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Is This More Than a Field Trip? Exploring Memories of Teton Science Schools' Field Education Program

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Is This More Than a Field Trip? Exploring Memories of Teton Science Schools’ Field Education Program

By

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B.A., University of Wyoming, 1989

Plan B

Submitted in partial fulfillment of the requirements for the degree
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Abstract

For more than two decades, upper elementary students in one of the larger school districts in Wyoming have participated in Teton Science Schools’ Field Education Program (TSS). During this time, the district has sent hundreds of students to TSS. Since the expense of the program often exceeds school budgets, teachers and students are often involved in fundraising. This research examined the memories of students who were some of the district’s first attendees. In this qualitative study, the teacher and six of the 13 students were interviewed. Three of the six students participated in a focus group. The participants expressed a variety of episodic memories related to specific events during the trip as well as semantic memories (general knowledge) that they felt have an impact in their lives today. Using grounded theory and coding statements based on topics mentioned in interviews, three themes emerged. First, the students had the greatest number and most powerful memories of the preparation and fundraising the class did prior to the trip and of how the preparation impacted their experience at TSS. Second, the students remembered and related a sense of place (an emotional connection) to their lives today. Finally, the students related their experience at TSS to their sense of self (personal ideas, thoughts, and feelings) often citing memories of successes and challenges encountered there. All six students agreed that the trip was a valuable experience and hope that the district continues support it. However, more research into the long-term memories and impacts of place-based, outdoor field science education programs is needed.
To my kids, the ones I’ve taught and my own,
you inspire me to learn everywhere, everyday!
-Ms. Amen-Peterson
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Chapter 1

Introduction

Background and Rationale

A small school; a big event. The 1994-1995 school year had been filled with struggles and conflicts for a class of upper elementary students at the rural school where I now teach. At the end of the year, the teacher decided to move on to another school and another teacher, Attie Cathcart (pseudonym), volunteered to move up from first and second grades at the school to again teach this group as fifth and sixth graders. The students were feeling disengaged and unmotivated to learn. Attie, whose son was also in the class, spent the summer planning for the upcoming school year. She wanted to re-engage and motivate these students before they left their small rural school to attend the much larger junior high school in town, twenty or more miles from home.

She focused her planning on practical, local activities, encouraged the students to become active in their community and the nearby town, and asked them to take responsibility for their own successes and failures. The class took field trips for service projects and helped the chamber of commerce sort and organize maps for distribution in the city. A donation was made for their efforts. With this donation and a loan from the school’s PTA, they started their own classroom-based business, “The Dead Broke Kid Company.” They purchased craft supplies and made crafts to sell through their own “Santa’s Secret Workshop.” Their crafts were well received and they earned more money. They paid back the loan and purchased more supplies. They created rope and barbwire wreaths to sell and, by Christmas, The Dead Broke Kid Company was no longer “dead broke”.
With some of the money, the students purchased skis and began learning to cross-country ski in the fields surrounding the school, the ranchland of classmates, and in the nearby national forest. They decided that they would have enough money for a reward in the spring and began planning a trip to an amusement park in Denver. One excited student shared what they were learning and doing with her grandmother. The grandmother promised $1000 to match any earnings of The Dead Broke Kid Company, on the condition that the reward trip be “educational”. Attie considered educational opportunities within driving distance and, through luck and timing, found an opening for a week in March of 1996 at Teton Science Schools (TSS), an established and well-regarded field education program in Grand Teton National Park (GTNP). Attie received approval, but no funding, from the district’s administration (A. Cathcart, personal communication, November 5, 2016).

A partnership with place-based environmental education. In the twenty years since that first trip, almost every 4th or 5th grader in my school district is given the opportunity to attend the Field Education Program at TSS. Students spend three to five days exploring and learning, most often in the outdoors. They work closely with camp leaders (usually from the Graduate Program at TSS), their team of classmates, and their classroom teacher, to study a variety of environmental subjects within the boundaries of GTNP. Students may study glacial geology, stream quality, stewardship, winter ecology, or other topics. They practice team-building, cooperation, and learn skills to help each other through this challenging experience. They hike, ski, and snowshoe. They attend evening programs, some of which are conducted indoors. Students sleep in cabins with their classmates and are responsible for cleaning their cabins. They learn to only take what they can eat and weigh their ort, uneaten or wasted food, each day. They help clean the kitchen and do the dishes after meals. After the trip, students
often make presentations about their experiences to other classes, parents, or the school board and administration. The trip is funded through individual school fundraisers and currently our district allows for some funding to be used from classroom and school budgets. The district clearly thinks there is value in this type of place-based environmental education. At my rural school and at other schools in my district, fundraising and preparation for this place-based trip has become a demanding, yet rewarding, part of the upper elementary curriculum.

