



DETERMINATION OF SCIENCE TEACHERS' OPINIONS ABOUT OUTDOOR EDUCATION

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Abstract:

The aim of this research is to discover what science teachers' opinions about outdoor education learning environments are. Outdoor education learning environments contribute to problem-solving, critical and creative thinking skills of students. For this reason, outdoor education learning environments are very important for students to learn by recognizing the nature and the natural environment. Qualitative research method was used in this research. The study group of the research constitutes 16 science teachers. A semi-structured interview form was used as a data collection tool. According to the results of the research, most science teachers stated that they have taken their students to science centers and museums as the outdoor education environment in order for the students to be aware of the nature and the natural environment. They desired to use the outdoor learning environments, but the conditions of them are not appropriate. Teachers stated that they had problems in school-family cooperation, in-service training and obtaining legal permission.

Keywords: science, science teachers, outdoor education, opinions

1. Introduction

The fact that the students are imprisoned in the classroom in the course of educational experiences and the fact that the real life is removed, is a critical condition (Özür, 2010). According to Dewey, "... *there must be stalls, laboratories, fields, stables. The goal is not to teach children an art and a profession but to provide them with learning by doing*" (Akyüz, 1979, Quoted in: Özür, 2010).

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Outdoor education learning environments such as science centers for science teaching, museums, zoos, botanical gardens, and planetarium are being used more and more for science teachers (Smith, McLaughlin and Tunnicliffe, 1998). Learning environment in science teaching in general consists of classroom, laboratory, and outdoor education spaces (Orion and Hofstein, 1994). Classroom and laboratory environments are a limited learning environment for science courses, and science offers many opportunities for students in outdoor education (Carrier, 2009). Classrooms are not enough to create enriched learning environments. Especially lessons those are related with everyday life such as science education must be held outside the classrooms. In this context, teachers should take outdoor education activities; it will help students to love science and provide them with an entertaining and instructive way to internalize abstract concepts. Gaining awareness in science education, enhancing students' science knowledge, and providing rich science environments are among the primary tasks of the science teacher. Outdoor education activities to achieve them have great importance in terms of students' discovering nature, acquiring social experience and gaining concrete experiences (Griffin, 2004; Tal, Bamberger and Morag, 2005).

Nowadays, it is emphasized the importance of that the student faces with the problem directly such that the student must have experiences in real life. Briefly, the best learning can be achieved in real life. In this context, putting the students outside the classroom will help them learn new scientific concepts and skills and learn more. Learning new things in different ways can be funny, and this can make learning more interesting and meaningful. Using resources that are not available at school can be exciting for students. Encountering new environments can enhance social skills, self-esteem, the positive development of science attitudes, and learning motivations (Loxley, Dawes, Nicholls, Dore, 2016).

Outdoor education learning environments allow children to develop positive attitudes towards science through fun experiences. Outdoor education learning environments include science centers, museums, zoos, botanical gardens, planetarium, industrial establishments, aquariums and national parks. Such learning environments allow learners to be exposed to scientific experiences through cognitive, emotional, and psychomotor interactions, and increase their motivation to learn (Andiema, 2016). As a result of the survey, the planetarium tour showed that the planetarium tour was suitable for science learning and that the information became more permanent and that such outdoor education learning environments were fun and effective (Sontay, Tutar, Karamustafaoğlu 2016). Science museums contribute to children's scientific literacy and inquiry skills (Henriksen & Froyland, 2000). The planetarium, another outdoor learning environment, contributes to children's basic astronomical knowledge and helps develop three-dimensional thinking skills (Fisher, 1997)

The basic aim of the outdoor education learning is an effective and permanent learning. For this reason, such activities can also be used to further strengthen learning activities in school. Students discover objects, materials and events in an outdoor education learning environment by making direct observations in-field. In addition, such learning environments help on developing the problem-solving skills, having positive attitudes towards science, and motivating. The observation of students in an outdoor education environment makes them to construct a cause-effect relationship in the events, improves their examining skills. In short, outdoor learning environments support the development of students in all three areas, cognitive, emotional and psychomotor.

