7.185	0.011*	219.00	0.970
Experimental group	21	21.43					

*p < 0.05 significance

students evaluated the application based on evaluation criteria and stated their criticisms. In this way, they stated different opinions about the application performed. Making criticisms in the classroom environment contributed to the development of the students' democratic attitudes.

The students' satisfaction with the application of methods and their ability to explain the aspects about which they felt anxious indicate that the students made progress in terms of their reflection on action. They stated that they were satisfied with the application, as they became more accustomed to teaching, had fun doing the activities, and performed the activities successfully. They also stated that they felt anxious about thoroughly and successfully applying the methods in class.

The students explained the various problems they encountered in every stage of the methods and suggested solutions for these problems. Particularly, they focused on solutions to the problems related to working in groups and applying methods more effectively. The students evaluated the applications they conducted and explained their learning experiences by making a synthesis, which proves that the students improved themselves in terms of reflection on action behavior. They stated that they gained great learning experiences by actively applying the methods in class. In particular, they gained learning experiences about the effective application of those methods. Moreover, they gained some experiences about how to behave while teaching, including what they should pay attention to and how to communicate with students.

b. Reflection for Action

When the students' opinions about the application they conducted are examined, it can be argued that they performed the behaviors required by the reflection for action process to a great extent. The students' ability to explain what they would like to do for the applications they prepared to be more successful demonstrates that they made good progress in terms of the behavior of reflection for action. They stated their opinions about how to perform better by criticizing their own method applications. They think that if they spare more time and work harder, they can conduct better applications. They particularly believe that if tools and equipment, materials, and customs are used for the application,

and if more attractive activities are performed, then the application will be more successful. They think critically and creatively about this issue.

The students evaluated their applications in terms of their contributions to their daily lives and the profession of teaching. They particularly stated that these applications contributed to their daily lives in terms of their problem solving skills, socialization, communication skills, questioning, and showing respect to others' opinions. In relation to the profession of teaching, the students reported that they gained valuable experiences about the application of methods and enhanced their teaching skills.

The students also discussed the information they acquired as result of the applications they conducted and revision of their visions of teaching. These ideas can be viewed as the manifestation of the fact that the students improved their reflection for action behavior. They stated how they would like to educate their students when they become teachers. Moreover, they stated what they would like to do as a pre-service teacher and the professional areas in which they would like to improve themselves.

Findings Related to Portfolio File

In the present paper, the experimental group students prepared a portfolio file. In these files include reflective journals, personal performance writing, writing comparing the group performance with the performances of other groups, and writing comparing prior information with new information. The students' portfolio files were evaluated in terms of reflection on action and reflection for action gains. Three experts conducted this evaluation according to a graded scoring key given to them. In this key, reflective thinking performance levels are graded as 4= perfect, 3= highly adequate, 2= adequate, 1= inadequate needs to be improved, and 0=very inadequate.

As a result of the experts' evaluation of the dimension of reflection on action, scores were assigned to 21 students and the lowest mean was found to be 2.0 (adequate-acceptable) and highest mean was found to be 3.60 (perfect). When the mean of the scores assigned by three experts was taken, it was found that the mean score for portfolio file reflection on action performance of 21 students is $\bar{X}$= 2.91 (2.40–3.20 highly adequate). As a result of the experts' evaluation in relation to the reflection for action di-

mension, scores were assigned to 21 students, the lowest mean was found to be 1.89 (adequate-acceptable) and the highest mean was found to be 3.38 (perfect). When the mean of the scores assigned by three experts was taken, it was found that the mean score for portfolio file reflection on action performance of 21 students is $\bar{X}$= 2.69 (2.40–3.20 highly adequate).

