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A study on improving the awareness of science teachers about out-of-school learning

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Article history	<p>This research was conducted to determine the effect of activities carried out at a project on teachers' awareness about out- of- school learning. In line with this purpose, a science center was designated as an out-of-school learning setting and 24 science teachers were trained accordingly. Practical studies have been carried out on developing activities for out-of-school learning settings. In this study, instrumental case study design was used. Two separate forms consisting of open-ended questions were used before and after the project. At the beginning of the study, the teachers stated that they were confident in organizing trips to out-of-school environments. However, when they were asked what they did during the trips they organized, it was seen that their practices were limited to the procedures and the control of the students, but their awareness of associating the trips with the lesson was quite low. At the end of the study, it was found participant teachers' awareness and knowledge of organizing qualified field trips improved due to the practical activities. They reported that they realized what needs to be done for a quality visit and also learned the characteristics of the observation form, worksheets and educational games that should be prepared for these visits.</p>
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Introduction

Learning is a process in which an individual associates his/her knowledge and experiences with new knowledge and experiences. It continues in every moment of life and can happen in many ways and in different settings. Learning can take place in different settings, for instance while playing games, chatting, visiting, reading newspapers, books, magazines, browsing social media, watching television. This type of learning is defined as informal learning. Informal learning can be expressed as spontaneous learning that can happen anytime in life (Laçın Şimşek, 2020).

Formal learning takes place in schools, which is the first place that comes to mind when it comes to learning. Formal learning is trying to gain some knowledge and skills to the

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individual, in line with certain goals, purposefully and within a certain period (Laçın Şimşek, 2020).

In informal learning, the interests, curiosity and needs of the individual are in the foreground and free choice learning takes place. There are planned and scheduled activities in formal learning and the subjects are clear. In recent years, a definition that includes the characteristics of these two types of learning is frequently used in educational research: non-formal learning (Eshach, 2007) or out-of-school learning. Nonformal learning is the field trips to informal learning environments that are organized as a planned and programmed trip rather than an unstructured trip. In this type of learning, it is important not to ignore the interests and needs of individuals, but also to plan learning activities. Many informal learning settings such as museums, science centers, zoos, botanical gardens, aquariums, planetariums are regarded as important places for out-of-school learning. Field trips to out-of-school learning environments can be easily associated with the topics in the lessons, and opportunities can be created for effective learning.

Research has shown that visits to out-of-school learning settings have positive effects on learning (Bakioglu et al., 2018; Bozdoğan & Kavcı, 2016; Çavuş et al., 2013; Ertaş et al., 2011; Michie, 1998; Saidi & Sigauke, 2017), interest and attitude (Bozdoğan & Yalçın, 2006; Jarvis & Pell, 2005). Although many positive cognitive, social, and affective outcomes have been obtained from the visits to these settings, it is also indicated that these visits do not guarantee learning (Griffin, 2004). Hence, for such trips to be successful it is very important them to be planned, scheduled, and organized in association with lessons (Falk & Dierking, 2000). A visit without planning in association with the lessons cannot go beyond being a leisure time activity (Kisiel, 2005). The teacher, at this point, becomes an important factor for learning (Falk & Dierking, 2000; Hein, 1998; Jarvis & Pell, 2005). In out-of-school learning settings, to ensure the learning, teachers should inform students about the place where the trip will be organized, prepare them for the field trip, plan the trip, prepare that will enable students to think actively, ensure cognitive participation, support cooperation and socialization (DeWitt & Osborne 2007). Kisiel (2006) stated that trips associated with lessons not only enable students to remember what they have covered in the class, but also create an opportunity to understand why they do it. Teachers must have the awareness, knowledge, and experience to achieve this. However, recent studies have shown that although teachers describe trips to out-of-school settings as an important learning activity (Anderson & Zhang, 2003; Kisiel, 2005; Lakin, 2006; National Research Council, 1996, Laçın Şimşek, 2020), they mostly behave passively during these trips (Şentürk, 2015) and were unable to take advantage of learning opportunities. It is stated that teachers are still inexperienced in planning a field trip (Kisiel, 2003; Storksdieck, 2001; Tal & Morag, 2009). Teachers who do not have a clear goal for their visit, cannot relate experiences to the lessons (Griffin & Symington, 1997; Ramey-Gassert et al., 1994; Tuckey, 1992). Moreover, most teachers are, indeed, unaware of their role in shaping their students' experiences during the field trip (Storksdieck, 2001). This is an important obstacle for the visits to turn into a learning experience since the teacher, who does not have this awareness, just plans the trip. Teachers deal with issues such as transportation, consent, fee, but do not make any preparations to associate the trip with the lesson. However, the success of these trips is directly related to the preparations made before, during and after the trip (Jarvis & Pell, 2005, Laçın Şimşek, 2020). In the studies (Griffin & Symington, 1997; Orion, 1993; Ramey-Gassert et al., 1994; Rickinson et al., 2004; Tal et al., 2005), it was found that the teachers stated that they did not have enough information about how to relate the trips to the out-of-school settings with the subjects in the lessons, and that they did not have the knowledge about methods and techniques that could be used.