All students, and specifically rural students, find value in education that is based in the environment in which they live and which they can relate to their everyday lives (Avery, 2013; Sobel, 2004; Stern, Powell & Ardoin, 2011). Within the education profession, this practice is often referred to as place-based education (PBE). In the literature, place-based education (PBE) and environmental education have been used as separate, but overlapping, terms. Place-based education focuses on a student’s environment and uses the local community as the basis for learning (Sobel, 2004). Environmental education seeks to engage students in the environmental concerns of their “place.” Both engage students more deeply in their education by addressing standards using topics directly related to the environment and culture in which students live. Though not required of PBE or environmental education experiences’, both often occur outdoors and often away from the classroom. However, education out of the school setting requires time for preparation and planning and money for travel and supplies, both resources teachers often find lacking; therefore, fundraising and preparation for these trips places further demands on teachers.

High stakes testing and new rigorous standards place greater demands on all students and educators find it difficult to incorporate PBE into their teaching (Shamah & MacTavish, 2009; Showalter, 2013). Focused on rural students in their research, Shamah and MacTavish (2009)
found that rural students place less value on their local knowledge when place-based methods are abandoned. It is important for rural students to relate what they are learning and doing in school to their lives outside the classroom. This is especially important in STEM fields (Avery, 2013).

Environmental PBE programs engage students in science and increase their environmental attitudes and awareness (Stern, Powell & Ardoin, 2014). Liddicoat and Krasny (2014) conducted a qualitative study with Washington and Wyoming students who attended Mountain School (located in North Cascades National Park, Washington) and TSS, respectively, five years after their attendance. Using autobiographical memories, they found that Wyoming (TSS) students showed that they still remembered their trip in similar natural settings and used what they had learned to appreciate and understand their current situation. Washington students, inspired by their experience at Mountain School, learned and retained environmentally responsible behaviors (Liddicoat & Krasny, 2014).

There is extensive research to support the value of residential environmental education programs and PBE. In addition to Liddicoat and Krasny mentioned above, Bogner (1998) found that students attending both one- and five-day programs demonstrated cognitive gains and that the longer stay provoked positive environmental behaviors as well. In a study of a program in Great Smoky National Park, students remembered the experience positively and “developed a perceived proenvironmental attitude” (Farmer, Knapp, & Benton, 2007) and that student responses exhibiting a proenvironmental attitude may have been the result of program attendance (p.39). In 2015, Williams and Chawla studied adults active in environmental fields and found that “sixteen of eighteen of study respondents believed that program experiences shaped their environmental identity” (p.15). However, Smith-Sebasto and Semrau (2004) found that a large sample of students participating in a New Jersey program did not demonstrate an increase in
“positive attitudes toward the environment” after a 4-day stay. Stern, Powell, and Ardoin (2008) found students showed cognitive gains immediately after a residential environmental education experience, but that those gains had diminished substantially after three months.

Although the research mentioned above supports the belief that programs can impact short-term cognitive and affective goals, there is not extensive research to support that the programs impact environmental attitudes (Eaton, 1998) and there is very little research into the long-term impact of these programs. Long-term studies are difficult to conduct. It can be challenging to find participants years after the program. It is not possible to limit other influences as past participants’ age. The programs evolve and change. Turnover within research institutions and changing goals can also hinder long-term studies. The idea of long-term has likely shifted to include much shorter studies. Because of this, much research that includes the tags “long-term” and “environmental education” defines long-term as six months to one year after the experience.

**Statement of the Problem**

Weeklong field trips are expensive and by their very nature require students to travel and attend, sometimes hundreds of miles away from their regular school, routines, and homes for up to a week. These residential outdoor programs also require far more preparation and planning than traditional classroom teaching. They are costly and the fundraising involved often occupies hours of classroom, weekend, and evening time. With objectives and long-term goals of these programs always evolving, they have proven difficult to evaluate. The impacts may be difficult to identify and measure and are often not researched, especially after several years. Although students in my district have been going to TSS for more than twenty years, what our students
retain from this experience has never been explored. The gap in research concerning the long-term influences and impacts of programs like the Field Education Program at TSS is evident.

**Purpose**

The purpose of this qualitative study was to explore the retained memories of a weeklong trip to TSS twenty years after attendance. Using an open-ended, semi-structured interview process allowed me to explore the feelings and memories expressed by former TSS participants and discover how the experience may continue to influence their current attitudes. Initially, I posted a request on social media for former students to share memories of TSS. I immediately heard several positive stories. Memories and feelings are interesting and inspire me as a teacher, but hearing positive stories was not enough. In interviews, I probed to determine if memories of TSS have had a lasting impact on these former students’ lives.

