A sample of microteaching in environmental education and its effect on pre-service teachers' presenting effective lessons

Naim UZUN

Aksaray University, Faculty of Education, 68100 Aksaray, TURKEY

E-mail:nuzun@hacettepe.edu.tr

Received 31 Oct., 2011
Revised 5 Apr., 2012

Contents

Abstract

In this study, 'television program simulation' which was prepared in compliance with microteaching technique and thought to be effective in environmental education is introduced. This program was tried with 31 primary education pre-service teachers in Aksaray University in environmental education courses during 2009-2010 academic year. As a consequence of this study carried out according to pretest-posttest design, it was found that the pre-service teachers'

views of lecturing changed positively and their worries decreased after the application. In light of the findings of the present study, it is suggested that television program that is arranged in compliance with microteaching technique should be frequently used in environmental education.

Keywords: microteaching, pre-service teacher, environmental education.

Introduction

Microteaching is a technique aiming to prepare teacher candidates to the real classroom setting (Brent & Thomson, 1996). Microteaching can also defined as a teaching technique especially used in teachers' pre-service education to train them systematically by allowing them to experiment main teacher behaviors. By the help of this technique, teacher candidates can experiment and learn each of the teaching skills by breaking them into smaller parts and without encountering chaotic environment of the crowded classes. While instilling teaching skills in students during microteaching, reciprocal negotiation of the students actively presenting and watching about the performances can make great contribution to the acquisition of the skills (Taşdemir, 2006). Wilkinson (1996) emphasizes that teacher candidates can experience real teaching and teaching rules with the help of this method. This method offers teachers opportunities for discovering and reflecting on both their own and others' teaching styles and enables them to learn about new teaching techniques (Wahba, 1999). Pre-service teacher can benefit to a great extent from microteaching applications. Firstly, they reveal teaching facts; and roles of the teacher (Amobi, 2005; Hawkey, 1995; Kpanja, 2001; Wilkinson, 1996); help pre-service teachers to see the importance of planning and taking decisions (Gess-Newsome & Lederman, 1990); enable them to develop and improve their teaching skills (Benton-Kupper, 2001).

Microteaching technique is an application in which video recordings have been made possible as a result of developing technology. Audio and visual technology is an effective and reflective tool in preparing pre-service teachers to the profession of teaching. Video recordings provide pre-service teachers with the chance of evaluating themselves by engaging them in more experiences and configurations (Jensen et al., 1994). Sherin (2000) indicates that video recordings affect the perspectives of teachers in education process. Cunningham & Benedetto (2002)

emphasize that video tools support the reflective learning, and Spurgeon & Bowen (2002) stress that by the help of these tools, the problems that may occur in education process can be observed and defined. Farris (1991) states that this method increases the confidence and raises the awareness of personal skills. Selçuk (2001) indicates that video recordings can not only be used for demonstrating model teacher behaviours but can also be used for the analysis of microteaching. Using video recording method in microteaching applications contributes to the professional development of pre-service teachers by identifying strengths and weaknesses and improves their competencies (Tok, 2007).

When the relevant literature established on the use of microteaching technique in teacher education is reviewed, it is seen that the studies mostly focus on the efficiency of microteaching (Pauline, 1993), microteaching technique in different subject areas of teacher education (Çakır & Aksan, 1992; Peker, 2003; Akalın, 2005; Karçkay & Sanlı, 2009); the effects of video recordings on pre-service teachers' microteaching performances (Ceyhun & Karagölge, 2002; Lee & Wu, 2006); the efficiency of microteaching use for determining and solving the problems in teaching applications (Gürses et al., 2005; Erökten & Durkan, 2009); pre-service teachers' views about lecturing in the class (Görgen, 2003); microteaching applications in developing pre-service teachers' presentation skills (Higgins & Nicholl, 2003).

The literature review reveals that though microteaching applications are widely used in the courses such as teaching practice, special teaching methods and teaching technologies and materials development, they are not much drawn on in environment education courses. When the research on environmental education is examined, it is seen that there is no application in which TV programs are used to bring real life to the class.

In the prevention of environmental pollution not only at the local level but also at the global level and rearing individuals with positive attitudes and behaviors towards environment, teachers should assume an important role. To do so, during their pre-service education, teachers themselves should be exposed to experiences to make them more environmentally conscious. Changing behaviors about environment positively necessitates the alteration of attitudes, information, value judgments and accordingly consciousness. In order to realize these changes in environmental education, during the learning process different teaching methods

and techniques should be used. Environment education is important in terms of shaping the new generations' environment-related attitudes, beliefs and values. However, it is clear that we have some difficulties in combining theory with practice. In this regard, microteaching seems to have great potential because it can provide pre-service teachers with opportunities to try their theoretical information in practical settings, so their confidence in their ability to teach environment-related topics can increase. Thus, the purpose of the present study is to develop a sample model in the form of microteaching where a TV program is used for environmental education purposes. Moreover, it aims to determine the effects of a TV programs designed as a microteaching application on pre-service teachers' perceptions of lecturing.

