



The Practice of Prospective Science Teachers Regarding the Planning of Education Based Trips: Evaluation of Six Different Field Trips

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Abstract

The aim of this study is to explain how planning educational trips out of school environments for training purposes should be as well as to determine the opinions and the practices of prospective science teachers. The study that lasted for two years was carried out in parallel with the elective course "Science Education in Informal Learning Environments" in the Spring Term of the Academic Year of 2007-2008 and 2008-2009. Thirty-four 4th grade prospective science teachers participated in the study from the Giresun University Education Faculty Science Teaching Programme. In line with the research, educational trips to six different places were organized. The research data used in qualitative research observation form and semi-structured interview technique were obtained. The observed results showed that prospective science teachers were careful, willing, and joyful in all field trips and worked in cooperation. The interview results also showed that prospective teachers' knowledge and their self-confidence increased for educational trips for training purposes planned.

Key Words

Informal Learning Environments, Science Education, Fieldtrip.

The class environment's having limited sources to bring in the new knowledge which is acquired with the fast developments in science and technology to the society in an easy, understandable, and enjoyable way has caused the need for alternative environments (Bozdoğan, 2007; Kisiel, 2007). These places which are described as informal education environments include mass media, sports centres, zoos, botanic parks, woodlands, museums, libraries, aquariums, open air laboratories, nature centres, and a of social areas which we won't be able to count here (Hannu, 1993; Howe & Disinger,

1988). Informal education environments' being fun and natural, the people visiting these places being volunteers and the introduction of opportunity of gaining different experiences and teaching to different age groups of people with different activities can be seen as an advantage (Taylor & Caldarelli, 2004). It was introduced by the researches conducted that different activities which were presented apart from formal education resources were rich teaching resources which made learning more fruitful (Ramey-Gassert, 1997), encouraged learning by different ways which the class environment wasn't able to introduce, helped each student to enlighten themselves in their own paces (Melber & Abraham, 1999) and support the education at school (Gerber, Cavallo, & Marek, 2001; Hannu, 1993).

One of the formal education environments which include a lot of fields is the field trips which are organized by the schools. These trips are one of the leading and effective education strategies which attract the attention of students and whose outcomes

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are permanent. This strategy is one of the ways which provide students unique opportunities to understand the natural environment and promote the sustainability of education. These natural environments help the concepts and complex knowledge which are told in school environment to be observed in its natural environment, to be aware of the real world and it also provides to gain experience at first hand (Bowker & Tearle, 2007; Kola-Olusanya, 2005; Leback, 2007; Rennie & McClafferty, 1995; Scarce 1997; Skop, 2008; Tal, 2004b). They can also provide permanent change in the students' knowledge, attitudes and behaviours (Ballantyne & Packer, 2009; Knapp & Barrie, 2001; Orion, Hofstein, Tamir, & Giddings, 1997; Rudman, 1994; Tal & Morag, 2009). However, this condition must not mean that we deny the importance of education which is performed in the class because the best education takes place when a relation between intramural and extramural environments is built and carried out (Ballantyne & Packer, 2006; Kisiel, 2007). Moreover, it is emphasized that the field trips which are well-organised and associated with the school curriculum create successful outcomes (Bowker & Tearle; Kisiel, 2005; Tal, Bamberger, & Morag, 2005).

The field trips organised for the extramural environments which have such important functions are more difficult, complex and costly than formal education (Orion et al., 1997; Osborne & Dillon, 2007) and the teachers have important responsibilities during this process because the field trips which teachers organise by taking into consideration the needs and the interests of students provide the children not only to gain more experience and to get to know the world better but also develop the students' individual levels (Bowker & Tearle, 2007; Kisiel, 2005; Taylor, Morris, & Cordeau-Young, 1997). Furthermore, using scientific strategies during the planning process provide opportunities for the students to get to know their environment better, gain experience at first hand by doing observations and develop their problem-solving skills (Lisowski & Disinger, 1991; Taylor et al., 1997). But, the studies conducted reveal that teachers come across various difficulties in terms of management, counselling (guidance), and pedagogy while carrying out trips (Griffin & Symington, 1997; Kisiel, 2003; Michie, 1998; Olson, Cox-Petersen, & McComas, 2001; Tal & Morag, 2009; Tal & Steiner, 2006). It was observed that teachers were not aware of the aims of the trips they were taking (Cox-Petersen, Marsh, Kisiel, & Melber, 2003; Griffin, 1994, 2004; Griffin & Symington, 1997; Kisiel, 2003; Price & Hein, 1991) and they had difficulty in building a relation-

