PARTNERS IN EDUCATION: UNCOVERING WHAT HAPPENS DURING BOUNDARY ENCOUNTERS BETWEEN FORMAL AND INFORMAL EDUCATORS DURING FIELD TRIPS

by

JAMES AMMONS

(Under the Direction of Barbara A. Crawford)

ABSTRACT

Science educators have used field trips to enhance classroom instruction for many years. This dissertation presents two studies examining what is known about field trips focused on outdoor education. The first is a targeted review of the literature seeking to identify what is known about field trips focused on outdoor education and the role of collaboration among field trip educators. Definitions of collaboration in the literature are explored and extended to the context of education surrounding field trips. Recurring ideas in the research surrounding field trips encourage the practice of classroom teachers and outdoor educators working together to plan and deliver instruction. The second study looks into a partnership between a community of outdoor educators and a community of classroom teachers. This case compares the expectations of outdoor educators to the actions taken by the two communities as classified by the frameworks for partnership. Assuming collaboration is best practice, this review demonstrates a need for researchers and editors to include descriptions of who is involved before, during, and following the field trip. The case study discusses outdoor educators shift in pre-trip to post-trip expectations. The case study also reveals member communities involved in a partnership

classified as cooperation can still experience a high degree of satisfaction with the partnership. Implications for the shifts in outdoor educator expectations and the high levels of partner satisfaction are discussed.

INDEX WORDS: Collaboration, Communities of Practice, Informal Science Education, Out-of-school Learning, Outdoor Education

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DEDICATION

To the late Norm Thompson. His simple, yet insightful, question started me on this journey.

To my mother and father who worked so hard in so many ways. Their efforts will always encourage me to do more.

To my wife who lived this experience with me.

To my children, along for the ride.

For those who inspired and supported this work. I thank each of you for all that you have shared with me and I look forward to watching the paths you will take.

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CHAPTER 1

INTRODUCTION AND LITERATURE REVIEW

` In science education research, emphasis is often placed on science instruction delivered to students in the classroom. However, the learning of science concepts and science processes occurs in a wide variety of places, not just the rooms of a school. Some teachers who are aware of the learning opportunities outside of the classroom, and have the means to do so, often try to set up experiences away from the confines of the school building.

Classroom teachers are regularly trained to enhance the learning of science in classrooms, but are often limited in any knowledge or skills about how to set up and carryout a field trip for their students (Rebar, 2012). Teachers who have limited knowledge or skills for planning field trip experiences outside of the classroom are left to struggle through the process of setting up the various logistical challenges such as transportation and permission slips. The hurdles involved in planning leave teachers with little time to focus on the instruction, if any, that takes place during the field trip.

Science teachers plan field trips to a variety of places or centers. The purpose of these different informal science education centers varies with the mission of the centers. This dissertation takes a targeted look at the actions of classroom teachers and on-site educators participating in outdoor education field trips. Then it shifts focus to the activities of teachers who interact with a local botanical garden. Like other gardens, this botanical garden has an educational staff. The educational staff at the garden are the individuals who are responsible for setting up trips and planning activities with teachers.

Previous work has recommended changes in field trip design to either the formal (eg Behrendt & Franklin, 2014) or informal (e.g. DeWitt & Storksdieck, 2008) community. This study gives voice to both communities as they contribute to a combined practice. The complex planning of a field trip does not need to be dependent upon a single individual or even one group. Laive Alon and Tal surveyed students about their teachers who worked with guides during field trips to natural environments. Students who described their teachers as more involved "reported significantly higher learning outcomes" (Lavie Alon & Tal, 2017, p. 882). An assumption of this dissertation is that by working together, outdoor educators and classroom teachers can develop a well-planned and thoughtfully executed educational experience for students, beyond that planned by one of the communities. This work is designed to give both communities the ability to self-identify what works best when working with each other.

Overview

In this dissertation the notion of collaboration between classroom teacher and on-site educators surrounding field trips is explored. Collaboration can be described as "a long-term relationship that supports the engagement of complex multiple tasks" (Weiland & Akerson, 2013, p. 1337). Collaboration between classroom teachers and on-site educators has been recognized as an exemplary practice (Tal, Lavie Alon, & Morag, 2014) in field trip design and execution. Learning activities away from the school building are not only a memorable experience for students, but may also lead these students toward a science related career (National Research Council, 2009). By focusing on collaboration, the studies of this dissertation seek to illuminate the practice of collaboration within the context of field trips focused on outdoor education.

Two separate studies make up this dissertation. The first is a targeted literature review exploring the practices of classroom teachers and on-site educators. The second study explores the case of a community of outdoor educators and a community of classroom teachers as they partner together to plan and deliver a field trip for life science students. Linking the two studies is the practice of collaboration and the interaction of members of the formal classroom and the on-site educator communities.

This dissertation seeks to bring into focus the growing knowledge around the impacts of collaboration on field trips and how the practices of outdoor educators and classroom teachers influence the perceptions of this practice. Findings from these studies have potential to impact both the work of education researchers who study field trips, as well as the practitioners who work to design and deliver field trips.

Researcher subjectivity

Coming into this project I bring my experiences and influences from professional practice and personal connections. As a former classroom teacher I remember clearly the many challenges classroom teachers face when working to set up field trips for students. The logistical hurdles alone take up vast amounts of time. On the positive side of things, I have observed how these experiences become a powerful influence on students who have never before been to a zoo or an aquarium. Along with this experience is the desire as an educator to always try and improve the learning opportunities for my students.

As a researcher I have become familiar with suggested practices for supporting the efforts of teachers and on-site educators in a variety of field trip settings outside of the classroom. Recommendations for collaboration between classroom teacher and on-site educator are

prevalent throughout the research literature, and I have come to accept and profess these practices in conversations with colleagues in the teaching and research fields.

I bring these perspectives into the relationships I have developed with the communities involved in the case study in this dissertation. As part of my graduate work I served as teaching candidate supervisor for various students in the teacher education program. Several of the teacher candidates I supervised worked in classrooms at the middle school participating in the observed field trip. Through the supervision program I came to know some of the life science teachers who served as mentor teachers before asking them to share their perspectives as part of this study. I have also worked with the educational staff at Magnolia Gardens[1] on an interpretive signage project. These two communities were already partnered with each other when I became involved. I have done my best to help support the work they do while trying not to impose my own view of collaboration as best practice. I share more about my subjectivities later on in the case study.

Conceptual Framework

The work of this dissertation moves between the boundaries of formal science education in the classroom and out-of-school learning found in various settings away from the school. Within each of these fields of research are the "actual ideas and beliefs… about the phenomena studied" (Maxwell, 2011, p. 39). The following sections describes key ideas framing the dissertation as a whole as well as concepts framing specific chapters.

Relevant prior research

Before beginning a discussion of the conceptual underpinnings of this dissertation, these two studies need first be situated within the larger field of field trip studies. There has been

[1] Magnolia Gardens is a pseudonym

previous work attempting to summarize the efforts of researchers who study field trips. Koran and colleagues (Koran & Baker, 1979; Koran, Koran, & Ellis, 1989); Bitgood (1989) were some of the earliest to compile and attempt to summarize the practices of classroom teachers and on-site educators who deliver field trips to students. Rudmann (1994) narrowed down some of the important aspects of field trips specific to science teachers such as reducing novelty to the site. Rennie and McClafferty (1995) continued to focus on supporting science instruction at informal centers offering multiple suggestions for guiding student activity. Dewitt and Storksdieck (2008) conducted a review of the field trip literature to synthesize and encourage better field trip practices of museum educators. Behrendt and Franklin (2014) focused their review on the role of the teacher before, during, and after the field trip.

Most all of these reviews offer suggested actions to be taken before and during a field trip to support student learning. Some of the reviews reference direct interaction between classroom teachers and on-site educators (Behrendt & Franklin, 2014; DeWitt & Storksdieck, 2008; Rudmann, 1994). Yet, none of the previous reviews address collaboration between classroom teacher and on-site partners as part of an ongoing process. Another concept not present in previous reviews in the area of field trips is that of outdoor education. Environmental education appears briefly in a couple of the reviews (Behrendt & Franklin, 2014; Koran et al., 1989) with only one review specifically mentioning outdoor education (Behrendt & Franklin, 2014). The first study of this dissertation contributes to the field of science education field trips by focusing on collaboration between classroom teachers and on-site educators during outdoor education field trips. The second study dives into the nuances of one such case to explore the details of these interactions between field trip design partners.

Out-of-school learning. Terminology and definitions for describing science learning outside of schools varies across research communities. Some of the characteristics of out-of-school learning have been identified as "less structured, less sequential, it occurs in a short time period, it is influenced by physical features, and allows more interaction among learners, and facilitates interaction with adults" (Tal, 2012, p. 1118). International reports emphasizing the strength of out-of-school learning for school students have been conducted in Europe (Permanent European Centre for Informal Learning [PENCIL], 2007) and the United States (Bevan et al., 2010). While learning takes place in a variety of out-of-school settings and contexts, this review focuses on students at the P-12 level, in the Unites States, (ages 3-18) who participate in learning environments outside of their classroom as part of the classroom teacher's instruction (or lack of instruction as the case may be).

Not all learning experiences in out-of-school settings become productive learning opportunities for all students. "Even when teachers seem aware of 'best' field trip practice, their own field trip implementation might still deviate from a 'best practice' script." (DeWitt & Storksdieck, 2008, p. 187). Part of this review examines what practices are enacted by both classroom and on-site educators during the field trip. On-site educators (naturalists, park rangers, environmental educators, etc.) refers to those whose practice regularly takes place on sites outside of the traditional classroom.

Outdoor education. Defined by Donaldson and Donaldson (1958) the term outdoor education has slowly grown to encompass a wide range of activities, not all of which happen outdoors. Along with activities, outdoor education also relates to "developing knowledge, skills, and attitudes concerning the world in which we live" (Ford, 1986, p. 3). Priest (1986) has suggested that there are two main 'approaches' to outdoor education. Adventure education,

focusing on outdoor pursuits associated with recreation, is one approach. The second approach being environmental education which focuses on ecological studies and relationships in natural settings (Priest, 1986). This review focuses on the environmental education emphasis; as a greater number of school field trips center on the understanding of ecological systems rather than on outdoor recreation.

Communities of practice. The use of communities of practice is specific to the third chapter of the dissertation. The description of professional communities of practice comes from the work of Lave and Wenger (1991). In their description of professional practice, communities are framed as groups of people who share a common working objective and common daily practices. The common practices of each community help to determine the boundaries of the community. Those individuals who share a set of common professional practices are said to be part the same community.

Kisiel has used communities of practice to describe the work of classroom teachers and informal educators before (2010, 2012). Through these works, cases have been presented to study the interaction between the long-term relationship of elementary school teachers and the educational staff at an aquarium (Kisiel, 2010). This resulted in a slow process of adjusting regular practice to work between these communities. Kisiel has also used the communities of practice lens to describe what classroom teachers think about working with educators at informal science institutions and how teachers, experienced with taking field trips, might be valuable to understanding how such boundary encounters between classroom educators and informal educators occur (2014).

Framework of partnerships. The framework of partnerships is used as an analytical framework in Chapter 3. Separate organizations sometimes decide, either by choice or necessity,

to work together toward a common objective. The work between such organizations has been referred to as Interorganizational Relationships [IORs] (Intriligator, 1986). Intriligator proposed the framework as a way to describe the partnerships between schools and outside businesses. Expanding further on the description of these IORs, Intriligator listed several features around which interorganizational relationships can be evaluated: interagency objective; operating policies; interagency structure; personnel roles; resource allocation procedures; power and influence; and interagency relationships (Intriligator, 1992). These features allow for the description of activities between organizations as they work together toward the desired goal(s). Efforts between organizations can be described as coordination, cooperation, or collaboration (Intriligator, 1992). In her efforts to describe the work between different university and local school partners, Buck (1998) conceptualized a list of classifications identifying coordination, cooperation, and collaboration. These general terms suggest how interconnected the two organizations are in the work being done.

Weiland and Akerson (2013) integrated the work of Intriligator (1992) and Buck (1998) to set up the *framework of partnerships*. The framework was used to describe the partnership between an elementary teacher and an informal environmental educator as they planned and conducted five lessons over the course of a single unit. To aid in their descriptions, Weiland and Akerson (2013) developed a table from the work of Intriligator (1992) and Buck (1998) to help distill what the different levels of cooperation, coordination and collaboration might look like during the partnership between a teacher and informal educator.

Research Problem

Field trips have long been recognized as a valuable experience for student learning (Rudmann, 1994). Science teachers have been using field trips outside of school to enhance the

school curriculum. “Learning experiences across informal environments may positively influence children’s science learning in school, their attitudes toward science, and the likelihood that they will consider science-related occupations or engage in lifelong science learning through hobbies and other everyday pursuits” (National Research Council, 2009). To support this important aspect of science learning, this dissertation explores the practices of educators who help design and deliver field trips to students.

Collaboration between classroom teachers and informal science educators has been an important aspect of field trip research. In the context of field trips, collaboration can be considered the work between teacher and informal science educator to “discuss learning goals and mutual expectations” (Morag & Tal, 2012). The studies in this dissertation aim to further our knowledge about the practices of classroom teachers and informal science educators by focusing on the area of outdoor education field trips. Increased understanding of the practices that support collaboration between classroom teachers and outdoor educators can lead toward better design and implementation of future field trips.

Dissertation Context

The first study, a targeted literature review, developed from a need to uncover the interactions of classroom teachers and informal science educators in a specific context – an outdoor education based field trip. This literature review aimed to draw from the existing literature to catalogue what types of interactions occur between those who take on leading the activities of a field trip focused on outdoor education.

The second study aimed to examine the practices of outdoor educators and classroom teachers in a specific setting. Historically, the field trip explored in this case began with initial meetings and planning in 2012. Magnolia Garden’s educational staff, led by the education

director reached out to local middle schools to set up a trip for life science students to come to the garden for a field trip. Garden staff approached the teachers with their initial ideas for a field trip, including walking through the forested trails surrounding the more manicured parts of the garden. The plan was to use this walk to help open up a discussion about state science standards related to ecology, particularly stages of temperate deciduous forest succession.

To help students prepare for the trip to Magnolia Gardens, the educational staff developed activities for middle school teachers to use at their schools. These pre-trip activities were sent to teachers as a way to help introduce some of the planned activities for the forest walk (e.g. plot sampling and species counting on paper to prepare for doing this in forest) to students before they left to visit the Garden. Post-trip activities were also developed by Garden educational staff for students to practice the skills demonstrated during the forest walk. (e.g. plot sampling using a section of the natural area just outside of the school building). Post-trip and pre-trip activities were sent to the middle schools in advance of the trip.

The success of this field trip during 2013 helped encourage the University and the local school system to think about development of more field trips for students at other grade levels. This partnership developed a plan to attempt a field trip for all students in the school system at every grade level; in order for students to have some type of learning experience on the University campus each year. These trips varied in content and location on campus. Several more trips were implemented in 2014, with 2015 being the first year there was a trip for students at each grade level.

Through my work with the life science teachers at the middle school and with the Garden staff I became aware of how important this field trip was to the different communities involved. (See Appendix A for a map of the communities connected to the garden field trip.) The planning

and implementation cycle for the 2015 trip is when I began my journey with the program. The second study reveals what happened during this 2015 cycle.

Dissertation Outline

This dissertation consists of four chapters that include two manuscripts for future publication. Chapter 1 serves as an introduction to the dissertation. Chapters 2 and 3 describe two separate studies on outdoor educator and classroom teacher partnerships around field trips. The first study reviews the current literature on field trips with a focus on outdoor education. The second study dives into the interactions of a community of life science teachers at a middle school as they work with a community of outdoor educators from the local botanical garden. Chapter 4 serves to provide a conclusion and brings together the findings of Chapter 2 and 3, to offer implications and suggestions for future research and practice.

Manuscript One – A Targeted Literature Review of Outdoor Education Field Trips

The literature was surveyed for studies on field trips, specifically involving outdoor education. In this review a field trip is described as one in which students depart from a school for an educational event and return to school on the same day. Studies describing after school or weekend programs or studies detailing residential stays at trip sites were excluded from this review. This literature review focuses on the day trips expected to be the most common for classroom teachers and outdoor educators. Search terms included: field trip, trip, visit, outdoor education, outside classroom, environmental education, informal science education, classroom teacher, collaboration, informal, nonformal, and free-choice. These terms were used in various combinations in ERIC, EBSCO, and Google Scholar. Additionally, several research journals were reviewed specifically for the journal's focus on outdoor education. Selected articles

included empirical studies that describe P-12 (ages 4-18) school students visiting an outdoor education learning site.