Research Questions

In the study, the answers for the following questions are sought.

a. Does the introduced TV program have an effect on primary education pre-service teachers' perceptions of lecturing?
b. Does the introduced TV program have an effect on primary education pre-service teachers' worries about lecturing?

Methods

The Method of the Research

This study was designed according to pretest–posttest experimental design without control group model.

Study Group

The study group of the research consists of 31 primary education pre-service teachers attending Department of Primary Education of Education Faculty at Aksaray University in the fall term of 2009-2010 academic year. 67.7 % of the students of the study group are females (N=21) and 32.3% of them are males (N=10).

Application Steps of the Research

In the present study, TV program simulation to be used in environmental education was designed in accordance with the methods and techniques of microteaching. After providing necessary information about the program for the students, they were asked to prepare a course in the format of a TV program as microteaching. In the stages of preparation and presentation of the course, the following application steps of microteaching technique defined by Büyükkaragöz & Çivi (1999) were followed;

a. Preparing a lesson plan lasting 5–10 minutes.
b. Designing special evaluation forms in order to evaluate the lesson.
c. Teaching the lesson within the pre-determined time period, recording it on the camera.
d. Watching the video-recordings of the lesson.
e. Evaluation of the course by teacher and other persons in the audience using evaluation forms; doing corrections in light of the suggestions, criticisms, and contributions made.
f. Preparing and teaching the lesson again by taking into account the suggestions, criticisms and contributions
g. Evaluation of the lesson again by the audience and making suggestions if any.

Introduction of TV program simulation

TV program simulation prepared in the framework of environmental education course was designed in accordance with the microteaching technique. In the beginning of the term microteaching technique was introduced, sample applications were demonstrated. Then the students were divided into 6 groups, 5 groups of 5 persons and 1 group of 6 persons. The topics about environment were delivered to 6 groups according to their interests. The topics distributed to the groups are air, water and soil pollution, nuclear energy and wars, global warming and climate change and sustainable development. The pre-service teachers were asked to design a TV program about the topic assigned to their group in the form of microteaching. In this regard, during the times given to the students, they were asked to decide what the speaker, the audience and all the program team's duties would be. In the design of their program, the students were only limited to their creativity. The

students designed the class like a TV studio. The class design, poster, decoration, etc. and all the other arrangements were left to the students' discretion. The speakers presented the program in accordance with the format of the program, and the others acted like guests in different roles such as academic persons, villagers, Presidents of the Environment and Forests, Middle East Expert and Japan Ambassador. The other students of the class acted like the audience of the program. All the tools such as computer, overhead projector, volume system etc. were provided. Each group was given 50 minutes, 10 minutes for per student. All the activities carried out were recorded on the camera and photos were taken. After the recordings were watched, the lesson was evaluated by applying 'Microteaching Evaluation Forms', which was developed by Karadeniz (2009). After this evaluation, firstly the chance of self-criticism was given to the group members carrying out the applications. Then the opinions of the watchers were taken. The TV program was presented again after criticisms, contributions and suggestions made were taken into consideration. The conditions of microteaching techniques were repeated again as it had been done in the first step. Thus, 'TV program' was developed to be used in environmental education as a microteaching application (Appendix 1).

Data Collection Tools

In the study, the questionnaire developed by Külahçı (1994) and re-arranged by Görgen (2003) entitled as 'The Views and Opinions of Teacher Candidates About Lecturing in the Classroom' is used. The questionnaire is developed as three-point Likert scale containing 31 items, ranging from Yes (3 points), Partially (2 points) to No (1 point). The study of questionnaire's validity and reliability were already established the original study. In this study, the validity of the content and appearance was established through expert opinions and the Cronbach alpha coefficient for reliability was found to be .96.

The Analysis of the Data

The data gathered from the questionnaire was analyzed with SPSS program on computer environment. Paired Samples t-tests were used in order to compare the pre-test and post-test scores of the pre-service teachers taken from the questionnaire aiming to elicit their opinions about lecturing based on a TV program.

Results

In this part, 'TV program simulation' offered as a microteaching application in environmental teaching and the effects of TV program application in environmental education course on teacher candidates' views on lecturing in the class are analyzed.

The effects of TV program on the teacher candidates' view of lecturing in the classroom

In this part, what kind of effects the TV program arranged as a microteaching application in environmental education course have on teacher candidates view of lecturing are analyzed.

