

The Opinions of Teacher Candidates about the Learning Outcomes in Teaching Science and Technology Course and the Predictions of Instructors about the Subject

Ali YILDIZ

Ataturk University, Kazim Karabekir Faculty of Education
Department of Primary Education
25240 Erzurum, Turkey

Abstract

The purpose of the study is to examine the views of the primary school teacher candidates who are obliged to take the science and technology course about the learning outcomes they acquired with the presentations that they made during the course and the predictions of the instructors teaching (explaining) the science and technology course about these views. The study group of the research is comprised of a total of 69 students (28 males and 41 females) studying in the third grade of primary school teaching the programme of the education faculty in a state university. The opinion form is comprised of seven open ended questions and open-ended sensitising interviews were used as a data collection tool. After the questions were asked to teacher candidates, five instructors teaching the science and technology course were interviewed and asked to determine which outcomes the students wrote in the answers they could give to the open ended questions in percentages. It was revealed in the research study that the present condition which came up as a result of stating the opinions of primary school teacher candidates about which outcomes they acquired at what percentage during the presentations they made in teaching the science and technology course was different from the predictions of the instructors teaching the course.

Keywords: Teacher candidates, teaching science and technology, presentations, learning outcomes, opinions

1. Introduction

Education is poses a major problem for all societies. The purpose of education is to make individuals compatible members of the society that they live in and the modern world where that society is integrated and to equip them with the knowledge and the skills required by the age. The individuals should be raised to keep up with the changes and the developments in the society that they live in and the world and also contribute to these changes and developments. This condition can be provided not only with a good educational system, but also with qualified teachers (Çelikten, Şanal & Yeni, 2005).

The higher expectations of the society from education and thereby teachers changed the roles of the teachers in the education system. Brophy and Alleman (1991) state that the indispensable components of effective teaching are that the teachers is friendly, enthusiastic and willing, in favour of change and development, altruistic, and the teacher is a person who thinks and reflects their opinions. An effective teacher is someone who is not only objective and open-minded towards his/her students but also pays attention to the needs and expectations of the students and deals with the problems that they come across with scientific methods, examines their solutions, and considers individual differences.

It is essential that the acquisition of values and attitudes related to the profession by the teacher candidates studying in Education Faculties is as important as knowledge (Çeliköz & Çetin, 2004). Küçükahmet (2003) states that attitudes are one of the personality traits of teachers that affect students and especially the attitudes towards the profession, students and schoolwork affect the personality and learning of the students. The success and efficiency of the school as an organisation essentially depends on the qualifications of the teachers who are going to run and implement the system. While making a decision regarding how to develop the students, their learning and schools, it is impossible to ignore the qualifications of the teachers (Blanton, Sindelar, Correa, Hardman, McDonnell & Kuhel, 2003).

The teacher is the most effective component of class management. As an effective class manager, the teacher is expected to prepare the class for education, define the class rules for the students and make the students adopt them, organise and sustain education, and provide appropriate behaviours for the students (Ağaoğlu, 2002). The most important function of the teacher is to provide a suitable learning environment and class organisation. Harris (1991) determines that, in an effectively managed class, the level of the students being interested in the task is higher, the level of disturbing behaviours is lower and the level of use of the learning time intended to reach the goals is higher. Jeans (1995) emphasises that the attitude and behaviour of the teachers have an extremely important effect on the students. The strong effect of the teacher on the students and therefore on the individual and society results from their being the person who plans, implements, and assesses education, which is an interactive process. The teacher is responsible for the organisation and implementation of the education processes required for effective class management. According to researchers (Clark, Lotto & Astuto, 1984; Balci, 2007; Şahin, 2011), the fundamental factors that provide effective teaching in the school are the teacher and the student. The secondary important factors to realise effective teaching are class size, teaching strategies and physical opportunities.