In this study, it was aimed to give information to teachers about out-of-school learning through the example of a science center and to make practical implications. Thus, it was aimed to increase the awareness, knowledge, and experience of the teachers. Science centers are informal learning environments where hands on and minds on approaches are adopted, aiming to present science to their visitors in a fun and remarkable way. There are many exhibitions for science teachers to relate to the subjects in the lessons. In this regard, science centers have rich learning/teaching opportunities for science lessons (NRC, 2009).

It is important and necessary for teachers to learn about associating the trips with lessons, preparing activities for learning in out-of-school settings, and consider the issues in the preparation of activities. In the literature, there are studies investigating the thoughts and practices of teachers about out-of-school learning (Anderson et al., 2006; Kisiel, 2005; Michie, 1998; Rebar, 2012; Sariođlan & Küçüközer, 2017; Selanik-Ay & Erbasan, 2016; Şentürk, 2005; Tatar & Bağrıyanık, 2012), reveal the thoughts of teachers and teacher candidates who taken to different environments outside the school (Bozdođan, 2008; Bozdođan, 2012). However, there are limited practical studies on how activities should be done in these settings and what should be prepared for educational purposes before, during and after the trips (Carrier, 2009; Chin, 2004; Morentin & Guisasola, 2015a; Tal & Morag, 2009). In this study, which is a part of a project study, it was aimed to explore teachers' experience concerning out-of-school learning, to provide them with experiences and to develop their knowledge and awareness related to this issue. They were given some training on preparing activities, worksheets.

Aim of the study

This research was conducted to determine the effects of the activities carried out in a project on teachers' awareness and knowledge about organizing trips to out-of-school settings. In order to determine the awareness and changes in teachers, the following sub-problems were presented:

Sub-problems

- (1) What are the purposes of teachers to organize field trips for out- of -school learning?
- (2) What do teachers do (before-during-after) for field trips for out -of -school learning?
- (3) What kind of awareness did the teachers gain about out- of -school learning?

Method

Research model

In this study, instrumental case study design (Stake, 2005) was used. Instrumental case studies were carried out to understand or generalize a case. In other words, the case was examined and explained (Yin, 1994). In this study, an instrumental case study was used to determine the teachers' awareness and knowledge in organizing out-of-school trips. Then, it was aimed to increase their awareness and knowledge through the actions carried out during the project.

Studies conducted within the scope of the project

As an out-of-school learning setting, this project was held in a science center. Seven faculty members from six different universities and five instructors from the science center



took part in the project. In the science center, science teachers were given training on organizing qualified field trips to out-of-school settings, associate these trips with their lessons, and what they can do before, during and after the trips. The project lasted 7-days. The activities during these 7 days are as follows:

Table 1. The activities during the project

Process	Activity	Content
1 st day	Theoretical framework	What is out-of-school learning? What needs to be done for out-of-school learning? Procedural and educational preparations for out-of-school learning
2 nd day	Exploring the science center	Visiting the science center Examining the exhibits Taking notes about exhibits (These activities were carried out freely in the first stage and accompanied by a guide in the second stage.)
3 rd day	Information on educational preparations for out-of-school learning	Explaining and exemplifying the features of teaching materials (observation form, worksheet) and educational games should have
4 th day	Preparation of observation form and worksheet	Associating science lesson achievements with exhibits Preparation of observation form and worksheet for selected acquisitions
5 th day	Designing educational game	Preparation of educational games for selected acquisition
6 th day	Inter-group interaction	Each group examines the teaching materials prepared by the other groups and gives feedback by trying them in the science center. Groups make adjustments in line with the feedback.
7 th day	Presentations	Presenting the final versions of the observation form and worksheets and educational games organized in line with the feedback received.

During the trainings on the 4th and 5th days, information about the features of observation forms, worksheets and educational games were presented and criteria were created based on this information. Accordingly, the participants examined the prepared observation forms, worksheets, and games within the framework of the following criteria (Laçın Şimşek, 2019):

- (1) Activities should be short, clear, and interesting.
- (2) It should raise awareness among the students about the purpose of the trip.
- (3) It should direct students to mechanisms that are particularly desired to be noticed. For this, achievements should be taken into account.
- (4) There should be no questions/tasks that require the student to take long notes. The answers should be as short as possible.
- (5) The activities should enable them to discover the features, structure, working principle, scientific knowledge, and concepts of the exhibits.
- (6) Most importantly, all work should require direct interaction with the exhibit. In order for a student to be able to answer a question and fulfill a task, he or she must use the mechanism, and the answer must be explored by the results of the observations. Questions that he can answer in line with his own knowledge and that do not require interaction with the exhibit will not serve the purpose.

The participants examined the teaching materials prepared in line with these criteria. They tried the materials from the science center and tested how well they served the purpose. Thus, they both received feedback about their own preparations and gained experience by examining different examples.

Study group

The research group consisted of 24 science teachers. All of the participants took part in the project voluntarily. They gave their consent for the collection of data and their use for scientific purposes. The demographic characteristics of the participants are given in Table 1.