Table 1. t-test Results of Pre-test and Post-test Scores of Pre-service Teachers

Items	Mean		Std. Deviation		df	t	p
	Pre-test	Post-test	Pre-test	Post-test			
1. I do not know how to make introduction to the lesson.	2.41	1.29	.620	.588	30	7.105	.000 (*)
2. The idea of students' asking questions and not being able to to answer them makes me worried.	2.25	1.48	.681	.569	30	6.013	.000 (*)
3. I am anxious about having chaos while using course equipment.	2.16	1.45	.637	.767	30	4.062	.000 (*)
4. I am worried about my lectures' running short.	2.09	1.19	.789	.477	30	5.780	.000 (*)
5. The idea of lecturing in front of the students makes me exited.	2.74	1.77	.575	.883	30	5.683	.000 (*)
6. I am anxious about making mistakes while lecturing.	2.64	1.41	.608	.620	30	8.957	.000 (*)
7. I am worried about not knowing how to correct the mistakes I make while lecturing.	2.58	1.41	.564	.564	30	7.517	.000 (*)
8. I feel anxious about my lecture's being criticized.	2.25	1.32	.773	.599	30	6.100	.000 (*)
9. It makes me anxious not to know how to react against irrelevant questions of the students.	2.12	1.51	.805	.625	30	3.712	.001 (**)
10. I am worried about not being able to run the lesson smoothly.	2.54	1.54	.623	.722	30	5.981	.000 (*)
11. It makes me worried not to react against a student constantly string up trouble during the lesson.	2.16	1.38	.734	.558	30	4.683	.000 (*)

12. I am worried about not being able to manage the class.	2.16	1.32	.778	.599	30	5.692	.000 (*)
13. The idea of lecturing is enjoyable for me.	2.67	2.74	.540	.575	30	-.528	.601
14. I do not feel myself ready for the role of teaching.	1.96	1.51	.836	.724	30	2.528	.017 (***)
15. I am anxious about not being able to adjust my tone and speaking speed.	2.25	1.45	.681	.675	30	4.747	.000 (*)
16. I feel worried about getting confused while lecturing.	2.19	1.54	.654	.675	30	4.758	.000 (*)
17. The idea of lecturing in front of the students makes me worried.	2.19	1.29	.654	.692	30	6.368	.000 (*)
18. I am anxious about not being able to form meaningful sentences.	2.35	1.51	.608	.625	30	5.692	.000 (*)
19. I start to think that I need to learn more when the time to enter the class comes closer.	2.77	2.38	.497	.882	30	2.443	.021 (***)
20. I think the application of teaching should never exist.	1.45	1.29	.675	.642	30	1.153	.258
21. I am worried about generating a group discussion due to the possibility of not being able to control the class.	1.67	1.35	.599	.608	30	2.752	.010 (***)
22. I feel anxious about not being able to simplify the subject so that students can understand.	1.83	1.29	.734	.461	30	3.592	.001 (**)
23. It makes me anxious not knowing how to direct students' attention and interest to the subject.	2.35	1.32	.550	.540	30	7.228	.000 (*)
24. I am anxious about forgetting what to say while lecturing.	2.32	1.41	.652	.672	30	6.053	.000 (*)
25. I do not know what kind of demonstration method I should use in subjects requiring applications.	2.22	1.29	.844	.461	30	5.404	.000 (*)
26. I do not know what kind of reinforcement I should give to students who correctly contributed to the course.	1.93	1.41	.679	.672	30	2.794	.009 (**)
27. I am worried about not being able to contact with the students.	1.87	1.22	.805	.497	30	3.647	.001 (**)
28. I am not willing to receive help from the others.	1.67	1.29	.701	.588	30	2.443	.021 (***)
29. I am worried about not being patient while lecturing.	1.74	1.35	.773	.608	30	2.344	.026 (***)
30. I am worried about not being able to control my feelings while lecturing.	1.87	1.38	.763	.667	30	2.802	.009 (**)
31. I do not know how to end the course.	2.00	1.25	.730	.514	30	4.625	.000 (*)

* p<.001 ** p<.01 *** p<.05 N=31

As it is seen in Table I, the mean score taken from the post-test for the first 5 items (Mean=1.29, 1.48, 1.45, 1.19 and 1.77, respectively), is lower than the mean score of the pre-test (Mean=2.41, 2.25, 2.16, 2.09 and 2.74, respectively) and the

difference between the means is statistically significant (t(30)=7.105, 6.013, 4.062, 5.780 and 5.683; p<.001, respectively). These results indicate that after the microteaching application, the pre-service teachers know better how to start the course. Furthermore, it is possible to say that pre-service teachers' worries resulting from the possibility of not being able to answer students' questions, anxieties caused by possibility of experiencing chaos in using course equipments, the doubt of their lectures' running short and their excitement of lecturing in front of the students decreased to a great extent. The post-test means of 6-10 items (Mean=1.41, 1.41, 1.32, 1.51 and 1.54, respectively) are lower than pretest means. (Mean=2.64, 2.58, 2.25, 2.12 and 1.54, respectively) These mean differences were found to be statistically significant according to t-test results (t(30)=8.957, 7.517, 6.100; p<.001, t(30)=.3.712; p<.01 and t(30)=5.981; p<.001, respectively). It is understood that the worries of the pre-service teachers resulting from the possibility of making mistakes, not knowing how to correct the mistakes they can make during the courses, the probability of being criticized, not knowing how to react against the irrelevant questions and not being to able to run the lesson smoothly decreased to a great extent after the TV program microteaching application.

