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Article abstract

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Abstract

The study aimed to identify the views of prospective biology students on the field-trip experience as an outdoor learning activity in both educational and social contexts. It employed a qualitative phenomenological analysis method. Participants included 38 prospective biology teachers in an education faculty in the Marmara region in Türkiye. The field trip was held at İzmir Bird Paradise, Natural History Museum and Botanical Garden in İzmir, Türkiye. Data was collected by an open-ended question form before and after the field trip. Content analysis techniques were used to analyze the data. The results of this examination showed that the students were mainly content with the social activities, courses, İzmir Bird Paradise, the Natural History Museum, and the Botanical Garden, respectively, after the field trip.

Introduction

Learning can be examined under three headings: Formal, informal, and non-formal. While formal learning typically occurs in well-structured, traditional learning environments, such as schools and universities, informal learning can take place in many inadequately structured settings, including parks, student communities, and online environments. Non-formal learning is a discovery situation that is provided by scientific associations, governments, or student organizations, where people can access these institutions' online environments (Lange & Costley, 2015).

Learning can occur in science class, while watching television, browsing the internet, or through everyday experiences. If the students can make a connection between their prior knowledge and their experiences, they have the potential to produce a wealth of information through outdoor education. It is essential that teachers can help students connect with their knowledge, and teachers plan such activities by integrating them into the curriculum (Anderson et al., 2003). Outdoor education can be conducted outside the school program at various locations, including places outside the school or at home. Outdoor education places such as parks, museums, nature centres, aquariums, forests, wetlands, and camps can include various educational activities. It involves mass media, such as television, radio, newspapers, and outdoor sites (Howe & Disinger,

1998). The concepts regarding biology must be correlated to daily life. Techniques such as giving examples from daily life and discussing news from newspapers and TV can be used during lessons. Organizing extracurricular activities can be an effective way to integrate these concepts into daily life. It is hoped that students experience concepts of biology themselves. This can be best done with field trips for educational purposes. Therefore, teachers can organize field trips, hiking trips, camps, and social activities to promote students' environmental awareness and foster their interest in nature (Palmberg & Kuru, 2000).

Field trips can be divided into three groups: An informal survey of a neighbourhood, a formal scavenger hunt, and a virtual one by computer software (Krakowka, 2012). They can also be found in various locations, such as botanical gardens, wetlands, natural history museums, art museums, science art centres, and national parks (Anderson & Zang, 2003; Davidson et al., 2010; Kisiel, 2005). In this way, students can examine the plants in their environment closely. For example, natural history museums are one of the optimal learning environments, because during such a visit, students can observe examples of living things that existed in the past or are living today. Field trips, such as those mentioned above, organized by teachers as outdoor activities, motivate students to learn. These excursions enable students to apply the theoretical knowledge they have learned in school, and they are excited to explore this knowledge through activities outside the classroom (Krakowka, 2012). As a result, when students attend a field trip, they gain several benefits, including an understanding of the ecological relationships between flora and fauna and enhanced learning opportunities. According to the goals of an outdoor activity, a field trip plan should be developed (See Fig. 1).

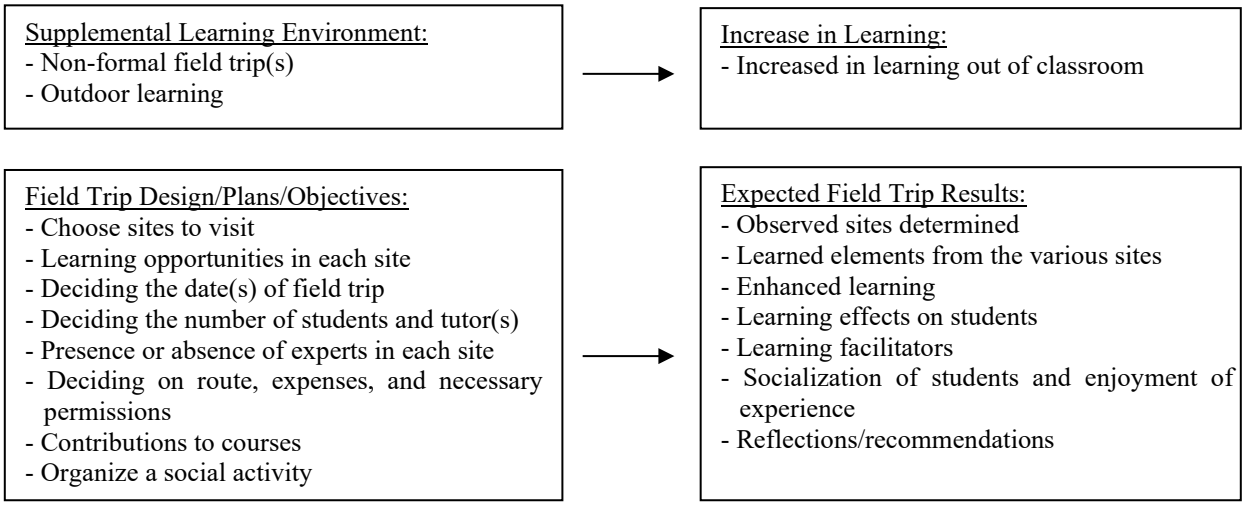

Figure 1: A field trip plan.

Furthermore, Salsabila et al. (2024) stated that to ensure the successful implementation of outdoor learning experiences, careful planning and review are necessary to develop the quality of outdoor learning and foster meaningful engagement and significant learning among students. Jose et al. (2017) reported that the trip-observation method used in field trips is an effective approach. The experiential field trip caused a change in students' knowledge of the local delta environment after the outing. In a study (Ertuğ, 2007) comparing the teaching of life units in the biosphere using traditional and trip-observation methods in second-year high school biology lessons, the post-test achievement of students in the experimental group, where the trip-observation method was

employed, was significantly higher than that of students in the traditional teaching group. Similar results were obtained in Şen's (2011) study comparing the teaching of population ecology through presentation and travel-observation methods in 10th grade biology lessons. Türkmen et al. (2016) reported that fifth-grade students required more enthusiasm for these activities in their lessons. The students found the Botanical Garden boring, while the Natural History Museum in İzmir, Türkiye was enjoyable. Tatar and Bağrıyanık (2012) also reported that science and technology teachers mostly preferred activities related to model/material preparation, reading books/journals related to science and technology, and field trips, including at least camps and visits to youth centres and aquariums.

Akgün et al. (2017) concluded that the observation-trip method positively contributed to the prospective teachers' views on the environment and environmental education. Bozdoğan (2012) reported that the students were willing and cheerful during the trip; they cooperated, and their knowledge and self-confidence in planning trips to outdoor environments increased. Doğan et al. (2018) indicated that field trips increased the prospective teachers' knowledge retention, enabled them to relate to daily life, allowed them to make observations and transfer theoretical knowledge to practice, enhanced motivation, and improved their psychomotor skills. Therefore, field trips are an important part of the learning component of the curriculum, offering unique and significant elements to learners, as they provide a connection between theoretical and applied knowledge. Teachers preferred outdoor activities because they ensured that the students learned by doing and living, and these activities increased their curiosity, interest, and motivation. In addition, field trips present an opportunity for social activities, such as travelling, having fun, going out together, and hiking. Çetin (2014) stated that the prospective biology teachers largely achieved their goals. They were impressed by Sarıkız Hill, the Legend of Sarıkız, and Kazdağı in Balıkesir, Türkiye, at most, and they had a bridge between the theoretical information taught in the courses, such as systematic botany and biogeography.