ship between the trips and course syllabus (Griffin & Symington, 1997; Kisiel, 2007; Ramey-Gassert, Walberg III, & Walberg, 1994). It was found in the studies conducted that teachers do not take active roles during the field trips process although they know that if it is well-organised, the field trips will have effective outcomes on students, they do not have any ideas about the planning which is to be done for the field trips (Anderson, Bethan, & Mayer-Smith, 2006; Ferry 1993; Tal 2004a; Tal et al., 2005) and they are incompetent about guiding students (Cox-Petersen & Pfaffinger, 1998; Griffin & Symington, 1997; Kisiel, 2005; Wellington, 1990). In addition, it was determined that teachers perceived the field trips as only interesting and enjoyable places (Cox-Petersen & Pfaffinger, 1998; Griffin, 1994, 2004; Griffin & Symington, 1997; Kisiel, 2003; Michie, 1998; Olson et al., 2001; Tal et al., 2005). Although the studies conducted reveal that the field trips had a very big potential to complete the education at school, it was seen in the studies above that a lot of teachers were not aware of their roles during this process and they did not use these resources effectively. This may have a lot of reasons. One of them is that while doing different activities outside the school teachers and teacher candidates are under time constraints and this pressure leads to reluctance about organising trips (Brewer, 2002; Howitt, 2007; Lindemann-Matthies et al., 2009). At the same time, taking the responsibility of the students and keeping them under control are the conditions which make teachers worry the most (Kisiel, 2007). Teachers' personal experiences (organized with their classes or joined while they were teacher candidates) and the conditions of both the school and the class (support for the trips by the school, number of students in the class, student interest, time, etc) play an important role during the preparation of trip (Bozdoğan, 2007; Disinger, 1984; Kisiel, 2005, 2007).

The studies conducted introduce the importance of encouragement and enlightenment of teachers about the subjects such as doing preparations and informing students before the trip, associating the trip with the school curriculum, giving a good and comprehensive guidance to their students during the trip and leading them and doing different in-class activities after the trip (Anderson, Lucas, & Ginns, 2003; DeWitt & Osborne, 2007; Orion & Hofstein, 1994; Tal, Bamberger, & Morag, 2005). Within this context, it was determined that teacher candidates should be given professional training and the institutions which educate teachers have important duties during this process (Anderson,

Data Analysis

The data related to the physical condition of the environment, activities done and the social and the individual interaction between prospective science teachers were obtained by the observation form prepared by the researcher. The researcher filled one observation form each trip during the process and tried to record the observations with photographs. In addition to this, the data obtained by semi-structured interview forms were subjected to content analysis. The data obtained through interviews were firstly written down and then the interview questions were accepted as the themes. According to the themes put forward by the research questions, the expressions were divided into categories; coded, summarised and interpreted by 3 different experts. For the reliability of the research, the coding consistency of the emerging categories was calculated. It was calculated by using the formula stated by Türmüklü (2000) as compatibility (matching) percentage in his study which is $P = Na / Na + Nd \times 100$ (P: matching percentage; Na: compatibility quantity; Nd: incompatibility quantity). The average compatibility percentage of the questions in the interview was calculated as 0,91 .

Implementation Stages

The distribution of implementation stages of the research according to the weeks was summarized below.

a) First, Second and Third Weeks (9 Lesson Hours-Class Environment): The questions prepared with semi-structured interviews technique were asked to the prospective science teachers before the lesson and these answers were recorded. The interviews conducted for each prospective teacher lasted 10 minutes on average. Then, prospective science teachers were informed by the researcher in the class environment about how to organize an education oriented trip and what they should pay attention during this process. Within this context, firstly, the importance of education oriented trips in terms of science teaching was told by making use of the literature and then the knowledge was made to be objectified with the examples given from the previous trip plans. Then, it was explained how to organize the trips which are going to be taken to the prospective science teachers stage by stage. PowerPoint presentations and visual materials (photographs, video plays, etc) were made use of in the lessons. Prospective science teachers were divided into three groups every two years because

trips would be organized to only three different extramural environments during the “science teaching elective course process in informal learning environment”. In order to address more effectively to the cognitive and affective field skills of science teacher candidates, the choice of places for the trips were decided by these groups. Thus, science teacher candidates were provided opportunities to conduct their studies enthusiastically. It was especially stated that the place of trip should be related to science subjects because the trips taken were education oriented and prospective science teachers were made to associate the place of trips with science subjects while making their choices.

b) Fourth and Fifth Week (6 Lesson Hours-Class Environment): Prospective science teachers had associated the place of trips with science subjects and then begun preparations to be made before and during the trips. During this process, the preparation of brochures for the advertisement of trip, the preparations made for guidance and the preparations of evaluation questions were completed.