When Table I is analyzed, it is confirmed that the posttest means of the items 'It makes me worried not to know how to react a student constantly causing trouble.', 'I am worried about not being able to manage the class.', 'I do not feel myself ready for the role of teacher.', 'I am anxious about not being able to adjust my tone and speaking speed' (Mean=1.38, 1.32, 1.51 and 1.45, respectively) are lower than the pretest means (Mean=2.16, 2.16, 1.96 and 2.25, respectively) .The difference between the means is statistically significant (t(30)=4.683, 5.692; p<.001, t(30)=2.528; p<.05 and t(30)=4.747; p<001, respectively). According to these results, worries of pre-service teachers arising from not knowing how to react against students constantly stringing up trouble during the course, not being able to command the class, not being able to adjust their tones and speaking speed decreased to a great extent depending upon the microteaching application. Moreover, these results indicate that pre-service teachers feel themselves more ready for the role of teaching. For the responses given to the item "The opinion of lecturing is enjoyable for me', pre-service teachers' mean score (Mean=2.74) taken from the posttest is higher than the mean score of pre-test (Mean=2.67). However, as a consequence of the t-test, these difference between the means is not statistically significant (t(30)=-.528; p>.05). The post-test scores of the students for 16-19 items (Mean=1.54, 1.29, 1.51 and 2.38, respectively), are significantly lower

than the pre-test scores (respectively Mean=2.19, 2.19, 2.35 and 2.77), (t(30)=4.758, 6.368, 5.692; p<.001 and t(30)=2.443; p<.05). It is understood from these results that the level of anxieties of the pre-service teachers stemming from the possibility of feeling confused while lecturing, the idea of giving a lecture in front of the students, and the possibility of not being able to form fluent sentences decreased as a result of the microteaching application. Even though the post-test score for the item "I think that the teaching application should never exist' (Mean=1.29) is lower than the pre-test score (Mean =1.45), this difference is not statistically significant (t(30)=1.153; p>.05).

Table I indicates that the post-test means of the items between 21-25 analyzed here (Mean=1.35, 1.29, 1.32, 1.41 and 1.29, respectively) are significantly lower than the pretest means (Mean =1.67, 1.83, 2.35, 2.32 and 2.22, respectively), (t(30)=2.752; p<.05, t(30)=3.592; p<.01, t(30)=7.228, 6.053 and 5.404; p<.001, respectively). The differences between the pretest and posttest scores reveal the worries of the pre-service teachers due to reasons such as not being able to generate group discussion owing to the fear of not being able to control the class, not being able to simplify the issues so that the students can understand, not knowing how to direct their attention and interest to the subject, forgetting what to say during the lesson and not knowing what kind of demonstration method they should use in subjects requiring applications decreased to great extent depending upon the microteaching application.

The post-test scores of the pre-service teachers for the last 6 items (Mean=1.41, 1.22, 1.29, 1.35, 1.38 and 1.25, respectively) are found to be significantly lower than pre-test scores (Mean=1.93, 1.87, 1.67, 1.74, 1.87 and 2.00, respectively) (respectively t(30)=2.794, 3.647; p<.01, t(30)=2.443, 2.344; p<.05, t(30)=2.802; p<.01 and t(30)=4.625; p<.001). These results show that the worries of the pre-service teachers resulting from not knowing what kind of reinforcement they should give to the students correctly to contribute to their learning, not being able to make contact with the students, not being able to receive help from others, not being patient during the course, not being able to control their feelings while lecturing and not knowing how to end the lesson decreased to a great extent as a result of the microteaching application.

Table 2. The Results t-test of Pre-test and Post-test Scores for the Pre-service Teachers' Worries about Lecturing in the Class

Test	N	Mean	Std. Deviation	df	t	p
Pre-test	31	66.19	8.247	30	8.955	.000(*)
Post-test	31	44.00	12.675			

* p<.001

As it can be seen in Table II, the pre-service teachers' post-test mean score (Mean=44.00) for worries about lecturing in the class is significantly lower than pre-test mean score (Mean=66.19) ($t(30)=8.955$; $p<.001$). These results prove that TV program based on microteaching technique decreased the worries of the pre-service teachers about lecturing, in other words, their self-confidence increased.

Conclusion and Suggestions

The findings obtained in this study that is designed in order to introduce a TV program simulation prepared based on microteaching technique into environmental education and to determine the effect of it on their lecturing in the class are as follows.

It is observed that television program simulation designed in line with the content of environmental education course is suitable for the microteaching technique and the technique increased the students' interests, excitements and wishes to participate in the course. Furthermore, it is confirmed that after microteaching application students know better how to start the course and their worries stemming from not being able to answer the questions of the students, experimenting chaos in using course tools, their lectures' falling short, and the fear of lecturing in front of the students decreased. On the other hand, worries of the students resulting from making mistakes while lecturing, not knowing how to correct the mistakes they can make during the course, the possibility of being criticized, not knowing how to react against irrelevant questions from the students and not being able to run the lesson smoothly decreased to a great extent as a result of TV program microteaching application.