However, factors such as syllabus (teaching anxiety regarding the curriculum on time), time management, field trip distance, cost, group size, as well as the safety and environmental conditions, impose various limitations on field trips (Munday, 2008). Therefore, sometimes a field trip cannot be held for the prospective teachers or students (Demir, 2007). Teachers may face obstacles due to the administration, students, parents, or other stakeholders regarding such activities. For instance, parents may not allow their children to participate in the field trip or the field trip may be too expensive.

In conclusion, field trips are a more effective approach when they are well-planned and organized for both recreational and social purposes, and when they put information into practice (Achen et al., 2019; Krakowka, 2012), although they have some obstacles. Moreover, when it is difficult to hold a field trip due to the problems mentioned above, virtual or augmented field trips can also be organized as an alternative (Çalışkan, 2011; Genge et al., 2024; Jerowsky, 2024; Krakowka, 2012).

Method

This study employed a qualitative, phenomenological design to obtain more detailed results, rather than generalized ones (Büyüköztürk et al., 2017). The study aimed to identify the views of prospective biology students on the field-trip experience as an outdoor learning activity in both educational and social contexts. This study sought to answer the following questions in order to compare the objectives of the field trip with the fulfillment of students' expectations from the trip:

1. What are the prospective biology students' goals of the field trip?
2. What are the prospective biology students' experiences during the field trip?
3. What are the contributions of a field trip to the courses?
4. What are the prospective biology students' suggestions about the field trip?

Participants

The participants in the study included 38 prospective biology teachers from an education faculty in the Marmara region of Türkiye. The researcher and the other instructor (the botanist) who organized the trip were both working in the department of biology education at the same faculty. The study sample was selected using the convenience sampling method (Büyüköztürk et al., 2017), as it was easy to access the participants.

Before organizing the field trip, a plan was developed, taking into account factors such as the route and the relevance of the learning sites to the educational needs of biology education students (See Figure 1). İzmir in Türkiye was selected for the field trip because it is a port city with a rich cultural and historical heritage. It is also an area that can be visited within a day. The İzmir Bird Paradise (IBP), an internationally important wetland, which includes a land ecosystem, as well as the Natural History Museum (NHM) and Botanical Garden (BG) are all encompassed in this region. All expenses were accounted for, and necessary permissions were taken from the university and related institutions. Thus, the outdoor activity was held in the IBP, NHM, and BG in İzmir, Türkiye, in one day, with two tutors from the education faculty (one botanist, who has been working with the same institution as the author, and the author of this study). Additionally, information about the field trip was provided to the students before the trip.

Data collection

A written questionnaire derived from the interview form (Çetin, 2014) was developed by the researcher. Its validity was verified by two experts (a primary-school teacher studying qualitative research and an academician studying botany). The form was given to the participants, who were voluntarily involved, before and after the field trip.

Data analysis

Content-analysis techniques were applied to the data evaluation (Saban, 2008; Yıldırım & Şimşek, 2006). Data analysis was thematic, as revealed through the students' reflections on their answers to the open-ended questions.

This process involves six stages (Saban, 2008; Yıldırım & Şimşek, 2006): Coding and extraction, sample-code-image compilation, category development, theme development, validity and reliability, and quantitative data analysis. The process of coding and developing categories and themes for the data was repeated many times by the article's author at various intervals. This provided intra-rater reliability. Additionally, two experts (a primary school teacher studying qualitative methods and an academic specializing in botany) were consulted to ensure further inter-rater reliability. According to Miles and Huberman (1994), the reliability coefficient was 97%. In addition, though 38 students filled out the form, the total number of codes in a table for a question may exceed 38, since the answers given to a question sometimes contained more than one code.

Ethical statement

The author acknowledged that the study involved human participants but determined that it did not require ethical committee approval, because it posed no risks and was considered harmless. The reporting of the results did not disclose the identity of the data provider, and no sensitive information was included. The author also obtained written approval from the students to participate in this study.

Findings

Goals of the field trip

The students' field-trip goals were grouped under five themes: IBP (29), NHM (28), BG (17), courses (35), and social activity (38). These areas were derived from the data. Table 1 shows the participants' responses in each area.

Table 1: Goals of the field trip.

Theme (f)	Category (f)	Code (f)
IBP (29)	IBP and Its Environment (1)	To see the İzmir Bird Paradise (1)
	Information Center (1)	To see stuffed animals (1)
	Birds (27)	To see flamingos, different bird species, and learn about different unobservable species in the Manyas Bird Paradise (25) To examine birds more closely (1) To see the habitats of birds (1)
NHM (28)	NHM and its Environment (6)	To visit NHM (4) To have information about the NHM (2)
	Museum (22)	To learn the history of nature. To have detailed information about the formation of the world. To examine the maps (8) To examine fossils (6) To see rocks (2) To learn the similarities between primitive animal species and those in the present. To see prehistoric animals and stuffed animals (3) To see the dinosaur model (3)
BG (17)	BG and its Environment (3)	To visit BG (3)
	Plants (14)	To observe different, previously unobserved plants and plant species (12) To see endemic plant species (1) To have information about various plants (1)
Courses (35)	Botany (9)	To contribute to the NHM to the botany course (1) To contribute the BG to botany (1) To observe plant species, flowers, and trees (6) To see and learn more species in terms of botany (1)
	Zoology (15)	To observe birds and animal species (12) To contribute to the IBP in zoology (2) To see and learn more species in terms of zoology (1)
	Other Courses (2)	To consolidate living things and subjects in biogeography (1) To contribute to the NHM to evolution (1)
	Learning (7)	To have information (4)

		To contribute to the course (3)
	Observation (2)	To observe different species (2)
Social Activity (38)	Having Fun, Sightseeing (36)	To have fun, sightsee, and see İzmir (32) To visit Ege University (3) To see new places like the IBP (1)
	Photograph (1)	To take photos (1)
	Others (1)	To participate in this trip for the first time (1)

IBP: İzmir Bird Paradise; NHM: Natural History Museum; BG: Botanical Garden

According to Table 1, the first theme, IBP (29), was divided into three categories: IBP and its environment (1), Information Center (1), and birds (27). The students had many goals regarding birds in the IBP, such as "to examine flamingos nearby" (S30) and "to see different birds from those seen in the Manyas Bird Paradise" (S7). Consequently, the students aimed to see IBP, stuffed animals, and birds, especially flamingos and different bird species, during the field trip.

The second theme, NHM (28), involved two categories: NHM and its environment (6) and museum (22). Regarding the NHM and environment category, the students wanted to learn more information about the NHM. They mainly sought to learn natural history, the world's formation, and see fossils. Among the comments that they voiced were "to have knowledge about the rocks regarding the formation of the world" (S4). In conclusion, they wanted to visit the NHM, aiming to gather more information about the museum and its exhibits.

