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2015

USING BIRD EDUCATION TO PROMOTE BIOLOGY TEACHERS' USE OF PLACE-BASED EDUCATION: AN EXPLORATORY INQUIRY THROUGH ACTION RESEARCH

A MASTER'S THESIS

BY

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THE PROGRAM OF CURRICULUM AND INSTRUCTION
İHSAN DOĞRAMACI BİLKENT UNIVERSITY
ANKARA

JUNE 2015

To my beloved ones: Okan, Rüzgâr and Defne

USING BIRD EDUCATION TO PROMOTE BIOLOGY TEACHERS' USE OF PLACE-BASED EDUCATION: AN EXPLORATORY INQUIRY THROUGH ACTION RESEARCH

The Graduate School of Education

of

İhsan Doğramacı Bilkent University

by

Özge Keşaplı Can

In Partial Fulfilment of the Requirements for the Degree of

Master of Arts

in

The Program of Curriculum and Instruction

İhsan Doğramacı Bilkent University

Ankara

June 2015

İHSAN DOĞRAMACI BİLKENT UNIVERSITY

GRADUATE SCHOOL OF EDUCATION

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Özge Keşaplı Can

June 2015

I certify that I have read this thesis and have found that it is fully adequate, in scope and in quality, as a thesis for the degree of Master of Arts in Curriculum and Instruction.

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Assoc. Prof. Dr. Gaye Teksöz

Approval of the Graduate School of Education

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ABSTRACT

USING BIRD EDUCATION TO PROMOTE BIOLOGY TEACHERS' USE OF PLACE-BASED EDUCATION:
AN EXPLORATORY INQUIRY THROUGH ACTION RESEARCH

Özge Keşaplı Can

M.A., Program of Curriculum and Instruction
Supervisor: Asst. Prof Dr. Jennie Farber Lane

June 2015

The purpose of this study is to explore strategies and resources to support biology teachers in conducting bird studies with their students and to promote place-based education in Turkey. Different strategies and resources, including a bird education trunk, a training workshop, two fieldtrips, and a Facebook group, were implemented to motivate and prepare teachers. In addition, the researcher provided consulting services to the teachers. The instruments for collecting data were a workshop evaluation questionnaire and interviews conducted with six teachers and seven pre-service teachers. In addition, during the study period the researcher used reiterative reflection to determine what data was needed to examine the effects of her efforts.

Teachers participating in this study reported that the resources and strategies introduced to them motivated them to conduct bird studies with students. Barriers and challenges such as time, curricular requirements, administrative issues,

difficulties with field studies, suitability of school ground, and student attitudes affected teachers' sense of preparation. One of the most important findings of this study is that the place-based education approach might help overcome many of these barriers. Through this study, the researcher was able to share her bird watching passion with teachers; ideally motivating teachers to inspire their students to become birding enthusiasts. The teachers expressed appreciation for her efforts and she learned that long-term collaborations will be necessary to support teachers.

Key Words: Bird education, place-based education, resources and strategies, teacher motivation and preparation, barriers and challenges

ÖZET

KUŞ EĞİTİMİ İLE BİYOLOJİ ÖĞRETMENLERİNİN YER TEMELLİ EĞİTİMİ KULLANMALARINI DESTEKLEMEK: EYLEM ARAŞTIRMASI YOLUYLA AÇIMLAYICI BİR SORGULAMA ÇALIŞMASI

Özge Keşaplı Can

Yüksek Lisans, Eğitim Programları ve Öğretim
Tez Yöneticisi: Yrd. Doç. Dr. Jennie Farber Lane

Haziran 2015

Bu çalışmanın amacı, kuşlar ile ilgili çalışmalar yapan öğretmenleri desteklemek ve Türkiye'de yer temelli eğitimi geliştirmek için stratejilerin ve kaynakların araştırılmasıdır. Öğretmenleri motive etmek ve kuş eğitim çalışmalarına hazırlamak için kuş eğitim seti, eğitim çalıştayı, iki arazi gezisi ve bir Facebook grubu olmak üzere farklı stratejiler ve kaynaklar uygulanmıştır. Bunların yanı sıra, araştırmacı da öğretmenlere danışmanlık hizmeti sağlamıştır. Çalıştay değerlendirme anketi ve altı öğretmen ile yedi öğretmen adayına uygulanan mülakatlar yoluyla veri toplanmıştır. Ayrıca, çalışma boyunca çabalarının etkilerini incelemek için ne tür verilere ihtiyaç olduğunu belirlemek için araştırmacı tekrarlayan yansımalardan yararlanmıştır.

Öğretmenler, bu çalışmada kendilerine sunulan stratejilerin ve kaynakların öğrencileriyle kuş eğitim çalışmaları yapmak açısından motivasyon sağladığını

belirtmiştir. Zaman, müfredatla ilgili gereksinimler, yönetimsel konular, arazi çalışmalarının zorluğu, okul bahçesinin uygunluğu ve öğrenci profilleri gibi engel ve zorluklar öğretmenlerin hazır olma ile ilgili algılarını etkilemiştir. Çalışmanın en önemli bulgularından biri yer temelli eğitim yaklaşımının arazi gezileri için izin alma, bu izinleri almak için gereken zaman ve uzak alanlara yapılan gezilerle ilgili güvenlik kaygıları gibi bazı engel ve zorlukların aşılması açısından yardımcı olabileceğidir. Bu çalışma ile araştırmacı, öğrencilerini etkilemeleri için öğretmenleri motive ederek sahip olduğu kuş gözlem tutkusunu öğretmenlerle paylaşabilmiştir. Öğretmenler, araştırmacının çabalarını takdir ettiklerini ifade etmişlerdir ve araştırmacı öğretmenleri desteklemek için uzun vadeli işbirliklerinin gerekli olacağını anlamıştır.

Anahtar Kelimeler: Kuş eğitimi, yer temelli eğitim, stratejiler ve kaynaklar, öğretmen motivasyonu ve hazırlanması, engeller ve zorluklar

ACKNOWLEDGEMENTS

I would like to offer my sincerest appreciation to Prof. Dr. Ali Doğramacı and Prof. Dr. Margaret K. Sands, and to all members of the Bilkent University Graduate School of Education community for this opportunity and supporting me throughout the program.

My deepest gratitude is to my dear supervisor Assoc.Prof. Dr. Jennie Farber Lane for believing in this study and providing great support all the time. I learned a lot from her constructive feedback. She is more than a supervisor for me. She is a good friend that I could share my life philosophy.

I also would like to express my thankfulness to Dr. Armağan Ateşkan who made the funding possible through the Alumni Small Grants Program of US Embassy and always supported this study in every aspect.

I would also like to thank and offer my sincere thanks to members of my committee, Assoc. Prof. Dr. Robin Martin and Asst. Prof. Gaye Teksöz for their valuable comments and feedback.

I would like to thank Burcu Meltem Arık Akyüz, Asuman Gem and Handan Doğan for their invaluable contributions to the bird education workshop. I would like to thank all the in-service and pre-service biology teachers who participated in the workshop and interviews. They made this study real. I hope to be in touch with all of them and meet in some other bird education activities.

Because of the supportive, warm atmosphere of CITE 2015 group of Bilkent GSE, I could carry on in spite of all difficulties. I would like to thank to all of my dear class mates. It was great to meet with all of you.

My family as my mother Perihan Keşaplı and my mother in law Hatice Can; my father Hüsnü Keşaplı and my father in law Cemal Can, my sister Özgür Keşaplı Didrickson and my sister in law Yasemin Can, my brother Onur Keşaplı and my brothers in law Serkan Can and Jno Didrickson deserves the deepest appreciation. Without their endless support it wouldn't be possible for me to graduate and write this thesis. They are great, compassionate care givers to my daughters.

Finally, I would like to express my biggest gratitude to my husband Okan Can and lovely daughters Rüzgâr and Defne. They were my biggest inspiration and motivation sources. I appreciate their patience during these two though years.

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CHAPTER 1: INTRODUCTION

Introduction

As human beings we are part of nature. We depend on nature for our physical basic needs and also for imagination and inspiration. Nature is essential for our psychological health too; it fosters curiosity and develops senses that support learning. Unfortunately, in the modern world people have been losing contact with nature. More and more, people stay indoors and when they go outside, they are looking down – at their mobile devices. To regain our connections with nature, we need to go outside, breathe the air, and look up. When we look up, we may see birds, even in the city. Bird watching and other bird related activities provide great opportunities to reconnect with nature.

To learn more about the benefits of bird watching to help us reconnect with nature, this study will explore strategies and resources to motivate and prepare teachers to conduct bird studies with their students. These bird studies can be extracurricular activities or teaching tools used during their lessons. Through this research, it is hoped that bird studies will help teachers to become more aware of their "place" as a resource for learning; therefore, increased Place-based Education (PBE) has been identified as a desirable outcome for this study.

Another aim of this study is for the researcher, who is an experienced bird watcher, to examine her own efforts to promote bird education as she prepares to become a classroom teacher. Therefore, action research will be a key strategy used in this study. Some sections of this thesis will be written in first person as I explore how I can best motivate and prepare other teachers to integrate bird studies into their practice.

Background

Environmental education (EE) as a field has been defined and described in many ways over many years. EE was first officially defined within the Tbilisi declaration (UNESCO/UNEP, 1978). According to this document, EE is a learning process that increases people's knowledge of and awareness about natural environments and environmental problems. EE aims to equip people with the necessary skills and expertise to understand and develop solutions for current environmental problems and to prevent new ones from occurring. EE promotes attitudes, motivations, and commitments to making informed decisions and taking responsible action. EE is often considered within a school system; however, it is a broader concept that can encompass public education in its entirety. EE can occur both inside and outside the classroom. It requires a holistic approach including all disciplines. Outdoor education and experiential education are related disciplines to EE. Orr (1994) described environmental education as "instruction directed toward developing a citizenry prepared to live well in a place without destroying it" (p. 14).

Although Turkey has a rich biological and habitat diversity, EE practices were rare until the last decade of 20th century. The Scientific and Technological Research Council of Turkey (TÜBİTAK) and non-governmental organizations like the Society for the Protection of Nature (DHKD), the Turkish Foundation for Combating Soil Erosion for Reforestation and the Protection of Natural Habitats (TEMA), the Foundation for the Protection and Promotion of the Environment and Cultural Heritage (ÇEKÜL), the Research Association of Rural Environment and Forestry Problems (KIRÇEV), the Nature Society (DD) and the Turkish Bird Research Society (KAD) all play important roles in EE in Turkey. Especially, within some TÜBİTAK programs, EE has achieved significant momentum. For example, within

the framework of the project called “Scientific Environmental Education in National Parks” by the Land, Sea, Atmosphere and Environment Research Group of TÜBİTAK, nature education was initiated in Termessos, Kaçkar, Kazdağı, and Göreme national parks in 1999. University students, research assistants, teachers, pre-service teachers and elementary school students participated in these ecology-based nature education programs. In addition, an “Environmental Education” protocol was signed between Ministry of Education and Ministry of Environment in 1999. Many schools have been taking part in national projects (such as Minik TEMA, Doğa Çantam) and international projects (such as South-Eastern Mediterranean Sea Project, Eco-Schools and Green Pack). Similarly, within the scope of “Nature Education and Science Schools” Program, TÜBİTAK supported 289 projects that include practical-based and hands-on science activities, and environmental education in non-formal settings between 2007-2012 (Erdoğan, 2011; Tüysüzoğlu, 2005; “Projects that was supported within the scope of 4004 Nature Education and Science Schools Program between 2007-2012,” n.d.).

There have been a number of studies about environmental education, including attitudes of students, pre-service teachers, and in-service teachers about environmental issues in Turkey (Dinçer, 2012; Erdoğan, Marcinkowski & Ok, 2009; Tuncer, Ertepınar, Tekkaya, & Sungur, 2005; Yılmaz & Andersen, 2004). Other studies have investigated the resources and strategies used to increase environmental awareness and literacy (Durmuş & Yapıcıoğlu, 2014; Erdoğan, Uşak & Bahar, 2013; Güler, 2009; Meydan, Bozyiğit & Karakurt, 2012; Erdoğan, 2011).

The importance of hands-on, real life experiences in EE has been highlighted by several studies (Chawla, 1999; Layrargues, 2000). Layrargues (2000) mentioned that effective environmental education should focus on local environmental issues. He

stated that students might more eagerly take action to solve local environmental problems if these issues are the ones that they face in everyday life. Therefore, one focus of EE has been to encourage people to become more aware of and to appreciate their local environments.

Place-based Education (PBE) "is an education philosophy rooted in EE and is also known as place-based learning, environment-based education and education for sustainability" (Barnett, 2009, p.10). Although it is a term that has recently appeared in the education literature, PBE has been supported by progressive educators for more than hundred years. For example, in "The School and Society," John Dewey emphasized the importance of an experiential approach to student learning in the local environment: "Experience [outside the school] has its geographical aspect, its artistic and its literary, its scientific and its historical sides. All studies arise from aspects of the one earth and the one life lived upon it" " (1915, p. 91; as cited in Woodhouse & Knapp, 2000).

To date, there have been a few investigations into PBE in Turkey (Ürey & Çepni, 2014; Köşker & Karabağ, 2012). There have been no studies using birds as a resource to promote awareness of one's place are found in Turkey. In other places in the world, educators and researchers have recognized the role of birds in promoting an environmental awareness and sense of place.

Russo (2008) states that birds are constant reminders of nature and they offer great opportunities for place-based education. It is even possible to observe seasonal differences in bird compositions and behaviours in a city park or school garden.

The Bird Education Network (BEN), founded in 2007 in USA, aims to make it possible for educators to exchange information about bird-related education strategies, materials, resources, and programs more effectively and efficiently. BEN

presents a variety of reasons why we use birds for education purposes. First of all birds are beautiful and attractive with their plumage and song. Some people may be afraid of or disgusted by some animals like insects and reptiles, but most everyone likes birds. Birds are very popular. They can be seen easily everywhere in every season. They are indicators of a healthy environment and they have many ecosystem services such as pollination, seed dispersal, insect control and being food for other animals. Culturally and scientifically they are part of our history. They are international with their fascinating migration they show us how we are all connected, illustrating how environmental issues cross boundaries and are shared by many nations ("Why Birds", n.d.).

There are many bird watchers around the world (and also in Turkey) who are not biologists, but are enthusiastic about birds and make considerable contributions to research and conservation studies. For example, bird watchers report tens of thousands of bird observations to citizen science projects at the Cornell Lab of Ornithology which is the most dynamic and powerful source of information on birds in the world. Scientists use these data to determine how birds are affected by habitat loss, pollution, and disease ("Citizen Science," n.d.). The Spring Alive Project, which is a simple bird watching survey run by Birdlife International, is another study to which children and adults contribute by submitting their first sightings of certain migratory species such as the barn swallow, common swift, white stork, cuckoo and Eurasian bee-eater ("About Spring Alive", n.d.). These are examples for citizen science projects focusing on birds and it is pointed out by Greenwood (2007) that collaborative research among networks of amateurs has had a key role in ornithology and conservation science for many years.

Global bird education studies promote cross-curricular and international connections. Magpiong (2007) shows that it is possible to involve bird activities in literature (symbolism and metaphors), social sciences (geography through bird migration), physics and mathematics (forces of flight), and arts (bird songs and colours of feathers).

Birds are very good indicators for the quality of environment (Gregory et al, 2003); they can be used as a flagship species for conservation studies. Furthermore, bird studies can promote international mindedness as students learn how birds migrating over their local communities are part of a larger, interconnected environment. Using local examples of endangered species in Turkey along with bird migrations through Turkey are effective ways to help students appreciate biological diversity and increase their awareness of nature conservation.

In addition, by considering conservation of migratory birds, students can gain insight into international cooperation since migratory paths cross borders of many countries. For example, an international and interdisciplinary art-focused environmental education program called Children are the Hope (www.childrenarethehope.org) has been carried out between Wisconsin (USA) and Cuba since 2009 using a bird species, sandhill cranes, as a symbol. This year, partners from Turkey and Rwanda have been involved in this program (K. Klink, personal communication, March 29, 2015).

Especially in the USA and UK, there are comprehensive nature education studies focusing on birds. The first one that deserves mention is the National Audubon Society (www.audubon.org) which was founded more than a century ago in 1905. According to their website, their mission is “to conserve and restore natural

ecosystems, focusing on birds, other wildlife, and their habitats for the benefit of humanity and the earth's biological diversity." ("Conservation", n.d.). Besides research and conservation studies, the Audubon Society provides tips for bringing nature into the classroom and tips for teaching outdoor and conducts education programmes such as "Audubon Adventures" designed for teachers and elementary grade students ("Audubon Education", n.d.).

The Bird Education Network (BEN; www.birdeducation.org) was formed in 2007 as an initiative of the Council for Environmental Education (CEE). Through a variety of new tools and strategies, BEN supports educators working in the field of bird conservation to work more effectively in the field of bird conservation. The network aims to make a more effective and efficient information exchange among educators about bird education strategies, materials, resources, and programs.

Flying WILD is an education program developed by the CEE that focuses on bird migration. They consulted with environmental educators, bird experts, and environmental conservation professionals to create a comprehensive activity guide for K-12 teachers. The guide includes teacher-led, student-led and volunteer-led activities, ideas for bird festivals and service learning projects, outdoor components and cross-curricular connections (CEE, 2011).

The Cornell Lab of Ornithology (CLO; www.birds.cornell.edu) is a non-profit organization founded in 1915 and conducts research and conservation studies on birds. It also gives high priority to the education studies for all ages about birds and nature conservation. CLO developed the Bird Sleuth curriculum for K-12 teachers. It contains lesson plans, games and many activities including inquiry-based outdoor activities that encourage students to discover nature by focusing on birds and becoming part of citizen-science projects.

Birdlife International organizes the Spring Alive campaign to monitor bird migrations. Observers from 35 countries in Europe (including Turkey) and the Republic of South Africa participate. This campaign involves observations of five migratory species: barn swallow, common swift, white stork, Eurasian bee-eater, and cuckoo. In spring, these birds migrate from Africa to Europe for nesting. They are easily recognized by their distinct features and it is possible to observe them even in cities. In spring, observers submit their first sightings of each species to the organization's database. In this way, the migratory patterns for each species can be followed throughout Europe. The Spring Alive campaign collects phenology-related data and population size data that can be good indicators for climate change. The Spring Alive campaign has been used as a citizen science project. Teachers and students can take part and it gives a good opportunity for teachers to take students into the field during the spring. The organization's webpage (www.springalive.net) includes activities for teachers and students.

The Wisconsin Bird Conservation Initiative and the Wisconsin Society for Ornithology developed a Birding Kit (www.wisconsinbirds.org/Education) to enable educators to introduce students to birds and their habitats, while exploring the outdoors. The kit includes binoculars, telescope, field guides and an educator's guide for grades four and eight. The guide includes activities related with the use of optical equipment and field guides, bird identification and bird conservation. For every activity, it provides Wisconsin State Academic Standards for social studies, science and environmental education.