Moreover, the worries of the pre-service teachers such as not knowing how to react against a student constantly stringing up troubles during the course, not being able to manage the class, not being able to adjust their tones and speaking speed decreased to a great extent depending on microteaching technique, at the end of the application the pre-service teachers were found to feel themselves more ready for the role of teaching. It was also found that their worries about getting confused during the lesson, the fear of lecturing in front of the students, the possibility of not being able to form meaningful sentences also decreased as a result of microteaching application.

In addition, due to the microteaching application, the worries of pre-service teachers such as not generating a group discussion due to the possibility of not being able to control the class, not being able to simplify the subject so that student can understand, not knowing how to direct students' attention and interest to the subject, forgetting what to say while lecturing, what kind of demonstration method they should use in subjects requiring applications dropped significantly. Moreover, their anxieties about what kind of reinforcement they should give to students who correctly contribute to the lesson, not being able to contact with the students, not being patient while lecturing, not being able to control their feelings while lecturing and not knowing how to end the course decreased significantly at the end of the application.

Görgen (2003), in his study focusing on whether there is a difference between the views of pre-service teachers about lecturing in pre and post-microteaching, states that microteaching caused some positive alterations on pre-service teachers' views of lecturing in the class. Microteaching is found to be efficient to make them more comfortable and to reduce their shyness (Çakır, 2000; Külahçı, 1994). In microteaching technique, the steps followed are presenting the lesson, recording it, watching it on TV again, removing its deficiencies by discussing and deciding on what can be done to make it better. This may help to reduce pre-service teachers' worries of how to correct the mistakes while lecturing (Demirel, 2000). Microteaching applications give positive results in solving the problems pre-service teachers encounter during the lesson and in the management of the class (Çakır, 2000; Külahçı, 1994). Akalın (2005) asserts that microteaching prepares pre-service teachers more effectively to their professions in comparison with the traditional teaching. These results support the present study's findings.

Karçkay and Sanlı (2009) have come to the conclusion that microteaching applications affect pre-school pre-service teachers' teaching competences positively. Pre-school teacher candidates carrying out microteaching applications are found to be more efficient during lecturing as they kill some of their worries in the classroom setting and as it causes them to feel more comfortable (Sarı et al., 2005).

Many studies indicating that microteaching activities help pre-service teachers to suppress their anxiety levels, overcome their doubts and fears, increase their consciousness about teaching profession, be efficient in all the matters about teaching self-competence, make contact with students, direct students' interests to the course, use time efficiently, benefit from education technologies and provide classroom management support (Arends, 2000; Kpanja, 2001; Karamustafaoğlu & Akdeniz, 2002; Fernandez, 2005; Fernández & Robinson, 2006, Ogeyik, 2009) are in compliance with the present study .

In light of the findings of the present study, it is possible to say that TV program simulation designed in accordance with the microteaching technique is effective to a great extent in reducing the worries of pre-service teachers about lecturing and in increasing their self-confidence and their interest and excitement about the environmental education course. Consequently, introduced TV program simulation method is suggested to be used especially in teacher education institutions and also in all levels of teaching. The missing equipments required for the healthy execution of microteaching applications should be provided. This application is thought to be important in terms of applying the microteaching technique in environmental education and make pre-service teachers volunteer practitioners of these applications. It is suggested that further research may look at the effects of TV program simulation at different levels of schooling on variables such as environmental consciousness, environmental attitude and behavior.

References

Akalın, S. (2005). Comparison between traditional teaching and microteaching during school experience of student-teachers. *Eurasian Journal of Educational Research, 20*, 1-13.

Amobi, A. A. (2005). Preservice teachers' reflectivity on the sequence and consequences of teaching actions in a microteaching experience.*Teacher Education Quarterly, 32*(1), 115-130.

Arends, R. I. (2000). *Learning to teach.* Newyork: Mc Graw-Hill.

Benton-Kupper, J. B. (2001). The microteaching experience: Student perspectives. *Education, 121*(4), 830-835.

Brent, R. & Thomson, W.S. (1996). Videotaped microteaching: Bridging the gap between the university to the classroom. *The Teacher Educator, 31,* 238-247.

Büyükkaragöz, S.S. & Çivi, C. (1999). *Genel öğretim metotları* [General teaching methods]. (10. Baskı). İstanbul: Beta Basım Yayım Dağıtım.

Ceyhun, İ. & Karagölge, Z. (2002). Kimya eğitiminde tezsiz yüksek lisans öğrencileri ile mikroöğretim [Microteaching with non-thesis graduate students in chemistry education]. *V. Ulusal Fen Bilimleri ve Matematik Eğitimi Kongresi.* ODTÜ Kültür ve Kongre Merkezi. Ankara, Türkiye.