The ‘What, How, and Why’ structure employed by Brody, Bangert, and Dillon (2007) was utilized to identify ideology, epistemology, and axiology of each study. In the context of their report Brody, Bangert, and Dillon chose to define ideology as the nature of what is studied, axiology as why things are being studied, and epistemology, as the nature of methods used. In addition to these, Brody and colleagues also used ‘Who’ to describe the sample of each study. This review explores the previous categories while adding the ‘Where,’ ‘Who,’ and ‘When.’ Where is used to identify the setting for the outdoor education field trip. The Who in this review describes the demographics of participants. When refers to the periods before, during, and after the field trip. More specifically, the When shows the involvement of classroom teachers and outdoor educators at each phase of the field trip.

The context of each study was recorded to describe what role classroom teacher(s) and what role the outdoor educator(s) served in each phase of the field trip. Involvement of classroom teachers and outdoor educators with students in this study was viewed as a spectrum of instruction. Some activities were more classroom teacher led, some more outdoor educator led, and others involved the collaboration between both educators. The roles of educators were recorded in activities before, during, and after the field trip. For example, Nadelson and Jordan noted the teacher and outdoor educator preparing lessons together in advance of the field trip that integrate with class curriculum (2012). The work by both educators before the trip is considered an act of collaboration. Knapp and Poff studied a school group who visited a national park (2001). While the classroom teachers were likely present during these activities, the activities themselves were described as being led by the park rangers. Since there is no description of

classroom teacher participation, the activities during the trip are considered to be near the outdoor educator end of the spectrum for educator involvement. In a separate study of teacher's perspectives on participating in a restoration project, Shume described classroom teachers growing seedlings with students in the classroom following the trip (2016). For the time after the field trip this was categorized as entirely teacher led, because the outdoor educator was not mentioned as being involved with this activity. Not all descriptions of educator involvement, in selected studies, describe activities distinctly led by classroom teachers or led by outdoor educators. For example, Gebbels and colleagues mentioned a session after the field trip led by one of the program's educators while being supported by classroom teachers (2012). Examples like this, along with an understanding of the multiple forms of educator participation likely in practice, supported the conceptualization of educator participation as a spectrum of involvement.

Manuscript Two – When Educator Communities Work Together

Data collection stemmed from first meeting with leaders of each group as part of the College Within Reach[2] meeting at the beginning of summer. Group meetings were also conducted separately with each of the different educator communities, life science teachers at each middle school, and the outdoor educators at the garden. Semi-structured interviews were conducted with the outdoor educators to understand their views of the partnership going into the 2015 field trip. Observations were conducted during the field trip by the researcher. Field notes from the observation were used to develop a personal journal account of the events observed (McKechnie, 2008). Post-trip semi-structured interviews with outdoor educators and with life science teachers were conducted to reveal perspectives on the efforts surrounding this year's field trip. All interviews were transcribed verbatim to capture the voices of participants.

[2] College Within Reach is a pseudonym

Thematic analysis was used to explore the data to reveal both the semantic and latent ideas expressed in the text (Braun & Clarke, 2006). To reveal expectations without constraints, outdoor educators were asked to describe what this field trip with the life science students and teachers would be like with unlimited resources (time, staff, curriculum restraints, funding). These unrestrained expectations were elicited for the various stages of before, during and after a field trip. With this in mind, original extracts were used to generate initial codes inductively. Extracts were also deductively coded according to what stage of the field trip process the extract was referring to (before, during, or after), along with whom the expectation was for (expectations of self, expectations of partnership, or expectations of teacher). *Expectations of self* include an outdoor educators' ideas about her/his own practice. *Expectations of partnership* includes practices involving the direct interaction of outdoor educators and classroom teachers. Finally, *expectations of teachers* are practices teachers perform without involvement from outdoor educators. For example, the following text from an interview with one of the outdoor educators was given the initial codes of *expectations of partnership*, *before-trip*, and also given a code of *class curriculum* to describe the outdoor educator's acknowledgement of the teacher's role in the classroom.

> I think I'd like a combination of the teacher -- us having a field trip package to present, you know like what we have now where it's set up on the website, the teacher chooses. But I also would like to be able to provide them an element of customization, where they could say you know, we've been talking about whatever in class, can you incorporate this, we'd like to look at this a little bit more. You know, that way the teacher gets a little bit of say in what they're—not even so much a little bit, but gets some say—in what they

are wanting to get their class to understand or get presented to their class. (OE2 pre-trip interview)

Initial codes from the entire interview were collected and catalogued in a spreadsheet and used to develop a *mind map* to generate initial themes (Braun & Clarke, 2006). Mind maps were created, matched to the list of initial codes, and reviewed, which led toward theme development. As more interviews and texts were reviewed, the coding scheme and mind map were updated to reflect the views of all participants. Updating the mind map required another look through the interviews to ensure new codes represent the data set and no important extracts were missed.

Themes were then defined by describing the narrative of the theme through the course of the data set. The defined themes were presented to peer researchers. Descriptions of the themes were shared along with some example extracts. Peer researchers were then given brief sections of uncoded transcripts for coding. To ensure trustworthiness, differences between the author and the peer researchers were discussed and revised to ensure themes and codes were consistent (Lincoln & Guba, 1986). Each theme was written out in a narrative form as part of the findings for this study. Themes were shared and supported with extracts which captured the nature of the theme and allow the reader to follow the description of outdoor educator expectations.

For the nature of the collaboration, the framework of partnerships (Weiland & Akerson, 2013) was used as part of theoretical thematic analysis (Braun & Clarke, 2006). The description of each of the eight dimensions (Intriligator, 1992; Weiland & Akerson, 2013) guided the researcher through the text looking for relevant extracts. This deductive analysis was used to gather evidence for each of the dimensions so each dimension can be classified as cooperating, coordinating, or collaborating.

The collection of extracts used as evidence for developing each classified dimension were shared with peer researchers along with the descriptions established by Weiland and Akerson (2013). Peer researchers were used to cross-check (Lincoln & Guba, 1986) the extracts placed into each dimension. Once consensus was reached for placement of each extract, a rich narrative was produced from the extracts to fully describe the dimension in question. These narratives were used to help develop the justification for each classification. Chapters 2 and 3 present the two studies described above.

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CHAPTER 2

OUTDOOR EDUCATION PRESENTED DURING FIELD TRIPS: A TARGETED LITERATURE REVIEW[3]

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Abstract

Science educators have used field trips to enhance classroom instruction for many years. This targeted review of the literature looks not at field trip research as a whole, but examines, in particular, what is known about field trips focused on outdoor education. Field trips have been generally recognized as opportunities for student learning. While the body of research surrounding field trips continues to develop, this review seeks to identify what is known about field trips focused on outdoor education and the role of collaboration among field trip educators. Definitions of collaboration in the literature are explored and extended to the context of education surrounding field trips. Recurring ideas in the research surrounding field trips encourage the practice of classroom educators and outdoor educators working together to plan and deliver instruction. This literature review is for the benefit of the science education community and educators who work in out-of-school settings. The studies reviewed provided little to no information on how educators interacted with each other during the design, implementation, and follow up of a field trip. Assuming collaboration is best practice, this review demonstrates a need for researchers and editors to include descriptions of who is involved before, during, and following the field trip.

Keywords

Collaboration, Field Trip, Outdoor Education, Targeted Literature Review

Introduction

School field trips have been recognized as excellent opportunities for student learning (Rudmann, 1994). Science educators have long taken advantage of the opportunities afforded by experiences outside of the classroom. Many of these field trips are used to support the school curriculum while some trips are simply for students to experience the natural environment inaccessible within the confines of the classroom. According to the National Research Council (NRC) of the United States "[l]earning experiences across informal environments may positively influence children's science learning in school, their attitudes toward science, and the likelihood that they will consider science-related occupations or engage in lifelong science learning through hobbies and other everyday pursuits" (2009, p. 304). Rather than looking broadly at field trip research, this review examines what is known about field trips focused on outdoor education.

Priest suggests one of the main 'approaches' of outdoor education is through environmental education (1986). Environmental education (EE) has been described as enabling people of all ages to build skills to think about environmental situations, make educated decisions about those situations, and develop the ability to act in ways that improve the environment (Wals, Brody, Dillon, & Stevenson, 2014). Gough suggests EE be considered an integral part of the curriculum both inside and outside of the classroom (2002). Reid and Scott (2013) in their chapter on areas of EE research, set up categories used to describe EE research. The categories most related to field trips include: 1) teachers; 2) informal learning; and 3) curriculum evaluation. Reid and Scott go on to describe these categories as "nodes" in the field of EE and that understanding practices which connect nodes together is just as valuable as understanding EE research in each node itself. This review looks at the research connecting these

nodes. The following targeted review will contribute to the body of research surrounding field trips by distilling what is known about field trips focused on outdoor education.

The NRC encourages researchers to "increase understanding of the connections or barriers in learning between more formal and more informal science learning environments" (2009, p. 312). Previous research on science education field trips has consistently recommended teachers be involved in the instruction to students before, during, and after the field trip (Bitgood, 1989; Rennie & McClafferty, 1995). Rudmann noted that teachers and informal educators should be aware of "influential effects of the pre-visit instruction, the novel environment, and the actual instructional methods employed during a field trip visit" (1994, p. 140). Rudmann recognized the need to connect learning before the field trip, during the field trip, and even after the field trip to the classroom curriculum. DeWitt and Storksdieck recommend museums take into account "teachers' perceived needs, current practice, objectives and contexts" (2008, p. 189) to improve field trip practice. Writing to educators outside of the classroom, DeWitt and Storksdieck emphasized the need for on-site educators to think about the perspectives of teachers during the design and implementation of science related field trips. Behrendt and Franklin suggested teachers plan events in advance with informal staff and be actively engaged with the trips' activities, even if informal staff are leading the trip programming (2014). To summarize, the above reviews of field trips describe the impact of pre-trip, and post-trip activities on the learning surrounding field trips, as well as the need to connect the field trip to the curriculum. Yet to be determined is the overall impact of classroom teacher(s) and on-site educator(s) partnerships on students' field trip experiences.

Conceptual Framework

Out-of-school Learning

Terminology and definitions for describing science learning outside of schools varies across research communities. Some of the characteristics of out-of-school learning have been identified as "less structured, less sequential, it occurs in a short time period, it is influenced by physical features, and allows more interaction among learners, and facilitates interaction with adults" (Tal, 2012, p. 1118). International reports emphasizing the strength of out-of-school learning for students have been conducted in Europe (Permanent European Centre for Informal Learning (PENCIL), 2007) and the United States (Bevan et al., 2010). While learning takes place in a variety of out-of-school settings and contexts, this review will focus on students at the P-12 level, in the Unites States (ages 3-18), who participate in learning environments outside of their classroom as part of the classroom teacher's instruction (or lack of instruction as the case may be).

Not all learning experiences in out-of-school settings become productive learning opportunities for all students. "Even when teachers seem aware of 'best' field trip practice, their own field trip implementation might still deviate from a 'best practice' script." (DeWitt & Storksdieck, 2008, p. 187). Part of this review examines what practices are enacted by both classroom and on-site educators during the field trip. On-site educators (naturalists, park rangers, environmental educators, etc.) refers to those whose practice regularly takes place on sites outside of the traditional classroom.

Outdoor Education

Originally defined by Donaldson and Donaldson (1958) the term outdoor education has slowly grown to encompass a wide range of activities, not all of which happen outdoors. Along

with activities, outdoor education is also about “developing knowledge, skills, and attitudes concerning the world in which we live” (Ford, 1986, p. 3). Priest (1986) suggested that there are two main ‘approaches’ to outdoor education. Adventure education, focusing on outdoor pursuits associated with recreation, is one approach. The second approach being EE which focuses on ecological studies and relationships in natural settings (Priest, 1986). This review focuses on the EE emphasis as a greater number of school field trips center on the understanding of ecological systems rather than on outdoor recreation.

Collaboration

Collaboration can be described as the combined effort of two parties toward a common goal. In their attempt to define collaboration between researchers, Katz and Martin (1997) suggest “a 'research collaboration' could be defined as the working together of researchers to achieve the common goal of producing new scientific knowledge” (1997, p. 7). Using Kats and Martin as a starting point, collaboration between groups of educators could be described as the working together of educators to achieve the common goal of producing new educational experiences. Drawing on the work of Katz and Martin, along with additional researchers in the informal education literature (NRC, 2009; Tal, Bamberger, & Morag, 2005; Tal & Steiner, 2006), this targeted review situates collaboration around field trips as the contributions of teachers and on-site educators responsible for the enactment of the educational experiences immediately before, during, and immediately after the field trip.

In the literature collaboration between classroom teachers and on-site educators has been recognized as having multiple variations. Morag and Tal used the Field Trip in Natural Environments (FiNE) framework to categorize teacher-facilitator collaboration into the levels of full partnership, partial collaboration, and no connection (2012). Figure 2.1 displays the multiple

paths classroom teachers and outdoor educators can take in preparing and facilitating a field trip. Some field trips show individual efforts by either classroom teachers or outdoor educators, similar to Morag and Tal's no connection (2012). Figure 2.1 combines partial collaboration and full partnership into the merging arrows representing a spectrum of collaboration happening between classroom teachers and outdoor educators around outdoor education field trips. The authors recognize there are multiple ways in which classroom teachers and outdoor educators can and do interact with each other. Rather than categorically demarking the level of collaboration, the combined practice of classroom teachers and outdoor educators can be viewed as involvement along a spectrum of interaction as shown in Figure 2.2. The various interactions along this spectrum are used to help visualize the level of classroom teacher and outdoor educator participation described in the studies identified for this review.

Practicing Collaboration Around Field Trip Design

Current literature recommends educators build strong collaborative instruction around field trips. The Permanent European Resource Centre for Informal Learning (PENCIL) established criteria set to help classroom teachers and informal centers build toward better practice (PENCIL, 2007). The first criterion states "Teachers are involved in the design phase of museum / science centre education projects aimed at schools" (2007, p. 8). The Center for the Advancement of Informal Science (CAISE) reviewed informal science programs across the globe, but mainly in the United States (Bevan et al., 2010). The CAISE report recognized "[f]ormal-informal collaborations lead to conceptually rich and compelling science learning programs that build on both the structural and social affordances of informal settings and objects" (p. 59). The CAISE authors highlight the importance of classroom teachers working with informal educators as well as calling attention to the lack of literature describing the impact

of these collaborations. Collaboration has also been encouraged by the North American Association of Environmental Education (NAAEE) in the development of the *Guidelines for the Preparation and Professional Development of Environmental Educators* (2010). Environmental educators following these guidelines are urged to work with partner educators, such as classroom teachers, in designing educational programs to "meet shared environmental education goals" (2010, p. 20). The most recent edition of the guidelines (NAAEE, 2017) continues to encourage professional environmental educators modify instruction as needed when working with other instructors.

Some researchers and theorists studying the impacts of field trips are working at the intersection of outdoor education and science education. After evaluating 62 field trips to natural environments taken by students ages 10-14, Tal, Lavie Alon, and Morag proposed several recommendations for designing field trips to natural settings including:

> • Field trips should be planned together by the teachers and the field guides who need to discuss their goals, means and collaboration pattern
>
> • Field trips should be planned with knowledge of and connection to the school curriculum, in order to make ideas visual and concrete
>
> • The teacher should be involved throughout the field trip, as a mediator in the cognitive and in the social domains (2014, p. 28)

Recommendations by Tal, Lavie Alon, and Morag lead readers to recognize the importance of classroom teachers working collaboratively with field guides [or other informal educators] on the design and implementation of a field trip. For a subset of the larger study, Lavie Alon and Tal (2015) surveyed students from 26 different field trips and found students perceived the actions of the classroom teacher to have little to no impact on what the students believed they learned

during the trip. The responses from these students appear contrary to the best practices suggested by Tal and colleagues (2014). These results offer a reminder that the phenomena of classroom teacher and on-site educator collaborations and their impacts are not fully understood.

In an effort to assist informal and formal educational groups working together to 'bridge the gap' between the two, Fallik, Rosenfeld, and Eylon (2013) developed a model to foster 'dialogue and cooperation.' The model consists of a 4x4 table displaying the four aspects in common between informal and formal education aligned with four bridging principles aimed at bringing staff in the two contexts together. Derived from the literature, Fallik and colleagues' 4x4 model is designed to foster conversations between classroom teachers and informal educators in preparation for field trip planning together.

Recurring ideas in the research surrounding field trips encourage the practice of classroom educators and outdoor educators working together to plan and deliver instruction. In an effort to inform the science education and informal education communities this review will examine the impact of collaboration on outdoor education field trips.