The aim of this research is to discover what science teachers' opinions about outdoor learning environments are. To this end, the following questions were asked to science teachers:

1. Where and why do you take your students as outdoor education learning environments?
2. How are your conditions for taking students to outdoor education settings?
3. What do you think about the negative aspects of the outdoor education learning environment?

2. Method

In this research, phenomenological design of qualitative research was used. Phenomenological design focuses on what we are aware of but we do not have an in-depth and detailed understanding. In the qualitative research, it is expected that the researcher is the most fundamental identifier in the collection and analysis of the data, and it is expected to reveal the richly described findings in depth by following an inductive process (Merriam, 2009). In phenomenological design studies, one of the main data collection tool is the interview. In this study, it was tried to reveal deeply the opinions of science teachers about outdoor education learning environments. A purposive sampling method was used in the research. The purposive sampling has a critical importance in terms of providing the researcher the opportunity to learn a lot about information-rich situations (Patton, 2002). As the study group, maximum diversity sampling method was used from 16 science teachers' in Mugla, Turkey. Almost half an hour of interviews were held with each of the science teachers and these interviews were recorded with the voice recorder. The data obtained using the semi-structured interview form was coded by the investigator and another science instructor, and the percentage of correspondence between the coders was calculated as 87.43%. For

this purpose, the reliability formula of Miles and Huberman (1994) was used. Participant science teachers are coded as T1, T2, T3,..,T16.

Table 1: Working Groups

| | | |
|---------------------------|-----------|------------|
| TOTAL | 16 | 100 |
| Gender | | |
| Woman | 8 | 50 |
| Man | 8 | 50 |
| Ages | | |
| 21-25 | 1 | 6,4 |
| 26-30 | 2 | 12,5 |
| 31-35 | 5 | 31,6 |
| 36-40 | 2 | 12,5 |
| 41-45 | 6 | 37,5 |
| Level of Education | | |
| Undergraduate | 10 | 62,5 |
| Graduate | 6 | 37,5 |
| Year of Service | | |
| 1-5 | 2 | 12,5 |
| 6-10 | 2 | 12,5 |
| 11-15 | 4 | 25,0 |
| 16-20 | 4 | 25,0 |
| 21-25 | 4 | 25,0 |

3. Results

Findings related to the data obtained from interviews with science teacher candidates within the scope of the research are as follows.

The answers to the question "*Where and why do you take your students as outdoor learning environments?*" directed to science teachers are shown in Table 2.

Table 2: Codes for responses to the question
"Where do you take your students as outdoor education and why?"

| Codes | Frequency | Teachers |
|---------------------------|------------------|--------------------------------|
| Museum, Science Center | 13 | 2,3,5,4,6,7,8,9,11,12,13,14,16 |
| Recognizing Nature | 8 | 2,4,5,6,8,9,12,14 |
| Recognizing Natural Envr. | 8 | 5,6,8,9,11,12,14,16 |
| Research | 7 | 2,3,5,7,8,11,13 |
| Observation | 7 | 1,3,5,6,9,12,14 |
| Knowledge Skills | 4 | 4,5,8,12 |
| Experimentation | 2 | 12,14 |

As seen in Table 2, the most of the science teachers participating in the research, takes students to the museums and science centers; half of them are taking them to outdoor environments for aiming the recognizing the nature and the natural environment; less than half of the teachers are taking students to outdoor learning facilities within the purpose of research and observation. Teachers expressed their views as follows: *"Science is to recognize nature at first. Students need to understand the essence of their surroundings. They can respond to questions they are curious about everyday life. One of the best ways to do this is to take students to places like nature and science museums."* (T8)

The codes of responses to the question *"How are your conditions for taking students to the outdoor environment?"* directed to science teachers are shown in Table 3.

Table 3: Codes for responses the question
"How are your conditions for taking students to the outdoor environment?"

| Codes | Frequency | Teachers |
|--------------------|-----------|-----------------------------------|
| Inappropriate | 14 | 1,2,4,5,6,7,8,9,10,11,13,14,15,16 |
| Unwillingness | 8 | 3,4,6,7,8,11,13,14 |
| Student population | 8 | 2,4,5,7,9,12,13,16 |
| Statutory Permits | 4 | 1,4,5,7 |

As shown in Table 3, most of the teachers stated that the conditions were not suitable for the outdoor environment; half of the teachers were reluctant in accordance with the conditions of the class. Teachers expressed their views as follows: *"Our conditions are absolutely inappropriate. First of all, teachers are reluctant. Because a trip out of school is a very long and tedious process. Although outdoor education environments are very useful for students, teachers are reluctant to do so. The preparation process takes a long time period. It takes a long time to get their legal permission. Teachers are reluctant because of these reasons."* (T4)

The answers to the question *"What do you think about the negativities to the process of outdoor learning environments?"* directed to science teachers are shown in Table 4.