Cunningham, A. & Benedetto, S. (2002). Using digital video tools to promote reflective practice. *Proceedings of Society for Information Technology and Teacher Education International Conference,* Nashville, Tennessee, USA.

Çakır, Ö. (2000). Öğretmen yetiştirmede teoriyi pratiğe bağlayan mikroöğretimin Türkiye'deki üç üniversitede durumu [The status mikroteachings' linking theory to practice in teacher training in three universities in Turkey]. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi, 18,* 62-68.

Çakır, Ö. & Aksan, Y. (1992). Yabancı dil öğretmeni yetiştirmede mikroöğretimin rolü: Bir model [The role of microteaching in growing foreign language teacher: A model]. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi, 7,* 313-320.

Demirel, Ö. (2000). *Alandan uygulamaya öğretme sanatı* [The teaching art from field to practice]. Ankara: Pegem A Yayıncılık.

Erökten, S. & Durkan, N. (2009). Özel Öğretim Yöntemleri II dersinde mikroöğretim uygulamaları [The microteaching applications in course "Special Teaching Methods II"]. *1. Uluslararası Türkiye Eğitim Araştırmaları Kongresi,* 1-3 Mayıs, Çanakkale www.oc.eab.org.tr/egtconf/pdfkitap/pdf/167.pdf

Farris, R.A. (1991). Micro-peer teaching: organization and benefits. *Education, 111* (4), 559-562.

Gess-Newsome, J. & Lederman, N. G. (1990). The preservice microteaching course and science teachers' instructional decisions: a qualitative analysis. *Journal of Research in Science Teaching, 27*(8), 717-726.

Görgen, İ. (2003). Mikroöğretim uygulamasının öğretmen adaylarının sınıfta ders anlatımına ilişkin görüşleri üzerine etkisi [The effect of microteaching practises on student teachers' views of giving lessons in the classroom]. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi, 24,* 56-63.

Gürses, A., Bayrak, R., Yalçın, M., Açıkyıldız, M. & Doğar, Ç. (2005). Öğretmenlik uygulamalarında mikroöğretim yönteminin etkililiğinin incelenmesi [Investigation of effectiveness of microteaching at practicum]. *Kastamonu Eğitim Dergisi, 13*(1), 1-10.

Hawkey, K. (1995). Learning from peers: The experience of student teachers in school-based teacher education. *Journal of Teacher Education, 46,* 175-183.

Higgins, A. & Nicholl, H. (2003). The experiences of lecturers and students in the use of microteaching as a teaching strategy. *Nurse Education in Practice, 3,* 220-227.

Jensen, R. A., Shepston, T. J., Conner, K. & Killmer, N. (1994). Fear of the known: using audio-visual technology as a tool for reflection in teacher education. Paper presented at the *74th Annual Meeting of the Association of Teacher Educators,* Atlanta, USA.

Karadeniz, Ş. (2009). *Mikroöğretim değerlendirme formu* [Microteaching evaluation forms], Retrieved March 12, 2009, from http://www.sirinkaradeniz.com/kaynaklar/ppt/Egt/mikroogretim_degerlendirme.doc

Karamustafaoğlu, O. & Akdeniz, A. R. (2002). Fizik öğretmen adaylarının kazanmaları beklenen davranışları uygulama okullarında yansıtabilme olanakları [Reflect possibilities of physics teacher candidates' expected behavior to win in the application school]. *V. Ulusal Fen Bilimleri ve Matematik Eğitimi Kongresi.* ODTÜ.

Karçkay T. A. & Sanlı, Ş. (2009). The effect of microteaching application on the preservice teachers' teacher competency levels. *Procedia Social and Behavioral Sciences, 1*, 844–847.

Kpanja, E. (2001). A study of the effects of video tape recording in microteaching training. *British Journal of Educational Technology, 32*(4), 483–486.

Külahçı, Ş. G. (1994). Mikroöğretimde Fırat Üniversitesi Teknik Eğitim Fakültesi deneyimi I. model geliştirme [I. model development experience in microteaching of Firat University Faculty of Technical Education]. *Eğitim ve Bilim, 18*(91), 12-23.

Külahçı, Ş. G. (1994). Mikroöğretimde Fırat Üniversitesi Teknik Eğitim Fakültesi deneyimi II. değerlendirme [II. evaluation experience in microteaching of Firat University Faculty of Technical Education]. *Eğitim ve Bilim, 18*(92), 36-44.

Lee, G. C. & Wu, C. C. (2006). Enhancing the teaching experience of pre-service teachers through the use of videos in web-based computer-mediated communication (CMC). *Innovations in Education and Teaching International, 43*(4), 369-380.

Mergler, Amanda G. & Tangen, Donna J.(2010). Using microteaching to enhance teacher efficacy in pre-service teachers. *Teaching Education*, *21*(2), 199-210.

Ogeyik, Ç. M. (2009). Attitudes of the student teachers in english language teaching programs towards microteaching technique. *English Language Teaching, 2*(3), 205-212.