The Fledging Birders Institute (FBI; www.fledgingbirders.org) is another non-profit environmental education organization in the US that supports healthy development of youth through the benefits of bird watching. It helps to increase awareness of

avian diversity and conservation. As a member of BEN, FBI offers resources for teachers, birding mentors and parents. The Royal Society for the Protection of Birds (RSPB; www.rspb.org.uk/discoverandenjoynature/) in the UK has been carrying out bird education activities for many years. Within RSPB there is one group for young children, Wildlife Explorers, and for teenagers there is RSPB Phoenix. The book, *Sharing the Wonder of Birds with Kids* (Erickson, 2012) was specifically written for educators to give them activity suggestions for introducing children to the world of birds.

Some bird education studies have been carried out by NGOs in Turkey such as the East Mediterranean Bird Migration Education Project (executed by the researcher on behalf of Bird Research Society [KAD] in 1999), white stork education studies (KAD) and Turkish section of the Spring Alive campaign (Nature Society). A biology teacher in one of the private schools in Istanbul founded a bird watching club in the early 1990s that was active for around five years (K.A.Boyla, personal communication, May 14, 2015).. Between 1995-2007, seven Bird Watching Schools were organized in Ankara and in İstanbul by NGOs (DHKD, KAD, DD) in which mainly university students participated. Bird watching clubs have been founded in universities and in some cities NGOs working on bird research and conservation and bird watching clubs organize activities open to the public on special days like "World Migratory Bird Day" in spring and "World Bird Watching Day" in autumn. They also produce education materials like leaflets and posters to raise public awareness and create interest. In addition, a bird watching club has been founded in a high school in İstanbul in 2014 (H. Doğan, personal communication, November 29, 2014).

In terms of bird education, TÜBİTAK publications are also worth mentioning. In the children's magazines "Bilim Çocuk and Meraklı Minik" information about birds is frequently included. In addition to these magazines, several books aiming to introduce birds to children have been translated and published by TÜBİTAK. There are also some recent examples of literal works for children related with birds. For example, *Bizim Kuşlar (Our Birds)* which was written by Zelal Özgür Durmuş (2014), who is a bird watcher and received biology teacher training. Another example is the book called *Kuşlar Bize Ne Söyler? (What Do Birds Tell Us?)* written by Filiz Özden (2010).

Background of the researcher for the action research

As mentioned in the introduction, this study will include sections where the researcher examines her efforts as a bird educator to promote birding activities. This section is written in first person where I share my background and explain how and why bird studies are important to me and my professional development.

Bird watching came into my life when I started studying at Middle East Technical University (METU) in 1994. I participated in "First Ornithology School" organized by the Ankara Bird Watching Club. There, I had a chance to meet with bird watchers (there were just around twenty of them in Turkey at that time) and joined two bird watching trips within the scope of ornithology school. Afterwards, birds have played a central role in my life both professionally and voluntarily.

In 1995, I took part in the foundation of METU Bird Watching Club which was the first bird watching club at a university in Turkey. During my university years, I participated in bird research, conservation, and education projects run by NGOs. I carried out educational activities in some primary and secondary schools using class

activities such as slide shows or guiding bird watching trips. This experience introduced me to nature education.

During my summer practice as a biology student in 2000, I learned bird ringing at Jormfruland Bird Station in Norway. Before I graduated from the university, I took an active role in the foundation of the Turkish Bird Research Society (KAD) in 1998 and I was a board member for six years. I executed or worked as a consultant in many nature conservation projects both voluntarily and professionally. My first professional work experience was being consultant of "East Mediterranean Bird Migration Education Project." Within the scope of that project I developed a bird migration education set with my colleagues (including slides, information booklet, poster, leaflet and a game) to be used by local NGOs to raise awareness for the conservation of migratory bird species in the area. I organized a training workshop for the members of local NGOs and carried out pilot education activities at elementary schools.

While in Norway for my summer practice, I understood that the ringing method is a useful and valuable tool for bird research and nature conservation. It is also effective for nature education as children get amazed when they learn fascinating facts about bird migration and when they release ringed birds. As a result of my experience in Norway, I dreamed of launching a national bird ringing scheme in Turkey and in 2001 it became a reality. I began my first master's study on bird migration using the ringing method. In 2002, I took the initiative to launch the national scheme under a protocol between KAD, METU and Ministry of Forestry and Environment. One of the most valuable experiences of my life was being the national coordinator of the Turkish Bird Ringing Scheme. As the national coordinator of the scheme for 8 years, I worked in collaboration with my national and international colleagues. I carried out

studies in many places like Manyas National Park, Çukurova Delta and METU campus. During these studies, as a licensed ringer I trained volunteers, mainly biology students, on this research method and performed educational activities for local children. My colleagues and I organized bird ringing courses in Ankara and in Manyas National Park.

In 2008, I decided to move to a village with my husband and daughter. It was like a bird paradise by the sea and surrounded by temporarily flooded forests. It was also on the migration route of many bird species. There, bird watching was not just a pastime, it took place all the time because birds were everywhere around our place. While we were doing some garden work swans, spoonbills or birds of prey were flying over our garden, while we were having our dinner at the balcony we were observing a hawfinch also feeding its young, while playing in the garden with my daughters (we had our second daughter by then) were observing blackbirds coming to the plum trees. My daughters learned to share plums with the birds. In winter, we used to hang a bird feeder for great tits. It was especially amazing to witness my little daughter's reaction when she first observed white stork flocks migrating over our house. We observed around 5000 of them in just half an hour. Two years passed and she is still remembering those moments. Whenever she hears about white storks she starts talking about that day.

In the village I learned that although children in rural areas grew up with great bird diversity, they may not be interested in or aware of birds. Therefore, I organized a bird watching trip to a lake that was very close to the village. The children got so excited observing water birds through a telescope for the first time in their lives. Later, I also made a small scale bird ringing study and organized an activity with kindergarden students in the village. They were surprised with the facts about the

migratory journey of a willow warbler. During the period that we lived in the village, children brought all the injured birds that they found to me. Through these activities, I realized that although they live in a village, children were not aware of the natural life in their place or they had misconceptions. For example, they were killing porcupines thinking that they are eating their vegetables in the garden and similarly they were thinking that lady bugs harmed their plants. Thus, it became apparent that the disconnect with nature can happen in villages, and not just in cities. It seemed to me there was something wrong with science education in Turkey since ecological literacy was so low. If there was no one (parents or teachers) to tell or help children discover the cycles and systems of nature, these misconceptions could go on like this forever.

When we moved back to Ankara for my study at Bilkent Graduate School of Education (GSE) it was difficult to adapt to living in a big city again. We discovered a little park near our apartment and it was like a refuge for us. In an ordinary day in this little park in Dikmen (Ankara) which is approximately 0.5 hectares, I can observe different bird species like kestrel, rock dove, collared dove, sparrow, magpie and great tit with my daughters. Apart from these resident species which can be seen all through the year, it is possible to observe seasonal changes. In spring we observe summer visitors like swifts and in winter, winter visitors like robin and siskin. Similarly, in Altınpark (Ankara), 151 bird species were recorded through regular observations and even a new species was added to Turkey's bird checklist (E. Yoğurtcuoğlu, personal communication, April 24, 2015). Even small patches of trees or tall shrubs in the cities are crucial for a wide variety of species. In my masters study I showed that a diverse number of migrant species utilize Middle East Technical University Campus field as a stopover site (Keşaplı Can, 2004).

I have been a bird watcher for 20 years and birds have changed the way I see the world. For me, life is more colourful, happier, and exciting with birds. They improved my observational skills through developing my visual and auditory senses. They are full of surprises and I feel so sorry that people, especially children, who are not aware of birds' presence and their beauty. For many people, there are only sparrows, pigeons and crows as bird species. However, they are not aware of the sexual dimorphism of house sparrows or the presence of different crow species. During all the educational activities that I organized or participated, I witnessed the excitement, amazement and happiness of people of all ages when they observe birds through binoculars or learn interesting facts. Because of this, I always felt it was my responsibility to share my enthusiasm and knowledge about birds and nature with other people.

One day, my daughter told me that she showed her friends the crows flying over their school. Her friends got surprised and told her "Oh, we thought that they are normal birds?" When she shared this conversation with me I got quite shocked. What is a "normal bird"? What did they mean? I wished those students could have the opportunity to visit that park regularly which is just a five minutes' walk from their school. It was another critical moment for me to feel that bird education is a tool that needs to be improved in Turkey to increase the love of nature and our sense of place.

Problem

Nature fosters children's naturally occurring curiosity. However, in this century, children spend most of their time indoors with technological devices; their awareness and understanding about the natural world and their contact with nature is limited. Even if they are lucky to go to a park their connection with nature is compromised by parental rules and worries about safety. Louv (2010) claims that many physical and

mental problems of today's children, like obesity, depression and attention disorder, occur because of this broken bond with nature.

Moreover, when children learn about environmental problems, they are often taught about distant places and exotic species, but know little about the wildlife living in their backyard. Barnett (2009) asserts, however, learning real world experiences in the local environment makes children enthusiastic and inspired to learn more. Similarly Sobel (1996) says that in order to flourish and truly empower children we need to give them opportunities to love Earth before asking them to save it.

Since children spend a considerable amount of time at school, school grounds provide an ideal opportunity to reconnect students to the natural world. Teachers have an important role to make this connection possible. Unfortunately, hands-on activities, outdoor education and place-based education are rarely used in formal education in Turkey. In spite of educational reforms, biology education in practice is still dominated by teacher-centred traditional methods depending on textbooks used with class lecturing. Most of the state schools do not have a laboratory and if they have, they are rarely used. According to the university entrance exam results, among the science subjects achievement in biology is the lowest (Telli, Brok, Tekkaya & Çakıroğlu, 2009). In a study that examined students' views about biology, the main reasons for learning difficulties were found to be the nature of the topic, teaching style, students' learning and studying habits, students' negative feelings and attitudes towards the topic and deficiency of resources. Students couldn't find connections with their daily lives (Çimer, 2012). Therefore, it can be concluded that lack of practical activities and field trips are among the important factors that contribute to low achievement in and dislike for biology. Many studies showed that curricular limitations, time constraints, lack of resources and lack of expertise are the main

reasons preventing teachers from using outdoor learning (Dyment, 2005; Ham & Sewing, 1988; Rickinson et al., 2004; Simmons, 1998).

Turkey has a very rich avifauna with 482 bird species identified to date (E. Yoğurtçuoğlu, personal communication, May 19, 2015) and important bird migration routes occur within Turkey's national boundaries. Although bird education is a useful tool for place-based education, it is not utilized in formal education in Turkey. Increasing teacher interest in birds and providing them with strategies to teach about birds may be the impetus needed for teachers to go outside and to take students with them. Once outside, they can learn about and explore their environment, and become more aware of their place in nature.

Purpose

The purpose of this study is to promote place-based education in Turkey by explore exploring strategies and resources that support biology teachers in conducting bird studies with their students. A small group of pre-service and in-service teachers were targeted during the research and participated in a variety of strategies and resources to introduce them to bird education, including a bird education trunk, a training workshop, two fieldtrips, and a Facebook group. The researcher, with her background about bird research and bird education, provided consulting services to the teachers. This is a qualitative, exploratory case study that includes action research along with investigative tools such as a workshop evaluation questionnaires and interviews.

Research questions

How can I, as a bird educator, promote place-based education and motivate and prepare biology teachers to conduct bird studies with their students?

1. Which strategies and resources do Biology teachers indicate motivate them for bird education?
2. Which strategies and resources do Biology teachers indicate prepare them for bird education?
3. What barriers and challenges have Biology teachers faced or perceive they may face when conducting bird education?
4. Do Biology teachers indicate that bird studies will involve students in place-based education?

Significance

Connection with nature is very important for the physical and mental health of children (Louv, 2010). Eaton (2000) states that learning experiences occurring in open air have greater effects on the development of cognitive skills than in-class learning experiences. In their book *Your Brain on Nature*, Selhub and Logan (2012) presents the results of scientific research about the positive effects of the nature on our brain. This is especially crucial for high school students who are experiencing pressures such as preparing for university entrance exam.

Bird studies as a place-based education tool can provide skills and knowledge that support comprehensive and practical learning strategies and provide psychological benefits. Other benefits include the development of both visual and auditory observation skills, enhancement of awareness and understanding of natural world in general and the place that they live in particular, and improvement of communication and social skills. Bird studies also have positive effects on academic success through sparking interest and increasing engagement (Magpiong, 2007; “Bringing birding to our students”, n.d.).

Unfortunately, students are spending more and more time indoors rather than experiencing outdoors during their school learning. According to Dyment (2005), barriers such as background knowledge, comfort, and time prevent teachers from integrating place-based education into their classroom lessons. This study seeks to identify strategies and resources that will motivate and prepare teachers to conduct bird studies with their students. By working closely with a small group of pre-service and in-service biology teachers, I hope to gain valuable insights that will enable me to continue to promote bird education in Turkey. I also hope that as these teachers become more comfortable with bird studies, they will motivate their students and other teachers to appreciate and use their place, including their school grounds and local community, to study and recognize their place in nature.

Definitions of the key terms

Environmental education: Environmental education aims to develop skills and attitudes that would make the human race understand the relationship between the environment and human impact on the environment. In order to take action to conserve the environment, people should understand how their decisions and actions affect the environment (IUCN, 1970).

Citizen Science: Citizen Science is a process that engages the public in the scientific process and the advancement of scientific knowledge (Krasney & Bonney, 2005).

Outdoor education: Outdoor education is a method that improves student learning by using the resources (both natural and artificial) outside the classroom (Knapp, 1996).

Place-based education: Place-based education is an approach in which local community and environment is used as a starting point to teach concepts in language arts, mathematics, social studies, science and other subjects across the curriculum.

PBE is mainly a student centred strategy which emphasizes hands-on, authentic learning experiences. PBE increases academic success, fosters students' appreciation for the natural world, supports students in developing stronger ties to their community and becoming active and contributing citizens (Sobel, 2004). Smith (2002) determined common patterns in place-based education as cultural studies, nature investigation, real-world problem-solving, interaction with local business and community members and participation into community functions like town and council meetings.

CHAPTER 2: REVIEW OF LITERATURE

Introduction

Practical activities outside the classroom, including direct observations of nature, are essential components of science education. There are many benefits of outdoor learning for students, teachers and the wider community. These experiences increase students' knowledge about nature, inspire and motivate them to learn science, increase students' creativity and critical thinking skills, renew teachers' enthusiasm for learning, and raise active and engaged critical citizens (Ballantyne & Packer, 2002; Lieberman & Hoody, 1998; Howarth & Slingsby, 2006, Rickinson et al., 2004).

Connecting with nature is very important for the health of children, too. In 1999, Smith and Williams found that children in North America typically spend only four to five percent of their time out-of-doors; considering the increase in technology and mobile devises, it is likely that amount may be even less today. Louv (2010) claims that many physical and mental problems of today's children, like obesity, depression and attention disorder, occur because of this broken bond with nature. He calls this broken bond the nature-deficit disorder.

In schools and through the media, today's children hear and learn about environmental problems like global warming, ozone layer depletion, destruction of rainforests, extinction of species and some ecological concepts like recycling. However, they spend very little time in nature. In addition, they learn about environmental problems of distant places but neither have awareness nor a sense of their local nature (Louv, 2010).

Cajete (1999) claims that the hidden curriculum of modern Western education is "designed to condition students to view the natural world as a collection of objects that can be manipulated through science, technology, and human economic interests" (p.190) and this engenders biophobia (fear of nature). Thus, students feel more comfortable in a human-made world than in an unfamiliar nature. Similarly, Sobel (1996) discusses the "fear of ecological problems and the natural world" created through a heavy focus on classroom dialogues about problems of distant places. According to him, this fear makes students distance themselves from nature as well. He calls this phenomenon "ecophobia."

Place-based education (PBE) seems to be one of the best solutions to help today's children to become more comfortable in nature. In this chapter, PBE will be described and the use of PBE in the world and in Turkey will be presented. As a tool for PBE, examples of bird education activities from around the world will be discussed. Finally, it will be shown that PBE is limited in Turkey and the teachers' role in this respect is important. This study will help to address this limitation through exploring strategies and resources to increase teachers' motivation and preparedness to conduct place-based bird studies with their students.

Place-based education

Outdoor education is often considered to involve extensive trips, but it can simply be stepping outside on to the school grounds or local community. This strategy of using local environments is called place-based education. Sobel (2004) defines PBE as "the process of using the local community and environment as a starting point to teach concepts in language arts, mathematics, social studies, science and other subjects across the curriculum" (p. 7).

Learning about and in the natural world involves observing living and non-living aspects of an ecosystem. With PBE, the ecosystem is the school grounds and the local community. Non-living aspects of an ecosystem include soil, water, and weather while living aspects include wildlife species of plants and animals. Through PBE, children learn that they do not need to travel far to observe wildlife (Smith, 2007). According to Broda (2007), schoolyard-enhanced learning is considered a subset of PBE. Schoolyards give opportunities for all subject areas by providing real examples for the topics covered in the lessons or simply providing motivation by changing the pace and place of lessons.

Benefits of place-based education

A number of studies have analysed the benefits of PBE. Liebermann and Hoody (1998) conducted a study involving 40 schools in twelve states that designed their entire school curricula and structure around using the local community and natural resources as the context for learning. The findings of this research suggested that by engaging the senses through inquiry-based questioning, PBE increases enthusiasm for learning and reduces classroom problems.

In another study, Switzer (2014) showed that PBE in combination with scientific inquiry increased student motivation to learn ecology. The research found that PBE increased students' effort to learn ecology compared to students who learned through reading and answering questions in textbooks.

The Place-based Education Evaluation Collaborative (PEEC) evaluated ten place-based education programs taking place in more than hundred schools since 2001. Through adult and student interviews along with educator and student surveys and observations, their evaluation showed that the PBE model has many benefits. PBE

makes students and teachers appreciate their local surroundings, develop a sense of place, become active citizens of the local community and protect the environment. PBE was found to increase student and teacher motivation for learning about nature. Through real life, hands-on experiences students become more engaged and PBE promotes learning and increases academic success. The Beebe School in Malden, Massachusetts has followed a PBE model since 1999, their students outperformed peers in other schools in the district in math and science. PEEC reported that PBE changes school culture. For example, the Haley Elementary School which is a public school on a busy highway in Roslindale, Massachusetts, transformed into a different place after PBE implementations. Students became motivated, asked more critical thinking questions and felt more like scientists. Parental involvement and teacher collaborations increased, too (PEEC, 2010).

Place-based education in the world

There are many examples of place-based education from the UK and USA. For example, Howarth and Slingsby (2006) indicated that school grounds need not be very extensive to do practical activities for science education. The authors provide three applied examples to support their ideas: observing an artificial pond to see the effects of abiotic factors, monitoring a small patch of plants to observe succession over a number of years, and examining lichens as indicators of air pollution.