The third theme, BG (17), comprised two categories: BG and its environment (3), and plants (14). Two students commented in this way: "to see plant species belonging to different families" (S1) and "to see endemic plant species" (S13). As a result, they aimed to examine different plant species and endemic plants in the BG.

The fourth theme, courses (35), included five categories: Botany (9), Zoology (15), Other Courses (2), learning (7), and Observation (2). In this area, one student made the following comment, "…to see and learn different species related to zoology and botany" (S4). In conclusion, another reason why students participated in the trip was to contribute to their faculty courses.

The fifth theme, social activity (38), comprised four categories: Fun (38), sightseeing (36), photography (1), and others (1). The students participated in this trip as a social activity. They wanted to explore new places, visit Ege University, have fun, enjoy a nice time in İzmir, and take photos. However, the goal of one of the students differed from that of the others, who said, "I wanted to participate, since I have not attended any field trip[s] in four years" (S33). Thus, they attended the field trip with some social reasons, such as fun, exploring new places.

Experiences about the field trip

The students' experiences about the field trip were grouped under five themes: IBP (56), NHM (54), BG (45), courses (10), and social activity (4) (See Table 2). Based on the responses, several insights emerged. They watched birds, especially flamingos, in the IBP. The NHM was the most interesting part of the trip for the students, as they got to see animal skeletons, rocks, fossils, and a dinosaur model. They saw several plants, especially exotic ones, such as orchids and coffee trees, in the GG. The benefits of this field trip demonstrate that the students acquired new knowledge and skills about IBP, courses and teaching, and had a social activity too. Table 2 provides details of the responses.

Table 2: Experiences about the field trip.

Theme (f)	**Category (f)**	**Code (f)**
IBP (56)	IBP and Its Environment (3)	(+) Liked the place where the flamingos lived. It was very intriguing to be on the largest artificial island. The IBP was quite large and had a huge area of greenery. (3)
	Information Center (1)	(+) Watched a short simulation (1)
	Birds (52)	(+) Observed various bird species: Flamingos, pelicans, cormorants, and swans. Examined bird species closely. Remembered how birds fly. (48) (+) Examined birds with binoculars (1) (+) Observed flamingos' place where they were fed and incubated together (1) (+ -) The IBP was not bad, since we saw birds from afar. (1) (-) The IBP was not very attractive, as we did not see many birds. (1)
NHM (54)	NHM and Its Environment (6)	(+) Liked the NHM; observed the records of past times and had information about the formation of the world (6)
	Museum, Guide (50)	(+) Observe animals, other birds, extinct animals, a panther, and many animal skeletons, such as whales and the evolution of whales (18) (+) Observed fossils, plants, and animal fossils (15) (+) Observed rocks and stones (11) (+) Observed the dinosaur model (4) (+) Learned morphological features and the importance of many living things (2) (+) Observed the volcanic mountain simulation (1) (-) Time spent at the NHM was very inadequate (1) (-) The tour to the museum was a bit boring (1) (+) Guide: Given information about fossils. The lecture in the NHM was very impressive and informative. (6)
BG (45)	BG and Its Environment (4)	(+) The BG was great. (4)
	Guide (1)	(-) The presentation of the BG was not very good. (1)
	Plants (40)	(+) Observed and learned about plant species. Learned about Latin names of plants and lifestyles. Observed tree and flower species that we had never seen and did not exist, and are spread in Türkiye, including banana, citrus, laurel, sandalwood, gum, coffee, eucalyptus, sago palm, coast redwood, black pepper, and water lily (37) (+) Observed the endemic species (2) (+) Added information to my previous knowledge (1)
Courses (10)	Botany (1)	(+) Observed the living things taught in the courses. Studied the plant kingdom (1)
	Zoology (1)	(+) Observed the living things taught in the courses. Studied the animal kingdom (1)
	Biogeography (1)	(+) Valuable for biogeography (1)
	Evolution (4)	(+) Contributed to the evolution of animals (4)
	Learning (3)	(+) Learned new information (3)
Social Activity (4)	Having Fun, Sightseeing (4)	(+) Much fun (2) (+) Toured the seaside in my free time in İzmir. The IBP tour was better than the Manyas Bird Paradise tour. (1) (-) Not enough time for a tour in the free time (1)

IBP: İzmir Bird Paradise; NHM: Natural History Museum; BG: Botanical Garden

As seen in Table 2, the first theme, IBP (56), comprises three categories: IBP and its environment (3), Information Center (1), and birds (52). Regarding the first theme, the students found the IBP to be large and impressive. Most of them observed birds, especially flamingos,and found them fascinating. (S50). The students' observations included, "I liked the place with flamingos. The largest artificial island was very attractive" (S33). We learned that this is the pinkness of the feathers of flamingos fed with salt shrimp" (S33), and "The bird paradise was not bad, but we saw birds from afar. We saw pelicans, ducks, and flamingos…" (S15). After all, they found the opportunity to see the largest artificial island (IBP) and its various bird species such as flamingos, pelicans, cormorants, and swans.

The second theme, NHM (54), involved two categories: NHM and its environment (4), museum and guide (50). Regarding the NHM and environment category, the students liked the museum because there was an exhibition environment where living things were explained from the simplest to the most advanced. The students made positive observations related to the category of museum and guide (48), such as "The simulation of the eruption of a volcanic mountain was informative (S17). The students also enjoyed observing animals at the museum, seeing a stuffed panther, a whale skeleton, skeletons of different living things, and a dinosaur model. Some of their remarks comprised responses such as "We saw living remains, bones, and historical stones" (S29), "I examined the skeletons of animals and their real models" (S26), and "There was a copy of the fossil of the archaeopteryx [a bird-like dinosaur]" (S30). Lastly, it demonstrates that the students were satisfied with observing several animals, including birds, a panther, various animal skeletons of whales, plants, animal fossils, and a dinosaur model. In addition, while one student found the time spent in the museum insufficient, stating, "We went to the NHM. The one-hour period was too inadequate" (S38), another mentioned that "I was bored in the museum" (S33). For the most part, the students were satisfied to visit the NHM.

The third theme, BG (45), included three categories: BG and its environment (4), guide (1), and plants (40). Four students found the BG tour useful, as demonstrated by this respondent, who said, "We toured the BG. This place was beautiful. The green environment attracted my attention, because I studied biology" (S38). The students' experiences related to the BG theme were gathered under the 'plants' category. They were delighted to see different samples and endemic plants from around the world, including Türkiye, in the BG, such as banana, sandalwood, coffee trees, sago palm, and coast redwood. Among their observations were statements such as, "I saw a banana tree for the first time" (S31); "I had examined coffee and pepper trees that were not spreading in our country" (S6); and "We observed the endemic species of İzmir" (S16). These comments demonstrate the benefits of authentic experiences like these.