Pauline, R. F. (1993). Microteaching: An integral part of a science methods class. *Journal of Science Teacher Education, 4*(1), 9-17.

Peker, M. (2009). Genişletilmiş mikroöğretim yaşantıları hakkında matematik öğretmeni adaylarının görüşleri [Pre-service mathematics teacher perspectives about the expanded microteaching experiences]. *Türk Eğitim Bilimleri Dergisi, 7*(2), 353-376.

Sarı, Y., Sakal, M. & Deniz, S. (2005). Okul öncesi öğretmen yetiştirmede mikro öğretim yönteminin etkililiği [The effectiveness of microteaching in preschool teacher training]. *Akademik Bilişim 2005*, 2-4 Şubat 2005, Gaziantep Üniversitesi, Gaziantep.

Selçuk, Z. (2001). *Okul deneyimi ve uygulama* [School experience and practice]. Ankara: Nobel Yayın Dağıtım.

Sherin, M. G. (2000). Viewing teaching on videotape. *Educational Leadership, 57*(8), 36-38.

Spurgeon, S. & Bowen, J.L. (2002). Digital video/multimedia portfolios as a tool to develop reflective teacher candidates. *23rd National Educational Computing Conference*, Texas.

Wahba, E. H. (1999). Microteaching. English teaching. *Forum Online, 37*(4).

Wilkinson, G. A. (1996). Enhancing microteaching through additional feedback from preservice administrators. *Teaching & Teacher Education, 12*(2), 211-221.

Taşdemir, M. (2006). *Kuramdan uygulamaya öğretim yöntemleri* [The teaching methods from theory to practice]. Ankara: Nobel Basımevi.

Tok, T. N. (2007). *Etkili öğretim için yöntem ve teknikler. Öğretim ilke ve yöntemleri* [Methods and techniques for effective teaching. Teaching principles and methods], (ed. Ahmet Doğanay), Ankara: Pegem A Yayıncılık.