Table 2 *Demographic characteristics of the study group*

Study Group	Variable	N
Gender	Female	15
	Male	9
Seniority	1-5 years	6
	6-10 years	13
	11 years and over	5

Data collection tools

In the study, two separated forms consisting of open-ended questions were used before and after the project. Forms were filled in individually. Open-ended question form which was used in the pre-application included the following questions for participants:

- Purposes of organizing out-of-school trips,
- How do they prepare for out-of-school trips,
- What do they do before, during and after the trip,
- How do they feel about their competence to organize trips to out-of-school settings,
- Associating out-of-school trips with their lessons.

In the open-ended question form used in the last application, there were questions related to:

- Evaluating the completed work throughout the project,
- Associating out-of-school trips with their lessons,
- Awareness on how to make trips for out-of-school learning more efficient.

Data analysis

Qualitative data were analyzed with content analysis. Open coding was done separately by the researchers, and the codings were collected under the common themes according to the meanings they express. Afterwards, the codes and themes were compared and discussed, and the data that were not compatible for these themes were re-examined. When it was agreed on the codings after comparing them for the second time, the findings were finalized.

Validity and reliability studies

Various measures have been taken to ensure the validity and reliability of the data obtained through qualitative means. These are:

- Questions that would support each other were included in open-ended questionnaires and these questions were evaluated together.
- Firstly, the data were evaluated separately by the researchers and the codings were compared. Then, a second evaluation was made to ensure compliance between the codes. Finally, a consensus was reached by re-discussing the coding.



- The teachers' statements were taken directly and presented. Quotations were not corrected or changed, and the statements were reflected with all spelling mistakes. While giving the statements, the names of the participants were kept confidential, and nicknames were created in a way that the sequence number, gender, seniority variables were brought together. For example, 1F1 represents the first female and the participant with 1-5 years of experience and 18M3 represents the 18th male and the participant with more than 11-years of experience.

Findings

1. Teachers' purposes for organizing trips

In order to determine the participant teachers' awareness regarding organising out-of-school trips, it is necessary to determine their current thoughts and practices. For this, the teachers' purposes were asked for organizing trips. While 20 teachers stated that they organized a trip at least once, 4 stated that they did not organize a trip. The teachers who organized the trip were asked about the places where they organized the trip and the purpose of organizing these trips. It was determined that 21 of the trips were to museums (10 science centers, 3 archeology, 3 zoos, 2 botanical gardens, 2 natural history, 1 aquarium), 9 were to institutions and 7 were to science festivals and. 13 teachers also stated that they organized trips in the form of school activities targeting cultural and social development. Teachers' purposes in organizing trips to out-of-school settings are summarized in Table 3.

Table 3. Teachers' purposes to organize trips to out-of-school settings

Theme	Code	Frequency	Total frequency
Learning/ Teaching	Associating with lessons	5	17
	Effective learning	5	
	Gaining skills	4	
	Gaining experience	2	
	Associating with daily life	1	
Raising awareness	Information/ Awareness	11	16
	Recognition of historical/cultural/natural places	5	
Affective acquisition	Increasing interest	3	10
	Gaining value	3	
	Motivation	3	
	Socializing	1	

As seen in Table 3, teachers organized trips for the purpose of learning/teaching, raising awareness and providing affective gains. Some example statements of teachers about the places where they organized trips and the purposes of organizing trips are presented below:

22F2, who stated that she made a trip to the science center in order to associate it with the lessons and to increase the interest in science, expressed that she organized trips "*in order to observe the experiments we could not show at the school setting and to attract the students' interest in science lesson*".

7F2 stated her reasons, indicating that she organized trips for effective learning, as "*Providing teaching through different ways, making science teaching permanent, learning by doing and experiencing, ensuring the understanding of the gains*".

5F2 said that she organized a trip to Atatürk's House and Nursing Home as an institution visit, “We organized it to ensure that children spend time with the elderly, to develop the feelings of helping others and solidarity and to make the children feel the sense of national unity.”

Stating that she organized trips to institutions and schools to obtain information, 9F1 expressed “to get information about the institution and to observe the working areas of some professional groups that students might consider in the future”.

11F2 stated that she organized a trip to the zoo for informing related the theme of raising awareness and stated that “to enable students to get to know the animal groups better”. 12F2 also stated that they visited the university for information/awareness raising, “We organized a university orientation trip to guide students in choosing a profession” can be given as an example of this theme. 1F1, who stated that she organized a trip with his social studies teacher, said “We aimed to get to know the surrounding environment and to visit historical and cultural places”.

12F2, who stated that they organized a picnic for motivation under the affective gaining theme, clearly said that she aimed to motivate the students during the trip in her statement “We tried to make students relieve stress by organizing motivational picnics before the exam.”