c) Sixth, Seventh, Eighth, Ninth, Tenth and Eleventh Week (18 Lesson Hours-Field Trip): After all preparations were completed, practices started. In this process, a trip was taken in the first week and an evaluation was carried out in the class in the second week. Then, while going to the trip field, the group who was the guide that week distributed the advertising brochures to prospective teachers and asked them to read the brochures and answer the questions before the trip. This is a kind of activity which enables all prospective teachers to have information about the place of trip before the trip. When they reached the place of trip, the group members who were going to be the guide for that trip divided the other prospective teachers into groups of two or three and gave information about the place of trip within the framework of information leaflets which they had prepared before. Prospective teachers were made to answer the questions which they were required to answer during the trip at the end of the process. And then all the brochures and the papers where there were the answers of questions asked to prospective teachers were collected by the guide group to be evaluated a week later.

d) Twelfth Week (3 Lesson Hours-Class Environment): After the trips were completed, all of the prospective teachers were asked open-ended questions which were prepared by the researcher using semi-structured interview technique.

Discussion

Although the education studies conducted in informal education environment are more difficult, complex and costly than formal education (Orion et al., 1997; Osborne & Dillon, 2007), these places appear to be an attractive education environment because they have very important functions for the students to acquire cognitive, affective, and psychomotor skills (Orion & Hofstein, 1994; Tal & Morag, 2009). However, a lot of studies conducted reveal that a lot of teachers are not well-informed and equipped enough to plan and implement the trips and because they can't fulfil their roles in this process, they can not benefit from these resources effectively (Griffin, 1994; Griffin & Symington, 1997; Kisiel, 2005, 2007; Orion & Hofstein, 1994; Storksdieck, 2001; Tal & Morag; Wellington, 1990). It was expressed that within the context the teachers should be informed and encouraged with the help of an instructor on issues such as making preparation before the trip, associating the trip with the school curriculum, giving good and detailed guidance to their students during the trip, and instructing them and doing different in-class activities after the trip (DeWitt & Osborne, 2007; Tal, 2004a) and it was also emphasised that the institutions which educate teachers have important concerns (Anderson et al., 2003). With the study conducted, the planning process of an education oriented trip was explained to the prospective science teachers theoretically and by making them do implementations in 6 different extramural environments, they were helped to gain experience. The observation carried out during the implementations proved that prospective science teachers were usually enthusiastic and cheerful during the trips. So, it can be said in this condition that education oriented trips have the potential to provide learning with entertainment. It was also seen with the observations that prospective science teachers listened to not only the groups who guided them but also the guides who were assigned by the institutions where the trip took place carefully (Fiskobirlik EFİT AŞ., Doğankent FES, Karaca Cave and Freşa Mineral Water Factory) and they made an effort to have information. This condition makes us think that prospective science teachers were enthusiastic to have information about the place of trip and took the trip seriously. In addition to this, it was observed that prospective science teachers were in collaboration with each other during the trip and from here it was concluded that education oriented trips developed social interaction and helped learning.

It was revealed in the interviews which were conducted before the lesson that two-thirds of prospective science teachers stated that the schools trips which they joined in during their previous teaching levels had usually the purpose of fun that and because of this, they would maintain this in their professional life. Hence, it is revealed that how previous experiences affect prospective science teachers about organizing trips. It was found in other studies that the personal experiences of teachers played an important role during the organisation of trips and the trips (Kisiel, 2005, 2007). It was observed in the interviews which were conducted after the practises that the views of the prospective science teachers had changed considerably. It was determined that nearly all prospective science teachers stated that they had understood how serious issue the process of planning and organising trip was and after they started their jobs, they would prefer trips which include largely education and also the element of fun. From here prospective teachers were thought to realize that extramural environments were amusing environments but also very important places for education. Within this context, supporting science teachers about planning and implementation of an trip with applied practises at universities would contribute them to gain positive experiences because the studies conducted reveal that there are very rare implementations about this subject in institutions that educate teachers (Anderson et al., 2006; Ferry 1993; Tal 2004a) and if 2 or 3 sample trips are carried out for teachers/ prospective teachers about how to give education in extramural environments, they will be able to get more information and experience (Tal & Morag, 2009).

It was determined in the interviews carried out before the implementations that more than two-thirds of prospective science teachers did not believe in themselves about planning an trip but all prospective teachers except one believed in themselves after the implementations. Having an opportunity to do practice in the trips organised appear to be an element which increases the self confidence of prospective science teachers. It was proved in a study conducted that the experiences obtained as a result of implementations developed self confidence of prospective teachers and also increased their interaction and communication with the students (Wang, 2004). It was observed before the lesson that what planning trips meant for prospective science teachers was to put emphasis on such conditions as arranging transportation vehicles for the activities to be done before the trip, getting the necessary permissions for the trip, collecting the fares,

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