Vickers and Matthews (2002) describe practical examples of place-based activities for K-12 students that are based on the development stages of child discovery proposed by David Sobel. They assert that "children need wild places. Both the world of imagination and the natural world beckon children to explore secret places to make profound connections with plants and animals of the earth" (p.16).

Warkentin (2011) provides another example of a study in which pre-service teachers, within the scope of Environmental and Sustainability Education course, participated in a place-based, experiential learning in Central Park, New York. The teachers made weekly visits to the park and wrote a nature journal. Although in the beginning they thought that the park was not a real nature experience, in the end they formed a different point of view and appreciated the surprising natural diversity in Central Park.

Roghaar and Lott (2014) present a PBE effort used in a kindergarten. In this study, classroom activities were supported by using school grounds, an adjacent cemetery, and a field trip to a local canyon to make students comprehend the criteria for being a living thing and recognize the living and non-living components of their world.

Place-based education in Turkey

In Turkey, there have been a number of research studies on environmental education (Dinçer, 2012; Erdoğan, Uşak &Bahar, 2013; Tuncer, Ertepınar, Tekkaya, & Sungur, 2005; Yılmaz & Andersen, 2004). However, little evidence of PBE in Turkey has been found in the literature.

An interdisciplinary school garden program for a free activity hour including in-door and out-door activities was developed and implemented in an elementary school in Trabzon in the spring of academic year 2010- 2011. Students were actively involved in gardening activities on the school grounds and they connected their experiences with the Science and Technology topics (Ürey, 2013). Köşker and Karabağ (2012) carried out a study in the social sciences to evaluate views of 258 geography teachers working in provinces of Ankara about PBE. They found out that geography teachers generally use in class activities and rarely do outdoor activities. They don't effectively use activities related with the local place that they live in. In addition,

they do not collaboration with parents, community and NGOs. On the other hand, teachers pointed out that the PBE approach is highly effective method to teach about natural and cultural local resources, problems in their local environment, and the human and nature relationship.

Some projects of NGOs working on nature education in Turkey have a PBE approach. For example, "Ağaçların Diliyle İstanbul (İstanbul through the language of Trees)" is a nature education project of ÇEKÜL (www.cekulvakfi.org.tr) using trees as a tool to make children learn about their place. Similarly, K-12 environmental education programs developed by TEMA (www.tema.org.tr), in consultation with academicians from universities, aim to improve students' and teachers' physical, cognitive and social skills by strengthening their connection with the local environment. TEMA conducts an intra-organizational evaluation of these programs twice a year but they are not published (B. Arık Akyüz personal communication, May 25, 2015).

Ecological gardening and permaculture studies have been conducted by Didem Çivici, who is an English teacher and permaculture designer, to learn about the effects of ecological education settings on behaviour and learning pattern with the support of MEB, Permaculture Research Institute of Turkey and a couple of other NGOs, carried out these studies in the gardens of some schools in Istanbul between 2011-2013. In these studies, the aim was to increase environmental awareness of students through first-hand experiences and to include gardening in the curriculum of all schools ("Eko-Per", n.d.). Another place-base related project is called Şehirdeki Doğa (Nature in the City; www.sehirdekidoga.com) to make people (especially children) contact with nature in a city without going distant places. In order to do

that, workshops were organized that entailed planting orchards in school gardens, organizing nature games, and leading nature walks.

Bird education as a tool for place-based education

Since birds are everywhere, they provide an ideal opportunity for PBE. Even in a city park or in a school garden it is possible to observe seasonal differences in bird populations and behaviours. The attractive plumage and notable songs help to locate birds and therefore can be more easily seen and heard in every season compared to other animals such as mammals. They are great tools for students to start learning about wildlife. Birds are very good indicators for the quality of environment so they are used as flagship species for conservation studies (CEE, 2011).

Bird education activities provide cross-curricular opportunities. There are possibilities to involve social sciences (geography through bird migration), physics and mathematics (forces of flight) and arts (bird songs and colours of feathers) (Magpiong, 2007). For example, James de Winter, who is a PGCE Physics Tutor at the Faculty of Education at University of Cambridge, developed a teaching pack called Physics and Birdsong (www.physicsandbirdsong.co.uk) for primary and secondary school students with an idea to use local bird songs, which are familiar to students, as a tool to teach about sound, waves, frequency and amplitude. He also claims that using this approach develops students' skills in drawing and interpreting graphs (J, Winter, personal communication, January 12, 2015).

Birdwatching is among the actions Louv (2010) lists that can be taken by families, schools, or and in the community to improve contacts with nature. In one study, Barnett (2009) summarized and evaluated PBE science curricula with regard to Marin County bird species to introduce and explain the benefits of PBE. Through

making a literature review she discovered that PBE creates excitement in the learner and rejuvenate the teachers.

Role of teachers and their competencies

Since students spend considerable amount of time at school, teachers have big role and responsibility in creating opportunities for interactions with nature. However, they experience some challenges and barriers which prevent them achieving this.

According to the research, there are external and internal barriers that prevent teachers to teach environmental topics. External barriers and logistic barriers, such as lack of time, funding and resources have been evaluated as significant factors (Ham & Sewing, 1988; Ko & Lee, 2003); however, internal and personal barriers, such as teachers' attitude, content, and pedagogical knowledge are also important in this respect (Jegede, Taplin, & Chan, 2000; Shulman, 1987).

Some other researchers have stated that outdoor learning has been limited by numerous institutional, cultural, and logistical barriers (Barker, Slingsby & Tilling, 2003; Comishan et al., 2004; Fisher, 2001; Ham & Sewing, 1988; Hart & Nolan, 1999; McCutcheon & Swanson, 2001; Rickinson et al., 2004; Simmons, 1998). Five key barriers to outdoor learning were listed by Rickinson et al. (2004) as health and safety issues, teacher's confidence and expertise in teaching and learning outdoors, curricular requirements, shortages of time, resources and support, wider changes within the education sector and beyond.

Dubel and Sobel (2008) state that place-based teacher education is one of the essential steps for place-based education. If teachers comprehend PBE well, they can facilitate their students experiences more effectively. Students might be given opportunities to experience place-based education outside of the core curriculum

through a variety of options (like integrating math and science through mapmaking, place-based social studies, nature journaling).

Ministry of National Education (MoNE) Biology curriculum

While EE activities and projects have been carried out in Turkish schools as part of the school curriculum for many years, there has been a notable increase in EE activities and projects since the 1990s because of the efforts to join the European Union (EU). Over time, Turkish elementary school science curriculum has been placing greater emphases on EE. On the other hand, there are studies highlighting the weakness of environmental education in MoNE elementary curriculum (Alp, Ertepınar & Tekkaya, 2006; Erdoğan, Marchinowski & Ok, 2009; Dinçer, 2012).

EE is not offered as a separate course in secondary education but integrated into the Biology course. Erdoğan, Bahar and Uşak (2012) state that developing responsible environmental behaviours and cultivating environmental literacy are among the main purposes of a Biology course. In the context of developing environmental literacy, Biology Course Curricula aims to help students become conscious consumers by developing awareness and positive attitudes toward the environment (MEB, 2009).

Aydoğdu (2010) states that subjects, concepts, and attainments related with EE are included more in 2007 Biology Course Curricula compared to previous years. In 1997, environmental-related topics were only in the first and third grade of the biology curriculum (Gezer, Köse, Durkan, & Uşak, 2003), but in 2007 they were distributed throughout all grades.

In 2013, some changes were made to the MEB Biology Curriculum. One of the statements in the general framework of MEB Biology Curriculum is “to become aware of the living and non-living components and their relationship in the local

environment that s/he lives in.” In addition, there are recommendations for teachers to give examples from local species, concepts and give information about local issues (MEB, 2013).

Although there are improvements regarding EE in MEB Biology curriculum and there are some suggestions supporting PBE on paper, there are still gaps in terms of hands-on activities and real-life field experiences within local environments in practice. This absence indicates that PBE is missing or limited in the biology curriculum in Turkey. Therefore, supporting teachers’ use of bird studies to increase student awareness of their local environment is a good step to improve PBE in biology education.

CHAPTER 3: METHOD

The purpose of this study is to promote place-based education in Turkey by exploring strategies and resources to support biology teachers in conducting bird studies with their students. In this chapter, the research design, the participants, the instrumentation, data collection, and data analysis are presented.

Research design

Through qualitative inquiry, this study used action research methods to explore and analyse the research questions and to describe insights gained from teacher participants. As stated by Marshall and Rossman (1999), research ideas in qualitative inquiry may come from real-world observations, from the researcher's own experiences, and from tacit theories. Accordingly, the professional and personal experiences of the researcher defined the focus of this study.

Throughout this study, the "cycle of inquiry" process was employed. The cycle of inquiry is the dialectic relationship between theory, practice, research questions and personal experiences (Marshall & Rossman, 1999). Similarly, action research is a cyclic, iterative process where the focus of the research is subject to ongoing review and reflection through the repetition of plan, act, observe, and reflect cycles (McAteer, 2013).

A variety of action research methods was employed by the researcher to inquire into the effectiveness of the strategies she used. With each research method, she reflected on her practice and considered ways to further support teachers and to promote their interest, motivation, and preparation (Figure 1).

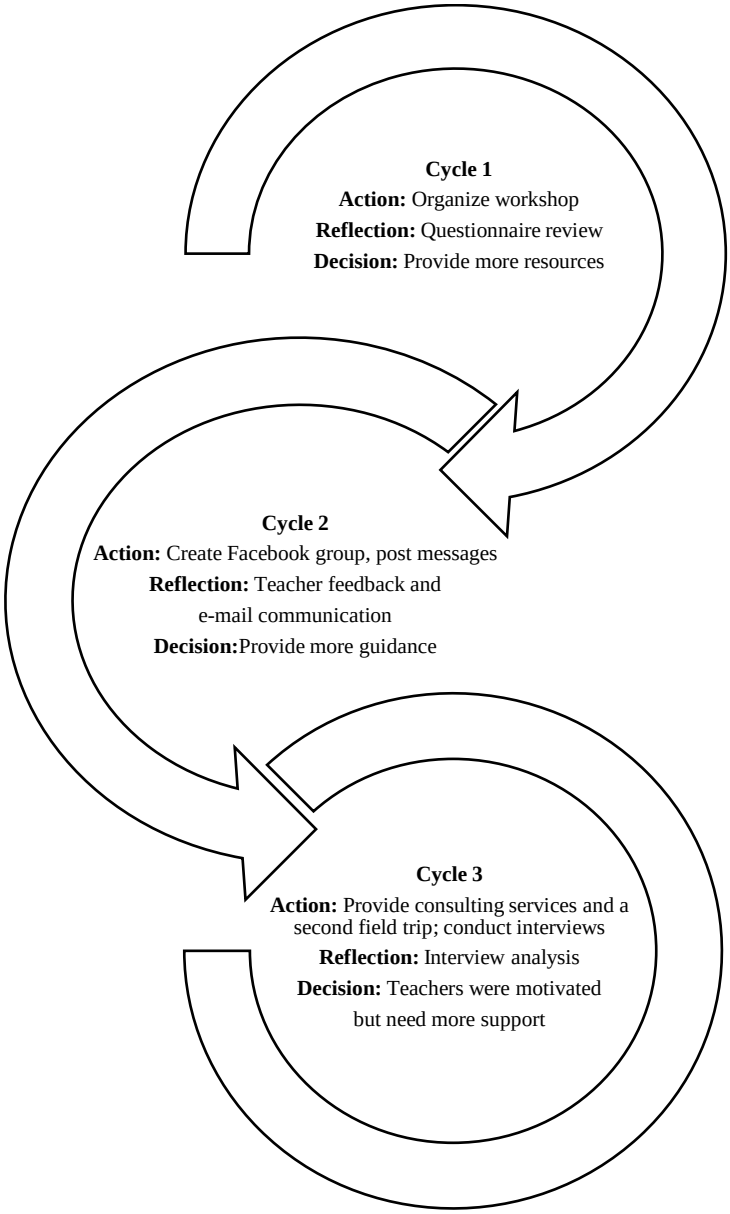

Figure 1 Action research cycles of the study

Participants

The primary participants for this study were teachers who attended a bird education workshop that was conducted on November 29-30, 2014. In total, 19 participants attended the workshop including one middle school science teacher and 11 high school biology teachers from nine different private schools in Ankara,

Erzurum, Kocaeli, and İzmir, one biology teacher from a state school in İstanbul, and seven pre-service biology teachers from the Bilkent Graduate School of Education (GSE). There was no sampling strategy for the workshop. It was announced through Bilkent GSE alumni group and the interest of the teachers was the determinant for their volunteer participation.

Interviews were conducted with in-service and pre-service biology teachers who were selected through purposeful and convenient sampling. Six in-service biology teachers were interviewed who attended the workshop and showed some interest to bird education studies after the workshop. Background information about the interviewed teachers is presented in Table 1.

Table 1
Background of interviewed teachers

Teacher	**Teaching experience**	**School profile**
T1	5 years	a private high school in Erzurum
T2	1 year	a private high school in Ankara
T3	1 year	a private high school in Bursa
T4	5 years	a private high school in Ankara
T5	3 years	a private high school in Ankara
T6	25 years	a state high school in İstanbul

In addition, two group interviews were conducted with seven pre-service biology teachers to learn of their intentions of using bird studies in their future practice. The first group was composed of four students who were in their first year of graduate school and the second group was composed of three students who were completing their second (and final) year of graduate school. Six of them participated in the workshop and field trip in May, although two of these were unable to participate in the theoretical background training part of the workshop

on the first day. All of them participated in the field trip in May. The seventh pre-service teacher only joined the field trip in May. In addition to the workshop, the researcher led a short bird watching trip on the campus for the four first-year students as a part of Biology teaching method course in April. As peers of the researcher, the second year students were frequently informed about birds and bird education during their daily life. Moreover, during the Dalyan field trip organized by Bilkent GSE in June 2014, the researcher made a presentation on bird watching and led a bird watching session in the field in which the second-year students also participated.

Strategies and resources to promote teacher motivation, and preparation

To address the main research question for this study, the researcher considered a variety of resources and strategies that might be used to help teachers feel motivated and prepared to integrate bird studies into their curriculum. To gain insights into what sparks interest in bird studies, interviews were conducted with two bird watchers who started bird watching during high school years. The researcher investigated other bird education programs for teachers used around the world. Based on this background search, she developed and implemented the following strategies:

- Bird education trunk
- Bird education workshop
- Curriculum study with conceptual framework
- Facebook group for bird education
- Consulting services

There were some other initiatives used in the study. For example, the researcher attended the "Crane Symposium" at Hacettepe University on April 1, 2015 with a presentation "From Nightingale to Crane Education with Birds" (joint presentation with Korie Klink from Children are the Hope Inc, USA). She made use of this opportunity to introduce bird education studies and place-based education. There were some teachers and pre-service teachers among the audiences. In addition, during student teaching, the researcher prepared a lesson on adaptation focusing on birds for 8th grade as a trial to integrate birds into the curriculum.

Bird education trunk

A bird education trunk was created based on the Birding Kit of Wisconsin Bird Conservation Initiative and Wisconsin Society for Ornithology. The bird education trunk included 14 binoculars, one telescope, and several bird identification guide books (*The Most Complete Guide to the Birds of Britain and Europe*, *Birds of Turkey and the Middle East*, *Birds of Middle East Technical University* and *Bird Songs and Calls of Britain and Northern Europe*). The bird education trunk was made available for teachers' use for free. A borrowing agreement and checklist was prepared for this purpose (Appendix 1 and 2).

Bird education workshop

A bird education workshop was organized on November 29-30, 2014 to develop the bird watching capacities of biology teachers and to introduce the bird education trunk. The bird education trunk and the workshop were supported by Alumni Small Grants Program of U.S.Embassy (Ankara, Turkey).

The workshop had two parts, one part provided teachers with theoretical background and the other engaged teachers in practical training activities. The workshop program was designed by the researcher based on similar training workshop programs offered around the world (for example, Project Wild Teacher Workshops and Flying Wild Educator Training Workshop) (Appendix 3). The workshop started with a session on nature education and place-based education in general by a nature education expert in Turkey. Then, a teacher having a bird watching and bird education background made a presentation on bird watching. Then, another session was carried out by the researcher on bird education. It was the most comprehensive session with the following subtitles: "Why Birds?"; "The Effects of Bird Studies on Children and Youth"; "Bird Education in the World and in Turkey"; and "How teachers can use bird studies through examples and suggestions." The researcher learned about and contacted with a Biology teacher from a state school who founded the first bird watching club in a high school in Turkey. She was invited to the workshop and made a presentation on their activities.

Figure 2. The researcher talking about "Why Birds?" in the workshop

For the second part of the workshop on November 30, 2014, a field trip for practical training to Lake Mogan and Lake Eymir was organized. Another field trip was organized on May 9, 2015 to Kızılcahamam. Through these field trips, teachers gained experience in two different seasons in two different habitats, wetland and forest, within their local environment.

Figure 3. The researcher guiding bird watching in the field trip to Lake Mogan

Curriculum study with conceptual framework

A conceptual framework was adapted from an existing source (Flying Wild) to identify the important aspects of bird education (Appendix 4). This framework was used by teachers during the workshop to match the concepts of the framework with the objectives of the MoNE Biology curriculum. The aim of this activity was to make teachers aware of the opportunities to integrate bird studies into their lessons, rather than only for extracurricular activities. Teachers worked in groups of four or five and then shared their ideas with the other groups.

Figure 4. Curriculum study with conceptual framework

Facebook group

After the bird education workshop, the researcher launched a closed Facebook group called “Kuşlarla Eğitim (Education with Birds)” on December 29, 2014 (Figure 4). The aims of this group were to maintain the interest of the participants, to inform them about some resources, events, documentaries, to increase their awareness, and to motivate them with some ideas like making a bird feeder for birds during the winter and locating bird nests in the school garden in the spring. The members were also reminded of the possibility to borrow the bird education trunk.