The fourth theme, courses (10), involved five categories: Botany (1), Zoology (1), Biogeography (1), Evolution (4), and learning (3). Regarding the courses, the students stated that they observed living things individually and examined plants and animals. They thought that the trip was helpful for the courses of biogeography and evolution, as evidenced by statements like, "The trip contributed to the evolution course that we would see next year" (S12). In this way, such excursions can lay the foundation for future course topics and instill a sense of excitement and anticipation in the learners.

The last theme, social activity (4), consisted of the category entertainment and sightseeing (4). As a social activity, most students emphasized that seeing new places in İzmir was entertaining, and the trip was beneficial. Student 22 stated, "Having free time by the sea was very enjoyable." This illustrates that learning is far more than just understanding facts. It also encompasses sensory experiences by interacting with people, places, and things.

Contribution to the courses

The students' views on the field trip's contribution to the courses were grouped under seven themes: Botany (14), Zoology (17), Evolution (3), Other Courses (17), Observation (5), and Teaching (5). The results for this portion of the study indicate that the field trip contributed to several students' courses, including botany (botany, botanical lab., plant morphology and anatomy lab., and plant systematics), as well as zoology (zoology, animal anatomy, and animal systematics). For instance, the students established a relationship among botany, trees, and flowers. The students observed that animals such as flamingos, whales, jaguars, and deer could be useful in zoology courses. They observed some species they had learned in botany and zoology in their own environment, examined animal skeletons at the NHM, and observed many plants in the BG. Moreover, field trip was useful for the teaching profession. For instance, they experienced how to make a plan and do a field trip as a future teacher. Table 3 presents the specific comments from this section of the questionnaire.

Table 3: Contribution of the field trip to the courses.

Theme (f)	**Category (f)**	**Code (f)**
Botany (14)	Botany (9)	The BG contributed to botany. Established a relationship among botany, trees, and flowers, as well as the BG. Water kettle connected with botany (8) Permanent learning to see the things taught in botany in the BG (1)
	Courses Related to Botany (3)	The BG contributed to botany, the botanical lab, and the plant morphology and anatomy lab. (3)
	Plant Systematics (2)	Banana, iron, and sandalwood trees could contribute to this course. (1) Trees provided correlation to systematic courses. (1)
Zoology (17)	Zoology (15)	Observed organisms and animals taught in zoology provided more permanent learning. The museum was connected to zoology. Animals such as flamingos, whales, jaguars, and deer could contribute to zoology courses. We understood flamingos' wings and legs were red or pink in colour. (10) Flamingos, whales, birds, fossils, and fossil organisms were connected to zoology. (2) Observed birds' habitats (1) Observed skeletal structures of some living things, animals, and got information from the NHM (2)
	Courses Related to Zoology (2)	Contributed to zoology and animal anatomy courses. Animal anatomy with the whale's two arm bones (2)
Evolution (3)	Evolution (3)	Contributed to evolution, learned that skulls from different species of the human genus are related to evolution. Fossil remains contributed to evolution. (3)
Other Courses (17)	Other Courses (17)	Observed the species learned in botany and zoology in their own environment, observed animal skeletons in the NHM and many plants in the BG, observed the usefulness of the Latin learned beforehand here. (5) Field trip was linked to zoology, botany, biogeography, and plant morphology and anatomy. It should be conducted for several courses. It was helpful as an observation method. The live example was good. Flamingo Island was beneficial in biogeography classes. (5) Observed some of the real ones learned in the courses. Correlated with botany, cytology, and zoology. There were animals and plants. (1) Correlated with botany, zoology, and anatomy (1)

		Learned about botany, zoology, plant morphology, and anatomy, animal physiology and anatomy (1) Botany, zoology, ecology: Trees were taught in the BG, animals in the museum, and birds in the IBP. (1). Botany, zoology, plant morphology and anatomy. Ecology, biology: Living things in the places where the place seen would make these courses more permanent and effective (1) The NHM provided information about general biology. (1) Biogeography: Observed the periods of the rocks and examples of fossil rocks by years (1)
Observation (5)	Observation (5)	Observed theoretical knowledge taught in the courses in real life, observed various birds, plants, and fossils. Observed animals and plants that had never been seen before. Observed the plant species that live in the BG, which contributed to the learning (4) Permanent learning by observing animals and plants (1)
Teaching (5)	Teaching (5)	A biology teacher should see such museums and places like the IBP. (1) We could show the photos taken to our students in the future. (2) The teacher's teaching style was good in the NHM. (1) A trip observation was helpful in teaching. (1)
	Trip Arrangement (1)	That kind of trip could be made when we were teachers. (1)

IBP: İzmir Bird Paradise; NHM: Natural History Museum; BG: Botanical Garden

Table 3 showed that the first theme, botany (14), consisted of three categories: Botany (9), courses related to botany (3), and plant systematics (2). Among the collected data was this account: "…It was related to botany and zoology. We observed animal skeletons and plants with very different distribution area[s] in the BG" (S6). This remark provides evidence of how observing plants in person helped students consolidate theory and practice.

The second theme, zoology (17), encompasses two categories: Zoology (15) and courses related to zoology (2). The students reactions display the ways that they interacted with the display, saying things like: "…Flamingos, whales, and fossil organisms were allied to zoology…" (S19), "We had examined the skeletal structures of some living things in the NHM…" (S8), and "Through the zoology course, I had established taxonomic relationships with animals in the museum and birds in the bird pradise…" (S20). These students connected to zoology in the museum, examining animals such as flamingos, whales, jaguars, and bones of animals.

The third theme, evolution (3), included just this as its category. The data that was extracted included the following observation: "…I had linked evolution, zoology, botany, and biogeography. It was informative to find skulls from different species of humans in their evolutionary history. These were homo eractus, homo neodentalis [neanderthalensis], and skull specimens of many different genera. (S24)

The fourth theme, other courses (17), comprises only this category (17). The students indicated that the trip would contribute primarily to botany, zoology, and biogeography (5), as inferred from this response: "The trip contributed a lot to zoology and botany. I saw the usefulness of the Latin we learned there, because some words were not in Turkish." (S31) Another student mentioned: "…We had the chance to see different kinds of trees in the BG. In the NHM, we also saw the animal species that we learned about in zoology. In terms of biogeography, we had the chance to see the period of the rocks and the examples of fossil rocks." (S24). These testimonials highlight how a field trip can incorporate multiple components of the curriculum and expose students to a variety of subject areas simultaneously.

The fifth theme, observation (5), included one category, which was observation (5). One of the teachers noted, "Observing plant species living at the BG contributed to my learning, because I learnt better visually" (S26). At the same time, another found that "examining organisms taught in the zoology course provided a more permanent learning (S27).

The sixth theme, 'Teaching' (5), merged two categories: Teaching (5) and Trip Arrangement (1). S27 alluded to how this field trip would benefit her future students by saying, "When I start my teaching life, it will be beneficial to tell my students and to show the photos I took there. Also, observing the living things taught in zoology will provide more lasting learning in my student life..." (S27).

The examples from these two final themes (observation and teaching) articulate the importance of field trips, not only for students, but also for teachers and those preparing for the profession.