The teachers who are experts in their fields make their students attend the lesson actively. These are the teachers whose course presentations are open, who understand the problems that the students are faced with during learning, who are ready for the questions of their students and who do not display any ambiguity and evasions with the answers they give (Woolfolk, 1998). The effectiveness of the teacher is their ability to use the suitable tools and methods to realise the educational purposes. The teacher who is going to guide these dynamic processes in the direction of the goals of education and teaching plays an important role. It is obligatory for the goals to be carried out completely in order to fulfil the expectations of education. The roles of the people present in the school as a formal organisation were generally determined. The ability of the school system to reach its purpose depends on the individuals who take these roles to carry out their roles in an effective and adequate way. The effective teacher is not the person who only knows how to teach or how to solve the problems encountered while teaching, but who can also decide what and when to teach and who implements it. Qualified teachers are organised, can speak fluently and accurately, can use both various tools and equipment and practice methods (Şahin, 2011).

Bodner (1986; 1990), one of the advocates of the constructivist learning approach, states that even if the teachers are extremely good educators, the students will not be able to learn all the time, the knowledge in the teacher's mind will not be transferred to the mind of the student and the student is required to attend the learning environment actively. Due of this, it is required that the teachers should acquire the necessary knowledge about the science and technology subjects and use it effectively during lessons in order to prevent the courses from being traditional and to help the students to acquire science and technology literacy. It is known that the roles of the experiences and lives acquired previously, which are the primary factors that affect the attitudes of teacher candidates towards the profession, are significant. In this sense, it is important to reveal and understand the opinions of the teacher candidates who take the compulsory teaching science and technology course in the education faculties about the learning outcomes provided by the presentations carried out in the classroom and that are considered to be a short term teaching rehearsal by them.

Purposes of the study

- 1) To reveal the opinions of the teacher candidates who take the compulsory teaching science and technology course at university about the learning outcome provided by the presentations carried out in the classroom by them.
- 2) To seek an answer to the question "At what rate do the instructors teaching the science and technology courses understand the opinions of the teacher candidates about the learning outcomes acquired by the presentations carried out in the classroom?"

2. Methods

2.1. Research Design

Open-ended questions which help the students to express their own opinions about the research topic liberally and to reveal their scientific ideas clearly (Akgün, Gönen & Yılmaz, 2005; Bauner & Schoon, 1993) were used in the research study, which has a qualitative design. The research is a case study that aims to reveal the existing condition thoroughly.

2.2. Study group

The study group of the research study is composed of a total of 69 students (28 males and 41 females) studying in the third grade of the primary school teaching programme of the education faculty in a state university with a 55 year history.

2.3. Implementation

The stages of the implementation carried out throughout the research study are presented below.