Table 4: Codes responses the question
"What do you think about the negativities to the process of outdoor learning environments?"

| Codes | Frequency | Teachers |
|-----------------------------|-----------|---------------------------------|
| Cooperation | 13 | 2,3,4,5,7,8,9,11,12,13,14,15,16 |
| Family | 8 | 1,3,4,7,9,12,14,15 |
| Resource restrictions | 8 | 5,7,9,10,11,14,15,16 |
| Lack of in-service training | 8 | 2,4,7,8,9,12,14,16 |
| Staff Quality | 4 | 3,5,6,9 |
| Permit transactions | 4 | 1,4,5,7 |
| Safety and danger issue | 2 | 9,11 |
| Being unprepared | 2 | 4,7 |

As seen in Table 4, the majority of science teachers participating in the survey view the lack of cooperation as negative. Again, half of the teachers who participated in the survey state the lack of family cooperation, resource limitation and in-service training as negative. It is seen as a negativity that the quality of the personnel is insufficient and the period of getting permission is long. Few teachers have mentioned the problems of being safe and unprepared. Teachers explain these considerations in the following way: *“In-service training is a good thing. We can learn how to make an excursion trip to outdoor education settings for in-service training. Before, during and after the trip, we can see them practically as in-service training. Co-operation with the family is too weak to take students out of school. Improvement is necessary in these matters.”* (T9)

4. Discussion and Conclusion

The main purpose of science events is to enable students to develop scientific thinking. In science lessons, topics often include abstract and complex concepts. Outdoor education environments are important to make these abstract and complex concepts easier to understand. Because, in their natural environment, concrete and visual materials provide a permanent learning experience for students. Students also have the opportunity to learn by doing experiments in outdoor education learning environments such as science centers. Science centers helps students in terms of problem-solving, critical and creative thinking. In this context, it can be positively evaluated that teachers take students to outdoor education learning environments in order to conduct research by recognizing the nature and the natural environment. Through observation and experimentation, students develop psychomotor skills as well as hypothesis building and problem solving skills. Teachers' use of outdoor education learning environments for observation and experimentation is a positive feature.

Outdoor education environments enable students to gain high-level thinking skills such as critical thinking, analysis, and synthesis. Students have the opportunity to see the theoretical knowledge available in outdoor learning environments in everyday life. According to the results of the research, none of science teachers have mentioned these extrinsic learning environments that may be positive for the students. Again, outdoor learning environments enhance students' inquiry skills, discovery, interest and motivation. It is very important for students to experience in outdoor learning environments, to build hypotheses, to research and to explore.

It is important for students to be in the learning process, such as a scientist, in an outdoor learning environment that allows them to make experiment, to ask questions, and actively participate in the research process. These positive contributions of outdoor education learning environments have not been expressed by science teachers. It can be

said that teachers do not give much place in the learning process to outdoor education learning environments. Outdoor learning environments such as a science center, museum, planetarium, botanical garden, and zoo provide students with extensive and comprehensive experiences in-field. It also raises the interest and motivation to learn science and environmental awareness. While the outdoor learning activities have all these positive gainings, there are drawbacks in gaining them since the teachers do not give required necessity for this issue.

Teachers and parents need cooperation and support to contribute to both their children and their own return (Swick, 1992). Family visits also allow the teacher to learn about the family of the student (Brock, Dood, 1994). The fact that the school and the community cooperation positively contributes to the learning process of the student (Epstein, 1995). For this reason, teachers should consider the family as an important factor, since parents have a great deal of learning in their learning experiences. Researchers (Henderson & Berla, 1994) found that family participation in pre-school and high school education continued to contribute positively to children's development and school life. For this reason, when parents are involved in the education of their children, their children become more successful, regularly do homework, become more successful in reading, and develop a more positive attitude towards the school (Martin, 2001). Although, cooperation with the family in the learning process is a positive contribution of learning to the school life, it can be seen as a big problem that the teachers who participated in the research indicate lack of family co-operation. It can be said that this may cause negative effects on students' positive test results, school attendance and lectures.