Achieved goals

The students' views of achieving the field trip goals were collected under six themes: IBP (16), NHM (7), BG (8), courses (18), social activity (16), and trip program and duration (16). The students' goals and achievement levels were mainly met. Firstly, the students attended the trip for both social and course-oriented content purposes. The students also achieved their goals related to the IBP, NHM, and BG, including observing birds, visiting the museum, and examining various plant species and endemic plants. They were also satisfied with the trip's program and duration. The results are presented in Table 4.

Table 4: Achieved goals of the field trip.

Theme (f)	**Category (f)**	**Code (f)**
IBP (16)	IBP and Its Environment (6)	(+) The IBP met expectations. (3) (-) The IBP was a waste of time. (3)
	Birds (10)	(+) To see flamingos and to see them closely were good (4) (+) Observed more birds than at the Manyas Bird Paradise (1) (+ -) Aims were met in other places. There were not more bird species in the IBP. (3) (+ -) Aims were met about the trip. Observed flamingos from a far (1) (-) Observed birds from afar (1)
NHM (7)	Museum (7)	(+) The museum was the most beautiful and enjoyable part. To observe images in a museum closely made information more permanent (4) (+) The animal skeleton and different organisms in the museum were interesting. (1) (+) The trip was very instructive and examined various fossils. (1) (+) Observed species in the museum (1)
BG (8)	BG and Its Environment (3)	(+) The BG was good. (2) (+) The BG should have been stayed longer instead of the IBP. (1)
	Guide (1)	(-) The guide was not so expert enough. (1)
	Plants (4)	(+) The BG was beautiful with plants. Observed some new species and tropical plants (4)
Courses (18)	Botany (1)	(+) Examined some plants closely taught in courses (1)
	Zoology (1)	(+) Examined some animals closely taught in courses (1)
	Learning (16)	(+) Aims were well met. It was useful for our classes. (8) (+) It benefited students' permanent learning. Observed many species and received information, learned new things (7) (+) Observed species in museums (1)

Social Activity (16)	Having Fun, Sightseeing (16)	(+) It was a beautiful, efficient, enjoyable, and exhausting trip. Observed new places, visited historical places in İzmir in free time (16)
Trip Program and Duration (16)	Program (8)	(+) It was a nice activity for learning. (1) (+) The trip's content was rich and instructive. It was a comprehensive tour of many places. (2) (+) The food at the restaurant was good. (1) (-) The meal program was not good. (4)
	Duration (8)	(+ -) Aims were met, but time was very limited. The trip could be two days. Two trips could be planned. (2) (-) More time should be spent in the NHM. The guide in the dinosaurs' section in the NHM should be was so good. (5) (-) The group involved a high number of students. (1)

IBP: İzmir Bird Paradise; NHM: Natural History Museum; BG: Botanical Garden

According to Table 4, the students fulfilled many of the trip's goals. Although the students found the trip to be instructive, informative, and entertaining, some emphasized that their goals had not been met. These results are outlined below.

The first theme, IBP (16), consisted of two categories: IBP and its environment (6) and birds (10). In the first category, three students were pleased with the bird paradise trip. My expectations were met… Flamingo's legs and wings were very nice. (S38). However, three students seemed to be less satisfied with this portion of the experience. I was bored on Flamingo Island, but they were very nice animals. (S33) Five of the students were pleased with the Birds category (10), but five were disappointed. We did not find what we hoped for in the bird paradise because of seeing birds from afar. We could have done it in class. (S15)

The second theme, NHM (7), comprises just the one category of museum (7). In this area, all of the students (7) were impressed with this part of the trip, as the museum visit was instructive and interesting. The participants' favourable responses included comments such as, "…trip was useful for me, as I wanted to see the intermediate form shown at the NHM" (S17). Some students referenced the specific exhibits with which they were most satisfied, by indicating, "Animal skeleton[s] and the different creatures in the museum were interesting. It was nice to see the lower jaw part of the whale" (S24) and "The trip was very instructive. I wanted it done again… We had examined various fossils and remains" (S29). The students were very impressed with what they observed, including fossils, animal skeletons, and various organisms in the museum, which helped them retain their learning.

The third theme, BG (8), represented three categories: BG and its environment (3), guide (1), and plants (4). Concerning the first category, the goals of the seven students related to the BG were met. "The bird paradise and botanical garden, especially the tropical garden, met my expectations" (S19). Still, one student was unsatisfied with the schedule, arguing, "We should have stayed longer in the botanical garden rather than the bird paradise" (S38). It exhibits the students' aim with BG was to observe different, previously unknown plant species and endemic plants, and it seems that their aim was realized.

The fourth theme, courses (18), consisted of three categories: Botany (1), Zoology (1), and learning (16). The students (18) were satisfied with this trip in relation to the courses, as one student discovered, "I examined animals and plants that were instructed in classes more closely" (S25). They supposed that the trip was informative, because they learned new things (16).

The fifth theme, social activity (16), formed a category of having fun and sightseeing (16). Most of the students (16) reported that the trip was efficient, enjoyable, and fun. One student declared, "My goals and expectations were met. We visited historical places in İzmir in our free time." (S1) They emphasized that seeing new places in İzmir amused them. The trip was good as

a social activity.

The theme, "trip program and duration (16) was divided into two categories: Program (8) and duration (8). While most students were satisfied with the trip in terms of both areas (4; 4), four students were not. Regarding the program category, one participant who had positive views stated "100% of the goals were met. The trip was nice, and it was fun... Dinner was very nice and I liked the place very much" (S26). One of the disgruntled respondents complained, "We saw beautiful places, but the organization of the trip was very bad. We had dinner at 11 p.m. ..." (S34). This comment highlights how, although these experiences are beneficial for learning, it is essential to schedule each event so that the timing is reasonable. Regarding the duration category, the students mentioned that the field trip time, especially the NHM section, was insufficient and made the following recommendations: "We could not listen to the dinosaurs section in the NHM, due to a lack of time" (S19), and "It could have been two İzmir trips at different times, instead of a single day… For example, we should have spent more time in the NHM" (S21). This suggests that when too many visits are scheduled in a single day, students may not have sufficient time to fully enjoy the experience and may instead experience frustration, rather than optimal learning.

Suggestions about the field trip

Seven students found the trip enjoyable and beneficial, and did not make any suggestions about it, saying, "The trip was just fine. We visited many places in a short time, so I have no suggestions." (S7). In addition, four of the respondents felt that the trips should be repeated, emphasizing, "Everything was perfect. It must be done again" (S29). Some of the participants offered recommendations, such as "To teach following courses, such as evolution in museums with fossil forms, provides a more memorable effect. Therefore, I suggest that such issues be handled on site" (S37). Other student suggestions regarding the field trip are presented in Table 5. This data further underscores the importance of careful planning for events like these, particularly in terms of content and scheduling, not just for the site visit, but also for aspects such as meals and free time to explore.

Table 5: Suggestions about the field trip.