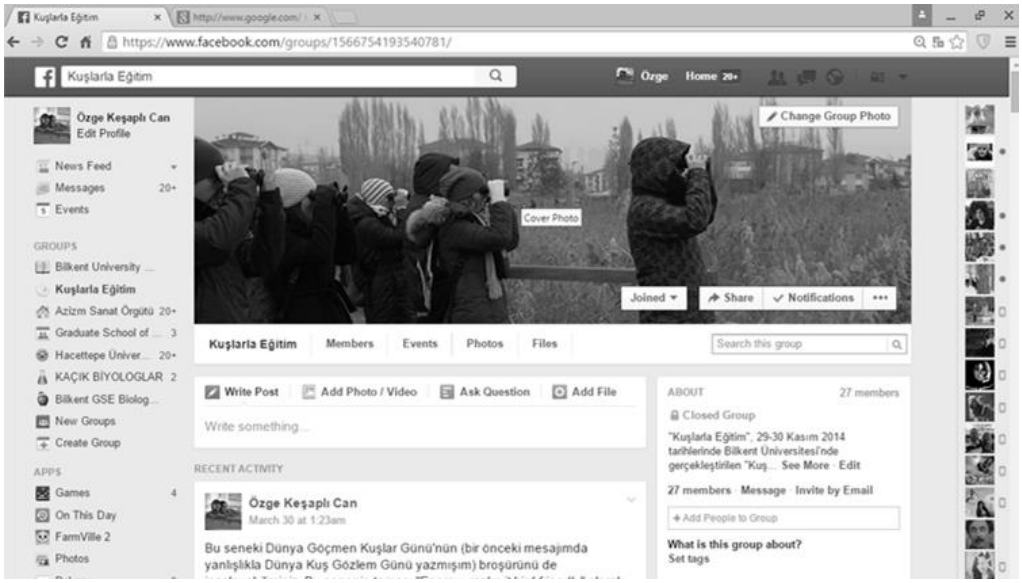

Figure 5. Screenshot of Education with Birds Facebook group on March 30, 2015

Some exemplar messages by the researcher to the Facebook group are presented below.

12 January 2015

"Crows are very intelligent birds. They even do some behaviour just for fun. You can see an example of such behaviour by carrion crow in this video. This is a nice example to be used in behaviour unit. https://www.facebook.com/D2Technologie/videos/10152035167277976/"

4 March 2015

"With the help of special structure of their flight feathers owls fly silently. A wonderful example of adaptation! You can share this video with your students http://www.bbc.co.uk/programmes/p02kqgpf

7 April 2015

"Finally, swifts have arrived! How I missed their crazy flights with screams. Today I observed them with my little daughter Defne. They offer

elusive opportunities for place based education with many interesting features. This is a species through which you can make exciting explorations with your students without going distant places. Your students can make research on the biology and ecology of this species and increase awareness in the school. Although they always tell that "we are here!" through their screaming flights with boomerang shaped wings many people in cities don't know them.

https://www.rspb.org.uk/…/discovera…/birdguide/name/s/swift/"

4 May 2015

"What do you think of finding magpie nests in your school garden before trees become thoroughly leaved? Afterwards, you can monitor the nests and even observe nestlings even if they got concealed. This morning, I took my daughter Rüzgâr to an exam at a school in Ümitköy. While waiting for her turn we found a magpie and a starling nest. You can observe tree trunks for starling nests. Meanwhile, you may discover other species' nests of course. Let's share our observations."

All the teachers, pre-service teachers, and trainers (except one who is not a Facebook user) who attended the workshop were made members to the group and two bird watchers interested in bird education requested to become members. Also three pre-service Biology teachers from Hacettepe University who listened to the researcher's presentation about the study in Crane Symposium on April 1, 2015 showed interest and the researcher also made them members of the group. Currently, there are 32 members of the group.

Consulting services

Other than posting messages to the Facebook group, the researcher communicated with the most active participants of the workshop, providing them with suggestions specific to their place, on how to borrow the trunk, and ways to organize activities with their students in the spring. These interchanges were done by e-mails and messaging through the Facebook page, such as the one below.

> 20 April 2015
>
> "Hello,
> I would like to inform you about an activity that you can conduct by borrowing the bird education trunk from Bilkent GSE.
> With the arrival of spring, birds, especially through their songs, have brought themselves into notice. Local birds already started displaying breeding behaviours and migrants started arriving. We are very lucky to be in Bilkent, where we can see species like great tit, magpie, blackbird, kestrel, common swift without having to go far. I have no idea about your schedule, how much time you could set aside for such an activity and how interested the students are but I'm guessing you are very busy. Therefore perhaps an activity targeting just one or a few species could be done. For example common swift and great tit could be our species. Swift is a migrant, great tit is a local species. Actually both are conspicuous species but not many people know about them within city settings. This spring you might spark interest of the students and perhaps next year you could launch a bird watching club.
>
> Common swift (*Apus apus*) spends winters in Africa. I saw first individuals around 2 weeks ago. Soon they will clearly announce their

presence with their screams. You can watch a typical swift flight in this video.

http://www.youtube.com/watch?v=Rd3NlfbA7yQ

Swifts are amazing species, carrying out nearly all activities, including sleeping and copulating on flight. They also provide serious biological control since they eat flies. You can read more on swifts from this website;

http://www.commonswift.org/Aerial-mating.html

I really wonder if the students are aware of this species. Beginning of May, their numbers will increase further. Students who are interested could first research on the species, make observations and then could share the knowledge with other students and teachers with a small activity in the garden.

With its song, great tit (*Parus major*) is one of the most heard species in the campus. You surely must have heard it .You can listen to this species' song at this link. https://www.youtube.com/watch?v=3nDLF2fxoWQ.As I mentioned earlier, it is a local species. Learning about a migrant and a local species should give students a chance to compare them and discuss their differences.

I appreciate your support in advance.

Best wishes,

Özge Keşaplı Can"

In addition to this, the researcher attended the bird watching activity at a high school with request from a teacher who attended the workshop.

Instrumentation

Short term evaluations were conducted throughout this study. Through questionnaires, the insights of teachers were received immediately after the workshop. Teachers were interviewed after they used or intended to use the education trunk with their students. Through these communications, the researcher also learned about students' overall reactions to the bird education activities. Although some quantitative data was collected in the workshop questionnaire, the data collection tools for this study are predominantly qualitative.

Guba (1981) proposed four criteria that should be considered by qualitative researchers to achieve trustworthiness in their studies: credibility, transferability, dependability and confirmability. According to Patton (1999), being the major instrument of data collection and analysis, the credibility of the researcher has utmost importance. In this study, the background, qualifications and experience of the researcher on bird research and education activities and her communication with other experts in these fields in Turkey provide support the trustworthiness of the study.

Questionnaires and semi-structured face-to-face and phone interviews were conducted with teachers to answer most of the research questions. The questionnaire was patterned after workshop evaluations from other studies (Flying Wild) and adjusted to address the research questions (Appendix 5).

The interviews included key questions about the research questions but remained semi-structured to allow teachers to openly express opinions and share insights. Because of the nature of the information needed, the questions were asked in an open-ended format, as opposed to yes/no or multiple choices as it can be seen in

Appendix 6. Although, the research questions set the framework for the interview questions, they were changed slightly depending on the interviewee's experiences, background and interest to the study up to that time. The researcher emphasized to the interviewees that they should feel free to give honest answers and advices.

Data collection

While investigating a research question, more than one approach was used to collect and analyse the findings (Byrman, 2003). It has been shown by Shenton (2004) that the use of triangulation is important for both the credibility and the confirmability (in order to reduce the effect of investigator bias) of qualitative studies. According to Denzin (1978) and Patton (1999) there are four levels of triangulation. They are methods triangulation, triangulation of sources, analyst triangulation and theory/perspective triangulation. Triangulation of sources was applied in this study. Through a questionnaire immediately after the workshop and through interviews with teachers who showed interest in bird education studies, teachers' opinions were asked at different points in time. In addition, both pre-service and in-service teachers were included in the study. Two teachers interviewed had some experiences in bird education with their students before this study. Moreover, one of these experienced teachers was from a state school and another one was from a laboratory school following an international curriculum. Therefore, participants with different backgrounds, with different amounts of teaching experiences, and with different working conditions were included in this study. In this way, triangulation was achieved through the use of a wide range of informants.

A workshop evaluation questionnaire was applied after the workshop to learn teachers' perceptions of how the workshop motivated and prepared them to conduct bird education studies with their students. The responses provided insights about teachers' thoughts on the benefits of these activities, challenges, and their further needs.

The experiences and viewpoints of teachers were evaluated through interviews. Interviews were conducted individually with in-service biology teachers. Interviews took approximately half an hour. With four of them it was face-to-face, with one of them it was as a Skype session, and with another it was by phone. All of the interviews were recorded. Interviews with pre-service biology teachers studying at Bilkent GSE were done as two group interviews with four first year students together and with three second year students.

Through action research methods and data analysis, the researcher gained insights from the data. However, because of her positive thoughts about bird education she kept in mind that there is a risk of bias in interpreting the data. She was open to criticism. Especially with any negative opinions of the interviewees she tried to make empathy through reflecting on her own experiences. All participants were asked to fill in a consent form for the questionnaire and interview during the workshop (Appendix 7).

Data analysis

All the answers from the 19 participants for workshop evaluation questionnaire were translated from Turkish to English and compiled question by question as a table (Appendix 8). Then they were read several times to become familiar with the answers and to identify repeating themes and interesting points related to the

research questions. Answers for some questions were tabulated, others were discussed and some exemplar quotations were selected to highlight themes.

The semi-structured face-face, Skype, and phone interviews were recorded, listened to repeatedly, key comments were transcribed, and translated from Turkish to English. Recurrent listening and transcribing key comments rather than the whole interview is a strategy to save time and energy of the researcher (Flick, 2002; Strauss, 1987). The key comments were read several times to become familiar with the data, to identify repeating themes and other interesting points, and to comprehend the broader meaning of the interviews. Thus, the "familiarization" approach was used in data analysis (Ritchie, Spencer & O'Conner 2003, p. 221). Similarly, the questionnaire data answers of some questions were tabulated and exemplar quotations were selected. Through these illustrative quotations, the researcher intended to use as many of the participants own words as possible to present the clearest picture. The results of the data analysis are presented in the next chapter.

CHAPTER 4: RESULTS

Introduction

The purpose of this study is to promote place-based education by providing resources and strategies to motivate and prepare Biology teachers to conduct bird studies with their students. A variety of strategies and resources were explored for this purpose, such as a bird education trunk, a bird education workshop, a Facebook group, and conceptual framework cross-referenced to the national curriculum. Plus, the researcher provided consulting services to the teachers and examined her own practice throughout the study. The opinions of teachers were gained through a workshop evaluation questionnaire and interviews.

Results

The analysis of teachers' perceptions of the strategies and resources used to motivate and prepare them to conduct bird studies with their students address the following research questions:

1. Which strategies and resources do Biology teachers indicate motivate them for bird education?
2. Which strategies and resources do Biology teachers indicate prepare them for bird education?

The teachers' indicated their perceptions through a workshop evaluation questionnaire and interviews conducted with in-service and pre-service biology teachers. For these two research questions, the findings are presented below based on the resource or strategy used: a bird education workshop, the bird education

trunk, a curriculum study with conceptual framework, Facebook group, and consulting services by the researcher.

Bird education workshop

The workshop evaluation questionnaires were examined to give insights into the research questions. There were 19 participants who completed the workshop evaluation questionnaire. The compiled responses for each question are presented in Appendix 8.

Overall, participants evaluated the workshop positively; the majority mentioned that the workshop exceeded (58%) or fulfilled (26%) their expectations. Others also commented positively stating that it was successful, productive, and motivating. Additionally, some of the participants indicated that the workshop was enjoyable, interesting, exciting and inspiring.

Teachers were also asked which part of workshop they liked the most or found the most helpful for their teaching. There were 37% of the participants who stated that the theoretical training was helpful, while 32% stated that practical training during the field trip was the most useful part of the workshop. The rest (26%) pointed out both the theoretical and practical trainings in the workshop were useful.

Regarding participants who valued the practical experiences, they specifically mentioned that learning how to use the technical equipment (binoculars and telescope) and the bird identification guide book was important. One of them stated that, “I was not expecting to see some of the species that we observed and I was not even aware some of them existence before.” Another participant reflected that, “As far as I see, I gained experience in an activity which will make my students happy as I’m happy too.” A similar reflection was shared by another

participant as follows: “The bird watching on the second day revealed the enjoyable part of this activity. In order to encourage our students in the future we need to feel the enjoyment of the activity as teachers.”

Following are reasons why some participants indicated the theoretical portion of the workshop was useful. They stated that learning about the educational outcomes of bird studies was useful. Being informed about the aims and benefits of these studies provided them with background knowledge that would help convince administrators and other members in their departments to support these studies and create interest among students. One teacher stated that, “Especially the emphasis on the positive effects of bird studies on children and youth will be very helpful in convincing administrators to carry out these studies in our school.”

One of the teachers indicated that through the curriculum work in the workshop s/he realised how and where birds can be used in the lessons. Another participant stated that, “I realised that my students are very far from nature and I should integrate nature into my lessons more.”

The experience and enthusiasm of the workshop leaders was identified as important factors to increase interest and motivation, especially for the theoretical part of the workshop. One of the participants stated that, “The trainers were very successful. Theoretical information is generally considered as boring but it was not the case for this workshop. We listened to their experiences and the information they provided very carefully. It provided a real eagerness and motivation.”

One of the participants who commented positively on both parts of the workshop stated that, “the first day was very useful with all the information and the practical

experience in the field through bird watching was very enjoyable." Another one emphasized the usefulness of strengthening theoretical knowledge with practice.

These were the immediate reactions of participants to the workshop. Five months later, interviews were conducted with six of these teachers. First of all, they were asked about their background about bird studies before the workshop and what they could do with their students after the workshop. This information is summarized in Table 2.

Table 2
Profile of interviewed teachers

T	**Background about birds & bird education before the workshop**	**What did they do about bird education after the workshop**
T1	Heard about bird watching but not interested in and feeling cool towards it. She was expecting it to be more difficult.	She decided to add some topics related with birds to the list of project work for students. Then, one of her students made regular bird observations for ten days in university campus near the school and four students made bird feeders to be put in the school garden. She didn't borrow the bird education trunk as they have binoculars, a telescope and guide books at school which acquired through the efforts of T5 when she used to work at the school.
T2	Participated in two bird watching trips while studying at university.	She couldn't organize any activities, but used birds in her lessons with 9th and 10th grades during classification, feeding behaviours and biomes (migration routes of birds) topics.

Table 2 (cont'd.)
Profile of interviewed teachers

T	Background about birds & bird education before the workshop	What did they do about bird education after the workshop
T3	Started bird watching at university. Participated couple of bird watching camps and some seminars. Didn't have any idea how to integrate it in her teaching.	She included bird watching in the IB ecology field study. She borrowed bird education trunk. In addition, during her guarding duties in the school garden she introduced some bird species to the students to make them aware of the birds.
T4	Does not have any knowledge and experience about birds and bird education.	She organized a bird watching activity, which was conducted by another teacher, in the school garden during club hour with seven students. She borrowed the bird education trunk. The researcher also participated to this activity as consultant.
T5	Started bird watching at university. Participated in many different projects carried out by NGOs. After started teaching Biology, she founded a bird watching club at school and carried out some little activities with her students. However, she lost her motivation. She was one of the trainers in the workshop.	She organized a bird watching activity with six students in the school garden during club hour. She borrowed bird the education trunk.
T6	Had a curiosity for birds and used to observe without identifying the species. Started observing and studying birds with her students in 2009 after being asked by one of her students. Before that she had not heard about bird watching and bird watching clubs in Turkey. Founded bird watching club at school she worked at in 2011. Very actively carrying out field trips, exhibitions at school. She had a presentation in the workshop to share their experiences.	She decided to give project work about birds. Some students observed and counted yelkouan shearwater in the Bosporus, some of them observed feeding behaviour (diving) of cormorants and some studied about cranes. In addition to these project works of students, they participated in bird migration festival and made an activity on "World Sparrow Day". She didn't borrow the bird education trunk as they have their own binoculars and bird identification guide books at school.

Then, they were asked to evaluate the effects of workshop on their practice through the question, "Did the workshop increase your motivation in conducting bird studies with your students? Did it make you feel more prepared to do bird studies with students?" Their answers are compiled in Table 3.

Table 3
Opinions of teachers about the bird education workshop

Teacher	**Response**
T1	It definitely increased my motivation and at least it showed how to begin. It was useful to practice in the field and it increased my awareness about birds. Although I'm a Biology teacher I was weak in this respect. After the workshop I really would like to conduct bird studies with my students.
T2	It increased my motivation. I learned a lot of things and bought the recommended books. Especially, learning the positive effects of bird studies on students' lives and hearing the experiences of the teacher who founded a bird watching club was very effective for me. After the workshop I could only use birds as examples in my lessons but I would like to organize an activity at the first opportunity. On the other hand, I also realised the difficulties. It is not easy and we don't have enough background. Before the workshop I had joined two bird watching trips as a participant with experts. However, now as a teacher I need to be the expert and I need to improve myself more. Before, it was like a hobby but now I consider this with the eyes of a teacher.
T3	It definitely increased my motivation and showed how I can associate birds with my teaching. It was very effective for motivation. The presentations were very successful. Book recommendations were very good. At least we learned how to begin but I don't feel prepared enough. It is difficult to know before trying with children.
T4	It increased my motivation but I don't feel entirely prepared before participating couple of more field trips. It was good for the beginning and increased my awareness for bird education. The question of "Why not to do this with my students?" rooted in my mind.

Table 3 (cont'd.)
Opinions of teachers about the bird education workshop

Teacher	Response
T5	I was about to give up and accept that it is not possible to conduct bird studies with the students because of some barriers and challenges. After listening to the teacher who founded a bird watching club at the school I thought that it could have been done already. To meet with other teachers having will to do these studies provided motivation for me. It was important in terms of being together with people talking the same language. We need to come together more often.
T6	Of course it increased my motivation and I learned a lot. I added bird related topics to the list that students can select for their project work. It was great to be with people with the same interest. Especially after the researcher's presentation I realised that I did many right things with my students and this improved my self-trust.

As it can be seen in Table 3, the bird education workshop was motivating for all the interviewed teachers by developing awareness, providing theoretical information and practicing opportunities, and giving chances to meet with people with the same interest. However, they stated that it was not enough to feel fully prepared, but just a good start.

Two group interviews were also completed with pre-service biology teachers at Bilkent GSE. There were seven pre-service teachers in total. Except for one of the pre-service teachers who had taken ornithology course during her undergraduate education, the students shared that they had neither interest nor experience about bird education before participating in the workshop or meeting with the researcher.

Along with the in-service teachers who participated in the workshop, these pre-service teachers were asked to evaluate the workshop in terms of increasing their motivation and preparation for conducting bird studies with their students in the

future. They expressed that the workshop definitely increased their interest and motivation. Their awareness toward birds rose significantly. One of them said that, “I was not aware of differences between bird songs. I was just saying that birds are chirping. Now, I know that there different songs and I even learned to identify a few.” Similarly, another one told that, “A nice bird song attracts my attention and I record it. One of my peers also records bird songs and we share them with each other. In addition, our conversations changed. We found ourselves discussing if it is a house sparrow or a tree sparrow.”

On the other hand, they think that the workshop was a very good start but it was not enough for them to feel totally prepared. They have concerns that students may ask different questions related with bird migration, feeding, and behaviour and they do not feel familiar with answers to all of their questions. They shared that it is very nice to identify even a couple of bird species, but it may not be enough. They are not feeling confident in bird identification. However, all of them expressed willingness to introduce these activities to their students. One of them said that, “The experiences of the teacher who founded a bird watching club at school affected me a lot. After listening to her I thought that it is possible to conduct bird education with students.” They all want to attend such activities more to improve their capacities as teachers.