In this era of high-stakes testing and rigorous new content standards, it is possible that this research may help rationalize the time and expense involved in attending programs like the Field Education Program at TSS. It could also provide much needed direction (Bourke, Buskist & Herron, 2014) to programs and teachers who attend to prepare activities that are remembered as meaningful by students.

**Research Questions**

The questions that guided this study were:

1. What are the memories retained by participants of residential environmental education (REE) experience and what are their perceptions of those memories?
2. How do former participants perceive the effects of those memories in their lives today?
3. How can those memories help inform the decision to participate in REE programs?
Chapter 2

Literature Review

Introduction

As a teacher who has attended TSS's Field Education Program with students, my research questions were generated from questions I have asked myself during the planning, preparing, attending and following-up that I have conducted throughout the years: What from this experience do students remember? What long-term significance do these memories hold for former participants? How can their memories inform decisions about the TSS Field Education Program today? I wondered if and how I might modify my goals and planning if I better understood what students who attended had retained. Therefore, while delving into the literature, I focused my search on defining TSS’s Field Education Program using the current literature. It has been two decades since my study participants attended the Field Education Program at TSS, so I studied the evolution of the program within this definition. I investigated the research methodology and theoretical basis that would best produce viable, defendable answers to my questions.

In 1996 and until 2016, TSSs’ mission statement was: “To connect people, nature and place through education, science and stewardship” (2016, tetonscience.org). By 2017, in preparation for their 50th year, TSS had adopted a new mission statement: “Inspiring curiosity, engagement and leadership through transformative place-based education” (2017, tetonscience.org). Four words remain constant in both mission statements: 1) through 2) place 3) and 4) education. These terms clarified a starting point for my research. Also pertinent to my research, in late 2016, the TSS Field Education Program’s web page redefined their goals and objectives and included “place-
based, experiential education”, “leadership skills”, “sustainability issues”, “natural history”, “ecology of the local area” and “hands-on/minds-on learning in the outdoors” as important program themes taught through the program. (http://www.tetonscience.org/field-education/home/, 2017).

In the literature, place-based education, outdoor education, experiential education, and residential environmental education have all been given their own distinct definitions (Adkins & Simmons, 2002; Heimlich, 1993; Robbins, 2015; Sobel, 2004). To understand the program that the students attended in 1996 and the program that my district’s students still attend today, I considered all four types of education associated with TSS’s Field Education Program.

To gain meaning from the recollections of former participants of TSS’s Field Education Program and to form a theoretical basis for my research, I considered memory theory used by Liddicoat in 2013 who conducted a study of participants five years after attending the TSS Field Education Program. Like Liddicoat, and Everson before her, I also looked at the significant life experience framework introduced by Tanner in 1980, which has since been used in research (Cachelin, Paisley, & Blanchard, 2009; Colvin, 2013; Williams & Chawla, 2015) to glean meaning from outdoor experiences and their effects on environmental attitudes and behaviors later in life, and as a method of program evaluation.

Finally, I justify my methodology by referencing literature that defends the appropriateness of qualitative research and the use of grounded theory for a long-term, exploratory study such as this. I dealt with my own inexperience in conducting research, interviews, and focus groups by seeking information on the techniques and tools required to help me implement my research, examine my results, and interpret my data.
A Definition of Place

Place can be defined, as it was for me by Doug Wachob, who first taught as a member of the Graduate School faculty at TSS in the spring of 1996 and has had a long affiliation with TSS and programs there. With the caution that place is not easy to define, Doug included the outdoors and the natural system in his definition, but added the importance of the human system and its understanding the natural system and that interaction to create meaning for the term place (personal communication, D. Wachob, February 11, 2017). Doug was referring to what Resor would call a sense of place (Resor, 2012).

Place does not only refer to location, that is, a geographic position or where a place is located on a map. Place as a location is objective, and requires little explanation. Location can be answered with longitude and latitude or, more commonly, a street address. However, place can be defined in two additional ways: locale and sense of place (Resor, 2010). Locale implies additional characteristics of a place including its setting and the objects, natural and man-made, that make up a place. A sense of place includes the feelings, emotions, and value one attaches to a location and the objects that are part of it (See figure 1).

In “The value of place”, a review essay of K. Brkich’s paper (2014), Dentzau (2014) discusses the use of the term place as highly individual and personal. Dentzau cautions that PBE must consider which approach, location, locale, or sense of place, is being emphasized. Educators using PBE methods must “acknowledge that for the
individual, it is highly situational, cultural and personal” (p. 165).

Figure 1: *A definition of place.*

The challenge of developing a sense of place for students on a trip to TSS is in inspiring them to connect to the beauty of an outdoor and possibly faraway place while simultaneously moving them to make that connection personal and take it home with them. In that experience of place and PBE, they can possibly find a reason to value and defend their own home environment.