The following questions drive this literature review:

1. For studies centered on outdoor education field trips, how are the studies carried out and what is the purpose of these studies?
2. In what ways, if at all, does interaction between classroom teachers and outdoor educators (centered on outdoor education field trips) influence the findings reported in the literature?

Design

Article Selection

The literature was surveyed for studies on field trips, specifically involving outdoor education. In this review a field trip is described as one in which students depart from a school for an educational event and return to school on the same day. Studies describing after school or weekend programs or studies detailing residential stays at trip sites were excluded from this review. This literature review focuses on the day trips expected to be the most common for classroom teachers and outdoor educators. Search terms included: field trip, trip, visit, outdoor education, outside classroom, environmental education, informal science education, classroom teacher, collaboration, informal, nonformal, and free-choice. These terms were used in various combinations in ERIC, EBSCO, and Google Scholar. Additionally, several research journals were reviewed specifically for the journal's focus on outdoor education. The peer-reviewed journals below were surveyed to identify possible articles based on relevant titles.

- Applied Environmental Education and Communication
- Australian Journal of Environmental Education
- Cultural Studies of Science Education
- Environmental Education Research
- International Journal of Environmental and Science Education
- International Journal of Science Education, Part B
- Journal of Environmental Education
- Journal of Outdoor Education
- Journal of Research in Science Teaching
- Science Education

- Studies in Science Education

Selected articles included empirical studies that describe P-12 (ages 4-18) school students visiting an outdoor education learning site. The literature yielded 22 studies which met these criteria. The analysis of these articles is described below.

Analysis

In order to answer research question 1, the 'What, How, and Why' structure employed by Brody, Bangert, and Dillon (2007) was utilized to identify ideology, epistemology, and axiology of each study (see Table 2.1). In the context of their report Brody, Bangert, and Dillon chose to define ideology as the nature of what is studied, axiology as why things are being studied, and epistemology, as the nature of methods used. In addition to these, Brody and colleagues also used 'Who' to describe the sample of each study. This review explores the previous categories while adding the 'Where,' 'Who,' and 'When.' The Where is used to identify the setting for the outdoor education field trip. The Who in this review describes the demographics of participants. The When refers to the periods before, during, and after the field trip. More specifically, the When shows the involvement of classroom teachers and outdoor educators at each phase of the field trip.

Depictions of educator involvement were used to explore question 2. The context of each study was recorded to describe what role classroom teacher(s) and what role the outdoor educator(s) served in each phase of the field trip. Involvement of classroom teachers and outdoor educators with students in this study was viewed as a spectrum of instruction (see Figure 2.1). Some activities were more classroom teacher led, some more outdoor educator led, and others involved the collaboration between both educators. The roles of educators were recorded in activities before, during, and after the field trip. For example, Nadelson and Jordan noted the

teacher and outdoor educator preparing lessons together in advance of the field trip that integrate with class curriculum (2012). The work by both educators before the trip is considered an act of collaboration. Knapp and Poff studied a school group who visited a national park (2001). While the classroom teachers were likely present during these activities, the activities themselves were described as being led by the park rangers. Since there is no description of classroom teacher participation, the activities during the trip are considered to be near the outdoor educator end of the spectrum for educator involvement. In a separate study of teacher's perspectives on participating in a restoration project, Shume described classroom teachers growing seedlings with students in the classroom following the trip (2016). For the time after the field trip this was categorized as entirely teacher led, because the outdoor educator was not mentioned as being involved with this activity. Not all descriptions of educator involvement in selected studies describe activities distinctly led by classroom teachers or led by outdoor educators. For example, Gebbels and colleagues mentioned a session after the field trip led by one of the program's educators while being supported by classroom teachers (2012). Examples like this, along with an understanding of the multiple forms of educator participation likely in practice, supported the conceptualization of educator participation as a spectrum of involvement. Table 2.2 uses the color coding from the educator involvement spectrum to help visualize when classroom teachers and outdoor educators are described as organizing activities for students. In instances where there is no mention of descriptions of educator involvement in a particular study, the symbol "X" is used. This designation does not imply anything about the study other than the published manuscript did not include description of who led the activities in which the students participated.

Findings

In presenting the findings, each research question will be addressed. First to be discussed is the purpose of each of the studies utilizing outdoor education. Similar to Brody, Bangert, and Dillon (2007) this review considers the axiology or why things are being studied. The purpose of each study in this analysis is classified as either theory testing, theory building, or evaluation. As seen in Table 2.1, most of the sample was classified as theory testing (13 studies). Studies conducting an evaluation occurred in five studies. Research attempting to build theory only occurred in a few studies (Ballantyne & Packer, 2002; Knapp & Poff, 2001; Lebak, 2007; Tal & Morag, 2009). Knapp and Poff described student actions during a trip influencing the student's knowledge and attitude of nature (2001). Ballantyne and Packer proposed factors that promote students' learning and enjoyment in nature-based programs (2002). Lebak (2007) demonstrated how engaging students cultural capital can promote student participation in outdoor activities. Tal and Morag (2009) explored how outdoor teaching experience and reflection impacted teachers perceptions of teaching outdoors. Regarding theory building studies, a point of interest is that the most recent study in this category is that of Tal and Morag, as they developed a theory for teachers learning and reflective practice when teaching in an ecological garden (2009). Perhaps the time has come for more researchers to attempt development of new theories in the area of outdoor education focused field trips.

Along with the purpose, the epistemology, or the nature of methods used, was catalogued for each study. The most common type of data collection was that of interviews (eight), along with survey/questionnaires (seven). Other frequently used data collection techniques included observations (five), and written tests (four). Among the studies in this sample the more infrequent data collections included drawings (Drissner, Haase, Wittig, & Hille, 2014; Judson,

2011; Nadelson & Jordan, 2012) and artwork (Gebbels et al., 2012), focus groups (Gambino, Davis, & Rowntree, 2009; Lebo & Eames, 2015), recorded audio (Lebak, 2007) or video (Tal & Morag, 2009; Zhai & Dillon, 2014), and the use of teacher journals (Tal & Morag, 2009). The limited number of studies incorporating recorded audio or video of the field trip experience could be a result of the challenges in securing the various necessary permissions to collect this type of data. While collected observations may help depict events as they occur, the use of recorded media not only inform the current study, but also allow for potential future analysis. If participant permissions are indeed the hurdle for most researchers, perhaps similar methods such as pictures for a photo voice (Wang, 1997) project will support both the current project and potential future research.

A comparison of the purpose of these studies to the various data collection methods used, revealed no distinct pattern. When looking within each classification of purpose, no distinct data collection method prevailed. Researchers in the area of outdoor education field trips used a variety of methods in order to build theory, test theory, and in evaluations. However, as noted above, additional data collection methods offer additional perspectives on theories applied to understanding outdoor education field trips. Methods such as photo voice have the potential to better illuminate the perspectives of students who have participated in these field trips.

Second to be discussed, this targeted review explored the variety of collaborative practices used by classroom teachers and on-site educators during outdoor education field trips. Looking at when different activities occurred before, during, and after the trip allows for a more nuanced description of the classroom teachers and on-site educators relationships and interactions in developing and implementing learning experiences. A thorough reading of the selected studies revealed not all published manuscripts included information regarding the

participation and interaction of classroom teachers and or on-site educators. Five different studies did not present information as to who had designed or led activities as part of the trip (Ballantyne et al., 2005; Braun, Buyer, & Randler, 2010; Cachelin, Paisley, & Blanchard, 2009; Judson, 2011; Lebo & Eames, 2015). Using the descriptions available, several trends emerged.

Trends

When described, classroom teachers and outdoor educators are often depicted as working independently. Only 15 studies offered a description of teacher(s) and/or on-site educator(s) involved in at least one phase of the field trip. Of the 15, 11 studies offered some description of learning activities immediately preceding the field trip. Within the 11 studies reporting pre-trip activities, five of them describe the efforts of the classroom teacher leading activities independent of the on-site educator (Braun et al., 2010; Cachelin et al., 2009; Gambino et al., 2009; Lebo & Eames, 2015; Shume, 2016). One study described pre-trip activities as mostly led by on-site educators while teachers acted mainly as behavior managers (Gebbels et al., 2012). Two studies described some degree of collaborative efforts between classroom teachers and on-site educators. The collaborative efforts included the development of integrated lessons (Nadelson & Jordan, 2012) and pre-trip activities mostly led by on-site educators (Tal & Morag, 2009). Different studies describe different roles of classroom teachers and on-site educators. One study described a unique situation where teachers were explicitly asked not to conduct any activities associated with the content field trip (Sellmann & Bogner, 2013) and another study described an action research project during which the researcher acted both as classroom teacher and on-site educator for students (Hamilton-Ekeke, 2007).

The act of preparing students before a field trip is recognized as an area in need of more attention (NRC, 2009). Three quarters of the identified studies depicted at least some

involvement by classroom teachers or on-site educators. The prevalence of involvement by teachers and or on-site educators in this review identify at least one type of field trip; trips focused on outdoor education, where pre-trip activities are being connected to learning happening on-site. A majority of pre-trip activities from studies in this review are handled by classroom teachers. The absence of the on-site educator during this phase is a symptom of the limited work classroom teachers and on-site educators engage in together before the day of the trip.

Most studies described activities during the field trip as led by on-site educators (Ballantyne & Packer, 2002; Ballouard, Provost, Barré, & Bonnet, 2012; Farmer, Knapp, & Benton, 2007; Gambino et al., 2009; Knapp, 2000; Knapp & Poff, 2001; Lavie Alon & Tal, 2017; Nadelson & Jordan, 2012; Sellmann & Bogner, 2013; Zhai & Dillon, 2014). However, not all activities during the field trips were on-site educator led. One study described the involvement of classroom teachers and on-site educators as both supporting student learning, together during a restoration project (Shume, 2016). The three remaining studies included the action research project where the researcher acted as both classroom teacher and onsite educator for students (Hamilton-Ekeke, 2007), a study describing multiple distinct episodes led by the classroom teacher separate from episodes led by the environmental educator (Lebak, 2007), and a study describing multiple trips with varying levels of collaboration from no interaction to on-site educator and classroom teacher working together (Tal & Morag, 2009). Teachers taking a back seat to on-site educators during field trip instruction is similar to findings in other studies (Morag & Tal, 2012; Tal et al., 2005). Lack of meaningful and intellectual involvement by a classroom teacher appears to be the current state of affairs in this area of outdoor education field trips.

Similar to activities conducted prior to a fieldtrip, post-trip activities in this review were mostly led by classroom teachers. Seven studies described teachers as the leaders of instruction for activities directly following the field trip (Cachelin et al., 2009; Gambino et al., 2009; Judson, 2011; Knapp, 2000; Lebak, 2007; Lebo & Eames, 2015; Shume, 2016). One article, discussing multiple trips, shared instances without much follow-up learning, as well as instances of collaboratively designed activities (Tal & Morag, 2009). Two studies continue unique circumstances of teacher participation. One unique study involved teachers explicitly asked not to conduct any activities associated with the content of the field trip (Sellmann & Bogner, 2013). The other is the action research project where the researcher acted as classroom teacher and on-site educator before, during, and after the field trip (Hamilton-Ekeke, 2007). Nine studies did not disclose the design or implementation of learning experiences after the field trip. The lack of outdoor educator participation in post-trip activities reveals a missed opportunity to connect field trip experiences with the classroom curriculum. Dewitt and Storksdieck (2008) suggest on-site educators should be more open to customizing the experience of each school trip to better integrate learning experiences on the field trip with those back in the classroom.

Activities during outdoor education field trips are regularly led by outdoor educators. Most of the studies identified for this review described the learning experience for students during the field trip. However, few of the studies fully described how different educators or classroom teachers were involved in designing or implementing learning activities. As noted above, out of the 22 studies identified for this review, only 15 listed some detail about the actions of teachers and on-site educators during a trip. The action research project is a unique case of teacher as on-site educator (Hamilton-Ekeke, 2007). Two more studies shared multiple events including distinct episodes of teacher or on-site educator (Lebak, 2007), and various

episodes of teachers acting as on-site educators (Tal & Morag, 2009). Only two studies described teachers and on-site educators as fully integrated in delivering the activities of the field trip together (Gambino et al., 2009; Shume, 2016). Out of the 15 studies that included a description of teachers and/or on-site educators during the field trip, 10 were described as being entirely led by the on-site educator. The lack of classroom teacher involvement is noteworthy. This may occur for a variety of reasons. Educators are known to have different agendas when considering field trips (Anderson, Kisiel, & Storksdieck, 2006; Kisiel, 2003). Some of these agendas focus on goals other than being involved as a leading part of field trip activities. Another potential reason for the lack of classroom teacher involvement in the selected studies may be due to the nature of the designed studies themselves. Evaluation studies are likely set up to evaluate the programs designed and implemented by outdoor educators. To borrow from a more positivistic analogy where the field trip can be viewed as an 'educational intervention,' the involvement of the classroom teacher could pose as one more potentially confounding variable and therefore, discouraged.

Few studies describe the interaction of educators during all phases of the field trip. Out of the 22 studies selected for this review, only six studies described the involvement of classroom teachers and or on-site educators during all three time frames - before, during, and after the field trip. Two of these studies showed the traditional pattern of pre-trip activities led by classroom teachers, activities on the trip led by on-site educators, and post-trip activities led by teachers (Gambino et al., 2009; Woodhouse & Knapp, 2000). Hamilton-Ekeke, in her action research project serving as both classroom teacher and on-site educator, described her efforts to plan a cohesive unit for students participating in lessons before, during and after the field trips (2007). Sellmann and Bogner's study examined field trips where teachers were explicitly asked

not to teach any of the content from the trip during lessons in the classroom (2013). Tal and Morag's use of classroom teachers acting as outdoor educators described multiple situations with different levels of collaboration before, during, and after the trip (2009). Shume's work describes a case in which classroom teachers led the pre-trip activities, supported learning activities during the restoration field trip, and then led post-trip activities back in the classroom (2016). The limited number of trips fully describing learning activities during each stage of the field trip may be due to authors not having the time or space to fully detail the 'interventions' taken to educate students.

The lack of descriptions of classroom teacher and outdoor educator involvement leaves a small sample of studies from which to evaluate the impact of collaboration surrounding field trips. The selected studies report a range of affective and knowledge gains by students. Without a clear picture of what classroom teachers and outdoor educators are involved with before, during, and after field trips, the influence of these educator partnerships is yet to be determined. Perhaps there was a high level of involvement by classroom teachers and or outdoor educators during most of these studies. Returning to the positivist analogy again, without a clear description of the 'educational intervention' readers are left to guess at the practice of the classroom teachers and outdoor educators. These guesses leave readers still searching for the impact of classroom teacher and on-site educator practices on student outcomes.

Implications

Providing full descriptions of the kinds of connections between classroom experience and field trip experience are in the best interest of researchers and practitioners. Connecting the learning experiences before the trip, during the trip, and after the trip has been shown to greatly benefit students (DeWitt & Storksdieck, 2008). Smith-Sebasto and Cavern's study of a

residential stay (school groups spending the night at the outdoor center) trip revealed that students who participated in pre-trip and post-trip activities, were assessed as having more positive attitudes toward the environment than groups who only did either pre-trip, post-trip, or no activities related to the trip (2006). Researchers still have more to uncover regarding details of stronger pre-trip and post-trip experiences. One can assume classroom teachers and on-site educators, as practitioners, are both invested in improving student outcomes. These student outcomes include both affective and knowledge-based goals, as determined by both communities.

The science education community, along with many informal education organizations, have established best practices, related to the roles of educators from both the classroom and out of school setting. These practices come into play as they work together throughout the design and implementation of a field trip. The results from this targeted review suggest there is generally a lack of description surrounding working relationships between different educators. However, the lack of information surrounding the efforts of classroom educators and outdoor educators does not inherently mean these studies were flawed. The limited description of the working educators leaves the door open for the reader to guess or make assumptions about what happened between the classroom teachers and outdoor educators during each study. Assuming collaboration is best practice, this review demonstrates a need for researchers and editors to encourage providing description of who is involved before, during, and after the field trip. Fully describing and assessing the efforts of all educators involved in a particular fieldtrip is key to understanding the experiences of students participating in science related field trips. Full disclosure of all educator actions may then allow for a better understanding of the impact collaboration has on these experiences.

Limitations

As noted above, the selection criteria for this targeted review included those articles published in English. This English language criteria limits the potential to incorporate work from other countries that do not use English for research publications. Most of the studies meeting selection criteria were conducted in Eastern Australia, Europe, and the United States. More geographically diverse perspectives are needed to better understand the interactions between outdoor educators across the globe. Researchers from regions who are conducting studies of single day field trips focused on outdoor education should consider reaching out to like-minded researchers in countries and regions under-represented in this review. Scholars from across the globe have the potential to connect their knowledge surrounding field trips to continue to develop the field's understanding surrounding collaboration.