Theme (f)	**Category (f)**	**Code (f)**
Trip Program and Duration (27)	IBP (4)	Stay less in the IBP (4)
	NHM (6)	Stay more in the NHM (6)
	BG (2)	Stay more in the BG (2)
	Others (13)	Visit the zoo (5) Longer trip. 2-day trip and visit 3 different places (4) More scheduled trips (3) Visit less than 3 places (1)
	Guide (2)	Add a zoology teacher to the IBP (2)
Social Activity (10)	Meal (10)	A well-planned trip or mealtime (10)

IBP: İzmir Bird Paradise; NHM: Natural History Museum; BG: Botanical Garden

As Table 5 shows, suggestions were grouped into two themes: Trip program and duration (27), and social activity (10).

The first theme, trip program and duration (27), is divided into five categories: IBP (4), NHM (6), BG (2), others (trip program and duration) (13), and guide (2). Among the first components, four students mentioned that less time should be allocated to the IBP category, or that

it was unnecessary to attend the bird paradise. One student remarked, "Instead of going to the bird paradise, we could have spent more time in the NHM and the BG" (S16). Regarding the NHM category, some recommendations were made that this section should be given more time, such as "…I would like to stay a little longer at the museum and listen to what the instructor told us there" (S10), and "We had about two and a half hours of free time in Konak, İzmir. We could shorten this time by an hour and get information about the dinosaurs in the NHM" (S19). Regarding the BG category, two students thought more attention was needed here, noting, "We could have stayed less in the bird paradise… We could have spent more time in the BG" (S38). In the guide category, two students stated that a guide should be included on the trip. Regarding the fourth category (trip program and duration), the students' opinions varied among the others (13). One respondent voiced: "Three different destinations for one day were compelling. Although time was limited, it was fruitful. Instead of visiting a few places in a single day, I would prefer to visit a few places and learn in depth. (S21). Another comment was "The trip must be longer. A one-day trip can be arranged with accommodation, allowing more time for all of them." (S21). These details offer insights into how this particular field trip could be improved.

The second theme of social activity (10) entailed one category: Meal (10). One of the most frequently complained about subjects was the meal program. One student grumbled about "having dinner before 22:00 p.m. … and arriving in Balikesir before 24:00…." (S20). While the event itself is a key component to planning, meals and other such breaks must be factored into the timetable. If the arrival time is expected to be late at night, students should be informed of this in advance, or a different schedule should be considered.

Discussion and Conclusion

The study aimed to identify the views of prospective biology students on the field-trip experience as an outdoor learning activity in both educational and social contexts. Thus, the views of prospective biology teachers about a field trip (the İzmir Bird Paradise, Natural History Museum, and Botanical Gardens in İzmir, Türkiye) were examined. İzmir was a suitable choice for this event, as it is a port city with a distinctive cultural and historical character. Additionally, three parts of this area (the IBP, NHM, and BG) in İzmir were visited within a single day. Thus, the students had learning opportunities about the wetland and the land ecosystems in the IBP and BG. In light of this study's findings, it was found that the students' aims and expectations about the field trip were met.

Goals The students' trip goals were divided into the following themes: Social activity, contribution to courses, IBP, NHM, and BG. The students ' primary goal was to engage in social activities (such as fun and sightseeing) and contribute to the courses (zoology: by observing birds, botany: by observing plants and different plant species, and learning: by observing and being informed). They wanted to participate to see bird species, especially flamingos, in the IBP. While attending this trip to see the dinosaur model, learn about natural history, the formation of the world, and examine fossils and animals at the NHM, they primarily encountered plant species, especially exotic plants, which were not previously on exhibit in the BG. Similarly, Güler (2009) reported that six teachers participating in ecology-based environmental education did so for entertainment purposes. Those results indicated the extent to which students needed social activities both in and out of school. Therefore, it is necessary to increase the number of field trips for students, both for course purposes, stress relief, and socialization.

Experiences According to the students' field trip experiences, they were generally satisfied with the trip, except for the dinosaur exhibit at the NHM. They enjoyed watching birds, especially

flamingos, in the IBP. The NHM was the most interesting part of the trip, as it featured the observation of skeletons, rocks, fossils, and a dinosaur model, all of which showcased evolutionary processes. The BG offered the opportunity to see plants, especially exotic ones, such as orchids and coffee trees. Likewise, Bozdoğan (2012) stated that the prospective fourth-year science teachers who participated in the educational trips to six different outdoor environments were enthusiastic, cheerful, and cooperative. In parallel with the current study's findings to investigate the impact of the classification of fifth-grade organisms and learning about the environment, the following, similar results were reached in the study (Türkmen et al., 2016) as to organizing a trip to the informal learning environment (İzmir Ege University NHM and BG). The T-rex and whale (50.4%) were the main animals that the students examined in the NHM. The fact that these large creatures were found in the museum greatly attracted the students. In addition, the volcanic mountain simulation and bright stones fascinated them. The students enjoyed their time walking around and receiving guidance in the NHM, realizing that it was a fun experience. Contrary to the conclusions of the present study, the fifth-grade students did not find the guide in the BG to be sufficient in helping them. They indicated that they were bored because the names of the plants in the BG were in Latin, and there were no Turkish equivalents for many of them (Türkmen et al., 2016).

However, although the botanist, who was one of the tutors who organized the field trip, informed the students about the goals of this excursion beforehand, and gave information about the BG during the field trip, none of the students mentioned that the IBP, including the wetland and land ecosystem, was an internationally important wetland area. For future field trips, students should be provided with information about the location, the route, and what to observe beforehand. A brochure, including travel information and photographs of the destination, can be prepared and distributed to the students before the trip, similar to the one provided at the IBP Information Centre. An observation form can also be prepared, allowing students to decide what they want to observe during their time there.

Contribution The field trip contributed to several of the students' courses, such as zoology, ecology, evolution, and botany. Additionally, they asserted that the trip had an impact on their observations and the teaching profession. Among the benefits they garnered were observing the teaching style of the guide in the NHM, learning to create a plan for a field trip as a future teacher, and taking photos from the field trip to show the students. The interactions and exhibits that these locations provided gave the students real-life, hands-on experiences in these academic subjects.

Social Activity The aim of field trips as a social activity is two-fold. First, it offers real-world immersion in the natural and cultural worlds. A field trip that focuses on the flora, fauna, and environment provides the opportunity to explore new places, observe various plants and animals, and foster a love of nature and its protection. At the same time, cultural locations, such as the city centre of İzmir in this study, allowed the students to enjoy their free time there. Field trips, as outdoor activities, can play a crucial role in enhancing students' understanding of course content and also meet other needs, such as stress relief, relaxation, and enjoyment outside of school life.

Accordingly, the students' goals and achievement levels were met in the present study. Çetin (2014) stated that, for the most part, the prospective biology teachers achieved their goals related to a field trip to Kazdağı National Park, Balıkesir, Türkiye. Deringer et al. (2025) indicated that college outdoor leaders successfully accomplished many of the programs' goals, such as teaching trip-planning skills and providing opportunities for social interaction with others, while organizing outdoor activities in nearby natural settings. In the present study, while the students primarily participated in the trip for social purposes and to engage with course-oriented content

prior to the trip, they successfully accomplished their course goals. They participated in the social activity by the end of the trip. Later, it was determined that the students reached their goals about the IBP, NHM, and BG. As a result, they took part in a trip that included viewing birds, visiting museums, and exploring plants before the trip, and then outlined that they had achieved their trip objectives. They were pleased to have been involved in the outing and found it instructive, informative, and entertaining. They were content with the trip's program and duration.