Bird education trunk

In the workshop evaluation questionnaire, all of the teachers mentioned that they would like to organize activities with their students either as extracurricular activity (e.g., six teachers mentioned that they would like to found a bird watching club) or integrate the topic into their lessons. They stated that the bird education trunk will be useful for their efforts.

When asked about the benefits of having a bird education trunk available, teachers provided variety of answers that are tabulated in Table 4.

Table 4
Opinions of workshop participants about benefits of having a bird education trunk

Theme	**Frequency**
Increasing awareness toward nature	9
Developing technical equipment using skill	8
Personal development (responsibility, working in group, curiosity)	4
Increasing effectiveness of the study (ease of practice, equal opportunity for students, saving time)	4
Learning scientific methodology	3
Increasing students' motivation	3
Provide piloting opportunity	2

The group did mention challenges and drawbacks to borrowing a trunk. The risk of damaging the equipment was stated as the main challenge of using the trunk by the majority of the participants (*n*=15). Other than this, they stated concerns about the need for an expert bird watcher to demonstrate how to use the equipment, inadequate number of binoculars (sharing binoculars might be difficult and this may decrease motivation), obtaining permission to use the trunk, and the time required to teach every student how to use the binoculars.

Participants were also asked to give suggestions for what information should be included in the teacher's handbook. This handbook will be added to the bird education trunk in the future. Their suggestions are presented in Table 5.

Table 5
Participants' suggestions for what to include in the teachers handbook

Theme	**Frequency**
Basic information to identify bird species (photographs, pictures)	6
Other information related with birds (like their spatial and temporal distribution, migration period, articles about feeding behaviour)	6
Basic information about bird watching (like where to begin, habitat suggestions, activity suggestions, technical information for the equipment use)	5
Checklist of species that can be seen in different areas	4
Safety issues for the field trips	2
Suggestions for teachers for the planning of these activities	1
Topics for the integration of bird education into the curriculum	1
Information about databases and bird census methods to be used in IBDP Biology lessons	1
Games	1

Five months after the workshop, the following questions were asked to selected in-service biology teachers: "Will having a bird education trunk available motivate you to conduct bird studies with your students? What suggestions do you have to improve the availability and usability of the trunk?" Their responses are highlighted in Table 6.

Table 6
Opinions of teachers about bird education trunk

Teacher	Response
T1	Bringing together all the equipment necessary for bird education and introducing in the workshop you made me realise the presence of these equipment in our school. Therefore, it increased my awareness and motivation. The number of the trunk might be increased. Information files, checklist for bird species might be included for some regions.
T2	It increased my motivation. If I find an opportunity to conduct an activity I would like to borrow it. The number of trunk might be increased to prevent problems with a lot of demand at the same time. I also suggest that you need to have a system to replace broken or damaged equipment.
T3	It increased my motivation. Without it I couldn't attach bird watching activity to the IB ecology field trip because it is not possible to make the school to buy anything in the middle of the year.
T4	It definitely provided motivation. It is great to know that there is a trunk available for our use. The equipment is expensive and with this system you don't need to have your own trunk. Number of binoculars is enough but it might be good to increase number of bird identification guide books. With crowded groups its adequacy might be a problem.
T5	Without this bird education trunk, I couldn't organize bird watching activity in the club hour or it wouldn't be that effective. It was great that every student had a binocular. It is so fortunate that you developed this trunk.
T6	As we had binoculars from the beginning of our interest to bird studies I never experienced deficiency of equipment. A telescope would be useful to set it to show birds to other students in the school.

As it can be seen in table 6, the bird education trunk is a motivating resource for teachers to conduct bird studies. It is understood that without having the trunk they would not think to organize any activity with their students. They feel equipped and supported with the presence of the bird education trunk.

The pre-service teachers were also asked if availability of the bird education trunk would motivate them to conduct bird studies. They said that bringing everything together necessary for bird watching is very good to provide support and motivation for teachers. One of them told that, "Without all these equipment it is not possible to carry out bird studies. Teachers wouldn't even try to do this. It is motivating in this sense." Another one stated that, "In the field, to have a binocular on my neck increased my motivation 100%. I could look through it as much as I like without waiting for my turn." One of them pointed out a different advantage of the trunk as saying that, "To develop a bird education trunk and such a borrowing system is really logical as it might be very difficult to convince administrators to give budget for all these equipment, especially for newly qualified teachers. We can use this trunk for pilot study to check if our students are interested in this activity and if it will be supported by our administrators." Another suggested adding an instrument to the trunk to record bird songs or videos. He stated that it might be useful to record an unidentified song or video of a bird to ask an expert later on. Another one suggested that the number of trunks should be increased and also developed in other cities with the initiative of teachers who participated in the workshop.

Curriculum study with conceptual framework

In preparation for the workshop, the researcher adapted the conceptual framework of bird related concepts of Flying Wild (CEE, 2011). During the last session of the workshop, participants worked in groups to examine the MoNE Biology curriculum using the conceptual framework as a reference. They were asked to find connections between the framework and the curriculum. The main connections they found were with the 9^{th} grade objectives, but some connections

were identified at all grade levels. The result of this analysis is presented in Appendix 4.

Through the workshop evaluation questionnaire, participants were asked if this workshop helped them to integrate bird education into their curriculum. All of the teachers responded positively to using varying approaches for this purpose and found the workshop helpful in this respect. Some of the teachers stated that they are interested in using birds in their lessons and mentioned relevant topics such as adaptation, animal diversity, physiology, species conservation, evolution. Two teachers gave specific suggestions: "Under the classification topic, identification of bird species and visual materials related with birds will be effective," and, "I'm thinking to make my students prepare a project about birds within a food chain." One teacher stated that bird studies can be directly integrated into 9th grade curriculum. Another teacher shared that this study increased his/her awareness about the possibilities of bird studies into the curriculum. Although International Baccalaureate Diploma Program (IB DP) was not considered in this study, it was noted that there are many opportunities in the IB DP curriculum to integrate bird studies. Two teachers thought that a Creativity Action Service (CAS) activity for IB DP might be planned. Another teacher stated that it might be a topic for extended essay for IB DP.

Through the interviews conducted five months after the workshop, it was revealed that teachers used birds as a part of their lessons by making connections within the curriculum. They mentioned that the cross-reference activity in the workshop increased their awareness in this respect. T2 said that, "After the workshop I had the idea to integrate birds to my lessons. I gave examples related with birds in my lessons with 9th and 10th grades. I became more conscious in this respect. Through

participating to this workshop I strengthened my knowledge that I gained at university." Similarly, T3 found the activity useful and said that she used bird examples in classification and modes of nutrition and ecology units. T6 said that, "To integrate birds into the curriculum is in teachers' hands. In every grade level and in every topic I give examples from birds. I was also using examples related with birds before creating a bird watching club, but now I feel more familiar with the topic. After the workshop, I added birds to the list of project topics for my students."

As far as the pre-service teachers, all except two thought it would be possible and useful to integrate birds to the curriculum. One of them said that, "In the beginning I was not sure about its possibility but after listening to the experiences of teachers during the curriculum study in the workshop I started to think that it is possible to integrate into the units like behaviour, ecology and evolution." Another one stated that, "I can integrate birds into my lessons and reinforce it through extracurricular activities. For example, if I talk about different beak shapes in adaptation topic I can make it possible to observe in the field during club hour. By this way, I can make a real life connection." The others favouring extracurricular activities explained that it is possible to develop a strong relationship between teacher and students through a bird watching club. One of them told that, "I prefer to start as an extracurricular activity because it might be widely disseminated in the school. There might be students interested in birds but studying social sciences. They may also join as a hobby. Afterwards, I may think of integrating into my lessons." These two pre-service teachers couldn't attend the curriculum work during the workshop. This might be a reason for their different thoughts about this.

“Education with Birds” Facebook group

The “Education with Birds” Facebook group was launched on 29 December 2014. By June 6, 2015, 107 posts were shared in the group which received 367 likes and 71 comments. Of the posts, 58% of posts were made by the researcher. Out of the 32 members, 28 have been active to different degrees since the launch of the group. Distribution of post types is presented in Figure 5.

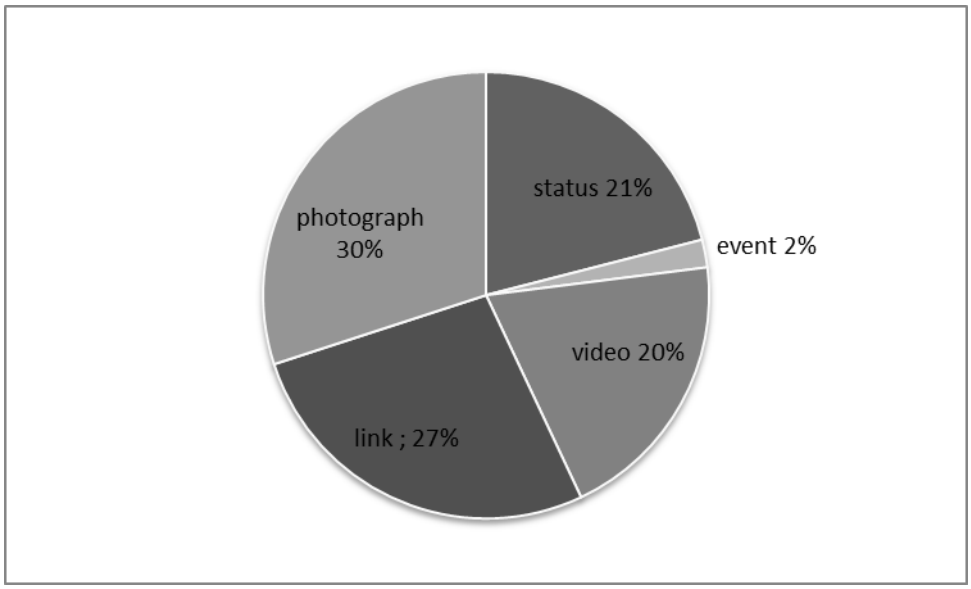

Figure 6. Distribution of post types to the “Education with Birds” Facebook group between 29.12.2015-05.06.2015

For example, on 20 March, T6 shared photographs of their bird watching activity on World Sparrow Day. The following message was posted to the group by a pre-service teacher on 22 May. “For a couple of days I’ve been going to METU campus and during my every visit at the same time (around 16:30) I saw a Jay. There is only one and always at the same spot. I would like to share this with you as I found it interesting and cute. I declared it as my favourite bird.” Another pre-service teacher shared a video on 4 May to increase awareness about not throwing gum around as they may stick beaks or wings of birds.

During the interviews, teachers and pre-service teachers were asked about their opinions of the Facebook group through the following questions: “How has the Facebook group affected your practice? Do you find it useful/effective for motivating and providing information? Do you have any suggestions?” The thoughts of teachers are presented in the Table 7.

Table 7
Opinions of teachers about “Education with Birds” Facebook group

Teacher	**Response**
T1	It definitely provided motivation. All the videos and information about birds that could be seen in different seasons were useful. It is a tool for communication. All the documents shared there might be compiled. Teachers should share anything that they did with their students to be a guide for other teachers. By this way, others would see that they do not have to wait to organize big studies but they can start with little activities.
T2	I feel happy and motivated to be part of this group. Sharing the activities that were carried out is effective for the persistence of interest. I cannot find time to read long posts and I read the researcher's posts more.
T3	It is useful and logical to have such a Facebook group. A video or any other information provides motivation and persistence of the interest. Through reading the posts in the group I remember that I need to organize an activity. Even sharing a photograph is very effective. I mentioned about some posts to my students. In this respect, it provides motivation for people like me having difficulty to find enough time.
T4	It is very useful and motivating. I learned about scientific web sites that I have not heard before. Especially, videos and photographs are very effective. It is possible to post a bird photograph to the group and ask which species it is. In addition, an information and document archive is being developed through this group.
T5	I do not have a Facebook account but probably I will have one as I could not get news about any bird related events. There is a need for an experience sharing platform.

Table 7 (cont'd.)
Opinions of teachers about "Education with Birds" Facebook group

Teacher	Response
T6	It is very helpful to improve my knowledge about birds and be informed about the bird related events like festival, seminars. Before this group we were having difficulty in receiving announcements. In addition, when we carried out an activity, firstly I would like to share it in "Education with Birds" Facebook group.

Although teachers had limited activity in the Facebook group, these comments reveal that this social media is perceived as a necessary platform to provide information, to share events, and to communicate. It appears that teachers' interest in the topic persists and their motivation increases.

The opinions of the pre-service teachers about Facebook group were also asked through interviews. Two of the first year pre-service teachers did not comment about Facebook group and they were not active in the group through sharing or liking any posts. The other two said that they check the posts, read the interesting ones giving priority to the ones posted by the researcher, but they do not use it frequently. On the other hand, one of them said that, "Even if I don't use very often now it is on my mind. Whenever I would like to organize an activity in the future, I may scan all the previous posts."

All the second years said that the Facebook page was motivating and they developed their knowledge through this group. Two of them mentioned that they do not want to be passive in the group and want to contribute. For this purpose they are searching information about birds on the internet and even if they do not share anything they learn a lot in the end. They mentioned that other social sharing platforms (Instagram, Twitter) are not suitable for the purpose of this

group. They added that there is a need for such a platform and Facebook is the best option for the time being.

Consulting services by the researcher

Other than posting messages to the Facebook group, as a consultant, I maintained active communications with the most active members of the workshop. These are the teachers who took the initiative to contact me for advice and suggestions. They asked questions about borrowing the trunk and organizing activities with their students in the spring. This was done by e-mails or private Facebook messages. In addition to this, I attended a bird watching activity that was conducted by T4 with her students through her request. During the interviews teachers were also asked about the effect of a researcher as a consultant. Their comments are presented in Table 8.

Table 8
Opinions of teachers about the researcher as a consultant

Teacher	Response
T1	It was both motivating and helpful with suggestions. It was good to be in contact constantly. It reminded me that I need to do something. It provided an extrinsic motivation.
T2	It is very good to have an expert to consult when I need. At least it would be good to be in the field couple of times with an expert. By this way, I can develop myself and my self-confidence will improve.
T3	A teacher can organize an activity but there will be a big difference from an activity organized with the participation of an expert. We cannot identify every species but an expert shows or tells something of the kind that motivation of the group increased during the activity. Therefore, at least time to time an expert support in the field studies is important.

Table 8 (cont'd.)
Opinions of teachers about the researcher as a consultant

Teacher	Response
T4	It was very helpful. It gives a confidence. Until we develop ourselves in one area we cannot be brave enough. For this reason, it is great to know that there is someone to help me and if I do something wrong, she can warn and correct. I want to conduct bird studies with my students but I have lots of questions and it is wonderful to have someone to ask all of them. Therefore, expert support is definitely needed.
T5	She was not asked about this question since she is a bird expert too.
T6	The researcher did not provide special consultancy to T6, but she explained how an expert helped them during their first years. They asked for help from one of the NGOs working on birds and a bird expert helped them to improve their knowledge and skills. Before getting touch with the expert, they had difficulties in identifying bird species and using the bird identification guide book. Sadly, they bought binoculars that are not suitable for bird watching. With all these difficulties they decided to select only one species to study. However, after working with the expert, they learned all the basic information for bird watching, changed their equipment and now they can identify 45 bird species. This year they carried out their activities independent of the expert. Therefore, she also thinks that support of an expert is necessary to build confidence and capacity.

Although pre-service teachers did not consult with me, their opinions about their future needs were asked during the interviews. They all agreed that they will need the support of an expert in the beginning. They noted that even if they can organize some activities from time to time, an expert should participate to increase their motivation.

Through these responses, it clear to me that to feel totally prepared to conduct bird studies with their students teachers need to gain more experience through the support of an expert. In addition to this, being aware of the presence of an expert willing to help them gives confidence and facilitates their endeavors.

Barriers and challenges to conduct bird education

The third research question of this study was, "What barriers and challenges have Biology teachers faced or perceive they may face when conducting bird education?" This question was examined through communication with teachers during consultation services and interviews.

Despite teachers' enthusiastic review of the workshop and the bird education trunk, it is clear that most of them were unable to find time to conduct bird studies with their students. As noted, only six teachers took the initiative to contact the researcher following the workshop to seek advice. Furthermore, when the second field trip was conducted in May, most of the teachers who attended the first workshop expressed regrets at being unable to attend. During the interviews, in-service teachers were asked about the barriers or challenges that they have faced or they may face while trying to conduct bird studies with their students. Their opinions are presented in the Table 9.

Table 9
Opinions of teachers about barriers and challenges to conduct bird studies

Theme	**Frequency**	**Quotations**
Time (both for teachers and students)	5	T2: Students may not want to give extra time for this activity. Especially for 11^{th} and 12^{th} graders, time is a big barrier because of university entrance exam. They have courses in the weekends. As private courses were closed by the government, next year teachers' work load will increase at school more and this will cause time deficiency for extracurricular activities.

Table 9 (cont'd.)
Opinions of teachers about barriers and challenges to conduct bird studies

Theme	Frequency	Quotations
Time (cont'd) (both for teachers and students)	5	T3: Time is the biggest barrier. We don't have financial barriers or deficiency of suitable places to go. We have our own forested area in the garden and there is a stream nearby but we even cannot find time to organize any activity in our garden. I first contacted with you in March to borrow the bird education trunk but we could hardly organize it in the end of May. T4: In spring, which is also the most suitable time for bird watching, there is an activity boom in schools. It is difficult to arrange time for all of them. In addition, I do not want to make any activity casually so I need to give extra time to develop myself. T5: Time is a big barrier especially for students. They have courses during the weekend. On the other hand, there is a special time for extracurricular activities. Therefore, organizing bird studies shouldn't be that difficult for teachers. T6: As teachers we have a heavy workload. We almost do not have any spare time because of meetings and paper work. In addition to this, our students want to be successful in many fields. In order to guide and motivate them we need to work extra hours.
Curricular issues	3	T1: For my school there are not many challenges. I'm lucky in terms of school vision and student profile. They are all easy going, well behaved and academically successful students. The only barrier I may think of is curricular workload. Especially for IB level it might be difficult. After the workshop, I offered project topics related with birds to prep students. It was fine as I don't have curricular limitations with preps.