DISCUSSION

Although in both the experimental group and the control group the post-test mean scores increased when compared to the pre-test mean scores, no significant difference was found between the posttest mean scores of the groups. However, when the pretest and posttest reflective thinking mean scores of the experimental group were compared, it was observed that in general, reflective thinking based activities made contributions to the development of the pre-service teachers' reflective thinking skills.Some research supports this finding.In the studies by (Erginel 2006; Gencer 2008; Guney 2008; Lambe 2011; Dervent 2012; Hagevik et al. 2012; Weber 2013; Arrastia et al. 2014; Chien 2014) an improvement was foundin the reflective thinking skills of pre-service teachers.

Though the posttest critical thinking mean scores of both groups increased when compared to their pretest mean scores, no significant difference was found between the posttest critical thinking mean scores of the groups. However, when the pretest and posttest critical thinking mean scores of the experimental group were compared, it was observed that in general reflective thinking based activities made some contributions to the development of the pre-service teachers' critical thinking skills. Chi (2010) reported that a significant number ofteachers think reflection, performed through writing daily journals, improves their critical thinking as teachers and learners.

Though the posttest democratic attitudes mean scores of the groups increased compared to pretest mean scores, no significant difference was found between the posttest democratic attitude mean scores of the groups. However, when the pretest and posttest democratic attitudes mean scores of the experimental group were compared, it was observed that in general reflective thinking based activities made some contributions to the development of the pre-service teach-

ers' democratic attitudes. Song et al. (2005) emphasized the perceived importance of student control and social and comparative learning in terms of developing reflective thinking.

Though the posttest achievement mean scores of both groups increased when compared to their pretest mean scores, no significant difference was found between the posttest achievement mean scores of the groups. However, when pretest and posttest democratic attitudes mean scores of the experimental group were compared, it was observed that in general, reflective thinking based activities made some contributions to the development of the pre-service teachers' academic achievement. Bas and Beyhan (2012) and Uygun (2012) conducted research on elementary school students and found that students from the experimental group students subjected to reflective-thinking based activities had greater academic achievement than the control group students.

It was observed that the students performed the behaviors required by the reflection on action process to a great extent. The students expressed the problems they were confronted with while preparing their applications and during their implementation. They also expressed their anxieties and the points they were satisfied with in their applications. The students explained what they learned from their application experiences, including their thoughts on how they could solve the problems they encountered.

It was found that the students performed the behaviors required by the reflection for action-process to a great extent. The students mentioned the positive effects of the practice applications on their daily lives. Moreover, with the information and experiences they gained from the applications, they expressed their intent to revise their visions of the teaching profession. Reflecting for action while writing journals contributes to the development of critical thinking, reflective thinking, and democratic attitudes. In research, it has also been reported that writing reflective journals enhances the reflective thinking skills of pre-service teachers (Zhu 2011; Gadsby and Cronin 2012).

The students' reflection on action performance mean scores, calculated based on their portfolio entries,was found to be highly adequate. The same score was found to be highly adequate for reflection for action. This finding is similar to the findings reported by many studies (Chetcuti 2007; Yoo 2009; Lalor et al. 2015).

CONCLUSION

The current paper was conducted to determine the effect of reflective thinking based activities on reflective thinking tendencies, critical thinking tendencies, democratic attitudes, and academic achievements of the second-year pre-service Turkish language teachers within the course Principles and Methods of Teaching. Though the experimental group obtained higher posttest, achievement, reflective thinking, critical thinking, democratic attitude, and academic achievement mean scores than the control group, these differences were found to be statistically insignificant. When the students' opinions, stated in their reflective journals about the activities they participated in, were examined, it was found that they performed to a great extent the behaviors required by reflection on action and reflection for action processes of reflective thinking. The students displayed excellent performances in terms of the gains of reflection on action and reflection for action processes. Reflective thinkingbased activities increased the students' interest in their course books, encouraged them to be more active, helped them to express their opinions in more democratic environments, and laid the ground for a student-centered learning environment.