2. Practices (before-during-after) of teachers on trips to out-of-school settings

The teachers were asked about the type of preparations they made for their trips, how they guided during the trip and what they did after the trip. The findings are presented in the Tables:

Table 4 The preparations made by the teachers before their visits to the out-of-school settings

Theme	Code	Frequency	Total frequency
Preparations for the organization of the trip	Obtaining permits	16	55
	Planning the transportation	9	
	Preparation of the trip plan	7	
	Information about the trip	7	
	Making an appointment	6	
	Planning the nutrition	4	
	Getting guide support	3	
	Assigning task to students	2	
	Visiting the trip area	1	
Learning activity	Setting questions/identifying associated learning outcomes	2	3
	Assignment for observation	1	

As seen in Table 4, all the teachers stated that they made preparations before the trip. Only three of them stated that they have prepared for learning activities.

Table 5 Teachers' practices during out-of-school trips

Theme	Code	Frequency	Total frequency
Arranging visit	Following / Securing / Disciplining Students	10	
	Describing the travel program /reminding the rules	8	
	Creating trip groups	4	

	Taking photos	3	27
	Motivating	2	
Learning/ teaching activities	Getting information from the guide	5	
	Answering questions	5	
	Associating with lessons	3	23
	Asking questions	3	
	Encouraging students to ask questions	3	
	Guiding exploration	3	
	Using digital applications	1	

As seen in Table 5, teachers provided two different types of guidance during the trips, namely, arranging the visit and conducting education/training activities.

Table 6 Teachers' practices after their visits to out-of-school settings

Theme	Code	Frequency	Total frequency
Spontaneous	Asking feelings and thoughts	12	
	Oral evaluation / asking questions	11	29
	Showing/evaluate photos taken	4	
	Reading notes taken on the trip	2	
	Preparing a notice board		
Planned	Filling out the observation form /questionnaire	2	
	Subject repetition after the trip	2	5
	Writing diary	1	

Three of the 20 teachers who organized the trip stated that they did not make an evaluation after the trip, while others stated that they made an evaluation. However, it was observed that these evaluations were mostly spontaneous and general. The number of teachers practicing in a planned way was not at the expected level. When the teachers were asked whether they associate their lessons with the field trips, 6 stated that they did not make a planned association. Table 6 shows the associations made with the lessons.

Table 7 Associating the trips to out-of-school learning settings with the lessons

Theme	Code	Frequency	Total frequency
Spontaneous association during the trip	Asking questions about the course subjects after the observations	4	
	Momentary association	1	6
	Taking notes	1	
Synchronize with topics	Include the relevant subject in the annual plan	2	
	Visiting after lesson subjects	2	
	Making associations after the trip	1	6
	Organizing a trip to places related to learning outcomes	1	
Planned association	Asking / associating questions about learning outcomes	2	3
	Explaining the subject through exhibitions	1	

It was found that during the trips teachers associated the trip and the lesson spontaneously, and some organized trips determining the possible informal settings related to the subjects at the beginning of the term. It was determined that planned associations were very rare. It was determined that only one teacher gave information and asked for assignments about what the students would do during the trip and also made associations with the subjects during and after the trip. The practice of the teacher is as follows:

Before the trip, 14M1 stated that “*I asked them to write down the simple machines they observed, take pictures and share them in our Facebook group*”, and “*I directed the students to the experimental setups within the scope of our subjects. I answered their questions.*” After the trip, he said “*We made a short evaluation and associated the trip with the topics in our lesson.*” Regarding the associations he made with the lessons, he reported that “*There were big pieces of DNA model. We repeated which bases will match with each other. We calculated the mechanical advantage while pulling them up in the seating setup made of pulleys.*”

Stating that 16F1 associated the trip with the lessons by synchronizing and organized the trips after covering the topics, she said, “*I planned some of the trips by stating that I would organize some of the trips in the annual course plans that we prepared before the term started, and by associating them with the lesson subjects. For example, we went on a trip to the dialysis center while my 7th grade students were learning the subject of excretory system health and I provided the opportunity for my students to listen to the subject from a nurse and a doctor.*” This teacher made preparations before the trip. She explained what she did regarding learning activities during the trip as follows: “*During the trips, the staff gave the necessary information and made explanations to the students. I made occasional explanations when necessary, so that the students could associate with our lesson. I answered the questions that the students specifically asked me. During the trips, I mostly guided the travel organization and managed the security issues.*” She stated that they spontaneously made verbal evaluations after the trip: “***We made a general evaluation of the trip*** with students. *I questioned their understanding and thoughts about the trip asking what they have learned and what they have liked.*”

Regarding synchronizing the subjects, 10F1 said “*I added it to the annual course plan. I have inferred the gains on the subject. I prepared a form consisting of open-ended questions regarding these gains. I gave information to the students about **the place we were going to visit***”. While she stated that she had obtained the necessary permissions and informed the students before the trip, she reported that “*I asked questions about the process, I used the applications available on the phone.*” during the trip and she stated that she used the “*question and answer technique*” after the trip.