- 1) In the courses of the first week, all of the classroom teacher candidates who form the study group of the research study were provided with the necessary explanations about how to teach the teaching science and technology course. In the same courses, all of the questions from the teacher candidates about the teaching process in the course were answered. In the same week, it was explained to all of the classroom teacher candidates that the instructors were going to teach the basic concepts and subjects of the teaching science and technology course over a period of six weeks. It was considered to be suitable that the subjects would be distributed in the first week in order to enable the teacher candidates to make the necessary preparations (conducting research, planning, suitable materials, and effective slides) for the presentations that they were going to start making six weeks later. In the remaining seven weeks, the presentations of the teacher candidates were planned.
- 2) The selection of subjects from the curriculum of the primary education science and technology course (4th and 5th grades) and immediately after the sequence of the lecture on the subjects according to the curriculum was determined. The subjects were distributed to the candidates by drawing lots: The topic in the first row was coded as number 1 and the topic in the thirtieth row as number 30. The teacher candidate who drew number 1 prepared and presented the first topic, as did the teacher candidate who drew number thirty.
- 3) Beginning from the week 8, 6 teacher candidates presented the subject that they prepared each week. Each teacher candidate made their presentations in 20 minutes. At the end of the presentations, 5 minutes were allocated to evaluate the presentations (positive or negative criticisms) with the teacher candidates acting as a student.
- 4) Primary school teacher candidates were informed that they should prepare their presentations according to the level of the 4th and 5th grade students; they could develop materials regarding the topic, they could use different methods such as computers, projectors, suitable slides, videos, posters, maps, tables and drama and they could display experiments.
- 5) It was determined that after the teacher candidates presented their work the students who acted as a listener (the other teacher candidates) could ask the teacher candidates questions and the teacher candidate who acted as a teacher was supposed to answer their questions. Similarly, the teacher candidate who made the presentation could ask a question to their peer sitting at the desk and acting as a student and everybody was asked to obey the requirement to answer these questions seriously. In this way, the participants attempted to create a real class atmosphere.
- 6) The evaluation of the performances of the teacher candidates who made the presentations were carried out by taking into consideration the entire process. certain criteria based on process-centred evaluation can be listed as the preparation of the teacher candidate for the course and having a comprehensive knowledge of the topic presented, the level of eagerness throughout the course, eye contact, tone of voice –stress and body language, use of a suitable method and technique, preparation and use of materials, time management, use of the board, performing visualisation and giving a summary and evaluation.
- 7) The implementation explained above was carried out for teaching science and technology courses I and II. The same implementation stages were carried out with the same study group in the second term for teaching science and technology course II by distributing different topics from the first term to the teacher candidates by drawing lots. Before long, each teacher candidate who participated in the study (exposed to the open-ended questions of the study) had the experience of performing two 20 minute presentations in the teaching science and technology course.
- 8) Open-ended questions of the research study prepared by the researchers were posed to the entire study group (69) on the same day after all of the classroom teacher candidates had given their second presentation a week later.

9) On the days following the open-ended questions were asked, interviews suitable to the “open-ended sensitising interviews” were carried out with six students chosen randomly among the teacher candidates who participated in the study to reveal the opinions that they acquired during the presentations they made in the science and technology course (Rubin, 1983; Yıldırım & Şimşek, 2011)

2.4. Data Collection tools and Analysis

The opinion form composed of seven open-ended questions prepared by the researcher and open-ended sensitising interviews (Rubin, 1983; Yıldırım & Şimşek, 2011) were used as a data collection tool. The research questions were analysed by three instructors who are experienced experts in their fields before the implementation and necessary changes and corrections were made based on their suggestions and opinions. During the subsequent days teacher candidates expressed their opinions in the written form using the opinion form made of open-ended questions, interviews in the form of “open-ended sensitising interviews” (Rubin, 1983; Yıldırım & Şimşek, 2011) were conducted with 6 people chosen randomly among the teacher candidates who expressed their opinions in the written form about the learning outcomes provided by the presentations they carried out in teaching science and technology course. While the alternative analysis of the answers were given by the students to the open-ended questions in the opinion form, the learning outcomes written were grouped according to their familiarity (a, b, c,...) and they were put into the tables in order to understand them easily in the findings section of the research and the necessary evaluations were carried out in the conclusion section.

After the questions were posed to the teacher candidates, interviews were conducted with five experienced instructors, who had presented the teaching science and technology courses in previous years, explained the course during the term when the research was carried out, and will probably present the course in the future in the same faculty. In these interviews, they were asked to write which learning outcome (or learning outcomes) at what percentage the teacher candidates wrote while expressing their own opinions in percentages (4%, 10%, 15%...) with the answers that they could write to the open-ended questions about the learning outcomes they acquired with the presentations they made in teaching science and technology course. The arithmetic average of the percentages of the predictions related to the learning outcomes of the teacher candidates written by the instructors for each question were calculated and they were given in the table where the learning outcomes of the related question were expressed.

3. Findings

3.1. The candidates’ answers to the questions about the learning outcomes provided by the presentations to the teacher candidates.

Question 1) Which learning outcomes did the presentations have you acquire in terms of class management? Please write your answer.

The grouping of the learning outcomes written by the students for question 1 with content analysis were carried out as was given below and their distributions were given in Table 1.