The field trip proved to be an effective technique in biology education in this study. Krakowka (2012) pointed out that these events are one of the extracurricular activities organized by teachers, motivating students to learn and allowing them to experience theoretical knowledge firsthand. The prospective teachers must participate in field trips and these types of experiences more often. As Bozdoğan (2012) and Doğan et al. (2018) revealed, field trips increased the prospective teachers' knowledge, energy, and self-confidence, enabling them to make observations and apply theoretical knowledge in practice. This approach is a unique part of the learning component of the curriculum. Similarly, Jose et al. (2017) asserted that a field trip increased students' knowledge of the local delta environment. Some studies have shown that the trip-observation method used in this technique is more effective than traditional ones (Akgün et al., 2017; Ertuğ, 2007; Şen, 2011). Additionally, Amri and Rahmadonna (2025) found that fifty percent of respondents viewed field trips as a combination of learning and recreation, while the remaining third interpreted it as a recreational activity. This demonstrates that a field trip is a combination of educational, recreational, and learning activities.

Suggestions Although the students were very pleased with the trip's program and duration, there were some suggestions on these components, as well as the guide, and social activity in this study. For instance, some students noticed some instances of the guide during the field trip. Although the two guides in the NHM, who were in charge, gave sufficient information to the students, some of them were observed not listening to the guides. In the future, the time allocated to the NHM will be increased because of improved planning of subsequent trips. Another suggestion was to have a zoology instructor on the field trip. Since the museum guides consisted of people who knew the museum and conducted research there, there was no need for a zoology guide during the trip.

Some students also recommended that these trips should be repeated. Since the visit was conducted with a heterogeneous group of 38 people, comprising second- to fourth-grade classes, there were some disruptions to the program due to the size of the group and the students' diverse interests. For instance, some students desired to spend time in the NHM because of the dinosaur model rather than the bird paradise. To solve the problem of programming in a field trip, the number of groups can be decreased for future excursions. Potential expeditions can be planned in two ways: Program and duration, as suggested by the students. The daily field trip program can be limited to two visiting points, such as the IBP and NHM, instead of three separate visits that include the IBP. In addition, some students did not like the meal program on the trip, but the reason was the cost of the trip and the time problem. There was a little delay on the way back to Balikesir. Extraordinary congestion in the traffic on the day and in the free-time area caused the dinner plan to be interrupted. However, in the faculty's biology education department, for reasons such as transportation, cost, and student behaviour, and due to the large group size (Munday, 2008), field trips can be arranged at least once a year. Tatar and Bağrıyanık (2012) also noted that the main reason science and technology teachers rarely preferred summer camps, youth centres, and aquarium visits was due to problems arising from a lack of facilities, administrators, students, teachers, and parents.

Finally, field trips should be carefully integrated into a course curriculum (Munday, 2008)

to help the students connect with their knowledge (Anderson et al., 2003). Several factors, including syllabus, time, leave, distance, cost, and the large number of students, should be considered when planning a field trip. Although many schools offer numerous classes, arranging field trips with large classrooms can be challenging. Practical and cost-efficient field-teaching procedures for large groups, such as conducting locally-based fieldwork, organizing students into project teams of four to six to carry out team-based work, and obtaining assistance from graduate students (postgraduate students to perform certain aspects of field supervision) should be employed (Jenkins, 1994). Additionally, virtual and augmented-reality field trips can be utilized if plants and animals that are inaccessible on-site can be accessed (Genge et al., 2024; Jerowsky, 2024). Because of their many benefits, field trips should be in the syllabus. Governments and faculties should consider coordinating a field trip for several prospective teachers and allocating the necessary budget. Seminars and workshops for teachers and prospective teachers about this method should be conducted (Achen et al., 2019; Sitali-Mubanga et al., 2018).

Some studies, including various measurement tools such as the Likert-type attitude form and interviews, can be utilized for future research. For example, an experimental design incorporating observation and semi-structured interviews (Achen et al., 2019; Bozdoğan, 2012), or an experiential field trip with a draw-and-explain assessment (Jose et al., 2017), would be viable options. These methods would contribute to the existing body of literature on the value of field trips in enhancing learning and social interactions.

In conclusion, this study aimed to investigate the perceptions of future biology students regarding the impact of field trips on their learning and social experiences. The literature attests that "… the multifaceted interpretation of field trips can be utilized by educators to create holistic and enjoyable learning experiences that not only meet curriculum objectives but also enhance student engagement and motivation" (Amri & Rahmadonna, 2025, p.169). The students' views were generally positive, but they raised concerns about the scheduling of free time, meals, and the duration of each visit. It is clear that while field trips are valuable learning resources, they must be well-planned so that learners can experience optimal benefits from these experiences.

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References

Achen, R. M., Warren, C., Fazzari, A., Jorich, H., & Thorne, K. (2019). Evaluating graduate student out-of-class learning: The professional field trip. *International Journal of Teaching and Learning in Higher Education, 31*(1), 96-107.

Akgün, A., Duruk, Ü., & Tokur, F. (2017). Gözlem gezisi yönteminin öğretmen adaylarının çevreye ve çevre eğitimine ilişkin görüşlerine etkisi. [Investigation of the field trip methods' effectiveness: As a way of improving preservice teachers' views on environmental education.]

Route Educational and Social Science Journal, 4(2), 65-82. https://doi.org/10.17121/ressjournal.594

Amri, S., & Rahmadonna, S. (2025). Exploring the meaning of a field trip: Recreational activity or learning activity? *Jurnal Pendidikan Progresif*, *15*(1), 169-177. http://dx.doi.org/10.23960/jpp.v15.i1.202512

Anderson, D., & Zhang, Z. (2003). Teacher perceptions of field trip planning and implementation. *Visitor Studies Today, 6*(3), 6-11.

Anderson, D., Thomas, G. P., & Ellenbogen, K. M. (2003). Learning science from experiences in informal contexts: The next generation of research. *Asia-Pacific Forum on Science Learning and Teaching, 4*(1), Foreword, 1-6.

Bozdoğan, A. E. (2012). Eğitim amaçlı gezilerin planlanmasına ilişkin fen bilgisi öğretmen adaylarının uygulamaları: Altı farklıalan gezisinin değerlendirilmesi [The practice of prospective science teachers regarding the planning of education-based trips: Evaluation of six different field trips]. *Kuram ve Uygulamada Egitim Bilimleri [Educational Sciences: Theory & Practice], 12*(2), 1049-1072.

Büyüköztürk, Ş., Kılıç Çakmak, E., Akgün, Ö. E., Karadeniz, Ş., & Demirel, F. (2017). *Bilimsel araştırma yöntemleri [Scientific research methods].* Geliştirilmiş 14. Baskı (14th enhanced edition). Pegem Akademi.