Stating that she was making preparations for the organizing, 12F2 said, “*We already had a guide during the trip. We have only made an effort to ensure that the students do not disperse and get lost. and stated that they made a general evaluation after the trip.*”

3M2, who stated that he did not plan the trips in a way to associate it with his lesson, but only made preparations for the organizing, reported that they did not make any evaluation after the trip and stated that “*I helped them discover the places we visited by relating them one by one to the subjects in lessons.*”

20M2, who stated that he was making preparations before the trip, reported what he did during the trip as “*guiding through the purpose by asking questions, acting within the framework of the purpose by guiding via the small notes about gaining, paying attention When the students are distracted preventing noise and chaos, firing them up to make it enjoyable, and making instant interventions by producing alternative solutions*”. After the trip, he added that “*filling the rubric scale via the questionnaire method, asking them write about their feelings and thoughts on blank paper*”. However, the questionnaire or rubric was not mentioned in the preparation phase. Therefore, the kind of survey conducted was unclear. He stated that he made his trips after the subjects were taught *during the lesson.*

The teachers were asked whether the trips to out-of-school settings should be associated with the lessons. While 21 teachers stated that it is necessary to be associated, one teacher said that it depends on the purpose of the trip, and one teacher mentioned that it was not necessary to associate every trip with the lessons. Regarding the association, 3M2 said that “*When the students see concrete things, they pay more attention, and it attracts their attention.*” 7F2 reported that “*It is absolutely necessary. Otherwise, it turns into an environment where students can run, fight with their friends, and indulge easily, and there will be definitely stray.*”

9F1 stated that “*It is absolutely necessary. I think that if it is not meaningful for students, it will not go beyond the expression of "let's go back as soon as it finishes". At least for me, that's still how I remember my school trip.*”

3. The effect of the project on teachers' awareness about out-of-school learning

Participants were asked about the contributions of the project. Findings related to these questions are presented under two headings as teachers' competence and awareness about organizing trips to out-of-school learning settings.

3.1. Findings about teachers' competence

At the beginning of the project, the opinions of teachers about organizing trips to out-of-school settings were examined, 13 teachers reported that they feel themselves competent, 3 reported that they feel themselves partly competent, and 6 felt themselves inadequate. Teachers who see themselves as competent in this regard have described their competencies at different levels. For example, while 18M3 stated that “*I think I have the necessary competence.*”, 1F1 expressed her competency more assertively as “*I naturally trust myself in terms of science lesson.*” On the other hand, some teachers [23F3] attributed being competent to some other factors as “*I can associate the trip with lessons when I have the necessary knowledge and sufficient experience.*” 16F1, one of the teachers who thought they were inadequate said that “*I do not think I am competent in this regard. I could not guide the students very well during the trip I organized.*”. This statement can be given as an example of this code and 16F1 also stated that she personally experienced this incompetency during the trip. In the continuation of her statement, she criticised herself as “*I could not perform the association and guidance well because I had not been there and had not visited the exhibition areas before.*”

After the project, teachers stated that they felt much more competent in organizing trips for out-of-school learning. The codings of teachers' competence and in which aspects they feel themselves competent are presented in Table 7.

Table 8 Teachers' opinions on their confidence about organizing trips after the project

Theme	Code	Frequency	Total frequency
Thoughts about their competencies	More competent/equipped/comfortable/better	19	23
	Conscious	2	
	Willing	2	
Situations they feel	Planning	9	18

sufficient	Noticing how to relate to the lesson	6
	Gain experience	2
	Design an activity	1

When Table 8 is analyzed, it is seen that 19 teachers felt more competent / equipped / comfortable / better about organizing trips, 2 felt more conscious, and 2 felt more willing. 9 teachers, who expressed their feelings in this way, stated that their competence in planning has been improved, 6 stated that their competence in associating the trip with the lesson has been improved, 2 stated that they gained experience, and one teacher stated that their competence in designing activities has been improved. 20M2 reported that he felt partly competent before the application and clearly demonstrated his development excitedly: *“I can say that I had no feelings about this before. Because I always used to take students to trips, explain like a tour guide in the places we went and gave the children extra time and come back. I feel excited to realize that trips do not help students much because they are carried out like touristic visits. I am not an expert on this subject, and I feel like I can be more dynamic and active towards the subject, as it is a spark to become an expert.”*

The statement of 1F1, who now feels more competent, sets an example for 'planning and designing activities theme' as follows:

“Much more competent. First of all, I learned more effectively how to examine the trip environment and how to make a plan. Also, I think I learned that I can design games and plays for the purpose of students’ orientation”

Statement of 17F3, who expressed she feels more comfortable in planning and in associating with the lessons, is an effective example for teachers who show improvement as *“It became easier for me to associate any trip with the lesson acquisitions. I learned how to plan my steps. Thanks to this project.”*

3.2. Findings about teachers’ awareness about out-of- school learning

It was determined, from the analysis of teachers' discourses at the end of the project, that teachers developed awareness on issues regarding organizing trips to out-of-school learning:

Tablo 9. Teachers’ awareness about out school learning after the project

Codings	Frequency
Understanding how to plan the field trip	20
Understanding how to prepare activity forms and their importance	9
Understanding the differences between field trip and informal visit	6
Understanding how to guide during trips	5
Gaining self-confidence	5