Students have the opportunity to experience events on their own in outdoor education learning environments. Like every learning approach, outdoor education should be carried out within the framework of a premeditated plan for specific acquisitions. Thus, students can have a chance to learn what they learn theoretically in the classroom through permanent experience and individual observation. The outdoor learning environment that allows students to learn by doing-experiencing, requires a lot of legal permission. In the research findings, teachers stated that these permits require too much processing and take a long time. For these reasons, it was discovered that teachers were reluctant to take their students to outdoor education learning environments.

Apart from the teacher, there is a need for a dedicated budget to perform the activities in the outdoor education learning environments, as well as competent auxiliary staff. This staff and the teachers should take into account all negative possibilities. According to research findings, teachers talk about lack of competent personnel in this issue. Excessive stimulus can attract attention and create distraction.

An education that takes place in the natural environment has been revealed as a result of research that contributes to the individuals being creative and critical thinking individuals who increase their tendency towards nature (Phenice & Griffore, 2003). In this context, it has been found out that science teachers do not take place in the outdoor learning environments necessarily, however taking students to the outdoor learning environments has a significant part from the beginning of the school.

Failure to use certain materials and tools in an outdoor education environment can result in accidents and injuries. Chemical substances, toxic gases, radioactive materials used in such media will cause danger. In addition, electric accidents, fires and explosions that may occur can lead to serious injuries or even deaths. The necessary training should be given to take precautions against such threats that might come to the teacher, student and auxiliary staff. Very few of the teachers (2 people) were found to be aware of such threats. With this result, it can be said that the teachers are lacking in taking necessary precautions against the security problems that may occur in the outdoor education environments.

Teachers in general and science teachers in particular, who play games, and have fun for the students as well as for group work, can be evaluated positively. It can be said that the teachers of the planetarium, which have a great importance in the teaching of basic astronomy concepts to the students, are negating teaching the concepts of astronomy. Planetarium offers tremendous opportunities for teachers and students to perform such experiments, especially since it is difficult and costly to perform some astronomy experiments in the school environment.

Teachers have never touched on any of the outdoor learning environments that allow students to develop cognitive, emotional and psychomotor skills and high-level thinking skills such as botanical garden, zoo, aquarium. On the other hand, pupils constantly interact with plants and animals all their lives. They also have the chance to see animals of different species, such as zoos, that they cannot see in everyday life. Therefore, it can be considered as a great negativity that teachers have no place in the outdoor learning environments which are a great contributor to the cognitive, emotional and psychomotor development of students such as botanical garden, planetarium, zoo, garden and aquarium.

5. Suggestions

Outdoor education learning environments, which provide learning environments for doing & living in their natural environment, are of great importance. For this reason, firstly teachers should be trained on outdoor learning environments in-service

trainings. Outdoor education learning environments should include practical activities and students should actively participate in the process.

Participation in events at the school increases student achievement. For this reason, it should attach great importance to family-teacher-school cooperation. Families should be included in the education of the students and active participation of the families should be ensured. Family visits that strengthen family-school communication and give teachers an opportunity to better understand their parents should be included. The process of obtaining their legal permission, that the teachers find difficult and time consuming, should be accelerated and facilitated. Managers involved in this process should be in company with teachers.

Legal issues and some accident possibilities may arise in outdoor environments. For this reason, teachers, students and assistant personnel should gain the necessary knowledge and skills in this subject. In some scientific museums, zoos or planetarium to be visited, safety of all individuals must be taken properly. In addition to taking the necessary precautions against possible hazards, students and teachers should be aware of safety.

About the Author

Ulas Kubat, PhD, Lecturer. He has been working as a teacher for a number of years. Dr. Kubat's research interests are in the area of science education, teaching-learning process, assessments. His research interests are focused on the relation between teaching-learning and knowledge-science curriculum practice in secondary education.

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