**Place-Based Education (PBE)**

Although PBE (as I broadly defined it in Chapter 1) wasn’t formally defined as a methodology in 1996, even ancient hunter-gatherer societies used place-based teaching methods as children learned from adults which local plants and animals were viable options for food and survival and which should be avoided (Herrboldt, 2016; Thomas, 2006). Traditional Ecological Knowledge is a term for this type of generational
knowledge and is commonly understood to be based on direct interactions between humans and their environment (Cleveland, 2009). Using local resources, teaching in ways that are directly relevant to the learners’ lives and the interaction between humans and their environment are central tenets of PBE.

The importance of connecting education and schoolwork to life and everyday work was put forth by John Dewey (1938) long before the term *place-based education* appears commonly in the literature. He explained that progressive schools worked at “making the most of the opportunities of present life” and toward a familiarity with our changing world (Dewey, 1938). A 1947 bulletin by the then Office of Education (currently the United States Department of Education) says, “school subjects can be useful in everyday living in the country,” (Bathurst, 1947, p. 30) and explains that what students learn in “country”, or rural, schools is especially useful when their work at school is used to improve their homes and communities.

In the early 2000s, the term “place-based education” and formal definitions begin to appear in the literature as a specific methodology for effective teaching. At first, because much of PBE occurs in the outdoors and “in nature”, it is associated with rural education and environmental education programs where access to the outdoors is more readily available.

Sobel (2004) provided a definition of PBE in the book *Place Based Education: Connecting Classrooms and Communities*. Sobel emphasized using local community resources and “hands-on, real-world experiences” to engage students more fully in their learning. Sobel promoted lofty outcomes of PBE, emphasizing that this approach can create “active, contributing citizens” as well as enhancing “community vitality and environmental quality.” Although environmental concerns are often addressed in science and social science curricular areas, Sobel states that all academic areas can be enhanced with PBE practices (p. 7).
In their 2010 book, *Place- and Community-based Education in Schools*, Gregory Smith and his co-author, Sobel, look to a definition provided by the Rural School and Community Trust and form a similar definition of PBE which includes the use of community members in “every aspect of teaching and learning” with an emphasis on the needs of the community. This definition again emphasizes the importance of the “local” to PBE (Rural School and Community Trust, 2004; Smith & Sobel, 2010, p. 23).

Working with Getting Smart and eduInnovation, in 2017 TSS offered professional development courses to encourage the implementation of PBE. In their publication, they offer a modern definition of PBE, which, although emphasizing the local, begins to address the importance of “place” and PBE in a global context as well as in urban areas (Getting Smart, 2017).

Tracing the ideas promoted since the beginnings of society (Thomas, 2006) to our modern, global society of today demonstrates the long and evolving timeline of PBE, even if every day use to the term is somewhat new. The term “place-based education” was not commonly used in 1996, but its methods were familiar in the rural education setting long before that time (Bathhurst, 1947; Dewey 1938). Recently it has become prevalent in urban schools as well. As our world becomes more technologically advanced, expands Internet access, restructures school districts, and improves mobility, the difference between urban and rural education may be narrowing. I acknowledge that PBE research has grown in recent years in both urban and rural settings, as has its familiarity with educators, schools, and programs outside of the school setting. However, since PBE began in the rural setting and the school I studied was and still is decidedly rural, I have separated the research regarding PBE into rural and urban areas.
Place-based education in the rural setting. Rural schools and their supporting organizations have been considered pioneers of place-based education. In the early twentieth century, when Dewey (1938) first proposed the idea that education should be rooted in what is meaningful for students and connected to their life outside of school, more of the United States was rural than it is today. Wyoming, with its estimated population of fewer than 600,000 people and with no more than three counties with a population density greater than ten people per square mile, is generally rural (United States Census Bureau, 2015). My school, twenty years ago, and today, is considered a rural school within my densely populated (for Wyoming) county (Branch, 2010).

The value of place-based education in rural settings has been supported in research and literature. Avery (2013) introduced the concept of local rural knowledge and its importance to the success of rural students particularly in science education. While rural students may have a thorough understanding of science concepts learned in their daily life, unless that knowledge is recognized and used as a starting point for teaching science in the school, the students may never make the connection between this knowledge and future opportunities. Avery found that connecting daily life and everyday local knowledge to formal education can help students envision themselves as active and involved citizens, and even as scientists, within their local communities.

Using case study techniques, Lewicki (2000) developed and implemented a place-based curriculum with 25 high school students in rural Wisconsin. After more than 100 days of place-based study at various sites within their community, students showed significant gains in standardized test scores. Lewicki considered other benefits as well. Lewicki demonstrated that students felt engaged with their classmates as a team of
learners and felt invested in their learning and in their community. The community setting increased memory retention, providing students with meaningful anchors to which they could tie their learning. The study found that the first-hand experiences helped students directly connect their activities to their community and increased their feelings of accountability toward the outcomes of their learning.