Table 9 (cont'd.)
Opinions of teachers about barriers and challenges to conduct bird studies

Theme	Frequency	Quotations
Curricular issues (cont'd.)	3	T3: Following two curricula (MoNE and IB) is very difficult. There is too much pressure both on teachers and students. Even if nobody tells you anything you feel it intrinsically.
Administrative issues (school vision, permission)	4	T2: It might be difficult to get permission for distant places. For this reason, it might be good to have a place based approach and organize activities in the school garden. I also liked the ideas of the teacher who founded a bird watching club in the school. We can select week of the bird, prepare boards for that species or make whole school to listen its song for couple of minutes before the flag ceremony on Monday. T4: Taking permission for field trips out of school is difficult as we need to ask to MoNE and parents. It takes a lot of time. For this reason, place based approach might be an advantage. T6: When I first mention about my intention to found a bird watching club in the meeting of teachers committee all the others laughed loudly. Later on some of them kept on making jokes about this. School vision and the attitudes other teachers might be a barrier.
Difficulties and risks of field studies (cold weather, safety issues)	2	T6: Working in the field conditions is very difficult. During our activity for World Sparrow Day it was very cold. It might be a challenge as most of the teachers are used to work indoors. For example, when we arrived to Belgrad forest for our first field trip a student started itching and became red in face and neck in just ten minutes. We went back immediately, she got examined but it was not possible to understand what happened. She did not come to school for two days and I got really worried.

Table 9 (cont'd.)
Opinions of teachers about barriers and challenges to conduct bird studies

Theme	Frequency	Quotations
Suitability of school garden (suitable place to go nearby)	1	T5: If the school garden is not suitable for such an activity then club hour is not long enough to go any other place.
Student profile	1	T2: Students may have resistance. Since they will not receive any grade from these activities they may not take it seriously.

Pre-service teachers were also asked their opinions about the barriers and challenges that they may face while trying to conduct bird studies with their students in the future. Lack of expertise was stated as one of the most important barriers as it decreases self-confidence of teachers. In addition, they have concerns that this may also decrease students' motivation and interest. Other than this, lack of time especially in the first years of teaching, lack of support from the department, lack of student interest, lack of equipment, difficulties for field trip organizations (permission, weather conditions, managing student behaviours and safety issues) are mentioned as other challenges or barriers. Related with student behaviours, one of them said that, "A successful, well behaving student might get spoiled in the field." One of them stated that, "Bird watching is difficult as it requires patience and this might be a challenge for some of the students." Another one said that, "Lack of teacher interest might be a barrier. Teachers should enjoy these activities with an inner motivation."

Place-based education

Interviews with teachers were conducted to examine the fourth research question: Do Biology teachers indicate that bird studies will involve students in place-based education? Teachers and pre-service teachers were asked if they noticed birds more around their school, home, and community. All of them replied positively to this question and gave some examples. T1 said that she even noticed birds during the PhD qualifying exam. She added that, "I was thinking that all little birds are sparrows. My awareness increased significantly. Now, I always feel that there should be birds around. I started looking at details like their beak and feet shape. I used to think that bird watching is a boring activity. I was freed from my prejudices." T2 told that she noticed a different, crested bird in the school garden and realised that actually there are many of them (identified later by the researcher as a crested lark). She observed its behaviours and tried to take a photograph. The other people around could not understood what was going on. She said that, "Because they were unaware of those birds and I was like that before, even though I studied Biology." One of the pre-service teachers said that while he was running he noticed a different bird. He said that, "I was fully concentrated on running, but it took my attention. My perception has changed totally." During the interview, with the information provided by the pre-service teacher, the researcher identified the species as a starling. In addition, one of the pre-service teachers called the researcher in April when she heard a different bird singing. She made the researcher listen to the song live through the phone and the bird was identified as a blackbird by the researcher.

In conclusion, the data collected in this study helped answer the four subquestions that relate to the overarching question about the researcher's teaching practice. In

the next chapter, the implications of the findings of research questions and the implications of the action research results are further discussed.

CHAPTER 5: DISCUSSION

Introduction

The purpose of this study is to explore strategies and resources to support teachers in conducting bird studies with their students and to promote place-based education in Turkey. Different strategies and resources including a bird education trunk, a training workshop, two fieldtrips, and a Facebook group were implemented in this study to motivate and prepare teachers to conduct bird studies with their students. In addition, the researcher, with her background about bird research and bird education, provided consulting services to the teachers. The instruments for collecting data were workshop evaluation questionnaires administered to all participants and interviews conducted with six teachers and seven pre-service teachers.

Following is the research question and the sub-questions of the study:

How can I, as a bird educator, promote place-based education and motivate and prepare biology teachers to conduct bird studies with their students?

1. Which strategies and resources do Biology teachers indicate motivate them for bird education?
2. Which strategies and resources do Biology teachers indicate prepare them for bird education?
3. What barriers and challenges have Biology teachers faced or perceive they may face when conducting bird education?
4. Do Biology teachers indicate that bird studies will involve students in place-based education?

The findings will be discussed in this chapter with support from the literature. In addition, the reflection of the researcher on her efforts to motivate and prepare teachers will be presented. Finally, the implications for practice, implications for further research, and limitations will be discussed.

Major findings

1. Which strategies and resources do Biology teachers indicate motivate them for bird education?

In this study, the overall positive comments from the teachers on the workshop questionnaire revealed that the bird education workshop was an effective tool for motivating teachers to conduct bird education studies. These positive comments imply that designing a workshop with both theoretical and practical training was useful. Informed and experienced trainers are crucial resources to create interest and increase motivation. The teachers pointed out the trainers made the workshop interesting, exciting, and enjoyable. The field trip and observing different bird species was an effective way to create interest and excitement among the participants. Therefore, the content of the workshop program and the trainers/speakers were important factors that made the workshop motivating.

The teachers advised that they needed a strong background and rationale to convince administrators and department members to initiate a bird watching activity in their school. In this respect, it was mentioned that it was useful to learn about the educational outcomes of bird studies during the workshop. The interviewed teachers and pre-service teachers listed a variety of benefits of bird education for their students; these included increasing awareness toward nature and nature conservation, improving behavioural, observational and social skills, reducing stress, making real

life connection, being more acquainted and changing their negative thoughts about biology. Being aware of these benefits for their students was revealed to be an important motivation for teachers to conduct bird education studies. For example, T5 said that, "I expect that all benefits I gained through bird watching will be valid for my students. For example, the friendship I had through bird watching provided a lot to my social and personal development. I want to give this opportunity to my students."

Workshops are commonly used in the field of environmental education including bird education. For example, the organization Council for Environmental Education conducts workshops throughout the United States and around the world. During a three hour workshop, participants learn how to use and receive a copy of *Flying WILD: An Educator's Guide to Celebrating Birds* curriculum guide. After three years of the implementation of this program, an evaluation was made through workshop evaluation questionnaire filled out by the participants. According to the questionnaire data, workshop participants believed that they learned new information about birds (91%) and bird related materials (94%) at the workshops and were confident that they could use the Flying WILD materials (93%) (McCrea, 2006).

The Leopold Education Project (LEP) which was developed by a high school science teacher as an innovative, interdisciplinary conservation and environmental education curriculum based on the essays in *A Sand County Almanac* written by Aldo Leopold. It was first adopted by a non-profit conservation group, Pheasants Forever, and then in 2013 it became a project of Aldo Leopold Foundation. It is stated that more than 15,000 educators have attended a LEP workshop over the last twenty years ("The Leopold Education Project", n.d.)

Project WILD was launched in 1983 in USA through the efforts of Council for Environmental Education, the Western Association of Fish and Wildlife Agencies, and state departments of education (http://www.projectwild.org). It is one of the most widely-used conservation and environmental education programs among educators of students in kindergarten through high school. Since the program began, over a million of educators in the US have participated in Project WILD workshops and these educators in turn have used Project WILD with more than 48 million youths. In an evaluation study done in 2000, educators overall gave high ratings to the Project WILD workshops (CEE, 2004).

In a study about the development, evaluation and dissemination of an energy education resource trunk as a product of Wisconsin K-12 Energy Education Program (KEEP), teachers were asked if a workshop should be a prerequisite for teachers who would like to use the trunk. Of the teachers surveyed, 50% thought that the Trunk Guide was sufficient for preparing them to use the trunk. The other 50% stated that it might be useful to attend a workshop for teachers before using the trunk but they did not think that training should be a prerequisite to using the trunk (Estes, 2003).

In a study carried out by Gilchrist (2004), 56 teachers were interviewed via telephone and asked to rate 21 bird education resources according to their usefulness. Workshops/training was found to be one of "the most useful" resources along with eight others. In this study, teachers were also asked about the dissemination method for bird education programs. Workshops, training, or a class or course were recommended by 21 teachers.

Similarly, in this study a bird education trunk was found to be a useful resource to conduct bird education studies and to increase motivation. According to workshop

evaluation questionnaire, the benefits of having such a trunk was listed as increasing awareness toward nature, developing technical equipment using skill, supporting personal development, increasing effectiveness of the study, learning scientific methodology, increasing student motivation, and providing piloting opportunities. Three teachers borrowed it in the spring and they all said that because of its availability it was possible to organize student activities. In Gilchrist's study, like workshops, a trunk containing resources on birds was found to be one of the most useful bird education resources according to the usefulness scores. In addition, support for field trips and field guides were also considered among the most useful resources. These findings are also consistent with this study as bird education trunk including binoculars, a telescope and bird identification field guide books provide support to teachers for organizing field trips.

Gilchrist also found that teachers and pre-service teachers expressed their intention to conduct bird education studies with their students and they asked what else they may need to do this. They said that they need guidance with basic information for how to start, points that should be taken into consideration, sample activities, possible species to be seen in their area depending on the season. During the workshop, participants were also asked about the content for a teacher's handbook to be included in the bird education trunk. They said that basic information about bird identification and other bird watching and safety issues in the field, checklist of birds that can be seen in different areas, safety issues, information about how to integrate bird studies into the curriculum and games should be included in the teacher's handbook. These needs are supported by the literature. An activity guide was revealed as another most useful bird education resource for teachers according to Gilchrist's study.

In addition to a workshop, the current study employed other strategies to motivate teachers. One was the Education with Birds Facebook group. The interviews revealed that although teachers do not actively use the site, it is an important platform in maintaining their interest on the topic, improving their knowledge, providing resources through archiving documents, and providing motivation to carry out studies with their students. The participants in this study think that teachers who carry out bird education activities with their students should share their experiences. In this way, they will be a model giving encouragement, and thereby increase the motivation of others. They reported that a Facebook group is an appropriate platform for this purpose.

The interviews revealed that student curiosity is an important motivation source for teachers. T6 who founded a bird education club tells that, "Students are the source of my energy. Their interest motivates me a lot." Similarly, T5 shared her ideas, "I want to give this opportunity to my students. However, not all of them may show the same interest and this might be frustrating."

However, T6 and also some pre-service teachers said that it is not enough to have extrinsic motivation sources such as training workshops, bird education trunks, Facebook groups, and support from consultant, and student interest. Therefore, intrinsic motivation for teachers is also crucial. T6 said that, "There are lots of barriers and challenges and it is in teacher's hands to keep on or give up. One of my students came to me and asked why we are not doing any study about birds. I approached his offer positively as I have an interest and curiosity about birds." Supporting this idea, Dyment (2005) states that if internal values and perceptions of a teacher do not include outdoor learning, external training will have little effect.

Coming together with people having the same interest was also revealed as an important factor to provide motivation; novices to bird studies mentioned this as well as more experienced birders such as T5 and T6. Teachers also expressed their thoughts on the necessity of coming together more often through organizing festivals and camps.

2. Which strategies and resources do Biology teachers indicate prepare them for bird education?

As to the effect of bird education workshop for teachers' preparations to conduct bird studies with their students, the study found that it was a good start by giving the basic information. However, it was mentioned that for feeling totally prepared and confident to independently carry out bird education with their students it was not enough. T5 defined the workshop as, "For the beginners it was like putting a bug in someone's ear." Teachers have concerns about being not an expert in this area and they expressed their need for expert support and developing themselves more. One pre-service teacher said that, "I don't feel confident in species identification and bird species even change with season." And another one said that, "It is not only the problem of species identification. Students may ask a lot of questions related with bird migration, feeding, and behaviour." They need experts to provide guidance and also to increase students' motivation through participating in some of the activities. They also expressed their opinions that communication with the researcher as a consultant was important to sustaining their interest on the topic and providing motivation and guidance. Similarly, in Gilchrist's study (2004) guest experts/speakers were among the most useful bird education resources for the teachers.

When the experiences of T6 were examined, it was found out that although she was not a bird expert she tried to carry out bird education with her students and learned with them. She also guided them to get contact with NGOs to have expert support. Similarly, Braus and Wood (2003) state that to conduct environmental education studies, it is not necessary to be a scientist or a professional environmental educator. They explain that as an interdisciplinary field, EE requires many skills like communication skills, creativity and decision making. The role of the educator is to facilitate learning and to guide how and where to find the experts. However, it should be noted that T6 has 25 years of teaching experience. This experience might be important to overcome many challenges and barriers.

3. What barriers and challenges have Biology teachers faced or perceive they may face when conducting bird education?

This study found that the barriers and challenges for conducting bird studies are time, curricular requirements, administrative issues, difficulties in field studies, suitability of school ground, and student profile. Pre-service teachers also mentioned their lack of expertise. The teachers did not mention the need of support from an expert in response to questions about barriers; however, this concern was raised during their discussion about other questions. They also indicated they need more resources to guide them in terms of basic knowledge on bird identification, bird watching, possible species that could be seen in different regions of the country.

The findings of the study are supported by the literature. Although there is no study focusing on the barriers and challenges teachers face while conducting bird education studies, there are quite a few about external and internal barriers that prevent teachers to teach environmental education. External barriers and logistic barriers, such as lack

of time, funding and resources have been evaluated as significant factors (Ham & Sewing, 1987-1988; Ko & Lee, 2003); however, internal and personal barriers, such as teachers' attitude, content, and pedagogical knowledge are also important in this respect (Jegede, Taplin, & Chan, 2000; Shulman, 1987). In this study, all the factors except funding were mentioned as a barrier or a challenge; this may be because with the exception of T6, all the teachers work in private schools.

Some other researchers have stated that outdoor learning has been limited by numerous institutional, cultural, and logistical barriers (Barker, Slingsby &Tilling, 2003; Comishan et al., 2004; Dyment, 2005; Fisher, 2001; Ham & Sewing, 1988; Hart & Nolan, 1999; McCutcheon & Swanson, 2001; Rickinson et al., 2004; Simmons, 1998). Five key barriers to outdoor learning were listed by Rickinson et al. (2004) as health and safety issues, teacher's confidence and expertise in teaching and learning outdoors, curricular requirements, shortages of time, resources and support, wider changes within the education sector, and beyond. All five of these key barriers were mentioned in this study. In particular, teachers mentioned that private courses for the preparation for the university entrance exam have been shut down by the government and schools will need to provide extra support for their students. This means extra work for teachers. Therefore, most probably their time for extracurricular activities will decrease because of this change in the education sector.

4. Do Biology teachers indicate that bird studies will involve students in place-based education?

Teachers were asked in the interviews if they notice birds more around their school, home or community. They all replied to this question positively and provided examples. This study increased their sense of place and they realised that it is

possible to carry out some studies in the school grounds depending on their suitability. One of the most important findings of this study is that the place-based education approach (e.g., using their school grounds to observe birds) might help overcome barriers like difficulties in taking permission for field trips from MoNE and parents, time to take these permissions and safety concerns for going distant places.

This finding is supported by the study of Dyment (2005) to find out the barriers to teaching on green school grounds. In this study, health and safety concerns and shortages of time, resources, and support were not reported as barriers limiting the amount of teaching occurring on green school grounds. According to this study, it is concluded that place-based education in green school grounds decreases the barriers for outdoor learning listed by Rickinson et al. (2004).

An implication of this finding is that by promoting place-based education, the emphasis of environmental education in schools will improve. As noted in the introduction and review of literature, place-based education plays an important role in environmental education (Barnett, 2009; PEEC, 2010).

Conclusion and reflections of the researcher

The overarching research question for this study was: How can I, as a bird educator, promote Biology teachers' motivation and preparation to conduct bird studies with their students? I was able to address this question and gain insights through my sub-questions.

My aim for this project was to build teachers' capacity to conduct bird studies with their students. I sought to accomplish this by providing resources and strategies to motivate them and help them feel prepared. During the study period, I used the

reiterative reflection to evaluate my efforts, to determine what data I needed to acquire and examine the effects of the strategies and resources on teachers' implications and my efforts.

At first, I was going to create a conceptual framework and activity guide to help teachers find ways to integrate bird studies into the MoNE curriculum. Ironically, of all the activities I accomplished during this study, the Turkish version of this guide was one thing that I could not complete. The main reason was because my time was devoted to developing activities for this study. We became aware of the opportunity to apply for and receive funds for a grant from the US State Department to purchase a bird education trunk. To orient teachers to this trunk, I organized a workshop for teachers. The plan was to follow a few of the teachers during the winter and early spring as they implemented bird studies with their students. However, it became apparent that teachers were facing many barriers to conduct bird studies and my own graduate work was taking more of my time than anticipated (including an internship in England). Nonetheless, I was pleased when several teachers did follow up with me to seek advice on doing some activities with their students. My advisor and I decided to include an action research component to this study, as I examined my own efforts to work with teachers to motivate them and help them feel prepared.

In order to reflect on my efforts and the results of this study, first of all I needed to consider my bird watching journey. How did I start? How did I get interested? How did I get motivated? How did I develop my knowledge and experience in this field?

Bird watching entered to my life through participating to the first ornithology school in 1994 that was similar to the bird education workshop organized in this study. There were theoretical presentations like bird watching, bird identification, different bird species like water birds, birds of prey and bird photography. Two bird watching

field trips were organized as well. During the theoretical part of the ornithology school, I was especially amazed with the bird photographs presented as a slide show accompanied by music. It was hard to believe to the presence of some species in Turkey. Just like the comments of bird education workshop participants, I can say that the ornithology school motivated me and provided me with basic information to begin bird watching.

However, in order to gain experience, I was in the field at least once a month throughout the year with experienced bird watchers, either on our university campus field or at a distant place. Additionally, we were having weekly meetings. Therefore, when I think about teachers concerns about not being confident about bird identification and needing expert support, I am not surprised. In addition, I have a great experience in bird studies; of course I'm not an expert in all 482 species in Turkey's checklist, but I can identify many birds throughout the country. I can appreciate teachers' anxiety because I realized I felt stressed about the possibility of not being able to tell which species was singing during the field trip of this study in spring. Therefore, their concerns about not being able to answer students' questions and lacking confidence because of insufficient knowledge are understandable.

In this study, I learned that student curiosity is an important factor for motivation. I experienced this when I felt the interest of teachers asking support or contacting me to learn about a species. It was a great feeling to know that I added a value and joy in their life through awareness of birds. It was useful to interact with teachers through this study. I gained a greater appreciation for the challenges they may face when creating a similar experience for their students.

Overall, I found evidence that the workshop interested all the teachers. However, this interest motivated only a small number of the teachers to actually implement activities with their students. Communications with these teachers revealed that they lacked confidence in many ways and needed guidance from me to help them feel prepared. It was especially helpful to speak to T6 who has created a successful birding club with her students. She confirmed that although she is becoming more knowledgeable about birds, she continues to seek advice from expert birders and naturalists.