RECOMMENDATIONS

In light of these findings, the following suggestions can be made. An elective course aiming to impart thinking skills in students can be incorporated into the curriculum of education faculties. Prior to empirical application, it would be useful to give theoretical and applied training about reflective thinking to pre-service teachers. The effects of instructional activities based on reflective thinking on pre-service teachers' problem solving and metacognitive thinking skills could be investigated. Greater importance should be attached to the establishment of educational-instructional settings conducive to the development of reflective thinking in teacher education. Instructors should be encouraged to construct such environments. As the development of reflective thinking takes a long time, the application of reflective thinking-based activities should last at least a term. A new course with the name of "evaluation of teaching practicum" could be incorporated into the teacher training

programs to evaluate their teaching practices. The learning-teaching process of this course can be planned based on activities targeted to the development of reflective thinking.

REFERENCES

Amobi FA 2006.Beyond the call: Preserving reflection in the preparation of "highly qualified" teachers. *Teacher Education Quarterly*, 33(2): 23-35.
Arrastia MC, Rawls ES, Brinkerhoff EH, Roehrig AD 2014. The nature of elementary preservice teachers' reflection during an early field experience.*Reflective Practice: International and Multidisciplinary Perspectives*, 15(4): 427-444.
Bas G, Beyhan O 2012. Ingilizce dersinde yansitici dusunme etkinliklerinin ogrencilerin akademik basarilarina ve derse yonelik tutumlarina etkisi [Effects of reflective thinking activities on students' academic achievement and attitudes towards English course]. *Amasya Education Journal,* 1(2): 128-142.
Chi FM 2010. Reflection as teaching inquiry: Examples from Taiwanese in-service teachers. *Reflective Practice: International and Multidisciplinary Perspectives,*11(2): 171–183.
Chien CW 2014. Pre-service elementary school English teachers' learning and reflection through simulated teaching practice and oral interviews. *Reflective Practice: International and Multidisciplinary Perspectives*, 15(6): 821-835.
Chetcuti D 2007.The use of portfolios as a reflective learning tool in initial teacher education: A Maltese case study. *Reflective Practice: International and Multidisciplinary Perspectives,* 8(1): 137–149.
Dervent F 2012.*Yansitici Dusunmenin Beden Egitimi Ogretmen Adaylarinin Mesleki Uygulamalarina Etkisi [The Effect of Reflective Thinking on Professional Practices of Preservice Physical Education Teachers].* PhD Thesis, Unpublished. Istanbul, Turkey: Marmara University.
Dewey J 1933. *How We Think: A Restatement of the Relation of Reflective Thinking to the Educative Process.* Boston: Heath and Company.
Dewey J 1997. *How We Think.* Mineola, N.Y.: Courier Dover Publications.
Erginel SS 2006. *Yansitici Dusunen Ogretmen Yetistirme: Hizmet Oncesi Ogretmen Egitiminde Yansitici Dusunmenin Algisi ve Gelistirilmesi Üzerine Bir Calisma [Developing Reflective Teachers: A Study on Perception and Improvement of Reflection in Pre-Service Teacher Education].* PhD Thesis, Unpublished. Ankara, Turkey: Middle East Technical University.
Gadsby H, Cronin S 2012. To what extent can reflective journaling help beginning teachers develop masters level writing skills. *Reflective Practice: International and Multidisciplinary Perspectives,* 13(1): 1–12.
Gencer AS 2008.*Biyoloji Ogretmen Adaylarinin Mesleki Gelisimlerinin Yansitici Dusunce ile Gelistirilmesi [Professional Development of Pre-service Biology Teachers Through Reflective Thinking].* PhD Thesis, Unpublished. Ankara, Turkey: Middle East Technical University.

Greiman BC, Covington HK 2007. Reflective thinking and journal writing: Examining student teachers perceptions of preferred reflective modality, journal writing outcomes, and journal structural. *Career and Technical Education Research,* 32(2): 115-139.

Gozutok D 1995. *Ogretmenler in Demokratik Tutumlari[Democratic Attitudes of Teachers].* Ankara: Ekin Matbaacilik.