One of the most important issues that creates awareness is 'how to plan the field trip'. The majority of participants reported that they understood to what to pay attention while planning, and how to plan. One of them, 1F1 expressed her improved awareness through the project as *“It provided me an insight about the worksheets and observation forms before the trip and guiding students to the purpose with activities during or after the trip. Most importantly, I realized that we can direct them through games instead of explaining how they should observe the mechanisms for learning purposes.”*

10F1 mentioned the importance of planning the trip in her statement as “*The activities we did, the forms we filled out and the games we prepared during the process gave enough insight on this issue.*” She also emphasized the activity forms in her statement. Referring to her awareness of planning, 21F2 explains how this awareness makes her excited:

“Absolutely. If I had planned such a trip before attending this training, I think it would have been completely superficial. But here we got a very good training about what to do before, after and during the trip. I can't wait to take my students to the science center.”

‘Understanding how to prepare activity forms and its importance’ was the second issue that raised awareness. Regarding the awareness of nine teachers about the importance of the activity forms, 22F2 said that “...I learned how to use the science center in accordance with its purpose and how to prepare an observation form, worksheet and game. I did not think that the science center could be visited with the purpose of a specific achievement... when we went to center, we visited all the mechanisms. Now I am planning to visit only specific sections.” Similarly, 17F3's statement as “...The detailed trips we made, the worksheets we created, the observation forms provided me with an idea of how I should use the mechanisms. As a result of the activities, I have done here, I think I can make all the trips related to my field more efficient, not only the trips to the science center,.” emphasized the importance of the forms to be used during the trip and she stated that she could make future trips more efficient.

It is thought that one of the most important outcomes of the project is understanding the differences between a field trip and an informal visit. The statement of 2M2, one of the teachers who made explanations on this matter, is given as an example below:

“Before participating in the project, I thought the science center **is a place only for** only excursion purposes. But at the end of the project, I learned that this is a place where a lesson or unit can be taught, applied, and measured very easily.”

In the statement of 2M2, the point of view regarding the trips he organized to out-of-school learning settings before the project is clearly seen. He stated that he gained knowledge of how to carry out a field trip thanks to the project.

Another issue that raised awareness and was mentioned by five teachers was understanding how to guide students during the trips. 9F1 said, “...I never thought that I could plan any trip that much. This situation changed my perspective enormously. I realized that while focusing more on the control of the students during their trips, we can actually have a good command of their learning.” It clearly shows the awareness of how to guide a field trip. Five teachers stated that they feel more self-confident at the end of the project. For example, the statement of 3M2 “All the work is motivating, encouraging. Sometimes you lie fallow in the profession. Thanks to such studies, we can feel self-confident again.” emphasized that the work carried out during the project enabled him to gain self-confidence by motivating him.

Discussion

Although out-of-school trips have always been an activity in the education system, it has become necessary and important to make these trips in a planned, scheduled, and associated way (Laçın Şimşek, 2020; MoNE, 2018; Şen, 2019). In this study, it was found that the majority of the participants (20 teachers) organized out of school trips. Teachers

mostly organized museum and cultural visits. Providing learning/teaching, raising awareness, and acquiring affective gaining are among the aims of the participants (sub problem 1) to organize trips to out-of-school settings. Studies investigating teachers' purposes for organizing trips, similarly, determined that trips were organized for enrichment. In this study, similar to the studies in the literature (Anderson et al., 2006; Kisiel, 2005; Storksdieck, 2001; Tal & Steiner, 2006), teachers stated aims including providing effective learning, attracting students' attention, making the subjects more understandable, providing a different learning experience, associating with daily life, providing affective gains, creating social experience opportunities, increasing motivation and guiding the choice of profession. It was interesting to find that the teachers almost never mentioned organizing trips to out-of-school settings for the purpose of entertainment. However, in many studies (Cox-Petersen & Pfaffinger, 1998; Griffin, 1994; Griffin, 2004; Griffin & Symington, 1997; Hein, 1998; Kisiel, 2005; Kisiel, 2003; Kubota & Olstad, 1991; Michie, 1998; Olson et al., 2001; Şentürk, 2005) in the literature, entertainment is often mentioned among the purposes of the trips.

School trips, must be planned, scheduled, and organized within the framework of certain goals to be a learning activity. Related to this, in the second sub-problem of the research, the participants were asked about the preparations they made for the trips. It was observed that most of the teachers who participated in the study did not report any lesson-related planning for the field trip, their preparations before the trip were limited to the preparations, they were interested in consent, transportation, and nutrition, and they only gave students information about the place. It was determined that only three teachers made preparations before the trip. It was seen that two of these teachers determined the achievements related to lesson and the place where the trip will be held, and only one teacher made a preparation by informing the students about the course and notifying the expectations from the students. It is possible to say that the pre-trip preparations of the teachers for field trips are limited to taking care of official tasks. In several studies (Bozdoğan, 2012; Cox-Petersen et al., 2003; Morag & Tal, 2012; Morentin & Guisasola, 2015b; Orion & Hofstein, 1994; Smith-Sebasto & Smith, 1997; Şentürk, 2015), it has been found that the preparations prior to the trip are limited to organizing the trip and giving information to the students about the destination and purpose of the trip.