- a) I learnt how to address the class.
- b) I learnt how to give the right to speak to the students
- c) I learnt how to make the students active in the lesson
- d) I learnt how to plan a lesson
- e) I learnt how to manage the process throughout the course
- f) I learnt that it would be an advantage to provide the control of the classroom by walking around the room throughout the course instead of standing in one spot.

Table 1. The distribution of the answers written by the teacher candidates and the predictions of the instructors to the question; “Which learning outcomes did the presentations have you acquire in terms of class management?”

Student answers	Students (N)	Students (%)	Instructors (%)
The students who wrote all of the learning outcomes (a, b, c, d, e, f)	35	50.7	39.0
The students who wrote five learning outcomes (any five gains)	-	-	24.0
The students who wrote four learning outcomes [a, d, e, f (7); a, b, c, f (7)]	14	20.3	19.0
The students who wrote three learning outcomes [a, c, e (9); a, b, c (3); c, e, f (3)]	15	21.7	8.4
The students who wrote two learning outcomes (d, e)	3	4.4	3.4
The students who wrote one learning outcome (a)	2	2.9	5.2
No answer	-	-	1.0
Total	69	100	100

Question 2) Which learning outcomes did the presentations provide you with in terms of technology? Please write your answer.

The grouping of the learning outcomes written by the students for question 2 with content analysis were carried out as presented below and their distributions are presented in Table 2.

- I learnt to use a computer and its supplementary tools to explain or present a subject in the lesson.
- I learnt how to prepare a slide.
- I learnt how to prepare a more visual and effective slide.
- I learnt how to visualise a subject better.
- I learnt to do research, find and use visual slides and videos about my subject.

Table 2. The distribution of the answers written by the teacher candidates and the predictions of the instructors to the question; “Which learning outcomes did the presentations provide you in terms of technology?”

Student answers	Students (N)	Students (%)	Instructors (%)
The students who wrote all of the learning outcomes (a, b, c, d, e)	34	49.3	18.0
The students who wrote four learning outcomes (any four gains)	-	-	20.0
The students who wrote three learning outcomes [a, b, e (6); c, d, e (9); c, e, f (7)]	22	31.9	30.0
The students who wrote two learning outcomes [a, e (2); b, e (5); c, e (3)]	10	14.5	16.0
The students who wrote one learning outcome [a (1); e (2)]	3	4.4	14.0
No answer	-	-	-
Total	69	100	100

Question 3) Which learning outcomes from the presentations have you acquired in terms of preparing, asking and answering questions? Please write your answer.

The grouping of the learning outcomes written by the students for question 3 with content analysis were carried out as presented below and their distributions are presented in Table 3.

- I learnt how to prepare questions that would motivate the students to the subject I was going to explain to them at the beginning of the lesson and help them to think independently.
- I learnt what kind of questions to ask and when to ask the questions in order to make the students attend the lesson.
- I learnt what kind of questions I (teacher) would be asked about the subject and to be prepared accordingly.
- I learnt what kind of questions I would prepare in order to be able to perform a better evaluation of the subject.

- e) I learnt that an answer to the question would be required to be received from many different students according to the quality of the question.
- f) I acquired the experience that preparing a question was a very difficult process.

Table 3. The distribution of the answers written by the teacher candidates and the predictions of the instructors to the question; “Which learning outcomes did the presentations have you acquire in terms of preparing, asking and answering questions?”

Student answers	Students (N)	Students (%)	Instructors (%)
The students who wrote all of the learning outcomes (a, b, c, d, e, f)	17	24.6	15.0
The students who wrote five learning outcomes [a, b, c, d, e (11); a, b, d, e, f (11)]	22	31.9	18.0
The students who wrote four learning outcomes (b, c, e, f)	6	8.7	19.0
The students who wrote three learning outcomes [a, b, e (3); a, c, e (3)]	6	8.7	17.0
The students who wrote two learning outcomes [a, b (5); b, e (6); c, f (2)]	13	18.8	16.0
The students who wrote one learning outcome [e (4); d (1)]	5	7.2	15.0
No answer	-	-	-
Total	69	100	100

Question 4) Which learning outcomes did the presentations provide you with during the preparation stage of the lesson (subject)? Please write your answer.