Appendix

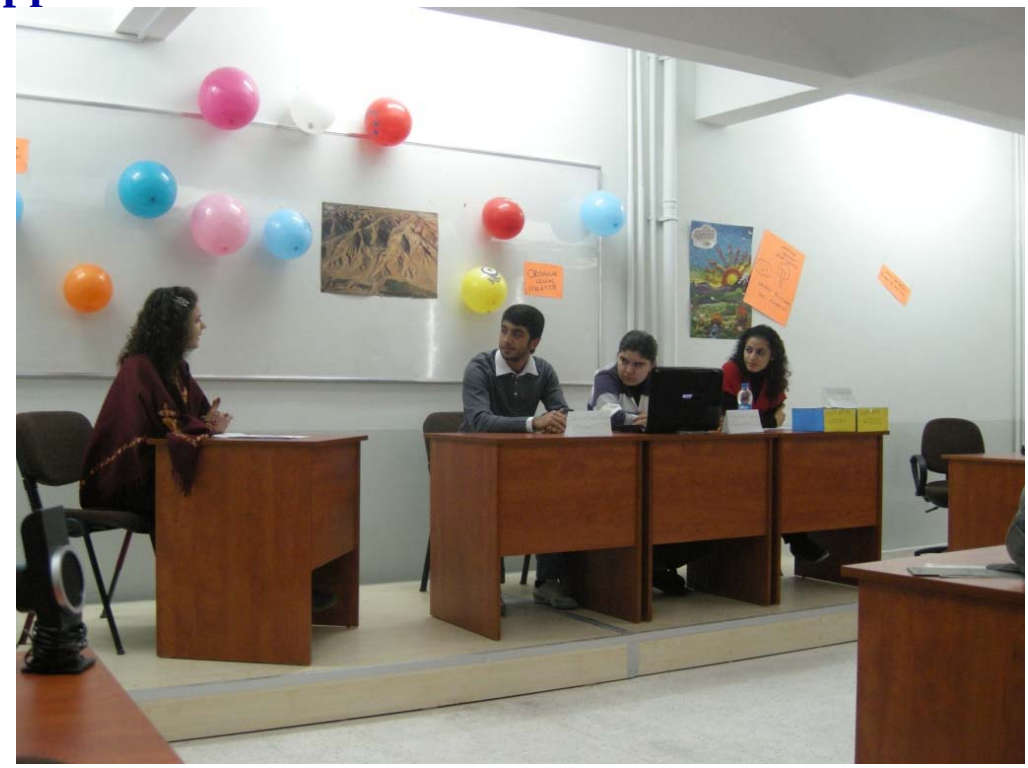

Photo 1

Photo 2

Photo 3

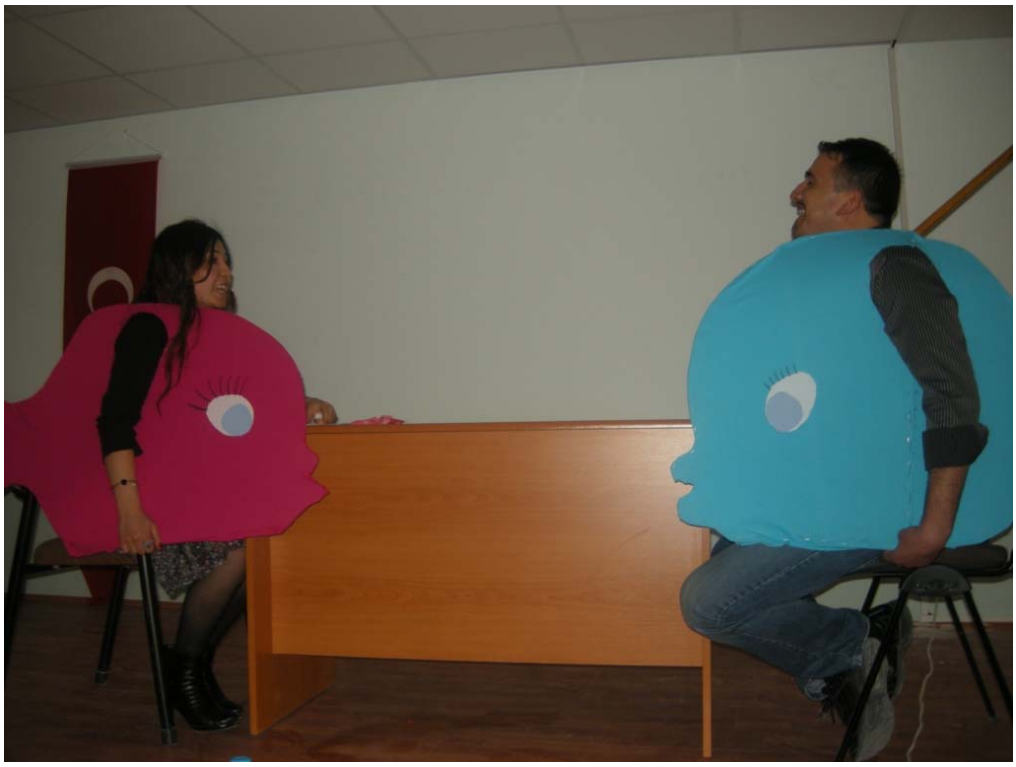

Photo 4

Photo 5

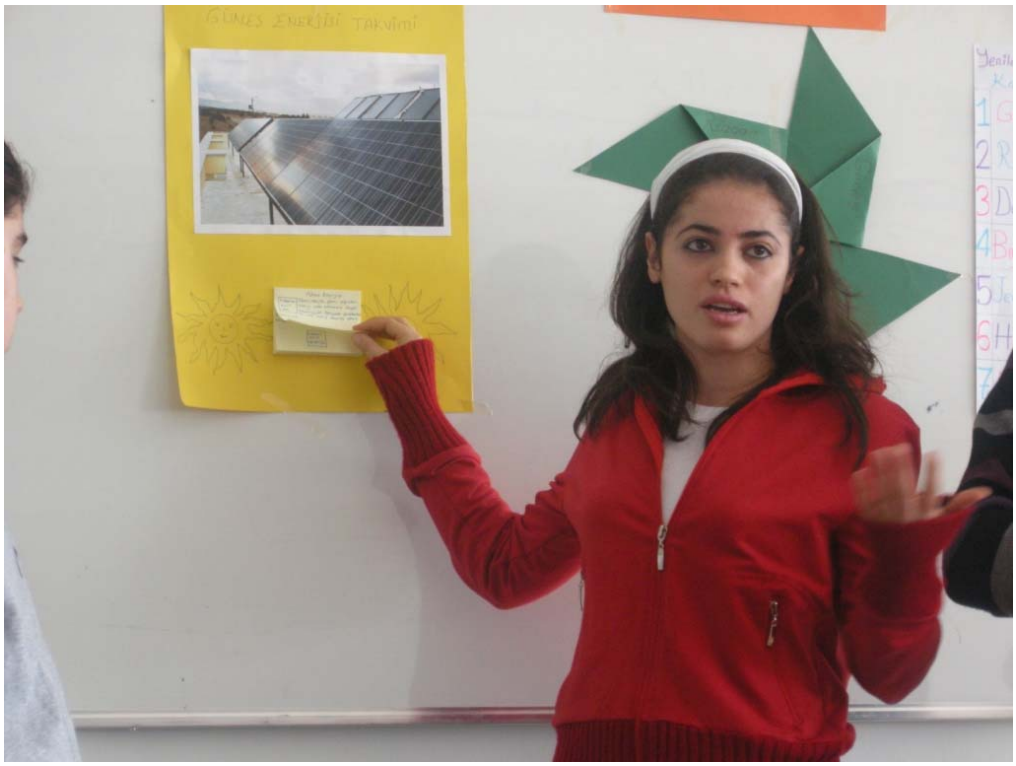

Photo 6

Photo 7

Photo 8