Another limitation is that this review omits studies based on ‘residential’ outdoor education experiences, in which students leave school, spend the night away from school, then return to school. Studies from these trips represent a different logistical and educational situation for teachers who are looking for an outdoor education experience for students. The resources required to plan a longer trip likely require a greater investment of time and communication between outdoor educators and classroom teachers. One can expect residential trips likely require a higher initial level of classroom teacher and outdoor educator collaboration, as compared with a single classroom teacher who seeks out a site in which students can travel to that site and return to school on the same day. The more common single day trip is represented in this review. A deeper look into the practices of classroom teachers and outdoor educators engaged in overnight trips has the potential to further the discussion and insights into the influence of collaboration surrounding outdoor education field trips.

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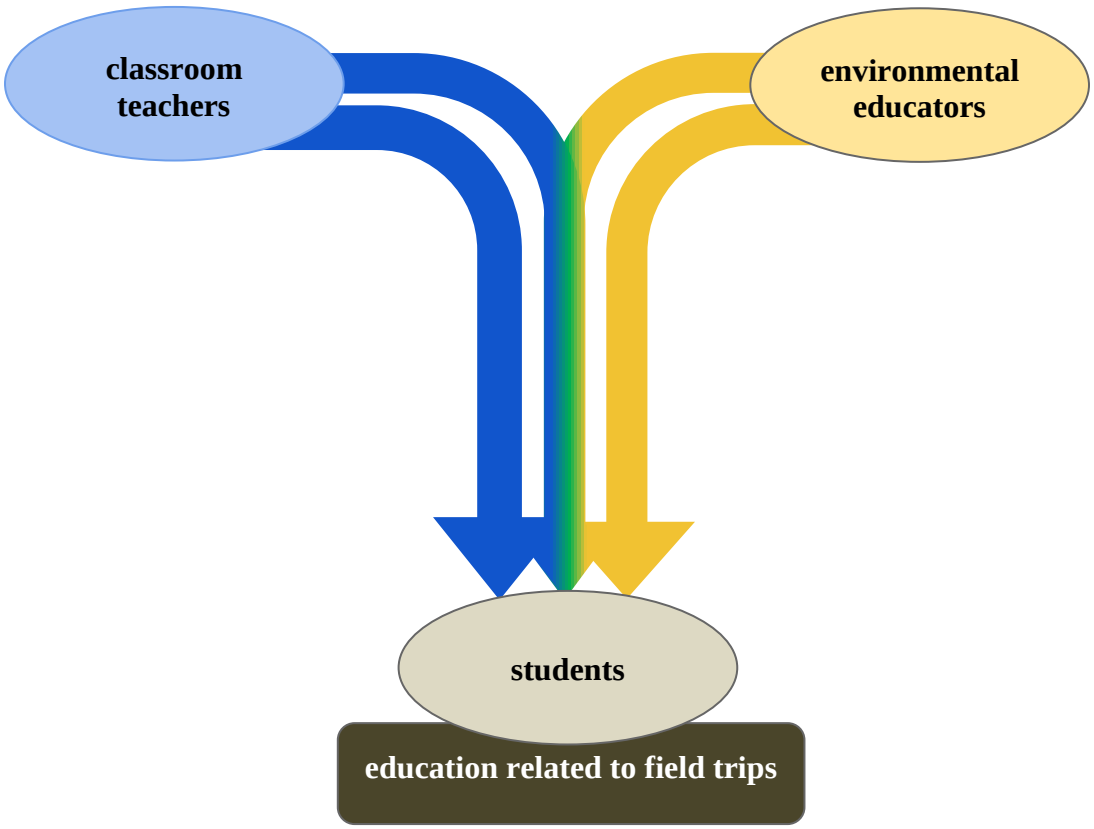

Figure 2.1
Paths Taken Toward Field Trip Planning and Facilitation*
*Adapted from Ammons (2016)

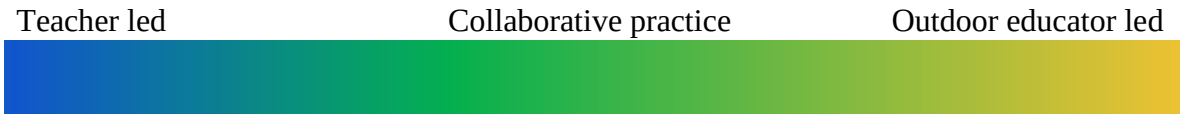

Figure 2.2
Spectrum of Educator Involvement during Field Trips

Table 2.1

What, How and Why of selected studies

Author	What (subject of study)	How (data collection)	Why (purpose of study)
Knapp (2000)	Examines the retention of information from an environmental science field trip I month and 18 months following its implementation	4 open-ended survey questions 1month & 18months after trip	Theory testing - Tulvig (1983) long term memory
Knapp & Poff (2001)	Understand if an environmental interpretive experience can enhance an environmental ethic	Semi-structured interviews 1week & 4months after trip	Theory building - "student actions formed the basis for recollection of the interpretive program and those actions were important in influencing knowledge and attitude." p.63
Ballantyne & Packer (2002)	Understand the ways in which students approach and respond to nature-based learning experiences	Pre & post trip questionnaires	Theory building - "provide information that will enable environmental educators to maximise student learning in and enjoyment of nature-based programmes." p.219
Ballantyne, Packer, & Everett (2005)	Investigation of the ways in which an informal learning program impacts student learning	Observations, interviews, questionnaires	Evaluation - "develop and pilot a measurement tool which (a) assesses students' environmental learning during, and as a consequence of their involvement in an environmental education program; (b) identifies aspects of the program that are most effective in facilitating students' environmental learning; and (c) can be used across a range of year levels and programs." p.24

Farmer, Knapp, & Benton (2007)	Effect of field trip on long-term environmental and ecological content, and attitudes towards environment	In-depth interview for N=15 (self-selected) of 30 who participated	Theory testing - student memory of field trip
Lebak (2007)	Describe cultural barriers preventing outdoor educator from connecting with students and describe how the teacher is able engage students in the participation and learning	Visual observations, recorded audio	Theory building - engaging cultural capital of students to engage in outdoor activities
Hamilton-Ekeke (2007)	Compare the efficacy of two teaching methods (field trip and expository methods of teaching) on students' performance in a concept of ecology in a biology course	Pre & post test	Theory testing - "the search for appropriate method of biology instruction" p.1871
Tal & Morag (2009)	Impact of teaching in an ecogarden on the reflective practice of teachers	Reflective journal, video analysis	Theory building - developing reflective teachers in outdoor settings "use the EG to empower the teachers in carrying out their own planned outdoor teaching and foster their reflective learning from that experience." .249
Cachelin, Paisley, & Blanchard (2009)	The effect of Wings & Water program on 4th graders knowledge of relationships between organisms and impact on students feeling towards wetlands	"cognitive gain" with card activity (p. 4) written response "measuring how fourth-grade students felt about wetlands" (p.5)	Evaluation - Wings & Water program

Gambino, Davis, & Rowntree (2009)	Investigate the program's impact on children's knowledge about, attitudes towards, and actions/advocacy for bilby conservation	focus group for students & parents, semi-structured interviews with instructors	Evaluation - Bunyaville Easter Bilby Adventure program
Demetriou, Korfiatis, & Constantinou (2009)	evaluate a curriculum for elementary school, appropriate for the introduction of students to the study of food webs	pre-post test consisted by three open-ended tasks	Evaluation - food web curriculum
Braun, Buyer, & Randler (2010)	Assess the impact of an outdoor ecological program dealing with two different non-native species on the learning and retention effect and on emotional variables	immediate pre-test, immediate post-test, 4 week post retention test	Theory testing - living animals elicit positive reactions and emotions and henceforth a higher learning success remain poorly empirically tested (Morgan, 1992)
Judson (2011)	Comparison of classroom, field trip, and field trip + science night on students mental models of the desert	drawn, labeled, explained models of desert ecosystem	Theory testing - impact of intergenerational environmental education on student learning
Nadelson & Jordan (2012)	Examined sixth-grade students' attitudes and recall of activities in response to their participation in Outside Day	Round1) survey (Attitude Toward Field Trips) N=98 6th graders; questionnaire high schoolers Round 2) 6th g open response ("allowed the students to freely communicate what they recalled about the event using a combination of drawing and writing" p.221)	Theory testing - "Knowing what field trip experiences students recall informs how the events should be structured and provides context for investigating student learning associated with field trips." p.220

Ballouard et al. (2012)	Examine the influence of a field experience based on snake population monitoring in the feelings of school children	Pre & post trip questionnaires	Evaluation - the effect of a "practical field experience on schoolchildren"
Gebbbels et al. (2012)	Explores the possibility that young people have the talent and motivation to use art forms to communicate views and information on the environment and biological world to wider audiences	Content analysis of poems, paintings, and descriptions of paintings	Theory testing – investigates the ability for students to incorporate environmental messages through the arts (poems and paintings)
Sellmann & Bogner (2013)	Can botanical gardens serve as effective educational institutions with regard to the issue of climate change	1 week pre, immediate post, & 4-6week post retention test (multiple-choice test consisting of 30 items covering the contents of both intervention units	Theory testing - "contextual model of learning (Falk and Dierking 2000)" at a botanical garden
Zhai & Dillon (2014)	Effect of botanical garden educators talk on field trip discourse and how this discourse mediates students' learning,	Video and audio recorded BGEs during field trips, transcribed	Theory testing - "investigate the pedagogical moves of BGEs from a discourse perspective" p.422
Drissner et al. (2014)	Effect of Green Classroom on students' long-term awareness and emotions towards small animals.	S1) written paragraph S2) drawing	Theory testing - "investigate the pedagogical moves of BGEs from a discourse perspective" p.422
Lebo & Eames (2015)	Impacts of a permaculture approach on students' ecological literacy, and on students' attitudes toward learning science in school.	Classroom & trip observations, pre-post questionnaires, post student focus groups, 3 teacher interviews	Theory testing - transformative learning (Mezirow, 2000) using permaculture as context

Lavie Alon & Tal (2016)	Effect of how using the environment contributes to various learning outcomes.	Survey & semi-structured interviews	Theory testing: outdoor educator's use of surrounding environment impacting student learning, specifically in outdoor settings
Shume (2016)	Teachers' perspectives on how a prairie restoration project impacted elementary students' environmental literacy.	Field trip observations, classroom observations, interviews, and artifacts	Theory testing - "place-based approach to developing environmental literacy through elementary students' participation in a prairie restoration project" p.5336 "place-based approach to developing environmental literacy through elementary students' participation in a prairie restoration project" p.5336

Table 2.2

Where, Who, and When of Selected Studies

Author	Where	Who	When		
			Before	During	After
Ballantyne & Packer (2002)	state forest	N=225 M: 26 [age 13-14]; 159 [age 15-17] F: 55 [age 13-14]; 26 [age 15-17]	X		X
Ballantyne, Packer, & Everett (2005)	environmental education center	N=134 ten classes (two Year 2, four Year 5 and four Year 6 classes)	X	X	X
Ballouard et al. (2012)	biological reserve, managed forest	N= 472 schoolchildren (age 6-11)	X		X
Braun, Buyer, & Randler (2010)	Outdoor urban area	N=40 5th, 7th, & 8th graders (age 11-14) "Highest stratification" school level		X	X
Cachelin, Paisley, & Blanchard (2009)	protected wetland	N=24 treatment 4th grade students (ages not given)	X	X	
Demetriou, Korfiatis, & Constantinou (2009)	recreational wetland	N=22 12 male, 10 female, diverse educational & SES backgrounds (according to teacher)	X	X	X
Drissner et al. (2014)	botanic garden classroom	N1=105; N2=65 S1: 5th grade, no demographics; S2: 3-4th grade 36 male, 29 female	X	X	X
Farmer, Knapp, & Benton (2007)	National park	N=15 self-selected school and class demographics listed	X		X

Gambino, Davis, & Rowntree (2009)	environmental education center	N=40 21 (age 4-5) students, 15 parents, 4 teachers	
Gebbbels et al. (2012)	around coast of Accra	N=50 single mixed-sex class (age 12-14)	
Hamilton-Ekeke (2007)	pond, stream, & forest near school farm	N=120 60 male, 60 female	**Entire unit and field trip taught by same instructor**
Judson (2011)	environmental education center	N=610 114 4th graders (age 9-10); 496 7th graders (age 12-13)	X
Knapp (2000)	city park	N=25 10 third graders, 15 fourth graders	
Knapp & Poff (2001)	national forest	N=24 rural town, from 3 different classes	X X
Lavie Alon & Tal (2016)	multiple locations	N=569 grades 4–10 (age 9–15)	X X
Lebak (2007)	environmental education center	N=10 group of 7 (6 African American boys & 1 Latino boy); group of 3 African American girls; white female teacher, white male outdoor guide	X
Lebo & Eames (2015)	"food forest" & "Eco-Hostel"	N=18 18 students (age 14), mixed race	X
Nadelson & Jordan (2012)	Public park	N=111 district demographic profile used	X
Sellmann & Bogner (2013)	ecological-botanical garden	N=108 treatment 71 female, 37 male	**No trip connection** **No trip connection**

Shume (2016)	regional science center	N=7 3rd grade teachers (8-21 years experience), all Caucasian; 6 female, 1 male.	
Tal & Morag (2009)	ecological garden on college campus	N=5 five female teachers; 4 of 5 speak Hebrew & Arabic - 1 Hebrew only; 3 student groups (grades 1,3,5) public magnet Arab elem. 2 groups (8th grade) from Jewish private school	X X
Zhai & Dillon (2014)	botanic gardens	N=102 3 botanical garden educators, 99 students (age 7–11) in 6 groups	X X

Note. Who - describes subject demographics. When – describes educator involvement at each phase of the field trip

CHAPTER 3

WHEN EDUCATOR COMMUNITIES WORK TOGETHER: THE PLANNING OF A FIELD TRIP BETWEEN OUTDOOR EDUCATORS AND CLASSROOM TEACHERS[4]

[4] Ammons, J. F. and Crawford, B. A. To be submitted to *International Journal of Science Education, Part B*

Abstract

Collaboration between classroom teachers and on-site educators has been recognized as an important part of field trip development (Bevan et al., 2010). This case study explores the nature of the partnership of educators as they interact to develop a field trip for 7th grade (ages 12-13) students. A community of practice lens is used to describe the interactions between a group of life science teachers and a group of outdoor educators at a botanical garden. Interview data were collected before and after the field trip to understand the expectations of outdoor educators in regard to partnering with classroom teachers. The framework of partnerships developed by Weiland and Akerson (2013) is used to describe the boundary encounters between educator communities. Outdoor educator expectations are compared to interview descriptions and observed interactions between the classroom teachers and outdoor educators. Differences that were revealed between expectations and resulting actions are discussed along with suggestions for enhanced professional practice for educator communities.

Keywords

Collaboration, Communities of Practice. Environmental Education, Field Trip, Outdoor Education

Introduction

The purpose of this study is to illuminate what happens when a group of classroom teachers interacts with a group of environmental educators to design and enact a field trip for middle school students. The focus is on the specific interactions between a community of classroom teachers and a community of outdoor educators as they develop the curriculum and enact the field trip. Field trips have long been recognized in science education as a great learning opportunity for students (Rudmann, 1994). Recent international reports also describe the importance of strong collaboration between formal and informal educators around field trips contributing to student learning (Bevan et al., 2010; Permanent European Centre for Informal Learning (PENCIL), 2007). The National Research Council (NRC) in the United States encourages more research be conducted to understand the "connections or barriers in learning between more formal and more informal science learning environments" (NRC, 2009, p. 312).

The importance of collaboration between classroom teachers and informal science educators has been noted in the literature. Collaboration surrounding field trips can be described as the communication between teacher and informal science educator to "discuss learning goals and mutual expectations" (Morag & Tal, 2012). The focus on collaboration research operates under certain assumptions. Faria and Chagas (2013) identified two of these as "the need to develop new science teaching approaches more effective in increasing students' interest and achievement; and the enormous potential of non-formal environments given the uniqueness and wealthy resources they present, ideal to promote good practices in science teaching" (p.162). By improving collaboration, the teaching practice of all educators (both classroom teachers and out-of-school instructors) can be elevated. Improved practice can lead to improved learning experiences for students.