The grouping of the learning outcomes written by the students for question 4 with content analysis were carried out as presented below and their distributions are presented in Table 4.

- a) I acquired the experience of conducting good research.
- b) I thought that the subject I was going to explain should be suitable to the level of the students.
- c) I learnt that it can be necessary to shorten or expand the subject.
- d) I learnt how to benefit from the course books for the research.
- e) I learnt how to benefit from the Internet for the research.
- f) I was supported and helped by my peers in every stage and this helped me to give importance to cooperation and interaction and be more sensitive about this subject.

Table 4. The distribution of the answers written by the teacher candidates and the predictions of the instructors to the question; “Which learning outcomes did the presentations provide you during the preparation stage of the lesson (subject)?”

Student answers	Students (N)	Students (%)	Instructors (%)
The students who wrote all of the learning outcomes (a, b, c, d, e, f)	15	21.7	12.0
The students who wrote five learning outcomes [a, b, d, e, f (6); a, b, c, d, e (14)]	20	29.0	15.0
The students who wrote four learning outcomes [a, b, c, f (3); b, c, e, f (9)]	12	17.4	25.0
The students who wrote three learning outcomes [a, c, e (4); d, e, f (3); a, b, e (9)]	16	23.2	30.0
The students who wrote two learning outcomes [a, b (2); b, c (2)]	4	5.8	12.0
The students who wrote one learning outcome (b)	2	2.9	6.0
No answer	-	-	-
Total	69	100	100

Question 5) When your presentations were complete, which learning outcomes did the criticisms which were made about you or the presentation or which you performed on your peers provide you with? Please write your answer.

The grouping of the learning outcomes written by the students for question 5 with content analysis were carried out as presented below and their distributions are presented in Table 5.

- a) I learnt how to put up with the criticism my peers gave about me or my presentation.
- b) I understood that my peers were usually right about the criticism they gave about me or my presentation.
- c) I understood that the positive criticisms my peers gave about me and my presentation motivated me and I had to think and go over the issues about which I received negative criticism.
- d) I learnt how to criticise my peers who made presentations with more suitable expressions without upsetting them.

Table 5. The distribution of the answers written by the teacher candidates and the predictions of the instructors to the question; “When your presentations were finished, which learning outcomes did the criticism which were done about you or the presentation or which you did about your peers provide you with?”

Student answers	Students (N)	Students (%)	Instructors (%)
The students who wrote all of the learning outcomes (a, b, c, d)	14	20.3	18.0
The students who wrote three learning outcomes [a, b, c (6); a, c, d (7); a, b, d (5); b, c, d (8)]	26	37.7	26.0
The students who wrote two learning outcomes [b, c, (3); c, d (6)]	9	13.0	18.0
The students who wrote one learning outcome [a (4); c (5); d (8)]	17	24.6	32.0
No answer	3	4.4	4.0
Total	69	100	100

Question 6) Which learning outcomes did the presentations made provide you with? Please write your answer.

The grouping of the learning outcomes written by the students for question 6 with content analysis were carried out as presented below and their distributions are presented in Table 6.

- a) I learnt how to set my tone of voice.
- b) I learnt that I should not speak with the same tone of voice and I had to use a suitable tone of voice according to the situation.
- c) My nervousness is slightly reduced and I feel better psychologically.
- d) I understand that building eye contact with the individuals opposite me made motivation easy for them in the lesson.
- e) I learnt how to communicate with individuals.
- f) I understood that effective communication established with the individuals was necessary for effective learning.
- g) I learnt that effective communication established with the individuals made class management easy.

Table 6. The distribution of the answers written by the teacher candidates and the predictions of the instructors to the question; “Which learning outcomes did the presentations you did provide you?”