There are two main factors that determine the effectiveness of a field trip, one is the quality of the field trip, and the other is the novelty space (Orion & Hofstein, 1994). The quality of the trip is determined by the nature of the trip, the methods and techniques used, learning materials and concrete interactions with the environment. The novelty space is a situation that the visited area is new for students (Falk & Dierking, 2000) and can be solved by introducing the visited area, providing information about the content, environment and process that will be encountered during the visit and it must be done prior to the trip. Preparations and practices regarding these two factors directly affect the quality of the trip. However, it has been determined in many studies (Griffin & Symington, 1997; Orion, 1993; Ramey-Gassert et al., 1994; Rickinson et al., 2004; Tal et al., 2005) that teachers neglect the preparations for the trip. Yet, such preparations are so crucial. Orion and Hofstein (1994) determined in their geology field trip study that there were more positive developments in the knowledge and attitudes of the groups which were prepared for the trip, and similarly Gennaro (1981) found that the educational preparations prior to the trip increased the success of the students. It has been determined that giving information about the place to be visited increases learning (Anderson & Lucas, 1997; DeWitt & Osborne, 2007; Kubota & Olstad, 1999). However, in this study, it can be seen that teachers were not very effective both in educational preparations and in preparing their students for the destination or they were not even aware of educational

preparations. It was determined that the teachers were content with giving general information about the destination. In his study, Şentürk (2015) determined that teachers were content with giving information about technical issues rather than students' cognitive, affective, social, and psychomotor gaining. In this study, only one teacher stated that she visited the destination prior to the trip. However, being familiar with the destination, knowing the environment, knowing the activities are other important factors in terms of the quality of the trip. The teachers were making more effort to maintain the order during the visit. Instructional practices were in the form of getting information from the guide, asking questions, answering questions, and helping students' discoveries. However, it is difficult to say that these were pre-planned and scheduled. When the teachers were asked how they relate the trips to the lessons, expressions supporting this situation were highlighted in their answers.

Examining the answers of the teachers who said that they made associations with the lessons, it was seen that most of the teachers made associations spontaneously during the trip. In addition, the teachers stated that they associate the trips and the subjects they covered by keeping the time periods between the trip and lesson close. However, it is known that the guidance provided by teachers during these trips is very important for students (Cox-Peterson & Pfaffinger, 1998). Unfortunately, teachers consider it sufficient to be in a different setting and do not care about how the interaction occurs (Kisel, 2005). None of the teachers participating in the project mentioned that they prepared a worksheet to use during the trip. Only two said that they wanted students to take notes or ask questions. No statement was found about worksheet that were structured and prompted to make observations. However, it is emphasized in many studies that it is necessary to prepare activity forms related to the subjects for the trips to be efficient, and these forms are important to guide students to observe in line with the purposes (Griffin, 1994, 2004; Kisiel, 2003; Laçın Şimşek, 2020). Worksheets are important tools for directing students' attention and observations and providing concrete interactions with the environment (Price & Hein, 1991; Laçın Şimşek 2019) and increase the quality of the trip.

Kisiel (2006) classified teachers' practices in informal settings under five headings: structured participation (such as tours or worksheets), unstructured participation (such as teacher facilitating participation), activity documentation, and supervision. In this study, it was determined that teachers mostly focused on supervision (forming groups, ensuring compliance with the rules, ensuring safety, etc.) and tried to ensure participation (asking questions, encouraging questions, directing students to listen the guide, indicating the point to be observed). It has been determined that activities for document creation such as photographing or video recording were also carried out, however, only one stated that he gave this task to the students for a specific purpose before the trip and used it to relate with the subjects after the trip.

Similarly, after the trip, it was reported by teachers that they made spontaneous and instant evaluations, asked questions about the trip. In the study conducted by Şentürk (2015), teachers reported that getting feedback from students about the trip was more important than providing an association with the lesson or sharing the experiences of students. Similarly, in this study, it was found that teachers make evaluations about the trip rather than make an assessment about the subjects related to the lesson. Only two teachers stated that they wanted students to keep diaries after the trip. Griffin & Symington (1997) stated that in their study the most frequently expressed activities were discussion using diary or writing stories. In the practices before and during the trip, it does not seem surprising to make a spontaneous evaluation after the trip, as there is no planned association with the lessons. It is possible to

say that associating trips with lessons is insufficient. In the literature, it is criticised that even though teachers describe trips as a learning opportunity, there is no planned connection between trips and the lesson (Tal et al., 2005; Tuckey, 1992). Since the activities and evaluations made after the trip enable students to review the trip and realize what they did not notice during the trip (Laçin Şimşek, 2020), and to understand the topics of the trip (Anderson, 1999), to establish new connections (Anderson et al., 2006), they are important and necessary. Studies have shown that pre-visit activities provide preliminary information that can help to understand experiences in the field, while post-visit events strengthen new connections and provide opportunities for future experiences (Anderson et al., 2010).