This study is not the first attempt to understand the interactions between members of an educational partnership. Weiland and Akerson (2013) use the *framework of partnerships* to evaluate the relationship of an elementary teacher and an environmental educator planning and teaching lessons together in the classroom. This framework uses the language of "cooperation, coordination, and collaboration" (Intriligator, 1992) to describe multiple aspects of a partnership. Kisiel (2010) described a yearlong partnership between an aquarium and a local elementary school and how the two communities of educators developed learning activities over the course of the year. While these cases offer insight into the relationship between classroom teachers and additional educators, neither of these cases describes the more common experience of a single field trip outside of the classroom. The study reported here seeks to use the framework of partnerships to describe the relationship between a community of outdoor educators working at a botanical garden and community of life science teachers as they engage in the planning and implementation of a field trip for 7th grade (ages 12-13) students.

Conceptual Framework

Communities of Practice

The description of professional communities of practice comes from the work of Lave and Wenger (1991). In their description of professional practice, communities are framed as groups of people who share a common working objective, common daily practices, and utilize common resources. The common practices of each community help to determine the boundaries of the community. One way to view a community is through the "objects" and "ends" used in a particular practice (Carlile, 2002, p. 446). Objects are the artifacts with which members work. Ends are the desired outcomes for particular objects. Those individuals who share a set of common professional practices are said to be part the same community. Members of a

community value their collective expertise as they work with one another (Wenger-Trayner & Wenger-Trayner, 2015). The use of communities of practice provides a lens from which to view the interactions between teachers and the outdoor educators during a field trip.

Kisiel used communities of practice to describe the work of classroom teachers and informal educators before (2010, 2012). Through these works, cases have been presented which studied the interaction between the long-term relationship of elementary school teachers and educational staff at an aquarium (Kisiel, 2010). This partnership resulted in a slow process of adjusting regular practice to work between these communities. Kisiel has also used the communities of practice lens to describe what classroom teachers think about working with educators at informal science institutions. The perspective of teachers who are experienced with taking field trips, was used to understand how such boundary encounters between classroom educators and informal educators occur (2014).

Boundary Encounters

When the members of distinct communities become engaged in activities with one another, the resulting encounter may be referred to as a *boundary encounter* (Cobb, McClain, Silva Lamberg, & Dean, 2003). Boundary encounters often have some type of shared goal. In the case of work surrounding a field trip, the shared goal often relates to the experience students are able to gain outside of the classroom. Continued boundary encounters may lead toward more regular involvement between communities which has been described as a *boundary activity* (Kisiel, 2014). The interaction between these communities may lead to some members of each community to become involved in a new, long-term *boundary community* (Kisiel, 2014). Members who participate in the boundary community retain the practices of their original communities while also participating in the hybrid practices of the boundary community. Figure

3.1 shows the relationship between different forms of boundary encounters. The different encounters are not necessarily a linear stepwise process. The arrows display greater involvement with an increase in practices shared between communities.

Participant Communities

The community of practice construct is used to describe groups of professional educators within this case study who share common practices. Classroom teachers who work within the county school system were asked to perform certain tasks as part of their roles and responsibilities to the students, parents, and staff within the school system. One of the 'ends' classroom teachers is regularly working toward is the responsibility to prepare students for district and state assessments. The preparation results in classroom teachers preparing students for the same science content. These teachers teach life science to 7th graders (12-13 years of age) each day of the school year. Working together, these teachers regularly plan lessons together, 'objects' specific to their community, and develop a level of practice that is unique even among other classroom teachers at the school.

Educational staff at the botanical garden are responsible for working with visitors of all ages. The skills to reach visitors in this range of ages include being able to move easily from age group to age group, on a daily basis. The on-site educators at the garden are in regular contact with groups who are planning to visit the garden in the near future. Garden staff have developed 'objects' or activities in which visiting school groups can participate. The desired goal or 'end' of these activities is to serve the Garden's mission through education. This communication revolves around certain logistics, such as adjusting plans and ensuring that visiting school groups know where to meet the garden staff and how long the garden staff will be working with the visiting students. The staff also maintains a working knowledge of the various parts of the garden

as well as the details needed to carry out educational programming for visitors. Staff members at the garden view themselves as environmental educators; environmental education is one of the major "approaches" in outdoor education (Priest 1980). More information about individual community members is described below.

Framework of Partnerships

Separate organizations sometimes decide, either by choice or necessity, to work together toward a common objective. The work between such organizations has been referred to as Interorganizational Relationships [IORs] (Intriligator, 1986). Intriligator proposed the framework as a way to describe the partnerships between schools and outside businesses. Expanding further on the description of these IORs, Intriligator listed several features around which interorganizational relationships can be evaluated: interagency objective, operating policies, interagency structure, personnel roles, resource allocation procedures, power and influence, and interagency relationships (Intriligator, 1992). Using these features allows for a systematized description of activities between organizations, as individuals work together toward the desired goal(s). Efforts between organizations can be described as coordination, cooperation, or collaboration (Intriligator, 1992). In her efforts to describe the work between different university and local school partners, Buck (1998) conceptualized a list of classifications that identified coordination, cooperation, and collaboration. These general terms suggest how interconnected the two organizations are in the work being done.

The framework has been used to describe the work between classroom teachers and other educators. Weiland and Akerson (2013) integrated the work of Intriligator (1992) and Buck (1998) to set up the *framework of partnerships*. The framework was used to describe the partnership between an elementary teacher and an informal environmental educator as they

planned and conducted five lessons over the course of a single unit. To aid in their descriptions, Weiland and Akerson (2013) developed a table from the work of Intriligator (1992) and Buck (1998) to help distill what the different levels of cooperation, coordination and collaboration might look like during the partnership between a teacher and informal educator.

This study seeks to describe the nature of what happens during the boundary encounters of classroom teacher and outdoor educator communities that using the framework of partnerships. While the practices among and between the communities in this case have been developing for some time, information was gathered during the third year of the program. The practices of these educators during this iteration of the field trip program provide for a set of interactions which more accurately describe what happens between communities. To more clearly describe the interactions during this iteration of field trip planning and implementation, the dimensions of the framework of partnerships are used to help understand the practices of members involved in this action between communities.

Outdoor Education

The field trip in this case walks students through a landscape showing various stages of forest succession. In one of the outdoor educator's descriptions, the trip is used to give students "direct contact with the natural environment" (OE1 pre-trip interview). The significance of using forest succession is to help provide first hand examples of different periods of human impact on the forest. The trajectory of this field trip aligns with Donaldson and Donaldson's description of outdoor education, which is "education in, about, and or for the out of doors" (1958 p.17).

However, professionals from various backgrounds view outdoor education differently (Ford, 1986). The different aspects of outdoor education are applied to multiple situations outside of the classroom. Key to most of these aspects is the "experiential process of learning by

doing" (Priest, 1986, p. 13). Experiential learning helps to foster observation, develop ethical values, and help understand human's role on Earth (Link, 1981). These ideas of knowledge through experience and developing an ethic of care are part of the mission statement of Magnolia Gardens[5]. According to one outdoor educator the impotence for designing this field trip was "an important part of what I perceive as the overall mission of the Garden" (OE1 pre-trip interview). The quotation from the outdoor educator above links the experience that students gain on the field trip to the mission of the Magnolia Gardens which seeks to help students "to foster appreciation, understanding, and stewardship of nature." The mission statement goes on to include experiential examples of how to foster these ideals. These goals of outdoor educators reveal the experiential learning perspective and care for the environment that is integrated into the boundary encounters with classroom teachers.

Research Design

This study employs a case study design (Stake, 1995) in order to understand the nature of the partnership between classroom teachers and informal educators. Making use of a case study method allows for the 'multiple perspectives' of the case to be represented (Stake, 1995). Weiland and Akerson (2013) used a case study method to explore the *bounded system* of the relationship between an elementary teacher and an informal educator. The narrative of this partnership uses the framework of partnerships to emphasize different dimensions of the interactions between teacher and informal educator.

Characterizing what happens between classroom teachers and on-site educators in an out-of-school setting does not come without some level of difficulty. Kisiel (2014) has noted some of these challenges in his use of a communities of practice lens to describe efforts between teachers

[5] To protect the identity of participants, Magnolia Gardens is a pseudonym.

and informal science educators. Challenges identified by teachers include capacity and communication, authority, and complexity. Challenges exist for researchers as well. Weiland and Akerson (2013), considered the communities of practice framework as too 'restrictive' to describe the full range of activities between an informal environmental educator and an elementary school teacher. Weiland and Akerson chose to develop the framework of partnerships to better articulate the "nature of the partnership" (p. 1337) between two educators. This study uses a communities of practice lens as an organizing concept for a community of classroom teachers and a community of outdoor educators to explore what happens during the boundary encounters surrounding a field trip. In order to more clearly reveal the practices of individuals at the boundary, the framework of partnershipsis used to describe how these communities of educators work together when setting up a field trip to an outdoor setting.

A community of practice (Lave & Wenger, 1991) lens can be used to describe educator groups are communities. This organizing concept allows for the description of boundary encounters between the groups as either cooperation, coordination, or collaboration (Intriligator, 1992; Weiland & Akerson, 2013) while planning and conducting the field trip. One of Kisiel's (2014) suggestions for improving the practice of interaction is to limit the number of participating communities. By limiting the number of participating schools, informal science education institutions can focus in greater detail on what a small number of schools truly need. This study's focus was on the interactions of a middle school working with a botanical garden to develop a field trip for 7th grade (12-13 years old) students. Questions guiding this study include

1) What are outdoor educators' expectations of the nature of collaboration in planning, enacting, and reflecting upon a field trip?

2) What type of interactions (cooperation, coordination, or collaboration) occur between classroom educators and outdoor educators during the planning and enacting of a field trip?

The Setting

This collaboration between middle school teachers and environmental educators is a part of a larger partnership between the university and the surrounding school system. College Within Reach[6] is a series of individual field experiences that use designed for students at each grade level from Pre-Kindergarten to grade 12 (ages 4-18). One of the main goals of College Within Reach is to help expose local students, many of them belonging to underrepresented populations at the university, to the different opportunities that post-secondary education can offer. Each trip in the program affords students the opportunity to visit different places on campus to introduce and familiarize students with the university. Students visit a variety of locations with connections to different academic disciplines for each trip. Some trips are more successful at supporting learning with the subject and curriculum assigned to the trip.

The seventh grade trip, the focus of this study, takes students (ages 12-13) to the university's botanical garden, Magnolia Gardens. Originally developed in 2013, the educational staff first approached the local middle school teachers with the idea for the field trip to align with the life science curriculum. Together with the input from teachers, the environmental educators at the garden developed a program designed to manage up to 120 students at a time. As planning continued, the Magnolia Garden staff developed a plan with an adjacent organic farm also run by the university. The combined activities on the farm and on Magnolia Garden's forested

[6] To protect the identity of participants, College Within Reach is a pseudonym

woodlands evolved into a whole day trip with the first half of the day spent with Magnolia Garden staff and the second half of the day spent with farm volunteers or vice versa.

Participants

The participants in this study include the educators who are responsible for planning and enacting this 7th grade field trip. At Magnolia Gardens this process includes the three members of the educational staff whom all self-identify as environmental educators. Two of the three outdoor educators were interviewed before the trip and two were interviewed after the trip. Only one of the three staff members was available to be interviewed both before and after the trip. Organizing efforts at the two middle schools were handled by the life science teachers. Observations were gathered during group meetings at both schools and from one school participating in the field trip. Only one school agreed to participate in the teacher interview portion. Two out of the three life science teachers, including the lead organizer for the school, were interviewed after the field trip. Table 3.1 shows the experience each that educator has working as a formal classroom teacher and separately as an outdoor educator in informal settings. Also listed are the years of experience that each educator possesses working with field trips and with this specific field trip between the 7th grade classes and Magnolia Gardens. The high level of experience from all actors suggests that this collaboration is not an unusual event for any of the participating educators.

Data Sources

Data collection began with a meeting between leaders of each community as part of the College Within Reach meeting at the beginning of summer. Group meetings were also conducted separately with each of the different educator communities, life science teachers at each middle school, and the outdoor educators at the garden. Semi-structured interviews were conducted with the outdoor educators to understand their views of the partnership going into the 2015 field trip.

Figure 3.2 shows a timeline for the collection of different data sources. Observations were conducted during the field trip by the first author (researcher). Field notes from the observation were used to develop a personal journal account of the events (McKechnie, 2008). Semi-structured interviews with outdoor educators and with life science teachers were conducted after the trip to reveal perspectives on the efforts surrounding this year's field trip. All interviews were transcribed verbatim to capture the voices of participants.

Bounds of the Case

The bounds of the case include the meetings, observations, and interviews from the 2015 cycle of the trip planning, implementation, and follow up. This case was selected to explore the nature of boundary encounters as part of a mature partnership. Accompanying the bounds of this case are the delimitations of this study. These factors include the choices not to seek the perspectives of the Center for Service Learning at the university and those of students who participated in the field trip. Instead this case study focuses on the specific interactions between outdoor educators and classroom teachers

Data Analyses

To uncover answers to the research questions, thematic analysis was used to explore the data to reveal both the semantic and latent ideas expressed in the text (Braun & Clarke, 2006). Research question 1 aimed to uncover the perspectives of outdoor educators' expectations regarding this field trip. To reveal expectations without constraints, outdoor educators were asked to describe what this field trip involving the life science students and teachers would be like with unlimited resources (time, staff, curriculum restraints, funding). These unrestrained expectations were elicited for the various stages of before, during and after a field trip. Original extracts were used to generate initial codes inductively. Extracts were also with another

deductive layer of codes according to what stage of the field trip process the extract was referring to (before, during, or after), along with another deductive code denoting whom the expectation was for (expectations of self, expectations of partnership, or expectations of teacher). *Expectations of self* include an outdoor educators' ideas about her/his own practices. *Expectations of partnership* includes practices involving the direct interaction of outdoor educators and classroom teachers. Finally, *expectations of teachers* are that practices teachers perform without involvement from outdoor educators. For example, the following text from an interview with one of the outdoor educators was given the initial codes of *expectations of partnership*, *before-trip*, and also was given a code of *class curriculum* to describe the outdoor educators' acknowledgement of topics the teacher is covering in the classroom.

> I think I'd like a combination of the teacher -- us having a field trip package to present, you know like what we have now where it's set up on the website, the teacher chooses. But I also would like to be able to provide them an element of customization, where they could say you know, we've been talking about whatever in class, can you incorporate this, we'd like to look at this a little bit more. You know, that way the teacher gets a little bit of say in what they're—not even so much a little bit, but gets some say—in what they are wanting to get their class to understand or get presented to their class. (OE2 pre-trip interview)

Initial codes from the entire interview were collected and catalogued in a spreadsheet and used to develop a *mind map* to generate initial themes (Braun & Clarke, 2006). Mind maps were created, matched to the list of initial codes, and reviewed, which led toward theme development. As more interviews and texts were reviewed, the coding scheme and mind map were updated to reflect the views of all participants. Updating the mind map required another look through the interviews to

ensure new codes represent the data set and that no important extracts were missed. The list of inductive codes that were used to generate final themes appear in Figure 3.3.

Themes were then defined by describing the narrative of the theme through the course of the data set. The defined themes were presented to peer researchers. Descriptions of the themes were shared along with some example extracts. Peer researchers were then given brief sections of uncoded transcripts for coding. To ensure trustworthiness, differences between the author and the peer researchers were discussed and revised to ensure themes and codes are consistent (Lincoln & Guba, 1986). Each theme was written in a narrative form as part of the findings for this study. Themes were shared and supported with extracts which captured the nature of the theme and allow the reader to follow the description of outdoor educator expectations.

For research question 2 about the nature of the collaboration, the framework of partnerships (Weiland & Akerson, 2013) was used as part of theoretical thematic analysis (Braun & Clarke, 2006). The description of each of the eight dimensions (Intriligator, 1992; Weiland & Akerson, 2013) guided the author through the text looking for relevant extracts. Deductive analysis was used to gather evidence for each of the dimensions, so each dimension can be classified as cooperating, coordinating, or collaborating.

The collection of extracts that were used as evidence for developing each classified dimension were shared with peer researchers along with the descriptions established by Weiland and Akerson (2013). Peer researchers were used to cross-check (Lincoln & Guba, 1986) the extracts placed into each dimension. Once consensus was reached for placement of each extract, a rich narrative was produced from the extracts to fully describe the dimension in question. These narratives were used to help develop the justification for each classification. Table 3.3

displays classifications for each dimension along with the justification and a sample extract as evidence.

Findings

The findings of this case are presented in an order that resembles the sequence in which the data were collected. First, the expectations of outdoor educators from before the trip are presented. Following expectations from before the trip is the description of the nature of the partnership using the framework of partnership. After the framework of partnerships is discussed, the expectations of outdoor educators after the trip are explored.