Although using place-based methodology can be time-consuming, particularly as students advance to upper level science and mathematics courses (Showalter, 2013), Shamah and MacTavish (2009) found that taking the time to include place-based methodology in the rural school setting increases a valuable skill set for students. Rural students may experience growth in autonomy, willingness to work, creativity, flexibility, responsibility, and independence (Shamah & MacTavish, 2009). A skill set with these characteristics would be an asset to any student, rural, suburban or urban.

**Place-based education in the urban setting.** Like research in rural education, studies implementing place-based education in urban settings show that students gain sounder understandings of science concepts when those concepts are related to experiences they have already had in life. In a study of urban fifth graders, students demonstrated greater connections and conceptual understanding of erosion when they used their own photos and observations of the phenomena in their neighborhood. The use of man-made materials they observed every day on the way to school aided understanding (Brkich, 2014). Urban students in the TSS Field Education Program connect to the place in Wyoming and take that connection to the life they experience in their urban settings (Gunshenan, Leu, & Perkins, 2016; Wilck, 1984).
Ernst & Monroe (2006) conducted a study in Florida with over 400 high school students from a variety of schools who demonstrated significant improvements in achievement motivation and critical thinking skills and attitudes after participating in PBE courses.

In a survey conducted to determine the influences of a residential environmental education program in Tennessee, Stern, Powell and Ardoin (2008) found that students showed gains in their connection with and stewardship toward nature as well in their tendencies toward discovery and awareness of the natural world. They found that larger groups from larger schools showed greater gains. In follow-up study, this team of researchers found that urban students generally showed greater gains than non-urban students after attending a similar program.
Semken & Freeman’s (2008) study of “sense of place” found that sense of place is a measurable learning outcome of place-based science teaching. They developed a “culturally inclusive, meaning-rich” introductory geology course. Using the Place Attachment Survey (Williams & Vaske, 2003) they assessed place attachment and meaning in students who took the course. They observed significant gains in student place attachment and place meaning.

**Place-based education: improving scores, meeting standards.** Whether urban or rural, the literature provides substantial reviews and research into the impressive claims of Sobel’s (2004) definition and the development of “active, contributing citizens” due to PBE and to educational experiences that happen outside of the school building. In the book, *Place- and Community-Based Education in Schools*, Smith and Sobel (2010) note that it is difficult to directly connect student participation in PBE to higher standardized test scores or to prove “statistically significant gains in student achievement” (p.14). However, academic gains do occur and there are certainly other outcomes that are as
important, and perhaps more important, than test scores. Students involved in PBE show gains in school satisfaction, gains in their own perception of their academic achievement, an increased connection to their community and sense of place as well as an increased awareness of the natural world and a desire to be stewards of it (Avery, 2013, Lewicki, 2000; Semken & Freeman, 2008; Smith & Sobel, 2010; Stern et al., 2008). In his earlier book, *Place-Based Education: Connecting Classrooms and Communities*, Sobel (2004) includes the heading, “What Research Says: “How Place-Based Education Increases Academic Achievement” and cites studies which show academic gains in PBE. The State Education and Environment Roundtable report, and a study published by the National Environmental Education and Training Foundation both confirm academic and other gains demonstrated by students in PBE programs.

Since the implementation of the No Child Left Behind legislation and even as we begin to implement its replacement legislation, Every Student Succeeds, we have been increasing our focus on these data-driven results. In 2013, the Next Generation Science Standards (NGSS) were introduced. Teachers and science programs are challenged to teach and meet these rigorous standards as well as produce test scores that demonstrate student success. A challenge for PBE researchers is to continue to gather data supporting positive impacts of PBE methodology and connect that with meeting the NGSS and the requirements of Every Student Succeeds.

**Environmental Education**

While TSS, prior to 1996 and still today, emphasizes “place” in their program definitions and uses the term “place-based education” in their new mission statement, when it formed in
1967 and throughout its history has “set the standard for environmental education” (Teton Science Schools, 2017). In the literature, “environmental education” is defined apart from PBE.

With a focus on ecology, environmental education began in the early 1970s with the National Environmental Education Act and celebration of the first Earth Day. Harnessing the energy of the anti-war movement, environmental education became synonymous with protests, pollution prevention, and “monkey-wrenching” irresponsible development (Carter & Simmons, 2010). In 1976, recognizing an increase in modern-day pollution and realizing a desperate need for environmental concern and education, the United Nations in the Belgrade Charter defined the goals and objectives of environmental education. They focused on environmental problems and developing concerned citizens committed to solving those problems (UNESCO-UNEP, 1976).