Although the situation of associating trips with lessons is very limited, when teachers were asked about their competencies in organizing trips, most of them stated that they felt competent in this regard. This finding shows that teachers think that organizing and successfully completing the field trips for out-of-school learning is sufficient, and their awareness of what to do for out-of-school learning is quite low.

Regarding the third sub-problem, after the project, all participants reported that they feel competent, more equipped, more conscious, and so on. At the beginning of the study, it is seen that the teachers perceive their competencies of organizing a school trip as preparations for a trip. It has been observed that the subjects teachers feel competent at have pointed to the educational planning and implementation of a field trip through the project. It has been determined that teachers have awareness about planning a field trip, understanding the importance of observation forms and worksheets, and structuring them, understanding the difference between field trip and informal trip, understanding how to guide students in trips, and gaining self-confidence. The teachers reported that they felt better equipped to plan, realize how the trip would be associated with the lesson, gain experience and design activities. It is possible to say that the project created an important change in teachers' awareness and knowledge about out-of-school learning.

Implications

Falk & Dierking (1992) stated that individuals' knowledge, skills, experience, motivation and learning desires, their interactions with the social environment and the physical environment are very important in such visits and stated that teachers should consider all of them for a successful trip. However, it was also observed that teachers were more interested in organization and order and the learning opportunities during the trips were neglected. For a good field trip, it was emphasized that students should have information about the places they visit and know what is expected of them (Dewitt & Storksdieck, 2008), and the preparation and activities of teachers are particularly important (Anderson & Zhang, 2003; Wünschmann et al., 2017). In many studies, it was found that teachers could not define their roles in field trips, they could not associate the trip with the lessons, and they rarely organized activities for the visits (Cox-Peterson et al., 2003; Cox-Peterson & Pfaffinfer, 1998; Griffin, 2004). In fact, it was stated that teachers evaluate the success of the trip not based on what the students have learned, but on how much fun and affective gaining they have achieved (Anderson et al., 2006). In this study, it was seen that most of the trips organized by the teachers focused more on cultural and affective acquisition and their evaluations about the trip. In previous studies, as in this study, although teachers stated that they organized trips to associate the lessons and explain the subjects they could not fully explain during the lesson in out-of-school settings, they did not make preparation and activities (before, during and after) which would support this purpose in terms of teaching (Tal et al., 2005; Tuckey, 1992; Cox-

Peterson et al., 2003). When teachers were asked whether it was necessary to associate the field trips, it was thought-provoking that they did not consider the trip as a learning opportunity and did not implement the necessary practices, although most of them said it was “absolutely necessary”. At the end of the project, it was seen that the information about associating the lessons with out-of-school learning settings and preparing activities increased, and their awareness improved. It has been also found that many teachers become more motivated to carry out their lessons outside the school. At this point, it is important to emphasize that practice-oriented trainings have an important place in achieving the desired goals. In this project, teachers experienced an active process and they designed and analysed their own activities. This is thought to be important in raising teachers’ awareness and knowledge. Providing teachers with practical training in different out-of-school learning settings is especially important for their development in this field. In addition, experiencing these environments with their own students will also provide mutual interaction. Griffin (1994) stated that teachers’ perceptions, perspectives, values and motivations are very important factors in the planned trip and these factors directly affect the quality of the trips. Therefore, it is essential to increase the awareness and knowledge of teachers about their roles in field trips to help them practice and gain experience (Bozdoğan, 2012; Chin, 2004; DeWitt & Osborne, 2007; Tal et al., 2005; Tal, 2001). This was neglected, as in abroad, for a long time (Anderson et al., 2006; Ferry, 1993; Hofstein & Rosenfeld, 1996; Morentin & Guisasaola, 2015a; Rebar, 2012; Smith-Sebasto & Smith, 1997; Tal & Morag, 2009) in teacher training programs in Turkey. However, it started to be included in teacher training programs with the educational reforms after 2004 as both a must field course and an elective course. This development is very important; because teachers’ awareness of the methods and techniques related to learning out-of-school should be supported.

Suggestions

This study presents data on the effects of the work done in the project. It is important to see how the achievements of the project are reflected in the practices of the participants. In future studies, it is recommended to investigate and evaluate the practices of teachers during their visits to out-of-school learning.

The most important point that separates out-of-school learning from a trip is the teaching materials used during the visit. In order to increase the efficiency of out-of-school learning, Therefore, it is recommended to give practical training on teaching materials in trainings related to out-of-school learning.

Limitations

The study was carried out through the science center sample in order to increase the awareness and knowledge of teachers about out-of-school learning. Conducting the applications only in the science center is a limitation of the study. However, this limitation has been tried to be overcome by making discussions about different out-of-school learning environments and samples. Since the activities continued during the project, interviews were planned with the teachers to get detailed information, especially after the pre-test; however, it was not possible to implement this plan due to the busy schedule. Focus group discussions with teachers after the project could not be presented in this study due to the page limitation.

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