Student answers	Students (N)	Students (%)	Instructors (%)
The students who wrote all of the learning outcomes (a, b, c, d, e, f, g)	24	34.8	12.0
The students who wrote six g learning outcomes (a, b, c, d, e, g)	3	4.4	16.0
The students who wrote five learning outcomes (a, b, d, f, g)	11	15.9	12.0
The students who wrote four learning outcomes [a, c, d, g (5); a, b, c, g (4); b, c, d, g (6); c, e, f, g (5)]	20	29.0	16.0
The students who wrote three learning outcomes (b, c, f)	3	4.4	19.0
The students who wrote two learning outcomes (b, c)	3	4.4	21.0
The students who wrote one learning outcome [c (2); f (2), g (1)]	5	7.2	4.0
No answer	-	-	-
Total	69	100	100

Question 7) Which learning outcomes did the presentations you made provide you with about which method is required to be used? Please write your answer.

The grouping of the learning outcomes written by the students for question 7 with content analysis were carried out as presented below and their distributions are presented in Table 7.

- a) I learnt how to choose the suitable method for the subject I was going to explain and plan the lesson accordingly.
- b) I acquired experience to use more than one method in a lesson
- c) I learnt how to prepare and use suitable materials for the subject I was going to explain.
- d) I learnt which method or technique I could use at which stage of the lesson in order to activate them.
- e) I learnt how to do research, set up the experiment, and interpret the results in order to find the suitable experiment related to the subject I was going to explain.

Table 7. The distribution of the answers written by the teacher candidates and the predictions of the instructors to the question; “Which learning outcomes did the presentations you did provide you about which method is required to be used?”

Student answers	Students (N)	Students (%)	Instructors (%)
The students who wrote all of the learning outcomes (a, b, c, d, e)	28	40.6	17.0
The students who wrote four learning outcomes [a, c, d, e (5); a, b, c, e (3); a, b, c, d (2)]	10	14.5	20.0
The students who wrote three learning outcomes [a, c, e (6); a, b, e (2); b, d, e (3); b, c, e (6)]	17	24.6	22.0
The students who wrote two learning outcomes[a, b (2); a, d (6)]	8	11.6	33.0
The students who wrote one learning outcome [c (4); e (2)]	6	8.7	8.0
No answer	-	-	-
Total	69	100	100

3.2. The opinions of the teacher candidates about the learning outcomes which the presentations they performed provided them with

In the interviews conducted (open-ended sensitising interviews), the teacher candidates gave comparative answers to the question; “What do you think about the learning outcomes provided by the presentations you performed?” It was discovered that what the students said in the interviews confirmed and supported the learning outcomes which they had stated in writing and their opinions and thoughts about the learning outcomes. These original opinions (positive/negative) are presented below.

“To begin with, the presentations we performed enabled us to develop and strengthen the feeling of teaching. They developed our self-confidence and feeling of responsibility. I learnt how to use the suitable equipment and tools and material to the lesson, in other words, the subject.”

“The presentations taught us how to address a community. I learnt how to manage a class and how to behave in the classroom. I learnt how to communicate more effectively. I know what kind of materials I need to develop in the science and technology course and where I can use them. I learnt how to plan a lesson and manage time. What else I can expect!”

“I acquired the experience required to provide class management. In the past, I was not able to express the subject I was going to explain exactly and I became bored in the classroom. But now, I can both express myself and I make the lesson more enjoyable.”

“I learnt how to be patient. I learnt effective class management. I learnt how to arouse interest in the lesson, in other words, in the subject which was explained, by asking effective questions.”

“I learnt with which visual I was going to support the subject best, to express my opinions better, and talk more effectively with other people. Furthermore, I want to state that I have found the criticism given in the heat of the moment just after the presentations to be beneficial.”