Just as there are many and evolving definitions of PBE, there are many interpretations of environmental education. Heimlich (1993) defined environmental education as teaching about the environment, generally in a “nonformal” setting. Since outdoor educational experiences are often seen as an antithesis to formal “text-book” learning, environmental education is often associated with PBE. Much like PBE definitions, Heimlich emphasized that environmental education is “natural learning” in that students should be provided a framework in which to construct their own meaning, from a point of their own interest and background.

At its inception, environmental education called for action. Participating in protests, writing governmental agencies, and dealing with “issues” was often a part of environmental education and created what Sobel calls “baggage” (2004, p. 8). Sobel agrees with Heimlich that “natural education” was the basis for environmental education in the early twentieth century but that it evolved to dealing with catastrophic issues that were too far removed for elementary

In the past, environmental education dealt with ecology and the natural environment. In the anthology, *Stories in the Land: A Place-Based Environmental Education Anthology* (Elder, 1998,) environmental education is part of PBE. Sobel states that to be “desirable” environmental education must also include the *built environment* and that it must connect to the community of the learner. Heimlich includes not only ecology, but also the emotional connection learners may have to a place.

As Getting Smart and TSS recently redefined PBE, the North American Association for Environmental Education (NAAEE) offers a modern definition of environmental education. While not focused solely on the local, the NAAEE definition of environmental education emphasizes the importance of learning about the environmental challenges local communities face to help inspire the development of skills to address global challenges. (North American Association for Environmental Education, 2015). The goal of environmental education is to “inform and inspire” as well as “motivate action”. Environmental education’s new definition, therefore, is closely related to PBE.

**Experiential Education**

Teaching through experiences rather than textbooks, lectures and worksheets is the fundamental premise of experiential education. Experiential educators emphasize learning by doing and use carefully chosen experiences to support learning and provide opportunities for reflection, analysis, synthesis of the experiences to create meaning (Adkins & Simmons, 2002.) Dewey espoused that newer education (“newer” in 1938) and progressive schools included a focus on individuality, free activity, and learning
through experience rather than through textbooks and teachers. The experiences may or may not be outdoors, but when students are actively experiencing phenomena to learn, the experience is often outside of the classroom.

**Outdoor Education**

Outdoor education has its own definitions. Robbins (2015) synthesized the primary objectives of outdoor education as building student relationships, creating environmental awareness, and inspiring personal development. Outdoor education often encompasses adventure and challenge education as well.

Adkins and Simmons (2002) while attempting to find convergence in the definitions of environmental, experiential, and outdoor education, trace the origins of outdoor education through an evolution of camping education and nature study to education “in, for, and about the outdoors” (p.2). They conclude that outdoor education has emerged “as a context for learning” in which outdoor experiences are designed to meet objectives in any area of education.

Outdoor education alone cannot define the TSS Field Education Program. The Field Education Program occurs, for the most part, outdoors. It is generally an adventure and challenge to students, and often teamwork and personal development are increased. Merging many educational approaches is required to define the program more clearly.

**Four approaches, one evolving program.** Environmental education is a field that often uses outdoor experiences to meet objectives. Experiential education often uses outdoor experiences to meet objectives. Although few, there are indoor activities included in the TSS Field Education Program. Outdoor experiences within a pristine and protected national park are the focus of the TSS Field Education Program. What makes
TSS’s Field Education Program unique is the place of GTNP and the surrounding area and the sense of place that TSS aims to instill in students that attend the program.

For the purposes of this project, I use the principles of PBE as synonymous with environmental, experiential, and outdoor education. While PBE does not necessarily take place “outdoors” and does not directly require an environmental component, the very nature of place relates to the environment in which we live—and that environment is often outdoors (Robbins, 2015; Smith & Sobel, 2010). TSS’s Field Education Program, self-defined as place-based, seeks to teach through the methods and ideas outlined above.

Although the place and geography of GTNP has remained much the same since my school first attended, and “place” has always been an integral part of the Field Education Program at TSS, both TSS and its programs have evolved. The national education standards teachers are asked to meet and goals and expectations of stakeholders have also changed. Understanding this evolution can aid in understanding the goals of the program 20 years ago. However, interpreting student recollections after this much time requires addressing memory theories.

**Memory Theory and Significant Life Experiences**

Memory theories are addressed in social and neurological sciences. In neurology, reliability of any memory, and especially long-term, emotionally attached memories can be questionable (Phelps, 2004). In the popular literature, based on an interview with Phelps, Konnikova reiterates that emotional ties, while strengthening specific recall, can also lead to a rewriting of these memories by individuals (Konnikova, 2015). When conducting research with six participants and addressing long-term memories, one could expect that the autobiographical
In psychology, there is value in documenting declarative autobiographical memories in order to interpret how those memories serve individuals later in life (Bluck, 2003). These types of memories are divided into two general categories: episodic and semantic. Episodic memories involve specific events and knowledge, which is emotionally and mentally tied directly to that event. Semantic memories involve general knowledge that is used but no longer tied to the event in which the knowledge was gained. In education, the hope is that much of our memory becomes semantic; however, episodic memories can also provide valuable data because the basis of education is not only what we are taught, but also what is remembered and expressed later in life (Semb & Ellis, 1994). Since my retrospective study involved a specific event, episodic memories were central to my research.