Expectations Prior to Trip

Outdoor educators' expectations for a trip without limitations were organized into tables based on *whom* the expectations were the target of (self, the partnership, or for the teacher) and *when* the expected idea is anticipated to take place (before, during, or after) the field trip. The organized themes found in expectations prior to the trip can be found in Table 3.2. Prevalent throughout each phase of the field trip and within each relationship target is the theme of *content and knowledge*. A developed understanding of natural features as they relate to forest succession and a knowledge of the route through the woods was some of types of knowledge that the outdoor educators mentioned. Expectations of teachers in this case include having knowledge of school curriculum and knowledge of students but lacking in the knowledge of the field trip site. This knowledge of the field trip site is similar to other studies identifying on-site educators as purveyors of on-site knowledge and expectations of classroom teachers as behavior monitors (Bamberger & Tal, 2006).

Outdoor educators at Magnolia Gardens before this field trip expected ideas around *activity* to be associated solely within the partnership aspect of the relationship. Outdoor

educators mentioned a need to discover what teachers would like to do during the trip given the resources (such as staff, programs, and educational spaces) available at the Garden. This intersection between classroom teacher desires and resources at the Garden requires the interaction of both outdoor educator and classroom teacher. Outdoor educators' attention to the activity is present through potential modifications during the trip and persists after the trip for activities from the Garden to be shared with the classroom teachers. Before the field trip, the outdoor educators in this case showed an explicit intention to work with classroom teachers through all phases of the field trip.

Observations of the Partnership

The outdoor educators and the life science teachers involved in this partnership generally held overall positive views of the field trip. Everyone praised the field trip for the experiences it offered students. The work from previous years helped to establish both the outdoor educator community and the classroom teacher community with a level of comfort and satisfaction about the work each was doing. Below is a discussion of each of the dimensions as laid out by Weiland & Akerson (2013). For the classification for each dimension along with a justification statement and sample evidence, see Table 3.3.

The 2015 trip was the third year for this particular field trip. The planning and implementation of the field trip cycle in 2015 utilized the experience of both communities to save time by communicating efficiently. Apart from the College Within Reach meeting in May, most communication between Magnolia Gardens and the middle school occurred via email. When asked what type of communication happened most often, one life science teacher replied "It was email, only because we already had a handle based on past experience" (LST1 post-interview). Most conversations focused on fine tuning logistical plans between the designated

lead teacher at the school (LST 2), and the Children's Program Manager at the Garden (OE 2), with occasional help from members at the Center for Service Learning. From these conversations, information was shared with other teachers at the middle schools and with other educational staff members and volunteers at the Garden. As expected, email traffic between outdoor educators and classroom teachers increased during the period of time leading up to the field trip and quickly curtailed after the trip. While the communities exhibited a heightened period of email conversations prior to the trip, the extended intervals of inactivity between communities led to *communication* being classified as coordination. Even with the long history of this trip, periods of inactivity led to the *duration* being classified as coordination. Missing from the conversations during this time were explorations into the content of the trip. As noted in the outdoor educator expectations described above, outdoor educators were open to activity modification with classroom teachers. Neither Garden education staff nor life science teachers described specific ideas to adjust or modify the learning activities for the field trip this year. A classroom teacher shared this comment about the planning for the trip.

> By the time they came to us, and we were appreciative of this, it was Garden led. But they had obviously asked us if these things were okay and were very open to any changes. But it was so well done that we didn't need any changes. (LST2 post-trip interview)

This teacher shared how some activities were modified in previous years. For this year's field trip cycle, the need to continue talking about field trip activities did not hold much value because the trip went so well. After the field trip, a teacher's attention is likely occupied by multiple tasks un-related to the field trip within the school setting. For the classroom teachers in this case, having the Garden staff members develop the activities,

check with the classroom teachers, and implement them during the trip, appeared to fulfill their expectations for overlapping boundary practices surrounding the field trip.

One of the goals of Garden staff is to collect feedback from visiting groups who participate in field trip programming. During the trip planning session (see Figure 3.2) staff members from the garden were sitting at a table with classroom teachers from the middle schools. One of the classroom teachers solicited ideas for an activity students could work on during the time between returning to school and dismissal at the end of the school day. One of the outdoor educators suggested students complete the post-trip survey. The survey from the garden was updated at the teachers' request and shared with them, yet no teachers participated in the survey during this cycle.

This particular year's attention to logistical details revealed an acceptance of the content being presented to students while at the garden. This acceptance does not mean that the content of the trip planning was passed over previously or ignored. Initial planning of the trip involved multiple face to face meetings to determine appropriate activities aligned to the school's state curriculum as described by one of the life science teachers:

> The first year that we had the opportunity to have a field trip, two people from the Botanical Gardens came out and met with us and gave us the idea. They gave us some pre-planning, they gave us an overview of what we do when we were there and some suggested post-planning activities and met with the life science teachers here. It fit in so nicely with the unit we were working on, which was interdependence of life. (LST2 post-trip interview)

This life science teacher shared her appreciation for the outdoor educator community and took the time to plan a field trip that would match the school's instructional calendar. Not

part of the Garden's original plan, an additional follow up meeting was scheduled to shift different activities and work through ideas together. Multiple meetings focused on the content of the trip would have been considered collaboration for objectives and likely communication as well. However, keeping the bounds of this case to the 2015 cycle, the lack of refinement to the trip content this year suggests *objectives* are classified as coordination. Both the mission of the Garden, as mentioned above, and the school curriculum find overlap, yet the accomplishment of these goals is not dependent on the interactions of the partnership.

The efforts of the classroom teacher community and outdoor educator community early on helped to inspire other field trips for local students in various school subjects across the university campus. The Center for Service Learning at the university became a key player in facilitating communication for existing trips and helping to start new ones. As part of the College Within Reach program, this field trip is connected to another institution other than the classroom educator and outdoor educator communities. However, the Center for Service Learning is not responsible for delivering the field trip to students, only helping with communication as needed. The *formality of partnership* between classroom teacher and outdoor educator communities can be classified as coordination because the two communities still retain their original practices, but are not required by the Center for Service Learning to change in a specific way. Even with the help of the Center for Service Learning, no organizational systems were put in place to specifically support the efforts of this field trip.

One of the *boundary objects* created by the Garden staff was a collection of activities classroom teachers could use to introduce concepts students would engage with during the trip. In the group meeting (See Figure 3.2) with the Garden staff, these activities were described as

being designed for classroom teachers to use without involvement from Garden staff. The *end* for these activities according to the outdoor educators in this case would be to prepare students for experiences during the trip. Teachers described using some of the activities in previous years, but no teachers mentioned using them during this cycle. Boundary encounters of classroom teachers and outdoor educators appeared to support each community in order to deliver this field trip, but have yet to alter the regular practice of either community. Based on the support each group offers to the partnership without a change in original practice, the *structure* can be classified as cooperation. The learning activities students have; for example, walking through the forest at the Garden, is central to the boundary encounters between the outdoor educator and classroom teacher communities. Even though there are temperate deciduous forests adjacent to the middle school, the classroom teachers do not have the distinct areas where the stages of forest succession are clearly visible. Neither do they have some of the materials used during a plot sample activity. The sharing of *resources* leads to the classification of coordination for this dimension of the partnership.

The classroom teachers who take their children on the field trip at Magnolia Gardens participated in activities designed and implemented by the outdoor educators from the Garden. The outdoor educators entered into these activities expecting classroom teachers to help with organization of students. One outdoor educator described the partnership with the classroom teacher as

> dependent on the chaperone. So if I'm with a teacher, it is oftentimes, I am definitely the leader and they are acting as a side teacher. If I am with a parent chaperone, I am definitely the leader and they chime in periodically. Some teachers are very involved and some teachers are very hands off. (OE3 post-trip interview)

While this particular outdoor educator appears open to classroom teacher participation, this example clearly reveals who the actual leader is on most of the field trip activities. This view on the role of outdoor educators is echoed in the experience a classroom teacher shared from the trip.

> We knew exactly what to expect. And when we got there, it was well organized. The groups of students went in different places and when we were there we pretty much would—[outdoor educators] led the majority of the experience. We would make sure kids were doing what they were supposed to, that they were behaving, but they were responsible for leading all of the activities. (LST1 post-trip interview)

From the perspective of the classroom teacher, leadership during activities is taken care of by outdoor educators. In the group discussions (See Figure 3.2) with the classroom teachers before the trip most teachers identified their role during the field trip as behavior managers of students. As demonstrated in these excerpts, input from classroom teachers is welcomed by the outdoor educators, but both communities appear to have settled into the tradition of assuming the classroom teacher serves as the behavior manager during the trip. Without a recognized overlap in expertise, the *roles* dimension is classified as coordination. In a similar fashion, the power of leadership and the knowledge of what is happening next resides with the outdoor educators. Outdoor educators retain the focus of control throughout the length of the field trip with few, if any disagreements about activity implementation. *Power and influence* in this case can also be classified as cooperation.

Looking at the partnership within the bounds of this case, the overall relationship is determined to be one of cooperation. Some dimensions such as roles and power and influence appear dominated by outdoor educators, but most of the dimensions are classified as

demonstrating a higher degree of sharing. Original planning for this field trip may have led to dimensions such as objectives and communication being classified as collaboration. However, the habits of the communities and the general acceptance that the field trip is working well leads communities to focus more on logistical details rather than working to change the content or leadership of field trip activities. The boundary encounters from this cycle of the partnership did lead to a shift in the expectations of the outdoor educators involved.

Expectations Following the Trip

Following the field visit of students and teachers, outdoor educators were again asked to describe what this field trip might look like if reimagined without resources. As expected, outdoor educators wanted more time for field trip activities. Within these expectations for more time, many of the themes from the expectations prior to the trip revealed themselves again. To facilitate comparisons between the two, expectations following the trip are organized in the same way (see Table 3.4) as the expectations prior to the trip. Similar to the expectations prior to the trip, the theme of *content/knowledge* is found at all phases of the trip and expected to be a part of both individuals as well as the partnership. One of the new types of knowledge that appeared in expectations after the trip is knowledge of partner. When asked what was important for other outdoor educators to know about teachers, OE3 shared an understanding of classroom teacher's daily schedules.

> I would say that if I were trying to give advice to a coworker on starting up a field trip program it would be please give clear, concise information to your teachers because they are busy. They're not at the computers and most likely if you send something too lengthy and wordy, they're not going to read it. (OE3 post-trip interview)

Understanding the ability of teachers to communicate during the work day is a knowledge of one's partner. Knowledge of partner only present in the interviews following the trip may be due to outdoor educators becoming more reflective about a recent experience even though they were asked to consider future interactions with classroom teachers.

Another shift in the expectations after the trip is embedded within the *planning* theme. Prior to the trip, expectations surrounding planning of the fieldtrip center mostly on trip goals. When considering planning in the interviews following the trip, outdoor educators' expectations focused more on logistics of the field trip. Outdoor educators in this case expect to spend more of their time before a field trip considering the potential goals of classroom teachers as they relate to the mission of the Garden. After the trips, outdoor educators' expectations for planning centered more on details such as students disembarking from the bus and organizing into groups to go on the trip. Outdoor educators have moved from the broader ideas, such as trip goals, to the narrower details of the logistics for the next year's field trip.

Perhaps the most important change in outdoor educators' expectations of practice became evident when examining expectations around the *activity*. Before the trip, expectations for the activity are found to involve the outdoor educators working with classroom teachers as part of the partnership. However, after the trip the outdoor educators shifted expectations from the partnership to the relationship domain of the self. Outdoor educators are shifting the practice of activity modification to the exclusive practice of their community. The mental choices outdoor educators are making to consider activity changes by themselves instead of within the partnership is intriguing. A possible explanation for this shift may be due to the implicit recognition that communication with classroom teachers after the field trip is all but absent compared to multitude of preparations needed before the trip. Another possibility may be

connected to the outdoor educators' sense of ownership of activity plans. The only consideration of the partnership involved in *activity* together is outdoor educators sharing post trip materials, developed by Magnolia Gardens' staff, with classroom teachers. The importance of this shift in *activity* is discussed below.

Discussion

This study contributes to the science education and outdoor education literatures by exploring the nature of the partnership between outdoor educator and classroom teacher communities. Also of importance is how the nature of the partnership relates to outdoor educators' expectations of the partnership. Findings suggest boundary activities (Kisiel, 2010) involving the efforts of both communities can lead to a shift in outdoor educators' expectations regarding the partnership. Previous studies have documented the challenges educators and informal educators face when attempting to set up a field trip (Gupta, Adams, Kisiel, & Dewitt, 2010; Kisiel, 2005; Tal & Morag, 2013). The extended nature of the Magnolia Garden partnership with the middle schools appears to have overcome many of those hurdles. Looking closely within the bounds of this case, the work between classroom teachers and outdoor educators still shows opportunities for more integrated practices. In this case the outdoor educators recognized room for more connected practices between communities, as they offered their own ideal field trip scenarios. Both classroom teacher and outdoor educator communities were very satisfied with how the partnership and field trip are enacted. These findings are discussed in more detail below.

The comparison of outdoor educators' before and after expectations revealed a shift in who is expected to take onus of activity modification. DeWitt and Osborne (2007) have encouraged museum staff who work with teachers to try and take on the perspective of the

teacher, when preparing educational materials. Similar to DeWitt and Osborne's suggestion, the outdoor educators before the 2015 Magnolia Gardens trip expected to modify the activities by incorporating input from the classroom teacher. Expectations of activity prior to the trip moved from expectations of partnership to expectations of self following the trip. Outdoor educators, immediately after the 2015 trip, expected activity modification to be the purview of their community as designers and facilitators of the learning experience. Understanding when outdoor educators are willing and interested in modifying field trip materials is important, not just for the communities in this case, but potentially for other classroom teachers who work with on-site educators to adapt appropriate learning activities for students.

While there are a variety of roles mentioned in outdoor educators' expectations during interviews before the trip, most actions leading up to and during the field trip were classified as coordination. The eight dimensions of the framework of partnerships allows for theoretical constructs to be mapped onto the actions of practitioners. Despite the classification given, using the language of the frameworks for partnership, the participants in this case viewed this Magnolia Gardens field trip as one that can go on to deliver a great experience for students. In a survey of teachers and staff from informal science education institutions, Kisiel (2014) reported both teachers and staff considered the student experience one of the more important goals for a field trip. Along with the endorsement outdoor educators gave to the Magnolia Gardens field trip, there was also a recognition for the possibility of improvement. In the interview after the rip, one outdoor educator gave an example of how the partnership might be improved:

> I think ideally it would be nice to have someone from our staff going in to do a 30-minute or an hour fun session with a classroom before they come to the Garden to explain, these are the things that we're doing, this is what we're going to do, this is what you might

experience. I think…and then, ideally it would be nice to have a post-trip visit as well. (OE3 post-trip interview)

The plan proposed here shows a new level of integrated practice. To set up additional times for outdoor educator visits, or more boundary encounters, to the school would likely involve more communication and has a chance to impact the relational dimensions of the partnership such as power and influence and roles of the partners.

Participants from the classroom teacher and outdoor educator communities expressed positive views of the field trip and the partnership. The examination of a single classroom teacher and a single visiting environmental educator in Weiland and Akerson's (2013) study, referenced participants describing the partnership as working well. Both Weiland and Akerson's study and this current case study resulted in a classification of coordination, yet members of both partnerships profess their satisfaction with partners. Something not considered in the framework of partnerships is the role of member satisfaction. Intriligator (1986) suggests that the degree to which partnerships run well can predict member satisfaction. As evidenced by this case and the work of Weiland and Akerson, classification of a partnership as coordination does not imply the partnership is not perceived as functioning smoothly. Returning to the excerpt from LST2's interview after the trip in the power and influence dimension in Table 3.3, this teacher recognized the limited involvement of classroom teachers. The excerpt indicates that this community of classroom teachers valued the knowledge being shared by outdoor educators and teachers in this community were satisfied with the roles they played during the field trip. Participating community members' satisfaction is not something specifically examined in this case. Given the findings from this case and from those of Weiland and Akerson, further

investigations into the aspect of satisfaction as a dimension of classroom teacher and informal educator partnerships may be needed.

The frameworks for practice (Weiland & Akerson, 2013) is a tool that allows a researcher to classify various dimensions between partnered individuals or groups. This tool, while of value as an instrument, does not necessarily place a value on the practices of those involved in the partnership. The value judgement may come from researchers with their own interests and biases or from practitioners who have their own views. The classification of dimensions in this study is not meant to place a value on the practice of any of the outdoor educators or classroom teachers in the study. Rather than placing a value on one of the groups the frameworks for practice in this study allows for a conversation about the shifts in outdoor educator expectations during a partnership classified as coordination. The importance and usefulness of this framework to practitioners, at the time of this writing, has yet to be explored in the literature.