When all of the positive opinions are analysed, it can be discovered that the teacher candidates usually stated learning outcomes which were partially different from the opinions they expressed before but parallel to the opinions they expressed in writing. It is revealed that only one of the teacher candidates expressed slightly negative opinions about the learning outcomes the presentations that the teacher candidates made provided them and determined that some of the learning outcomes were provided, but it could be more beneficial if they performed their presentations in a real (natural) class environment. This negative opinion was given below in its most natural (original) form.

“I don’t think that these presentations carried out are very beneficial since they are not made in classes (real environments) in primary schools. We are asked to see, think and perceive our peers (the teacher candidates) as students, which I believe is very difficult. The questions the children in primary schools can ask and the answers we can give to the questions and the attitudes of our peers are completely different. To me, these presentations would have been more beneficial if they had been made in classes where there were real students.”

4. Conclusions and suggestions

It was revealed that the teacher candidates who acquired the whole (six of them), four, three, two and only one of the learning outcomes written for the first question were 50.7%, 20.3%, 21.7%, 4.4% and 2.9% respectively and the teacher candidates who acquired the whole (five of them), three, two and one of the learning outcomes written for the second question were arranged in order as 49.3%, 31.9%, 14.5% and 4.4% and 2.9%. A similar sequencing can be done for the other questions (3-7) of the study by analysing the learning outcomes written. The teacher candidates determined that they acquired the whole (six of them), four, three, two and one of the learning outcomes written for the third question at the rate of 24.6%, 31.9%, 8.7%, 8.7%, 18.8% and 7.2%, for question four, the whole (six of them), four, three, two and one of the learning outcomes at the rate of 21.7%, 29.0%, 17.4%, 23.2%, 5.8% and 2.9%, for question 5, the whole (4 of them), three, two and one of the learning outcomes at the rate of 20.3%, 37.7%, 13.0% and 24.6%; for question 6 the whole (seven of them), six, five, four, three, two and one of the learning outcomes at the rate of 34.8%, 4.4%, 15.9%, 29.0%, 4.4%, 4.4% and 7.2% and for question 7, the whole (five of them), four, three, two and one of the learning outcomes at the rate of 40.6%, 14.5%, 24.6%, 11.6% and 8.7%.

It was found that the percentage of the teacher candidates who stated that the presentations made in teaching science and technology course provided half or more of the learning outcomes listed for the first question were 92.7%. It was understood that the percentage for the other questions were 81.2%, 73.9%, 82.3%, 71.0%, 84.1% and 79.7% respectively. The predictions of the instructors about the presentations made in the teaching science and technology course provided half or more of the learning outcomes written were 90.4%, 68.0%, 69.0%, 82.0%, 64.0%, 56.0% and 59.0% respectively. It is possible to examine the difference between the real situation and the predictions of the instructors teaching the science and technology course about the learning outcomes provided by the presentations the teacher candidates made in the lesson with the percentages (sequenced) given above and the data in the tables (Tables 1-7) of the study. Only three teacher candidates (4.4%) in the study stated that they did not acquire any of the learning outcomes written for question five (by not writing anything). Conversely, the instructors teaching the science and technology course predicted for the teacher candidates who stated that they did not acquire any learning outcomes as 4.0% for the fifth question and 1.0% for the first question.

In the open-ended sensitising interview (Rubin, 1983; Yıldırım & Şimşek, 2011) conducted, the teacher candidates gave comparative answers to the question; “What do you think about the learning outcomes provided by the presentations you made?” The candidates stated in the interviews that they expressed positive opinions (gained many learning outcomes) at the percentage of 83.3% and these opinions verified and supported the learning outcomes that were written before. Only one teacher candidate (16.7%) in the interviews expressed partially negative opinion. The negative opinion being expressed only for the environment where the presentations were made drew attention. The teacher candidate stated that it would be more realistic to make the presentations in a real (natural) class environment to provide the expected learning outcomes.