Research in the field of Significant Life Experiences (SLE) usually focuses on people who, as adults, are active environmentalists or environmental educators. SLE research has revealed that environmental and place-based activities in the outdoors are common childhood experiences for those people (Chawla, 1999; Peterson, 1982; Tanner, 1980). In several studies and literature reviews, outdoor SLEs are viewed as the groundwork for environmentally responsible behaviors later in life. This research suggests that students who attend the TSS Field Education Program may come away with a desire to engage in environmentally responsible behaviors and may one day become interested in the sciences or even become active environmentalists. SLE research does not suggest, however, that a single experience in the intermediate elementary grades as part of a class field trip will be life changing or impactful as an episodic memory or that the event should be classified as a SLE. While environmentally
active adults often have experiences like the Field Education Program at TSS, they usually have many of them over the course of their childhoods.

Using memory theory, Liddicoat (2013) conducted two studies to explore the long-term impacts of residential outdoor environmental education programs. One study investigated the memories of 54 students who attended the Field Education Program at TSS in Wyoming and another similar program, North Cascades Institute in Washington State, five years post-program. A second study focused on memories of former attendees of Bradford Woods, a program in Indiana, up to 50 years post-program.

Liddicoat (2013) noted that retrospective significant life experience (SLE) research helped define childhood experiences that seem to influence people who become environmentally active, but SLE research did not help explain what most attendees of the program remember or gain from the experience. Liddicoat, however, also suggests that episodic memories can inform researchers seeking to understand what is learned and retained from these programs (Liddicoat, 2013, citing Knapp & Benton, 2006).

Memory theory can help clarify what the actual experience brings about in the minds of participants, whether they become environmentally active later in life or not. Memory theory defines what is often remembered and SLE research suggests that experiences like the Field Education Program can be significant, but not alone, instead more generally as part of a life replete with outdoor experiences. The goals of a program like the TSS Field Education Program often do include increasing students’ environmentally responsible behaviors or at least their awareness of the environment and their place within it.
Prior to conducting interviews, I had background knowledge from attending TSS myself and from conversations with other teachers who have attended, including Attie Cathcart, and with TSS staff. From my own knowledge and based on the literature, I could expect that students might remember certain events but that the declarative autobiographical memories based on a specific event would vary from person to person. The themes that would emerge from the data itself, from the retained memories expressed by my participants. In qualitative research, grounded theory is the use of data to develop theory and themes.

**Qualitative Research, Grounded Theory, and Interview Techniques**

Qualitative research strategies and methods lend themselves to the type of research I conducted with the rural school students who attended TSS twenty years ago. In the book *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*, Creswell (2009) states that narrative research is a qualitative strategy that “combines views from the participant’s life with those of the researcher’s life” (p. 13).

According to Kvale and Brinkmann (2009) there are several forms of interview protocols appropriate to qualitative research. I developed a list of questions based on Kvale and Brinkmann’s advice for conducting semi-structured interviews and based on Liddicoat’s (2014) previous research into the memories of TSS participants.

Grounded theory is another qualitative strategy according to Creswell (2009). Creswell states, “the researcher derives a general, abstract theory of a process, action, or interaction grounded in the views of participants” (p.13). Glaser and Strauss (2011) define grounded theory as the “discovery of theory from data” (p. 1).

My background and personal information about TSS sparked my research questions. Knowledge derived from the literature made it possible to apply grounded
theory and memory theory in my research. However, the program on which my current knowledge was based was not the same program on which my research was based. The evolution of the Field Education Program at TSS is evident throughout its history, elaborated in the next section.

**Teton Science Schools’ Field Education Program Then and Now**

The Field Education Program at TSS has evolved in its 50-year history. In 1967, Ted Major, a high school teacher in Jackson, Wyoming, designed an experience for his students that would include six weeks of study of the natural sciences to be conducted outdoors. Not yet established in GTNP or as Teton Science School, TSS’s emphasis on place began with Major’s first program (Teton Science Schools, Feb. 25, 2017.) The literature at the time presented no definition of the term “place-based education,” but Major held that if one was to study natural science in an area with exceptional access to the natural world, that study should be taught outdoors, in that place.