Guney K 2008.*Mikro-Yansitici Ogretim Yonteminin Ogretmen Adaylarinin Sunu Performansi ve Yansitici Dusunmesine Etkisi [The Effect of Micro-Reflective Teaching Method in Accordance With the Presentation Performance and Reflective Thinking Activities ofStudent-Teachers].* PhD Thesis, Unpublished. Elazig, Turkey: Firat University.

Hagevik R, Aydeniz M, Rowell CG 2012. Using action research in middle level teacher education to evaluate and deepen reflective practice. *Teaching and Teacher Education,* 28(5): 675-684.

Hong YC, Choi I 2011. Three dimensions of reflective thinking in solving design problems: A conceptual model. *Education Technology Research Development*, 59(5): 687–710.

Kokdemir D 2003. *Belirsizlik Durumlarinda Karar Verme ve Problem Cozme [Decision Making and Problem Solving Under Uncertainty].* PhD Thesis, Unpublished. Ankara, Turkey: Ankara University.

Lalor J, Lorenzi F, Rami J 2015. Developing professional competence through assessment: constructivist and reflective practice in teacher-training. *Eurasian Journal of Educational Research*, 58: 45-66.

Lambe J 2011. Developing pre-service teachers' reflective capacity through engagement with classroom-based research. *Reflective Practice: International and Multidisciplinary Perspectives*, 12(1): 87–100.

Larrivee B, Cooper JM 2006. An Educator's Guide to Teacher Reflection. From<http://cengagesites.com/academic/assets/sites/4004/Education%20Modules/gd%20to%20teach%20refl.pdf.>(Retrieved on 27 February 2013).

Miles MB, Huberman AM 1994. *Qualitative Data Analysis.* 2nd Edition. CA: Sage Publications.

Paul RW, Elder L 2006.*Critical Thinking: Tools for Taking Charge of Your Learning and Your Life*. 2nd Edition.Upper Saddle River, NJ: Prentice Hall.

Schon DA 1983. *The Reflective Practitioner: How Professionals Think in Action*. Aldershot: Avebury.

Schon DA 1987. *Educating the Reflective Practitioner*. San Francisco: Jossey-Bass.

Semerci C 2007.Ogretmen ve ogretmen adaylari icin yansitici dusunme egilimi (YANDE) olceginin gelistirilmesi [Developing a reflective thinking tendency scale for teachers and student teachers]. *Educational Sciences: Theory and Practice,* 7(3): 1369-1376.

Shermis SS 1999. Reflective Thought, Critical Thinking. From <http://www.ericdigests.org/2000-3/thought. htm> (Retrieved on 5 January 2013).

Song HD, Koszalka TA, Grabowski B 2005. Exploring instructional design factors prompting reflective thinking in young adolescents. *Canadian Journal of Learning and Technology*, 31(2): 49-68.

Uygun K 2012. *Sosyal Bilgiler Ogretiminde Yansitici Dusunme Uygulamalarinin Akademik Basari ve Tutuma Etkisi [The Effect of Reflective Thinking Practices on Academic Achievement and Attitudes in Social Studies Education].* PhD Thesis, Unpublished. Ankara, Turkey: Gazi University.

Weber S 2013. *Can Pre-service Teachers be Taught to Become Reflective Thinkers During Their First Internship Experience.* PhD Thesis, Unpublished. Lynchburg, VA: Liberty University.

Wilson J, Jan LW 1993. *Thinking for Themselves: Developing Strategies for Reflective Learning*. Australia: Eleanor Curtain Publishing.

Yoo SY 2009. Using portfolios as a learning tool to develop pre-service teachers' inquiries and perspectives in early science teaching in South Korea. *Education*, 130(1): 72-77.

Zhu X 2011. Student teachers' reflection during practicum: Plenty on action, few in action. *Reflective Practice: International and Multidisciplinary Perspectives*, 12(6): 763–775.