Bird watching and studying birds is a passion of mine that will continue to play a significant role in my life. This study introduced me to the opportunity to spread my passion to others through the formal education system. By educating teachers, I hoped to motivate and prepare them to, in turn, spread interest and knowledge about birds to their students. I learned, however, that long-term collaborations will be necessary to support teachers. As I enter my first year of teaching, I will continue to consider my role as a bird educator and examine the reality and opportunities to share my passion with my colleagues within my school and throughout Turkey.

Implications for practice

This study confirmed that a variety of resources and strategies are necessary to support teacher preparation for conducting bird studies with their students. In addition to the bird trunk, teachers need an activity guide that includes basic information about bird watching, how to identify a bird and activity suggestions especially suitable to be implemented in school grounds to promote PBE.

The need for expert support was expressed by all the interviewees. Therefore, a database of birders might be created around the country that would be willing to be

conducted by teachers. In addition, more bird watchers should be members of Facebook group to post messages or to answer questions of teachers.

Teachers carrying out any activities should be encouraged to share their experiences with other teachers through Facebook group.

Teachers should be reminded about the founding of a bird watching club in the beginning of 2015-2016 academic year and another field trip might be organized in autumn to give momentum to their efforts.

A bird watching festival might be planned for next spring to create a motivation for teachers and students to carry out some activities to share with other schools during the festival.

According to the MoNE, students should complete a social responsibility work for 15 hours. T6 made her students complete that work through bird studies within the scope of nature conservation. Other teachers might be encouraged to use a similar approach in their schools.

World Bird Watching Day or World Migratory Bird Day might be proposed to the MoNE to be included in the list of "Important days and weeks."

Implications for further research

Motivating teachers was one aim of this study. A review of the literature, however, found limited research in this aspect of environmental education. There are opportunities to further investigate the relation between motivation and preparation. These can relate to cognitive psychology concepts such as achievement goals and internal and extrinsic motivating factors.

If teachers create bird watching clubs in their schools, then a longitudinal study might be carried out with focus groups of supervisor teachers and students of the clubs. The barriers and challenges of conducting bird education studies and also benefits for students will be revealed in detail through such a study.

IB Biology and IB ESS curriculum might be examined for the integration of bird studies as it was proposed by couple of teachers.

The processes of motivating and preparing teachers in place-based studies can be examined in relation to the goals of environmental education. The outcome of EE is to create environmentally literate students who take constructive action to help prevent and resolve environmental problems. A more in-depth study could be conducted to examine if, as students become more aware of birds and their habitats, do they indeed become more environmentally literate, internationally minded, and willing to take action to protect their "place," both locally and globally?

Limitations

The timing of the bird education workshop was one of the main limitations of this study. Teachers need to plan their extracurricular activities and indicate their interest to found a club in the beginning of the academic year. However, the bird education workshop was organized on 29-30 November. Therefore, any effects on the foundation of bird watching clubs by the workshop participants will be seen next year.

The time limitation was one reason why action research was added to this study. It was clear the researcher was going to take a number of actions to motivate and prepare teachers; therefore, a portion of the focus was turned inward to examine the researcher's own practice. As with all qualitative studies, the researcher was the main

instrument to collect and interpret data. There was the chance for bias or influencing teachers' responses; using multiple sources of data and perspectives from teachers helped ensure interpretations were trustworthy.

A random sampling strategy was not used in this study. Participation to the workshop was based on the participants' own interest. And for the interviews, only teachers who showed some interest in conducting bird studies with their students were selected. Their interest was understood through their activity in Facebook group or communication with the researcher. There were seven teachers who participated in the workshop but did not organize any activity with their students during the study period. The reasons for their lack of involvement were not investigated in the study.

Only the MoNE curriculum was analysed to find out related objectives, although some schools in Turkey use other international curricula like IB in addition to MoNE.

Only high school Biology teachers from Turkey were included (except one middle school teacher who participated in the workshop but was not interviewed) in the study. Only teachers from private schools were involved (except one who started conducting bird education studies with her students before this study).

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APPENDICES

APPENDIX 1: Bird education trunk borrowing agreement

Kuş Eğitim Seti Ödünç Alma Sözleşmesi

Bilkent Üniversitesi Eğitim Bilimleri Enstitüsü'ne ait Kuş Eğitim Seti, kuş eğitim çalıştayına katılan tüm öğretmenler tarafından hiçbir ücret ödemeden ödünç alınabilir.

Kuş Eğitim Seti, önceden e-posta ya da telefonla bildirilmek üzere resmi tatiller hariç hafta içi her gün 9:00-17:00 saatleri arasında Bilkent Üniversitesi Eğitim Bilimleri Enstitüsü'nden teslim alınabilir. Eğitim setinin alınması ve kullanım süresi dolduğunda geri getirilmesi öğretmenin sorumluluğundadır. Eğitim seti, Ankara dışındaki okullara ödemeli olarak kargoyla gönderilir. Aynı şekilde, kargo masrafları okul tarafından karşılanacak şekilde eğitim setinin kargo ile geri gönderilmesi gerekmektedir.

Eğitim setini ödünç alan kişi:_____

Okul:_____

Adres: _____

Tel:_____

E-posta:_____

Süre (en fazla 2 hafta):_____

Kuş Eğitim Setinin maliyeti 4000TLdir. Kuş Eğitim Setindeki optik aletlerin ve/ya kitapların kaybı ya da bozulması durumunda ödünç alan kişi sorumlu olacaktır. 30 gün içinde bu zararın karşılanması beklenmektedir. Okullarda doğa eğitimini desteklemek amacıyla ücretsiz olarak sağladığımız bu hizmetin sürdürülebilmesi için gerekli duyarlılığı göstereceğinize inanıyoruz.

Kuş Eğitim Setini özenle kullanacağımızı ve herhangi bir sorun olması durumunda en kısa sürede Bilkent Üniversitesi Eğitim Bilimleri Enstitüsü'ne bildireceğimizi taahhüt ederiz.

Ödünç alan öğretmen imza:_____Tarih: _____

Teslim eden imza:_____Tarih:_____

Daha fazla bilgi için Armağan Ateşkan (ateskan@bilkent.edu.tr) ve Jennie Lane (jennie.lane@bilkent.edu.tr) ile iletişime geçebilirsiniz.

APPENDIX 2: Bird education trunk checklist

Kuş Eğitim Seti Kontrol Listesi

Kuş Eğitim Seti'ndeki malzemeleri Bilkent Üniversitesi Eğitim Bilimleri Enstitüsü'ne teslim etmeden önce lütfen yukarıdaki listeyi dikkate alarak kontrol ediniz. Eksik ya da bozuk olan malzemelerden sorumlu olacağınızı unutmayınız.

Malzeme	
4 adet 8x42 Nikon Aculon Dürbün	
10 adet 8x40 Konusvue Dürbün	
1 adet Konuspot-80 Konus Teleskop	
1 adet SLIK SH-705E Tripod	
1 Kitap (Türkiye ve Ortadoğu'nun Kuşları)	
1 Kitap (Collin's Bird Guide-The Most Complete Guide to the Birds of Britain and Europe)	
1 Kitap ve CD (Collin's Bird Songs and Calls)	

Kuş Eğitim Setindeki malzemeler ödünç verilmeden önce kontrol edilmiştir.

İmza _____Tarih_____

Malzeme	
4 adet 8x42 Nikon Aculon Dürbün	
10 adet 8x40 Konusvue Dürbün	
1 adet Konuspot-80 Konus Teleskop	
1 adet SLIK SH-705E Tripod	
1 Kitap (Türkiye ve Ortadoğu'nun Kuşları)	
1 Kitap (Collin's Bird Guide-The Most Complete Guide to the Birds of Britain and Europe)	
1 Kitap ve CD (Collin's Bird Songs and Calls)	

Kuş Eğitim Setini kontrol ettim ve tüm malzemeleri sağlam ve eksiksiz bir şekilde teslim ediyorum.

İmza*:*_____ Tarih _____

APPENDIX 3:Bird education workshop program

Bird Education Workshop

Program

29 November /Saturday

09:30 Opening speech – Armağan Ateşkan-Özge Keşaplı Can

09:40 Meeting (games)- Burcu Meltem Arık Akyüz

10:00 Nature education- Burcu Meltem Arık Akyüz

10:30 Bird watching- Asuman Gem

11:00 Coffee break

11:20 Birds and education (examples from USA and UK, opportunities in Turkey)- Özge Keşaplı Can

12:30 Lunch

13:30 Experience sharing – Handan Doğan/ Biology teacher at Kabataş High School

13:50 Introduction of the Bilkent bird education trunk

14:10 Coffee break

14:30 Working groups on conceptual framework and curriculum integration

16:00-16:30 Discussion

30 November/ Sunday

8:30 Leave Bilkent for Lake Mogan-Birdwatching

11:30 From Lake Mogan to Eymir Lake

14:00 Back at Bilkent Campus for closure

This workshop is funded by “ State Department”

APPENDIX 4: Conceptual framework and MoNE Biology curriculum

Conceptual framework adapted from Flying Wild (CEE, 2011)	**Objectives of MoNE Biology Curriculum** (MEB, 2013)
I.General Biology	
I.A Bird species share a set of anatomical and physiological characteristics	9.1.1 Nature of science and biology (9.1.1.3a) 9.1.2 Common characteristics of living things (9.1.2.1a; 9.1.2.2a) 9.2.2 Diversity of living things and classification (9.2.2.2 b) 9.2.3 Kingdoms and Their Characteristics (9.2.3.1 ç; 9.2.3.2 a) 10.1.2 Meiosis and Sexual Reproduction (10.1.2.2) 10.2.1 Heredity and Biodiversity (10.2.1.2b)
I.B Birds are adapted to their environments in ways that enable them to survive and maintain their populations.	9.2.3 Kingdoms and Their Characteristics (9.2.3.1 ç) 9.3.2 Natural Resources and Conservation of Biodiversity (9.3.2.2 b; 9.3.2.4 a, b) 10.3.1 Ecology of Ecosystems (10.3.1.3.d) 11.3.1 Behaviour (11.3.1.1.a, 11.3.1.2 a) 12.4.1 Origin of Life (12.4.1.2 a; 12.4.1.3a) 12.4.2 Evolution (12.4.2.1 c, ç; 12.4.2.2a)
II. Habitat	
II. A Birds, like all living things, need food, water, shelter, and a suitable space to live.	9.1.2 Common characteristics of living things (9.1.2.2b) 9.3.1 Current environmental problems and human (9.3.1.1 a,b) 9.3.2 Natural Resources and Conservation of Biodiversity (9.3.2.2 b) 10.3.1 Ecology of Ecosystems (10.3.1.1a,b; 10.3.1.2 a, 10.3.1.3b,ç,d)
II. B Birds depend on forests, grasslands, wetlands, and other habitats to meet these needs.	9.3.1 Current environmental problems and human (9.3.1.1a) 9.3.2 Natural Resources and Conservation of Biodiversity (9.3.2.1b) 10.3.1 Ecology of Ecosystems (10.3.1.1a; 10.3.1.5a) 10.3.2 Biomes (10.3.2.1a)

II. C Each habitat is suitable only to those bird species that are adapted to it.	9.3.2 Natural Resources and Conservation of Biodiversity (9.3.2.4a) 10.3.1 Ecology of Ecosystems (10.3.1.3 d) 12.4.2 Evolution (12.4.2.1c; 12.4.2.2a)
II. D Carrying capacity refers to the dynamic balance between the availability of habitat components and the number of animals a habitat can support.	9.3.2 Natural Resources and Conservation of Biodiversity (9.3.2.1a) 10.3.1 Ecology of Ecosystems (10.3.1.5) 12.3.2 Population Ecology (12.3.2.1a)
II. E Birds play an important part in ecological systems, living in a web of interdependence in which all plant and animal species contribute to the functioning of the overall system.	9.3.2 Natural Resources and Conservation of Biodiversity (9.3.2.2b) 10.3.1 Ecology of Ecosystems (10.3.1.3c; 10.3.1.4) 12.2.3 Sexual Reproduction in Plants (12.2.3.3; 12.2.3.4)
II. F Birds may be used as an indicator of the environmental health of an ecosystem.	9.3.1 Current environmental problems and human (9.3.1.1b) 9.2.3 Kingdoms and Their Characteristics (9.2.3.2) 9.3.2 Natural Resources and Conservation of Biodiversity (9.3.2.2b) 10.3.1 Ecology of Ecosystems (10.3.1.5) 12.3.2 Population Ecology (12.3.2.2a)
III. Observation and Identification	
III. A Participating in bird counts can provide enrichment in one's life while contributing to scientific knowledge and bird conservation. (Citizen Science)	9.1.1 Nature of science and biology (9.1.1.1b) 9.3.2 Natural Resources and Conservation of Biodiversity (9.3.2.2b; 9.3.2.4 a,b) 10.3.1 Ecology of Ecosystems (10.3.1.5a) 12.4.1 (12.4.1.2a)
III. B Observing bird behaviour and identifying bird species contributes to a better understanding of the needs of birds and more effectively supports the conservation of bird species.	9.2.2 Diversity of living things and classification (9.2.2.2b) 9.2.3 Kingdoms and Their Characteristics (9.2.3.1ç) 9.3.2 Natural Resources and Conservation of Biodiversity (9.3.2.2 b) 11.3.1 Behaviour (11.3.1.2a; 11.3.1.3)
III. C Effective use of equipment for bird observation and identification requires basic knowledge and development of basic skills.	9.1.1 Nature of science and biology (9.1.1.1a, b,c; 9.1.1.3a)

IV. Conservation and Action	
IV. A People can act to help conserve migratory birds	9.1.1 Nature of science and biology (9.1.1.3a) 9.3.1 Current environmental problems and human (9.3.1.2a) 9.3.2 Natural Resources and Conservation of Biodiversity (9.3.2.2; 9.3.2.4 b) 10.3.1 Ecology of Ecosystems (10.3.1.5 a) 12.3.2 Population Ecology (12.3.2.2 a)
IV. B Acting at a personal level to help migratory birds, people can establish or improve bird habitat in their local area, monitor bird populations, and educate others about birds and their conservation needs.	9.3.2 Natural Resources and Conservation of Biodiversity (9.3.2.3; 9.3.2.4a, b)
IV. C Many factors that threaten or help bird populations are the result of human actions.	9.3.1 Current environmental problems and human (9.3.1.1; 9.3.1.2) 9.3.2 Natural Resources and Conservation of Biodiversity (9.3.2.2.b; 9.3.2.4 a) 10.3.1 Ecology of Ecosystems (10.3.1.5 a) 12.3.2 Population Ecology (12.3.2.2 a)
IV. D Human management of the environment affects bird populations.	9.3.2 Natural Resources and Conservation of Biodiversity (9.3.2.2 b) 10.3.1 Ecology of Ecosystems (10.3.1.5) 12.3.2 Population Ecology (12.3.2.2 a)
IV. E Citizens can become involved in the management of birds, habitat, and the environment by direct participation in the political process or through local, state, national, or international organizations.	9.3.1 Current environmental problems and human (9.3.1.1 a,b; 9.3.1.2; 9.3.1.3) 9.3.2 Natural Resources and Conservation of Biodiversity (9.3.2.4)
IV. F Citizens, government, industry, and business are responsible for conserving natural resources, including bird species	9.3.2 Natural Resources and Conservation of Biodiversity (9.3.2.4; 9.3.2.5) 10.3.1 Ecology of Ecosystems (10.3.1.5)
V. Migration	
V.A Many birds migrate to meet their habitat needs, including accessing seasonal food supplies, as well as specific climatic conditions.	11.3.1 Behaviour (11.3.1.2; 11.3.1.3)

V. B Migratory birds depend on habitat in more than one place, including breeding grounds, wintering grounds, and locations along migration routes. For this reason, international collaboration is required for the conservation of migratory birds.	9.3.2 Natural Resources and Conservation of Biodiversity (9.3.2.4) 11.3.1 Behaviour (11.3.1.3) 10.3.1 Ecology of Ecosystems (10.3.1.5a)
VI. Research Techniques	
VI. A A variety of techniques are used to gather data about birds.	9.1.1 Nature of science and biology (9.1.1.1b,c)
VI. B Scientific methods are used to understand the needs of birds and develop conservation plans to manage and protect birds.	9.1.1 Nature of science and biology (9.1.1.1 b,c)
VI. C Student research on birds enhances their understanding of scientific processes through inquiry.	9.1.1 Nature of science and biology (9.1.1.1 b,c)
VII. Birds and People: Cultural Connections	
VII.A Human and bird relationships are expressed through celebrations, legends, myths, religious teachings, literary writings, symbols, protocols, ceremonies, and other cultural and societal activities.	Cross curricular studies might be done with History, Geography and Literature departments. These concepts are also suitable for club activities. There might be some international collaboration about these concepts like Comenius. These concepts might be also used in topics related with conservation.
VII.B Appreciation of birds is often portrayed through creative expressions of human relationships with wildlife in historic and contemporary times.	
VII.C Activities related with birds like bird watching tourism, photography, falconry, pigeon feeders may have economic value and provide opportunities for recreational activities.	
VII.D Hunters may contribute to the management and conservation of birds and other wildlife and there are examples of this in the past.	

APPENDIX 5: Workshop evaluation questionnaire

1. To what extent were your expectations met during the workshop?

2. Which part of the workshop did you like the most or did you find the most helpful for your teaching? Why?

3. After this training do you feel more competent using bird education to help students understand their local environment?

4. Will this workshop help you integrate bird education into your lessons/ into the curriculum? How?

5. Are you planning to use the bird education trunk with your students? When? How?

6. What do you see as the potential benefits of using the bird education trunk?

7. What do you see as the potential challenges of using the bird education trunk?

8. What should be included in the teacher's handbook of bird education trunk to support your practices with students?

9. Anything else you want to share? What else should be included in this training? Anything missing?

APPENDIX 6: Interview questions

1. Did the workshop increase your motivation in conducting bird studies with your students? Did it make you feel more prepared to do bird studies with students?

2. Will having a bird education trunk available motivate you to conduct bird studies with your students? What suggestions do you have to improve the availability and usability of the trunk?

3. Did you do any bird education activities with your students after the workshop? If so, where did you take them?

4. If so, did you do the activities during an extracurricular program or as a part of a lesson during the school day?

5. How many students joined the activity? Please provide observations about their interest and participation. What interested them the most, what would gain their interest better? What other effects did you notice the experience had on students?

6. How did you (how would you) evaluate the benefits of bird education for your students depending on your experience?

7. How has the Facebook group affected your practice? Do you find it useful/effective for motivating and providing information? Do you have any suggestions?

8. How useful/helpful was it to have a bird expert (the researcher) as a consultant to help you plan and conduct bird studies? Would you be able to continue planning without a consultant in the future or would you need an expert to continue? If a birding expert was available to you in the future, what would you need from him or her?