Remembering the context of this case allows for the recognition of certain limitations in this study. As part of an ongoing partnership occurring over multiple years, many of the interactions between classroom teacher and outdoor educator communities have become habits. The reality is these communities have become comfortable with one another. The authors recognize most field trips are not likely to have an extended relationship between classroom teachers and on-site educators. Another limitation to case studies of this size is the scale and the ability to develop any level of generalizations. Given the exploratory nature of this case, there are aspects that may be transferable to other studies and field trip endeavors. Similar to Tal's (2004) recommendation following her study on collaborating parents, teachers, and community members, sharing students' perspective on this partnership would greatly enhance researchers'

understandings of the impact of collaborative efforts on the most important consumers—the students themselves.

Implications

Outdoor educators and those who provide professional development for outdoor educators, should take the time to identify when they are most willing to modify field trip programs to meet the needs of visiting school groups. Best practice when communicating with classroom teachers should include the adjustment of learning activities to meet the goals of both classroom teachers (DeWitt & Osborne, 2007) and outdoor educators. For partnerships involved in repeating field trips in the future, as in this case, outdoor educators should communicate clearly with classroom teachers about improvements to the program for future use.

For classroom teachers and outdoor educators considering an extended partnership, this case offers some examples of key factors to pay attention to. Both communities in this case have developed a better understanding of the practices of the partner community in this relationship. Figure 3.4 lists key factors for each community in the partnership. Some of the factors show an appreciation for the other community (e.g. teachers appreciate the trip connected to the school's life science curriculum). Other factors listed show a communities ideas for improvement (e.g. outdoor educator's hope for increased feedback after the field trip). Making use of open ended evaluation forms (Carlson, 2008) allow classroom teachers and students an opportunity to support outdoor educators who choose to modify activities shortly after the field trip has occurred.

For researchers of outdoor educators who facilitate field trips, more work is needed to understand if and when outdoor educators in additional settings, are open to modifying learning activities. Bringing together the knowledge gained from the expectations and practice of outdoor

educators in multiple settings will help to improve professional development. Similar to recommendations for museum educators (DeWitt & Osborne, 2007), outdoor educators who recognize when to modify activities in their own practice are better able to work with classroom teachers to provide the most suitable programing to students.

For science classroom teachers who work with outdoor educators, it appeared the outdoor educators in this case were more interested in working with classroom teachers during the time period prior to the actual trip. Perhaps one way to strengthen the partnership is for classroom teachers to offer to continue to work with outdoor educators, such as modifying activities (before to trip, during trip, and or after trip activities), after the field trip has concluded. Teachers and teacher educators should encourage more sustained communication between classroom teachers and outdoor educators to promote refinement of trip materials (Kisiel, 2014). Continual refinement of field trip programing is needed to meet the constantly changing demands of the classroom curriculum, issues relevant to outdoor education, and support of the student learning experience.

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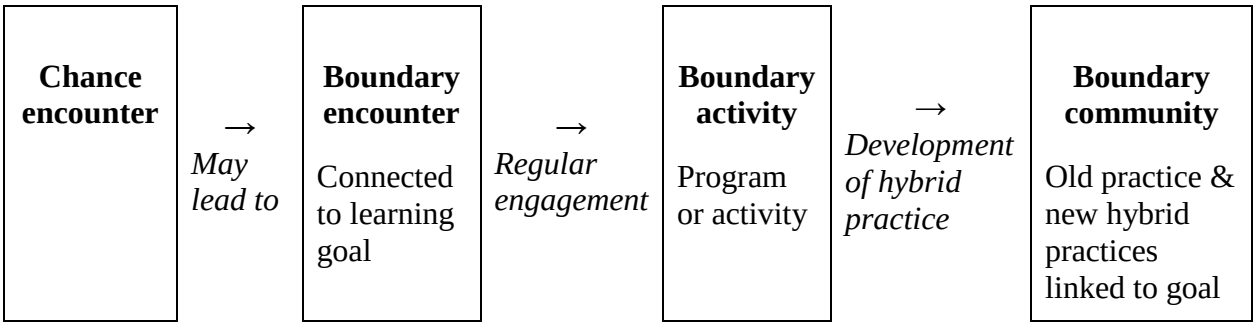

Figure 3.1
Forms of Boundary Encounters

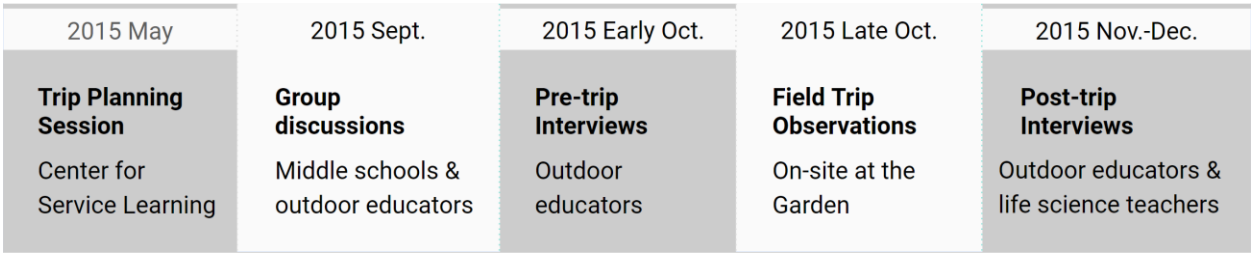

Figure 3.2
Timeline of the Case

Theme	Description
Planning	technical and logistical details of the field trip including any potential modification and evaluation
Content/Knowledge	knowledge needed to conduct field trip such as knowledge of school curriculum or knowledge of field trip site
Relationship	how outdoor educators relate to others on the field trip including teachers, chaperones, and students
Activity	knowledge and artifacts used to help adapt and present field trip programs
Approach	manner in which outdoor educators guide activities including flexibility and being interactive

Figure 3.3
Themes from Outdoor Educator Expectations.

Outdoor Educator Community	Classroom Teacher Community
• Teachers engaged as participants and group managers • Understanding the busy schedule of teachers • Hope for more regular feedback each year	• Trip integrated with school curriculum calendar • Trip supporting what teachers talk about in classroom • Clear and concise directions from Garden staff • Unique experience for students

Figure 3.4
Key Factors for Communities in the Partnership

Table 3.1
Experience of Collaborators

	Amount of Experience (years)			
Participant	Classroom teacher	Outdoor educator*	Involved with with field trips	With this field trip
Outdoor Educator 1	4	35	37	3
Outdoor Educator 2	2	15	15	0
Outdoor Educator 3	0	6	6	3
Life Science Teacher 1	10	0	10	3
Life Science Teacher 2	36	1	25	3

Note * Outdoor educator describes employment with the primary focus of environmental education

Table 3.2
Mapped Expectations of Outdoor Educators Before the Trip

	Phase of trip		
Expectations of whom	Before trip	During trip	After trip
Expectations of self	Content/Knowledge Relationship	Planning Content/Knowledge Relationship	Planning Content/Knowledge
Expectations of partnership	Planning Content/Knowledge Activity	Content/Knowledge Relationship Activity Approach	Content/Knowledge Activity
Expectations of teacher	Planning Content/Knowledge	Relationship	Content/Knowledge

Table 3.3
Analysis of Partnership

Dimension*	Classification	Justification	Sample Evidence
Communication	coordination (initially collaboration)	Initial meetings around the design of the trip involved the incorporation of standards, the activities used, and the roles classroom teachers and outdoor educators would have. Recent years show teachers and outdoor educators becoming accustomed to roles and not communicating as often.	"I wish I could take credit for the activities that were out there. My job at this end was to coordinate the organization of getting kids into groups at the request of…and getting parent chaperones and letting students know what to expect, getting the field trip stuff ready, getting the buses ready." (LST2 post-trip interview)
Duration	coordination	2015 was the third year of the partnership between the garden and local schools. Long term relationship with periods of high interaction and little to no interaction.	“With [College Within Reach], it was very intentional where the school system of course was very supportive of [College Within Reach], so we set up meetings with the teaching team at the middle schools that were planning to be involved in this new initiative.” (OE1 pre-trip interview)
Formality of Partnership	coordination	The work of the teacher community and outdoor educator community run as they would before the partnership, but are not required to follow suggestions from the interagency meetings. The Center for Service Learning facilitates communication between school teachers and field trip leaders at Magnolia Gardens and other field trip sites.	"It was very thorough and detailed. We knew exactly what to expect. And when we got there, it was well organized. The groups of students went in different places and when we were there we pretty much would—they led the majority of the experience. We would make sure kids were doing what they were supposed to, that they were behaving, but they were responsible for leading all of the activities." (LST1 post-trip interview)

Objectives	coordination (initially collaboration)	Searching for common learning objectives for trip; learning aligned with the school curriculum and the mission of the garden.	"It's probably not my top thing that I'm thinking about. I mean, when I'm leading a group, the first thing on my mind is not necessarily am I going to get the standard across. It's more of, and maybe it should be, but, what are things that they're doing, what are ways that we can teach them and engage them outside with nature in the things that we're supposed to be learning, so…and each group is different." (OE3 post-trip interview)
Power and Influence	cooperation	Locus of control during the trip rests with the OEs. Disagreements not discussed or resolved.	"I want to say I don't want teachers here to collaborate any more than it was done. I like that we had someone else teaching the students. They got to hear a different perspective on things that at least in science we've been saying here in the classroom. Here's someone else to validate that information." (LST2 post-trip interview)

Resources	coordination	Funds and efforts from Center for Service Learning help support transportation and partnership dialogue.	“They brought us some pre- and post-activities. We could decide where we wanted them. And the communication that [OE1] and I had after the first year was I said, hey I really liked the web of life activity that you shared with me, and I actually used to work at the Botanical Gardens and so I asked [outdoor educator] to send me the cards for that and some things that I knew were there from doing summer camp, and they did. And I said hey, I really like that one and [OE1] said, oh, I really would like to know about the pre and post-activities because that’s where we were kind of in the dark.” (LST2 post-trip interview)
Roles	coordination	Learning activities during the trip are led mainly by outdoor education staff at the garden. Input from teachers is welcome, but not expected.	“I guess I see them almost as an assistant you could say. You know, kind of going along with the class but jumping in as a leader if needed” (OE2 pre-trip interview)
Structure	cooperation	Garden and school are not co-dependent upon each other to reach goals. The interaction of classroom teachers and outdoor educators help to support each other, but no new organizational structures were developed.	"I would say that [the field trip] was mostly Garden staff led, I mean, and I think that was kind of how it (field trip) was designed because we’re going off trails so it’s not like there’s a path to follow. I mean we kind of had a general idea so the teachers and the chaperones that came wouldn’t have known where to go, so I mean it made sense to be Garden staff led. And I did have some teachers and chaperones that jumped in" (OE3 post-trip interview)

Note * Dimensions of partnerships from Weiland and Akerson (2013)

Table 3.4

Mapped Expectations of Outdoor Educators After the Trip

	Phase of trip		
Expectations of whom	Before trip	During trip	After trip
Expectations of self	Planning Content/Knowledge Activity	Content/Knowledge Activity Approach	Planning Content/Knowledge Activity
Expectations of partnership	Planning Content/Knowledge Relationship	Content/Knowledge Relationship Approach	Content/Knowledge Activity
Expectations of teacher	Planning Content/Knowledge	Content/Knowledge Relationship Approach	Content/Knowledge Relationship

CHAPTER 4

CONCLUSION TO THE DISSERTATION

This dissertation focuses on the importance of collaboration between classroom teachers and outdoor educators at the intersection of field trip design and implementation. Research communities (Permanent European Centre for Informal Learning [PENCIL], 2004) as well as the practitioner community (North American Association for Environmental Education [NAAEE], 2010, 2017) have supported the idea of collaboration around field trips. The preceding promotions of collaboration between outdoor educators and science teachers suggests this type of relationship should eeasily observed in recent literature or in the practices of experienced outdoor educator and classroom teacher communities. The key findings of this dissertation are 1) there is generally a lack of detailed descriptions of classroom teachers and on-site educators in studies of outdoor education field trips; and, 2) outdoor educators' expectations for planning learning activities shifted from partnering with classroom teachers to working independently apart from classroom teachers. An auxiliary finding from this work is the importance of satisfaction as described by members of a partnership. These findings are summarized below.

The first study of this dissertation took a focused look at on the literature surrounding outdoor education (Donaldson & Donaldson, 1958) field trips while the second study observes the case of a specific partnership. The first study bought together the broad knowledge of the field. This targeted literature review sought to determine what is known in the field about outdoor educators and classroom teachers within the context of outdoor education-based field trips. The second study catalogued specific interactions in one partnership as outdoor educators

and life science teachers designed and delivered a field trip to students. This case study incorporated the expectations of outdoor educators to better understand the perceived actions of this community of practice (Lave & Wenger, 1991). These expectations revealed the intentions of these outdoor educators towards working with the classroom teachers as a part of this established partnership.

Review of Findings

Collaboration between on-site educators and classroom teachers are components of both of these studies. These two studies approached the phenomenon of collaboration from different directions. The targeted literature review summarized the outdoor education field trip literature, establishing a broader view of collaboration in this area. The case study on the other hand explored the actions between partners to determine if the practices are indeed collaboration.

Study One

Previous research has summarized the literature around field trips. Mentioned within most of these reviews is the idea of classroom teachers working with on-site educators. Some of the reviews explicitly identify this practice as collaboration. However, none of the reviews thus far focus specifically on collaboration in those field trips characterized as outdoor education. Findings from this targeted literature review take us a step further in understanding the prevalence of collaboration around these types of field trips.

The studies selected for the literature review were conducted for a variety of purposes and utilized a variety of methods. While many of the studies investigated what students learned or how students' affective domains might have changed, none of the studies explored student perspectives on the actions of on-site educators or classroom teachers. When partnerships between educators are considered, the view of the student is generally left out.

In examining the selected studies to determine how on-site educators and classroom teachers participate with one another, it became apparent that many research studies do not provide complete descriptions. When described, classroom teachers and outdoor educators are often depicted as working independently. As for reporting the activities of either classroom teachers or outdoor educators before the trip, usually only one community is described as leading activities, Similarly, often only one community is regularly described as working with students after the trip.

Another finding centers on which actor leads instruction during outdoor education field trips themselves. Activities during outdoor education field trips are mostly led by outdoor educators. This outdoor educator leadership during the trip follows the traditional pattern in previous work describing the on-site educator as the leader of most field trip activities. Results from this review show this pattern has continued in studies of field trips about outdoor education.

The leading actions of on-site educators have been established as regular practice during the field trips themselves. However, few studies described the actions of both classroom teachers and outdoor educators during all phases of the field trip - before, during, and after the field trip. Part of the analysis of this review examined how each study described actors during these phases. Linking the actions of these three periods has been considered best practice around field trips for some time. Yet, in the studies that met the selection criteria for the review, very few of them explicitly described the actions of on-site educators and or classroom teachers before, during, and after the trip.

This review revealed the importance of fully describing the actions of on-site educators and classroom teachers when publishing studies on field trips. Authors of each published article were likely keen to emphasize what makes their study different and how this difference

contributes to the greater body of literature. However, omitting the details of who is responsible for guiding activities during field trips only leaves readers to speculate. These guesses can call into question whether the results from a study are due to the novel idea being examined, or simply due to actions, or lack of actions, of on-site educators and classroom teachers. Authors, reviewers, and editors should take care publishing works describing educational activities during these trips. Research on field trips should clearly describe the actions of the people who lead them.

Study Two

The case study offers a detailed look into not only the actions of outdoor educators and classroom teachers, but the perspectives of each of the two communities involved in this boundary practice. Since the recent literature regarding outdoor education focused field trips does not always describe the actions of outdoor educators and classroom teachers, the second study uses the frameworks for partnership to classify the boundary practice between garden educators and life science teachers during the third year of a regular field trip to the garden.

In the case study, the actions of outdoor educators are compared to their own expectations for what this partnership might look like in an ideal situation. The expectations of outdoor educators were organized based on when, before, during or after the field trip, the expectation should happen. Expectations were also categorized for whom in the partnership the expectation was for. Expectations were also thematically coded (Braun & Clarke, 2006) and developed into themes. Expectations from the pre-trip interviews within the planning theme focused on developing shared goals, then moved to center around logistics in post-trip interviews. Before the field trip, the outdoor educators in this case study considered working with teachers around trip goals. The focus of the planning theme after the trip shifted from goals

to logistics. After the 2015 trip, the logistical details of what could be improved about organizing the trip became outdoor educators' priority. The focus on logistics appears to come at the expense of thinking about the common goals outdoor educators might develop with classroom teachers.