The presentations made in the teaching science and technology course are thought to be beneficial in terms of reflecting the theoretical knowledge to practice, acquiring certain anticipated skills and qualifications or test at what level they are acquired. These presentations are important in order to prepare the teacher candidates for practical training (such practical courses as School Experience, Teaching practices I and Teaching practices II), which they will complete in primary schools. Making more frequent presentations about any field in education faculties in an organised manner could be beneficial for the teacher candidates as the preparatory activities for the profession before practical training. The researchers have suggested that they should conduct similar research studies for the student presentations made in teaching mathematics and teaching social studies courses. Furthermore, it may be beneficial to carry out research studies for the student presentations performed in teaching science and technology, teaching mathematics and teaching social studies courses, where more teacher candidates (in other words where the sampling is wider) are ensured to attend the study group in different education faculties.

References

- Ağaoğlu, E. (2008). Sınıf yönetimi. Z. Kaya (Ed.), *Sınıf yönetimi ile ilgili genel olgular (1-42)*. Ankara: Pegem A Yayınları.
- Akgün, A., Gönen, S. & Yılmaz, A. (2005). Fen bilgisi öğretmen adaylarının karışımların yapısı ve iletkenliği konusundaki kavram yanılgıları. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi*, 28, 1-8.
- Balcı, A. (2007). *Etkili okul ve okul geliştirme: Kuram, uygulama ve araştırma*. Ankara: Pegem A Yayıncılık.
- Bauner, M. & Schoon, I. (1993). Mapping variety in public understanding of science. *Public Understanding of Science*, 2 (2), 141-155.
- Blanton, L., Sindelar, P.T., Correa, V., Hardman, M., McDonnell, J. & Kuhel, K. (2003). Conceptions of beginning teacher quality: Models of conducting research. (Copsse Document No RS-6, Prepared for the Center on Personnel Studies in Special Education).1-56, FL:University of Florida, Gainesville.
- Bodner, G.M. (1986). Constructivism: a theory of knowledge, *Journal of Chemical Education*, 63(10), 873-878.
- Bodner, G.M., (1990). Why good teaching fails and hardworking students do not always succeed? *Spectrum*, 28(1), 27-32.
- Brophy, J. E. & Alleman, J. (1991). Activities as instructional tools: a framework for analysis and evaluation. *Educational Researcher*, 20, 9 – 23.
- Clark, D. L., Lotto, L. S. & Astuto, T. A. (1984). Effective schools and school improvement: a comparative analysis of two lines of inquiry. *Educational Administration Quarterly*, 20(3), 41-68.
- Çeliköz, N. & Çetin, F. (2004). Anadolu öğretmen lisesi öğrencilerinin öğretmenlik mesleğine yönelik tutumlarını etkileyen etmenler. *Millî Eğitim Dergisi*, (162). [Online] <http://yayim.meb.gov.tr> adresinden 12 Haziran 2012 tarihinde indirilmiştir.
- Çelikten, M., Şanal, M. & Yeni, Y. (2005). Öğretmenlik mesleği ve özellikleri. *Erciyes Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 19, 207-237.
- Harris, A. H. (1991). Proactive classroom management: several ounces of prevention. *Contemporary Education*, 62(3),156-160.
- Jeans, A. B. (1995). Teacher education: an international research agenda. *World Conference on Teacher Education*. İzmir: 9 Eylül Üniversitesi Yayınları.
- Küçükahmet, L. (2003). *Öğretimi planlama ve değerlendirme*. Ankara: Nobel Yayın Dağıtım.
- Rubin, H. J. (1983). *Applied social research*. Columbus, OH: Charles E. Merrill Publishing.
- Şahin, A. (2011) Öğretmen algılarına göre etkili öğretmen davranışları. *Ahi Evran Üniversitesi Eğitim Fakültesi Dergisi*, 12 (1), 239-259.
- Woolfolk, A. (1998). *Educational psychology*, Boston: Allyn and Bacon.
- Yıldırım, A. & Şimşek, H. (2011). *Sosyal bilimlerde nitel araştırma yöntemleri*. Ankara: Seçkin Yayıncılık.