9. What barriers or challenges have you faced (or do you think you'll face) trying to conduct bird studies with your students?
    a. Is finding time in the curriculum an issue? Will the conceptual framework, with connections to the national curriculum, assist you in relating bird studies to your teaching? What else would you need to help you make curricular connections?
    b. Is finding time and funding to take field trips an issue? Have you studied bird populations around the school grounds with your students? Would you consider doing this?

10. Are you thinking to continue bird education studies with your students? What resources or any other kind of support do you think you would need?

11. Do you find you notice birds more around your school, home and community? If so, can you share some examples?

APPENDIX 7: Consent form

Değerli Öğretmenler,

Bilkent Eğitim Bilimleri Enstitüsü'nde "Yer Temelli Eğitimi Geliştirmek Amacıyla Kuş Eğitimi Çalışmalarının Milli Eğitim Bakanlığı Müfredatına Entegre Edilmesi İçin Stratejilerin Analiz Edilmesi" başlıklı bir tez çalışması yürütüyorum. Bu çalışma kapsamında sizlerin desteğine ihtiyacım var.

Bu araştırma katılımcıların kuş eğitim çalışmaları ile ilgili görüşlerini ve deneyimlerini değerlendirmeyi amaçlıyor. Siz katılımcının dahil olacağı araştırma süreci 3 aşamadan oluşacaktır:

1- Katılımcının bir anket aracılığıyla kuş eğitimi çalıştayını değerlendirmesi
2- Katılımcının çalıştayda katılacağı grup çalışmasında kuş eğitim çalışmalarının MEB müfredatına entegre edilmesi ile ilgili stratejileri analiz etmesi
3- Katılımcının kuş eğitim setini kullanarak öğrencileriyle birlikte gerçekleştireceği çalışmalar sonrasında araştırmacı ile yüzyüze görüşmesi ve deneyimlerini paylaşması

Bu çalışmada toplanan hiçbir veride isim kullanılmayacaktır. Çalışma sonuçları bireysel katılımcıların adı ve özellikleri belirtilmeden değerlendirilecektir.

Bana destek olacağınızı umuyor katkılarınız için şimdiden teşekkür ediyorum.

Özge Keşaplı Can

Kuş eğitim çalıştayı anketindeki değerlendirmelerimin, kuş eğitim çalışmalarının müfredata entegre edilmesi ile ilgili görüşlerimin ve öğrencilerimle gerçekleştireceğim çalışmalar sonrasında benimle yapılacak görüşmelerde paylaşacağım deneyimlerimin bahsi geçen tez çalışması kapsamında değerlendirilmesinde hiçbir sakınca görmüyorum.

Ad Soyad:

İmza:

APPENDIX 8: Responses to workshop evaluation questionnaire

Question	Participants	Answer
Q1. To what extent were your expectations met during the workshop?	1	It was over my expectations. I realised our insufficiencies and mistakes. Through this workshop many mindful teachers about this topic were gained to the society.
	2	It was over my expectations.
	3	It fulfilled my expectations. I enjoyed a lot.
	4	It was over my expectations. I enjoyed a lot.
	5	It fulfilled my expectations. I did not have any experience before.
	6	It was over my expectations. It was interesting and enjoyable.
	7	It was over my expectations.
	8	It increased my motivation and excitement. It evoked a will to participate field studies again.
	9	It was over my expectations.
	10	It was over my expectations.
	11	It fulfilled my expectations both theoretically and practically.
	12	It fulfilled my expectations. I could observe birds, learned new bird species, new resources and how to use them.
	13	It was over my expectations in terms of both learning and enjoying. Participants with different levels of experience enhanced learning.
	14	It was over my expectations in terms of both learning and enjoying. I'm sure that it inspired many teachers who participated to this workshop.
	15	It was over my expectations both theoretically and practically.
	16	It fulfilled my expectations. I realised that if we look carefully we can identify many bird species. This increased my sense of place.
	17	It was over my expectations.
	18	In spite of bad weather conditions for the field trip it was very successful and enjoyable. I learned how to set a binocular.
	19	I think it was a productive workshop.

Question	Participants	Answer
Q2.Which part of the workshop did you like the most or did you find the most helpful for your teaching? Why?	1	I enjoyed the theoretical part (first day) the most. Trainers were very successful. Theoretical information is generally considered as boring but it was not the case for this workshop. We listened their experiences and the information they provided very carefully. It gave a real eagerness and motivation.
	2	All the theoretical information given on the first day were really very useful. We learned that place-based education can be effective for both teachers and students. Bird watching on the second day revealed the enjoyable part of this activity. In order to encourage our students in the future we need to feel the enjoyment of the activity as teachers.
	3	It is always more beneficial to make observations in the field than theoretical knowledge.
	4	It was very nice to imagine how much my students will be happy when they see the species that we observed during the field trip. I was not expecting to see some of the species that we observed and I was not even aware of the existence of some before.
	5	I learned that this activity is very rich and there is variety of opportunities to integrate to the curriculum. As far as I see, I gained experience in an activity which will make my students happy as I'm happy too.
	6	First day was very useful with all the information and the practical experience in the field through bird watching was very enjoyable.
	7	Especially the emphasis on the positive effects of bird studies on children and youth will be very helpful in convincing administrators to carry out these studies in our school. I felt refreshed and variety of ideas to carry out different nature education activities appeared in my mind.
	8	It addressed both visual and auditory intelligence. The presentations on the first day were very much appropriate. Practical work on the second day was very active and enjoyable. I saw that I can evaluate birds with respect to their morphology and behaviour.
	9	To learn about the positive effects of bird studies on children and youth and also to watch the video of students sharing their experiences
	10	Bird watching on the second day was the most useful part for me.
	11	It was very useful to strengthen the theoretical knowledge with practice. It was a good experience to see that it is possible to carry out field studies in every weather condition (cold, rain)
	12	To learn about the educational outcomes of bird studies was very useful. I can share this information with my students and colleagues as the aims of such studies in our school. It was also useful to learn about different resources. The group work for curriculum integration was also good as it made me realise how and where to integrate birds into my lessons.

	13	To learn how to use binocular, telescope and bird identification guide book was the most useful part for me.
	14	This workshop made me excited. I realised that my students are very far from nature and I should integrate nature into my lessons more. I think that bird watching will develop observation, research and monitoring skills of the students.
	15	Almost everybody had a chance to make practice with binocular individually. This was very good. In addition, after observing a bird information was provided about that species immediately. This would be effective with students too as it will make a deeper learning.
	16	To learn the names and the features of the bird species immediately after we observed them. It was also very good to be informed about the possible species that could be observed. Then those species were identified without being overlooked.
	17	To increase the persistency of learning it gives opportunities to make connection with real life. I'm thinking to use this approach in my future career as a teacher.
	18	It was useful to learn what is necessary to organize such an activity, what are the potential challenges and what kind of a background that the students will need.
	19	Birds and education, nature education and experience sharing.

Question	Participants	Answer
Q3.Will this workshop help you integrate bird education into your lessons/ into the curriculum? How?	1	It was very useful to make curriculum study in this workshop. We analysed MEB curriculum but I think there are more topics related with birds in IB curriculum.
	2	I think the experience I gained through this workshop will guide me in organizing extracurricular activities. I also would like to share the information that I learned in this workshop with my students in my lessons.
	3	Definitely. I will include bird watching in our field studies. As to the curricular possibilities, I will emphasize birds more in some of the topics like animal diversity and physiology.
	4	Definitely, it will. I think I may embellish a lot of topics with examples of birds.
	5	This workshop may be directly integrated to the 9th grade curriculum. For now, amateurishly I could launch this activity in my school.
	6	Definitely. Especially, environment, species conservation, adaptation and evolution topics are appropriate to give good examples from birds to draw students' attention.
	7	Especially, if the ideas revealed during the curriculum work is compiled and shared with the teachers it would be possible to apply the things that were learned in the workshop at many levels and in many topics. As a club activity, it already provided an expansion on itself.
	8	It will help. Actually, I realised that in many units I can make use of birds. Especially, in ecosystem unit of IB ESS lessons there are plenty of opportunities.
	9	Yes. Integrating bird studies to the curriculum will make some topics more concrete.
	10	I can integrate in my lessons for species diversity and adaptation topics.
	11	Although not in all units and in all grade levels, I can easily integrate with particular topics. In accordance with the information I gained in this workshop I will apply both in my lessons and in the field trips.
	12	Yes. I will certainly prepare a project proposal for CAS team in our school. I will share with my colleagues in the department that it is possible to integrate bird studies with the curriculum. I will enrich our library by ordering new resources.
	13	I will do my best to integrate to my lessons but it will guide me to found a bird watching club at most.
	14	I'm thinking to found a bird watching club in our school. I would like to integrate birds with my lessons too. I'm thinking to make my students to prepare a project about birds in food chain topic.
	15	Yes, it will. In many Biology topics like evolution, adaptation the features of birds will be a very good guide for students. With their diversity, they will be useful for many topics in the curriculum.

	16	Certainly it will. Under the classification topic, identification of bird species and visual materials related with birds will be effective.
	17	There are suitable topics in the curriculum to integrate bird studies like ecology, evolution, current environmental problems, and biodiversity. By this way, learning will be supported through real-life examples.
	18	It made me aware of the possibilities to integrate bird studies into the curriculum.
	19	I would like to include this activity in our CAS studies. In addition, I can easily integrate to the ESS lessons.

Question	Participants	Answer
Q4. Are you planning to use the bird education trunk with your students? When? How?	1	Definitely I like to use it. After talking with related units at school I would like to found a club as soon as possible.
	2	As a pre-service teacher I can say that I want to use it with my students in the future. I would like to keep on watching birds as a hobby and I may found a bird watching club at school.
	3	Definitely. I will organize and include bird watching activity in all field trips of our school especially in spring.
	4	I would like to found a bird watching club next year.
	5	Yes, in the earliest time when I took permission from school administrators.
	6	I really would like to use the trunk. A bird watching club might be founded with interested students and bird education trunk might be used in the field trips.
	7	Yes, I like to use it. From now on it will be a part of our Eymir Lake Field study. In the end of May or in the beginning of June.
	8	Yes. It might be used to define topics of individual investigation and extended essay for some students. It might be also used during club activity time.
	9	Yes, in spring, as a bird watching club.
	10	It is suitable for our bird watching club. As a club we can introduce bird species to other students in the school by setting the telescope.
	11	Yes. During the term I might talk about birds, provide opportunities to my students for bird watching and then in the end of the term I may organize a general bird watching activity.
	12	Definitely. In May-June or latest during the field trip in summer school.
	13	Yes. There are wetlands close to our school. Even if I cannot organize a field trip to those wetlands I can organize a bird watching activity in the school campus with this trunk. Hopefully, I'll create a similar trunk in the school.
	14	Definitely. I want to organize a bird watching trip to Bilkent Lake in spring. There we will learn to observe and listen to the birds and the nature.
	15	Yes. In spring or when the weather is not very cold.
	16	As long as the conditions are appropriate I would like to use it. Depending on student profile a similar activity might be organized. I may use it when it is most appropriate seasonally or curricularly.
	17	Yes. After covering an appropriate topic and making a program I want to organize a bird watching activity with the help of knowledge I gained through this workshop.
	18	If and only, when the students reach to the level required to use the equipment properly and the conceive the seriousness of the activity I may consider to use the trunk.
	19	Yes, for sure. It is not certain yet but it is highly possible in April or May when the weather conditions will be more suitable.

Question	Participants	Answer
Q5- What do you see as the potential benefits of using the bird education trunk?	1	It will contribute to the personal and physical development of my students. In addition, spending more time in nature will enrich them in many ways.
	2	I may use of this bird education trunk to understand if this activity is suitable to my school's vision and mission. If it is useful then schools may have their own sets.
	3	Students will have a chance to do nature observation and they will learn how to use binocular and telescope.
	4	It will be helpful to raise conscious observers as the students will be grasping the procedure and method of the activity that they do through using this trunk.
	5	To commune with nature, to identify bird species, to raise awareness are among the benefits.
	6	It will be helpful to increase students' interaction with nature, to increase awareness for nature conservation and to learn more about birds
	7	I don't know how it might be possible to do this activity without binocular, telescope and guide books. These are fixtures for bird studies. To be able to observe birds from a distance without disturbing them and to be able to identify species with the help of guide books make these studies efficient.
	8	To introduce technical equipment to the students, to develop responsibility, to be able to observe species at distant without disturbing them.
	9	To increase motivation and to give equal opportunities/facilities to every participants.
	10	Increase love of nature, increase interest to living things, increase curiosity, develop skill of using technical equipment, and increase the possibility to identify species in their country.
	11	To learn how to use a telescope and binocular and what are the key points in using a guide book.
	12	At least teachers and students will learn how to use telescope, binocular and a guide book. It will be nice to teach and learn the steps/phases of scientific observation in nature.
	13	It provides an opportunity for students who doesn't know much about birds and haven't done bird watching before to be acquainted with these equipment. This bird education trunk will also serve as an example for schools that wants to have its own trunk.
	14	Most importantly, students learn how to observe nature overall. They also learn how to move together and work in a group. Additionally, they learn to use technical equipment.
	15	To use binoculars individually by taking their own responsibility is an advantage for students. While using binocular they will develop their perspectives. The pleasure I had when I discovered a bird by myself and then learned its name was very different then learning about a species that the trainers showed us. I think it would be the same for students.

	16	To give opportunity to observe species, which attracted their attention closely and identify the unique features of the species.
	17	It is beneficial as it makes bird watching easier. It creates motivation for students.
	18	It provides opportunity to observe birds in their habitat and develops sense of equipment handling.
	19	more professional approach, ease of practice and saving time

Question	Participants	Answer
Q6- What do you see as the potential challenges of using the bird education trunk?	1	There might be problems in terms of taking permission and student safety. The trunk should be used under the supervision of teacher in order to keep it secure
	2	Even if there is not any other teacher experienced in using this trunk I believe that I may at least make a start with the training I got in this workshop. However, for a bird watching activity it would be more beneficial to work with experienced people.
	3	Using binocular an telescope requires experience and while students are using the equipment it might be difficult to protect them.
	4	Telescope and binocular should be used carefully
	5	Depending on the number of students binoculars might be inadequate.
	6	Giving the necessary instructions for the use of telescope and binocular is essential. Since they are fragile equipment everybody should be careful and cautious in using them.
	7	To give time to make every student learn about how to use the equipment might be difficult.
	8	To give damage to the equipment because of misuse and the possibility of students keeping away from taking responsibility.
	9	If the number of binoculars are inadequate and two students need to share a binocular there might be problems as they won't be able to make observation at the same time and their eye adjustments might be different. These may decrease motivation.
	10	Risk of giving damage when used careless
	11	Not being able to protect equipment under bad/harsh weather conditions. Students might have difficulty in carrying heavy equipment (telescope), losing or breaking the equipment.
	12	Students might not know how to use binocular and telescope. Therefore, it might be difficult to protect them.
	13	It might be difficult to transport the trunk. If students give damage to the equipment it would be saddening.
	14	Using binocular require practice. To keep the record of observed species and bad weather conditions might cause problems.
	15	Students may give damage to the equipment even if they don't intend to, with big groups sharing the equipment might cause problems, students might not be aware of the importance of the trunk.
	16	The tangible risk is the biggest challenge I guess.
	17	It is important to know how to use the equipment well. Taking the responsibility of equipment might be a challenge. To use it efficiently, help from an expert might be required.
	18	Because of misuse giving damage to the equipment or losing them. Having difficulty in finding a proper place to set the telescope in some places during the field trip.
	19	I couldn't find enough time to examine it during the workshop. I don't think that there will be too much difficulty.

Question	Participant	Answers
Q7- What should be included in the teacher's handbook of bird education trunk to support your practices with students?	1	We may have difficulties to identify bird species at the beginning. We will overcome this as number of our observations increase.
	2	Possible accidents in nature might be included (Safety in field studies might be included.)
	3	Identification key for bird species, the points that should be taken into consideration during bird watching.
	4	Practical information as visual and auditory to identify bird species, spatial and temporal distribution of species
	5	Migration period of bird species, spatial distribution of birds and their habitat preferences
	6	The basic information about birds and spatial distribution of bird species (species that can be seen in a particular area)
	7	I cannot think of anything
	8	Basically the methods that are used to identify bird species (like birds of prey, songbirds), articles related with their feeding behaviour and may be games
	9	Pictures of species that could be observed.
	10	Technical information about using binocular and telescope
	11	A checklist of species that can be seen at different habitats to keep records easier.
	12	Information about databases and bird census methods to be used in IBDP Biology lessons.
	13	Explanations for how to identify a bird for teachers who doesn't know to identify any bird species
	14	Since we are not experienced about birds, the handbook should include where to begin and the steps that should be followed with students. In order to provide sufficient information to teachers, a little handbook about birds might be prepared. Some little activities that can be done before bird watching might be included, too.
	15	There should be list of bird species to mark the observed species. Student should be able to write information about the species that s/he observed in the booklet.
	16	Identification key for bird species, habitats of birds, photographs rather than pictures, photographs of young and adult individuals of a species.
	17	Key points for equipment use, appropriate topics for the integration of bird education into the curriculum, warnings about possible events in field studies, suggestions to teachers for programming/planning these activities.
	18	Names of bird species, photographs of bird species, habitat suggestions for bird watching and checklist for bird species that could be seen.
	19	If I reply this question depending on the place I live, the bird species list for lake Eymir, their photographs and other information about those species should be included.

Question	Participants	Answers
Q8-Are there anything else you want to share? What else should be included in this training? Anything missing?	1	
	2	I think the training was very beneficial and there was not missing anything.
	3	Everything was very good.
	4	To make another bird watching trip in spring is my biggest will for today.
	5	If it is required to make a more advanced trunk a video camera might be included. Then, training for its usage would require more time.
	6	
	7	Thank you for everything.
	8	It was very joyous with every part. Thank you for everything.
	9	Everything was really very good. I would like to thank everybody who contributed to create such a training opportunity for us to participate. You increased our awareness.
	10	Examples might be given for some of the social behaviours of birds.
	11	Number of binoculars might be increased in order to prevent difficulties in sharing when using with students.
	12	Nothing comes to my mind right now. It was very good.
	13	You should keep on these studies. It would be very good if we could create an atmosphere/environment in every school that students love and identify birds. Before field trips, it might be helpful to introduce possible species to student and make them listen their songs/calls.
	14	Trainers were well equipped, experienced and satisfactory. They made us excited and motivated. I couldn't attend the second part. Thank you very much.
	15	
	16	Detailed information might have been given about the species that were observed.
	17	Nothing was missing. Thank you.
	18	
	19	A more detailed introduction of the bird education trunk could have been done. In addition, Bilkent GSE might organize a festival with high school teachers and students. In this way, schools would get motivated to work on projects and do bird watching to share with other schools in the festival.