Another pre-trip to post-trip shift in this case study appeared in outdoor educators' expectations of the knowledge and modification to the activities of the field trip. From analyzing pre-trip interviews, outdoor educators spoke of modifying and adjusting trip activities as part of the partnership. After the trip, expectations regarding trip activities were almost entirely expected of the outdoor educators themselves. Potential reasons for this shift may be due to challenges with communicating with classroom teachers after the field trip or due to outdoor educators' sense of ownership of the learning activities.

Observation of the nature of this partnership involved classifying each dimension using the frameworks for partnership (Weiland & Akerson, 2013). The results indicate most dimensions for the 2015 field trip year were classified as *coordination*. The exceptions to coordination were *power and influence* and *structure*. These two were classified as *cooperation*. Also of note are the descriptions of earlier events outside of the bounds of the 2015 case. These events included the initial interactions in planning this field trip. In those meetings and emails, the *communication* and *objectives* would have been classified as *collaboration*. The classification for dimensions during the 2015 cycle compared to previous interactions show the practices between communities have shifted over time. As outdoor educators and classroom teachers in this case study became used to working with each other, some of the collaborative dimensions shifted to cooperative. As time passes, perhaps the boundary practices of the past are accepted as

effective, and partners consider it best not to interfere. If something is working well, as described by both communities in this case, should they try to 'fix it?'

The frameworks for partnership was utilized in this case study only as an analytical tool. As a researcher I do not believe this tool places any specific value onto the practices of these two communities. I recognize my own bias in wanting to see more collaboration between outdoor educators and classroom teachers in this case study. My support during meetings with the communities likely revealed some of my own perspective to others involved. Regardless of my own perspective on collaboration surrounding field trips, I believe the values of those participating in these communities are most important to this field trip. The frameworks for partnership might be useful in reflecting on the different dimensions of a relationship, but actual members of the partnership should be the ones to assign any potential value to this classification.

Classroom teachers and outdoor educator communities both praised the 2015 cycle of the field trip. The high praise from those within the partnership comes despite the researcher classifying this partnership as coordinated. This high level of satisfaction by the communities involved suggests that collaboration in itself, is not a requirement for boundary communities to be satisfied with the activities of the boundary encounters. Weiland and Akerson (2013) also noticed satisfaction among educators in a partnership, despite a classification of coordination. Satisfaction could potentially be an additional dimension of partnerships to be considered in future studies exploring the relationships between on-site educators and classroom teachers.

This case study reveals the importance of knowing when outdoor educators expect to work with classroom teachers and when they expect to work on field trip activities themselves as a community. This has implications for both the outdoor education community and formal education community. For outdoor educators and those who deliver professional development to

outdoor educators, practitioners need to take the time to explicitly identify in their own practice, when they are most likely to work with a classroom teacher and when they are likely to leave them out of field trip activity modification. This decision should be communicated to classroom teachers, in advance of setting up field trips to ensure activities meet the goals of both partners. Conversely, classroom teachers should inquire into and be aware of when outdoor educators anticipate they are open to activity modification. This openness has the potential to strengthen future partnerships and formulate field trip activities to best support students.

The Two Studies

Together, the implications from these studies suggest there is more to be described and articulated when publishing studies about field trips. The context of the field trip is best understood when actions of the on-site educator and classroom teacher are fully articulated at all phases - before, during, and, after the trip. The second study offers one way the actions of these educator communities can be described. This case study dives into the dimensions of the partnership between educator communities. Not all research studies on field trips will focus on boundary encounters this acutely. However, it is recommended at least a minimal description of classroom teacher and on-site educator actions be included in each field trip research study.

The first study establishes a need for the basic descriptions of activities to be included, while the case study provides perspectives from outdoor educators on why this is important to practitioners. The outdoor educators in the case study mentioned a desire to work with classroom educators to ensure the field trip met the goals of these life science teachers. The perspectives of these outdoor educators are difficult to compare to the literature of outdoor education field trips, as many of these studies simply did not include information about how outdoor educators worked with classroom teachers. For the outdoor educators at this Garden, little empirical

evidence is available to support their intentions to work with classroom teachers in this way. Instead, theoretical ideas, such as the *framework of partnerships*, are used by researchers to classify and describe practice.

The case study utilized the framework of partnerships to help describe the participation of educator communities. However, the analytical process used in the targeted literature review can also be used to describe the participation of classroom teachers and on-site educators. Table 4.1 shows how the case study from this dissertation would have been represented as part of the targeted literature review. Describing a case study using shades of color along a spectrum greatly reduces the richness of the case. Coding the case like the other studies in the literature review allows the case to counted, like the other outdoor education focused field trips.

Another recurring idea from this dissertation is the satisfaction of outdoor educator and classroom teacher communities when involved in field trip partnerships. Previous work has established that classroom teachers (Kisiel, 2005), on-site educators (Gupta, Adams, Kisiel, & Dewitt, 2010), and researchers (Bevan et al., 2010) talk about field trips with different goals in mind. Recognizing the goals of those involved in the partnership helps lead toward the potential confluence of these goals. The classroom teachers and outdoor educators in the case study shared their satisfaction of working together. The concept of satisfaction with the activities of the partnership is rarely discussed in the selected studies of the literature review. Tal and Morag (2009) briefly discuss some of the teachers who learned to teach in an outdoor setting as being satisfied with the classroom teachers participating in the field trips. Not surprisingly, these satisfied teachers-as-outdoor-educators were the ones who experienced the most involvement with partnering classroom teachers. Promoting outdoor educator satisfaction when leading field trips might be one avenue towards promoting collaboration with visiting classroom teachers.

Proposals for Future Research

An examination of the literature for the impact of collaboration on outdoor education fieldtrips has revealed a need to clarify the actions taken by classroom teachers and outdoor educators. Future research with a clear description of the actions taken during these field trip partnerships can provide the information needed to reveal the impacts of outdoor educator and classroom teacher collaboration. When reporting on the details of a partnership, the limitations of the analytical tool in use should be pointed out to the reader. For example, relationship components such as satisfaction are not captured by the frameworks for practice (Weiland & Akerson, 2013) used in this case study. One future avenue to compare member expectations to their satisfaction would be through modified important-performance analysis (Martilla & James, 1977). Satisfaction, along with the other dimensions of the framework of partnerships can be analyzed in this way to establish important dimensions from the view of the practitioner rather than the researcher alone.

Similar to the case study presented in this dissertation, more work should be conducted to uncover the perspectives of teachers and students as they participate in outdoor education field trips. Understanding how these two groups view the practices of the partnership can help reveal what aspects of the collaboration have the most impact towards trip goals. Lavie Alon and Tal used surveys to reveal students did not view a teacher's efforts during the trip to be a major contribution to perceived learning outcomes (2015). More can be done to compare different levels of teacher outdoor educator partnerships as they relate to assessment of student learning. Kisiel (2014) synthesized some of the aspects of partnering with on-site educators that matter to classroom teachers – capacity, authority, communication, and complexity. More work is needed

to understand how the aspects captured in Kisiel's study relate to the different levels of classroom teacher and on-site educator partnerships.

More work is also needed in the area of residential outdoor education field trips. Different types of evaluation methods used in residential environmental education settings have been catalogued by Ardoin and colleagues (2015). Such measures can aid evaluators and researchers to help understand the impact of collaboration during residential outdoor education field trips. The extended length of time classroom teachers and students spend at residential sites are likely to include extended relationships as well. Research efforts in the residential stay settings can help inform aspects of collaboration around single day visits.

Summary

The promotion of collaboration between outdoor educators and classroom teachers has stemmed from both formal classroom and out-of-school communities. Collaboration around outdoor education field trips has been recommended for both classroom science teachers (Tal, Lavie Alon, & Morag, 2014) and outdoor educators (NAAEE, 2017).

As part of this dissertation, a targeted review of the literature was employed to shed light on the impact of collaborative efforts between classroom teachers and on-site educators. What was revealed is a lack of description for classroom teacher and on-site educator actions throughout the different phases of a field trip. To the best of this author's knowledge, the gap in reporting an important aspect of field trips, that of collaboration, has not been discussed in previous literature. The findings suggest work is needed to encourage researchers, reviewers, and editors to ensure the context of various studies on field trips is described fully. Completely describing the leaders and or activities and their actions, not just mentioning the context, is important in connecting these actions to student outcomes.

The case study of the Garden field trip revealed outdoor educator expectations around field trip partnerships with classroom teachers. The habits of classroom teachers and outdoor educators have led to a partnership at the coordination level that is satisfactory to both communities. The importance of member satisfaction within field trip partnerships, while beyond the scope of this dissertation, holds promise for future research.

Important to practitioners, this dissertation revealed outdoor educators may change when they feel is the best time to modify learning activities surrounding field trips. For on-site educators, knowing when they are most likely to modify learning activities with classroom teachers is an important aspect of their practice. Classroom teachers should take the time to explicitly ask on-site educators about the timing of activity modification when setting up a field trip. Improving this area of communication will hopefully lead to stronger partnerships and a better understanding of field trip collaborations.

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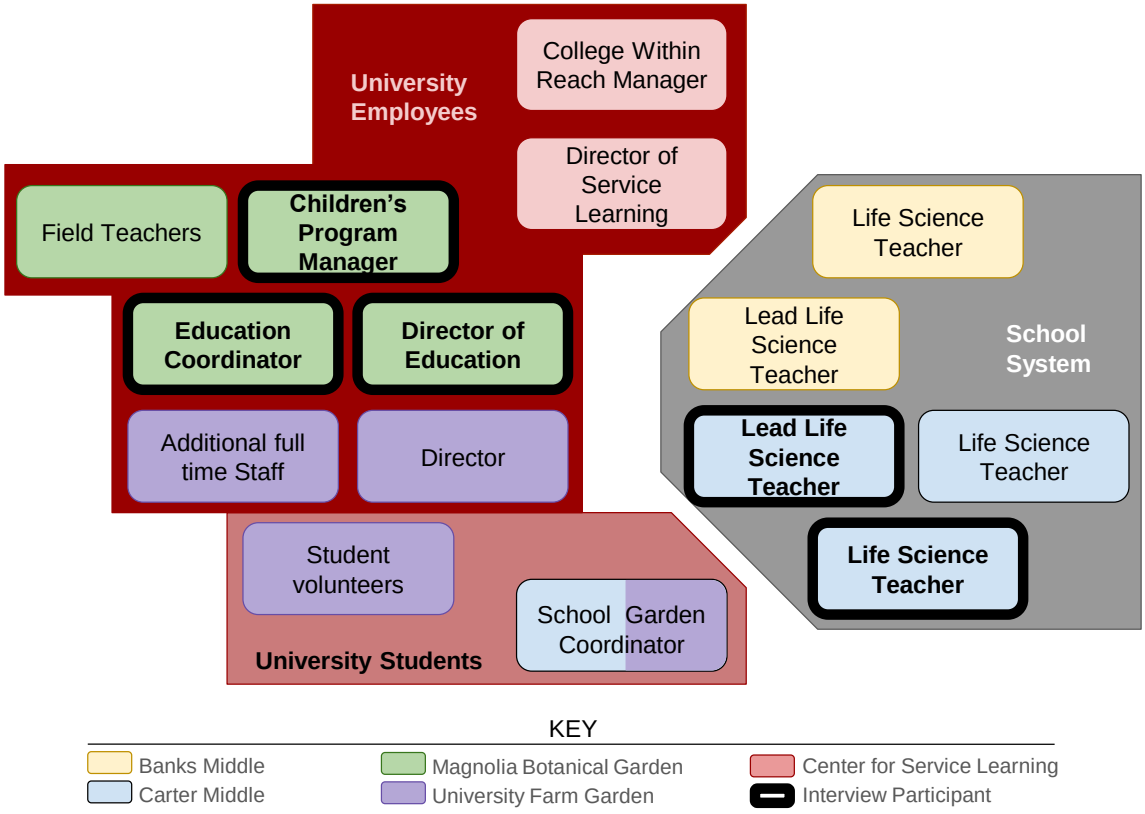
Table 4.1

Where, Who, and When of the Chapter 3 Case Study

			When		
Author	Where	Who	Before	During	After
Ammons & Crawford (2018)	SE US Botanical Garden	3 outdoor educators 2 life science teachers			

APPENDIX A

Communities Connected to the Garden Field Trip Program for Study Two



APPENDIX B

Pre-trip Outdoor Educator Interview Guide for Study Two

Semi-Structured Interview Protocol

Thank you so much for participating in this study! We will use an audio-recorder to record the interview process. You can withdraw from this interview at any time. We will use a pseudonym in place of your name in any future publications or presentations.

1. How long have you been involved with the [College Within Reach] program? Describe how you came to be involved with the project.
2. How often do you get involved with other school visits? Briefly describe those experiences.
3. How familiar are you with the middle school science classroom? Outside of [College Within Reach] can you describe for me your interactions with middle schools?
4. When planning a field trip, what are some of the important steps you think about as an interpreter?
5. Describe the communication you have with teachers when planning a field trip. Would you categorize it as (interpreter led, co-facilitators, teacher led or something else)? Provide an example to support your choice.
6. How would you characterize your interaction with teacher(s) during the trip (expert-novice, co-facilitators, teacher led)? Provide an example to support your choice.
7. What do you think is important to students during a field trip? How does their preferences impact their learning during the field trip?
8. Do you connect school visits to the school's curriculum or standards? How do you connect the trip to curriculum/standards?
9. Are students who visit able to connect the field trip to more than one standard? How does your work with them facilitate this?
10. How do you feel about the importance of field trips to student learning? How do you assess learning from the field trip?
11. If you were to describe an idealized field trip, what would it be? How would you as an interpreter, the teacher(s) and the students interact with each other during the field trip?

APPENDIX C

Post-trip Outdoor Educator Interview Guide for Study Two

Semi-Structured Interview Protocol

Thank you so much for participating in this study! We will use an audio-recorder to record the interview process. You can withdraw from this interview at any time. We will use a pseudonym in place of your name in any future publications or presentations.

1. Thinking about previous years, how would you describe your involvement with planning for the 7th grade [College Within Reach] to [Magnolia Gardens]?
2. Describe the communication you had with Teachers in the planning phase before this year's field trip. Would you categorize it as (interpreter led, co-facilitators, teacher led or something else)? Provide an example to support your choice.
3. How would you characterize your interactions with the interpreter(s) during the trip this year (interpreter led, co-facilitators, teacher led)? Provide an example to support your choice.
4. Do you think students were aware of the interaction between you and the teacher(s)? If they noticed, how might this have impacted their experience on the trip?
5. Did this field trip relate to the school's curriculum or standards? How did you connect the trip to curriculum/standards?
6. Did students who visited able to connect the field trip to more than one standard? How did your actions facilitate this? Do you know how often teachers connect classroom learning to students' experience at [Magnolia Gardens]?
7. How did you assess learning from the field trip? Did this have any impact on your relationship with the visiting class?
8. Can you describe a situation when a teacher provided 'skills' you did not expect?
9. After your experience this year, what would it be? If you were to describe an idealized field trip, how would you as an interpreter, the teacher(s) and the students interact with each other during the field trip?
10. After this experience are you likely to be more involved with the middle school classrooms in the future?
11. When planning a field trip with other individuals/groups, what are some of the important elements interpreters should consider?

APPENDIX D

Post-trip Teacher Interview Guide for Study Two

Semi-Structured Interview Protocol

Thank you so much for participating in this study! We will use an audio-recorder to record the interview process. You can withdraw from this interview at any time. We will use a pseudonym in place of your name in any future publications or presentations.

1. Thinking about previous years, how would you describe your involvement with planning for the 7th grade [College Within Reach] trip to [Magnolia Gardens]?
2. Describe the communication you had with Interpreters (informal educators) in the planning phase before this year's field trip. Would you categorize it as (interpreter led, co-facilitators, teacher led or something else)? Provide an example to support your choice.
3. How would you characterize your interactions with the interpreter(s) during the trip this year (interpreter led, co-facilitators, teacher led)? Provide an example to support your choice.
4. Do you think students were aware of the interaction between you and the Interpreter(s)? If they noticed, how might this have impacted their experience on the trip?
5. Did this field trip relate to your school curriculum or standards? How did you connect the trip to curriculum/standards?
6. Are students in your course able to connect the field trip to more than one standard? How does your teaching facilitate this? How often does your teaching explicitly connect to students' experience at [Magnolia Gardens]?
7. How did you assess learning from the field trip? Did this have any impact on your instruction?
8. After your experience this at the Garden this year, if you were to describe an idealized field trip, how would you as a teacher, the interpreter(s) and the students interact with each other during the field trip?
9. After this experience are you likely to be more involved with the [Magnolia Gardens] in the future?
10. When planning a field trip with other individuals/groups, what are some of the important elements teachers should consider?
11. What are some of the characteristics of a strong interpreter before/during/after a field trip?
12. Can you tell me a story of when you worked really well with an interpreter during a field trip?