Çalışkan, O. (2011). Yer ve çevre bilimleri eğitiminde sanal arazi gezileri [Virtual field trips in education of earth and environmental sciences]. *Ankara Üniversitesi Eğitim Bilimleri Fakültesi Dergisi [Ankara University, Journal of Faculty of Educational Sciences], 44*(1), 91-106. https://doi.org/10.1501/Egifak_0000001217

Çetin, G. (2014). Field trip to Kazdagi National Park: Views of prospective biology teachers. *Educational Research and Reviews, 9*(19), 823-833. https://doi.org/10.5897/ERR2014.1918

Davidson, S. K., Passmore, C., & Anderson, D. (2010). Learning on zoo field trip: The interaction of the agendas and practices of students, teachers, and zoo educators. *Science Education, 94,* 122-141. https://doi.org/10.1002/sce.20356

Demir, M. K. (2007). Sınıf öğretmeni adaylarının gözlem gezisi yöntemine bakış açılarının incelenmesi [The study of classroom teacher candidates' perspectives towards field trip method]. *GÜ, Gazi Üniversitesi Eğitim Fakültesi Dergisi [GU Journal of Gazi Faculty of Education], 27*(3), 83-98.

Deringer, S. A., Mitten, D., Rabinowitz, E., Leonard, A., & Clegg, J. (2025). Use of nearby nature in college outdoor programming. *Journal of Experiential Education, 48*(1), 4-21. https://doi.org/10.1177/10538259241265970

Doğan, Y., Çiçek, Ö., & Saraç, E. (2018). Fen bilimleri öğretmen adaylarının çevre bilimi dersi kapsamında gerçekleştirilen alan gezisi deneyimleri [The field trip experiences of pre-service science teachers in the environmental science course]. *Erzincan Üniversitesi Eğitim Fakültesi Dergisi [Erzincan University Journal of Education Faculty], 20*(1), 104-120. https://doi.org/10.17556/erziefd.346487

Ertuğ, A. (2007). *Lise 2. sınıf biyoloji dersinde okutulan "biyosferdeki yaşama birlikleri" konusunun geleneksel ve gezi-gözlem yöntemiyle öğretimin öğrenmeye olan etkisinin karşılaştırılması [A comparative study on the traditional and excursion-observation methods about "living units in the biosphere" of second grade high school biology curriculum].* Yüksek Lisans Tezi. [Unpublished master's thesis]. Selçuk Üniversitesi, Türkiye.

Genge, M. J., Laurent, V., Mason, P. J., Spencer, A. R., Sutton, M. D., & Whittaker, A. C. (2024). Learning and teaching geological field skills in a virtual world: Insights from an undergraduate virtual field trip in Kinlochleven, Scotland. *Earth Science, Systems and Society*, *4*(1), 10128.

https://doi.org/10.3389/esss.2024.10128

Güler, T. (2009). Ekoloji temelli bir çevre eğitiminin ögretmenlerin çevre eğitimine karşı görüşlerine etkileri [The effects of an ecology based environmental education on teachers' opinions about environmental education]. *Eğitim ve Bilim [Education and Sciences], 34*(151), 30-43.

Howe, R. W., & Disinger, J. F. (1998). Teaching environmental education using out-of-school settings and mass media. ERIC/SMEAC Environmental Education. https://eric.ed.gov/?id=ED320759

Jenkins, A. (1994). Thirteen ways of doing fieldwork with large classes/more students, *Journal of Geography in Higher Education, 18*(2), 143-154. https://doi.org/10.1080/03098269408709250

Jerowsky, M. (2024). *Comparing the use of virtual, augmented, and outdoor field trips in the environmental education of children* [Doctoral dissertation]. University of British Columbia.

Jose, S., Patrick, P. G., & Moseley, C. (2017). Experiential learning theory: The importance of outdoor classrooms in environmental education, *International Journal of Science Education, Part B, 7*(3), 269-284. https://doi.org/10.1080/21548455.2016.1272144

Kisiel, J. (2005). Understanding elementary teacher motivations for science fieldtrip. *Science Education, 89*(6), 936-955. https://doi.org/10.1002/sce.20085

Krakowka, A. R. (2012). Field trips as valuable learning experiences in geography courses. *Journal of Geography, 111*(6), 236-244. http://dx.doi.org/10.1080/00221341.2012.707674

Lange, C., & Costley, J. (2015). Opportunities and lessons from informal and non-formal learning: applications to online environments. *American Journal of Educational Research, 3*(10), 1330-1336. DOI: 10.12691/education-3-10-20.

Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis.* Sage.

Munday, P. (2008). Teacher perceptions of the role and value of excursions in years 7-10 geography education in Victoria, Austria. *International Research in Geographical and Environmental Education, 17*(2), 146-169. https://doi.org/10.1080/10382040802148638

Palmberg, I. E., & Kuru, J. (2000). Outdoor activities as a basis for environmental responsibility. *The Journal of Environmental Education, 31*(4), 32-36. https://doi.org/10.1080/00958960009598649

Saban, A. (2008). Okula ilişkin metaforlar [Metaphors about school]. *Kuram ve Uygulamada Eğitim Yönetimi [Educational Administration: Theory and Practice], 55,* 459-496.

Salsabila, D., Kholis, N., Kartikawati, R. L., & Maesaroh, I. (2024). Strategies for enhancing outdoor learning activities in elementary schools. *Manageria: Jurnal Manajemen Pendidikan Islam*, *9*(2), 135-154. https://doi.org/10.14421/manageria.https://doi.org/10.14421/manageria.2024.92-09

Şen, A. N. (2011). *10. sınıf biyoloji dersinde okutulan populasyon ekolojisi konusunun öğretilmesinde sunuş yolu ve gezi-gözlem yöntemi kullanılarak öğrenme üzerindeki etkisinin karşılaştırılması [Comparison of the effects of the presentation method and excursion-observation method on learning in the teaching of the population ecology topic taught in 10th grade biology course].* Yüksek Lisans Tezi. [Unpublished master's thesis]. Selçuk Üniversitesi, Türkiye.

Sitali-Mubanga, G. N., Lukonga, L. P., & Denuga, D. D. (2018). Effects of lack of field trips on leaner's performance in social studies at primary school. *International Journal of Education, 10*(2), 60-73. https://doi.org/10.5296/ije.v10i2.13325

Tatar, N., &Bağrıyanık, K. E. (2012). Fen ve teknoloji dersi öğretmenlerinin okul dışı eğitime yönelik görüşleri [Opinions of science and technology teachers about outdoor education}.

Elementary Education Online [İlkoğretim Online], 11(4), 883-896.

Türkmen, H., Topkaç, D. D., & Atasayar Yamık, G. (2016). İnformal öğrenme ortamlarına yapılan gezilerin canlıların sınıflandırılması ve yaşadığımız çevre konusunun öğrenilmesine etkisi: Tabiat tarihi müzesi ve botanik bahçesi örneği [The effect of field trips to informal learning environment on learning of "classification of living things": Case of the natural history museum and botanical garden]. *Ege Eğitim Dergisi [Journal of Ege Education], 17*(1), 174-197. https://doi.org/10.12984/eed.20218

Yıldırım, A., & Şimsek, H. (2006). *Sosyal bilimlerde nitel araştırma yöntemleri [Qualitative research methods in social sciences].* Seçkin Yayınevi.