In the late 1960s and early 1970s, the program’s inception coincided with the environmental education movement. There are testimonials from former students of TSS who declare that the experience spurred their futures as environmentalists. Terry Tempest Williams, one of the first graduate students at TSS in 1974 recalls reading Edward Abbey’s *The Monkey Wrench Gang* with Ted Major. She remembers attending environmental activities as part of her time there. Positively influenced by her time at TSS (as a significant life experience), she is now, an author, naturalist, and environmental activist. At times, participants would write letters and participate in environmental protests or events with instructors from TSS. Field Education Program participants might attend court hearings regarding environmental concerns in nearby cities. More recently, Juan Martinez, currently the Director of Leadership Development at the
Children and Nature Network and a member of the Board of Directors of the Sierra Club Foundation, attests that after an opportunity to attend TSS (as opposed to remaining in detention in Los Angeles) he found a "purpose in this life" (Teton Science Schools, 2012).

In the article “Teton Great Outdoors” from The Christian Science Monitor (November 13, 1984), then program director of the Field Education Program, Jeff Hardesty says, “Our aim is to educate people about their natural environment, hoping they will go into the future making wiser decisions. And we place them in real-life situations.” One of those “real-life situations” in 1984 was taking a school to a court hearing about the Jackson Lake Dam. Early in the history of TSS, environmental education included opportunities for environmental activism. However, the desire to present all angles of environmental education was present at TSS. Hardesty recalls one program dealing with the problem of elk management that included a hunting outfitter, and spokespersons from the National Park Service, the Forest Service, and the National Elk Refuge. The goal was to have students form their own opinions of the issue. Hardesty is quoted, “We specialize in experiential education” (Wilck, 1984.) In the 1980s, residential environmental education was becoming “experiential education” at TSS.

Engaging in environmental activism has not been part of the Field Education Program recently, but the principles of environmental awareness, conservation, and stewardship remain constant today. TSS left behind the idea that environmental education implied teaching an activist “monkey wrenching” stance for global problems that, at least at the elementary level, are pedagogically inappropriate and removed from the very place that PBE and TSS emphasize. The NAAEE states that environmental education strives to motivate action. (North American Association for Environmental Education, 2015). In 2017, based on its mission statement, TSS
could motivate action through “leadership.” However, neither “action” nor “environment” are included in TSSs’ mission statements from either 1996 or 2017.

TSS provides students with both outdoor and indoor experiences that add to the experiential nature of the program. The *Hands to Work* program, used since prior to 1996, requires students in the Field Education Program to help in the kitchen, clean their own rooms and cabins, and take care of their lunch preparation and cleanup. This program is incorporated not only to save TSS the cost and time of the work involved, but also to give students ownership in the experience and help develop an independent skill set.

In my interview with Doug Wachob, he recalled that in 1996 when he first arrived at TSS, the program was not designed for participants to connect the learning that occurred at TSS back to their place, regardless of the location of their school or the curriculum taught there. TSS’s Field Education Program offered a predetermined menu of field ecology classes, and the courses did not change according to the needs or goals of participants. Applying the sense of place gained during the Field Education Program back to a participant’s home and their established sense of place was not emphasized.

In the early 2000s, when TSS expanded its Field Education Program’s campus, it also began to emphasize PBE not only in relation to GTNP, but also in consideration of the participants. Studies have shown that urban and rural students come away from residential environmental education programs with different experiences (Stern, Powell, & Ardoin, 2011) and that many factors, including the length of stay at residential programs, affects outcomes (Stern, Powell, & Ardoin, 2008).
The value of place-based education has been defended in both rural and urban settings. TSS has a long history with the Principia, a boarding school in St. Louis, MO. In addition, the Field Education Program collaborated with the National Park Service to increase urban youth involvement at national parks and enhance urban outreach. Mountains to Main Street is an ambassador program facilitated at TSS in conjunction with NPS, Groundwork USA, and the Student Conservation Association. Youth leaders from around the country spent a week at TSS developing action plans to be implemented in their home communities.

In 2016, a pre/post-survey was given to 206 middle school students before and after a weeklong experience at TSS’s Field Education Program. These surveys measured attitudes toward science and self-efficacy and science learning related to the NGSS. The results showed that students demonstrated statistically significant improvement in all areas (Teton Science Schools Research Program, 2016).
Chapter 3

Methodology

My study was designed to explore participants’ memories 20 years after attending a five-day program at Teton Science Schools Field Education Program. This type of research can be difficult to conduct. Two decades after an event, records can be lost, memories can vary and research subjects can be difficult to find. Because of the varied nature of memories and because my research involved in the personal interpretations of participants, I realized that I could be surprised by the responses and the differences in experiences and memories that came up in my research.

Memory theory (combined with Significant Life Experience (SLE) research) was used as a lens to identify the themes that emerged. I initially used episodic memories to help define the topics, then semantic memories expressed in the interview data helped define the themes. Following Chawla’s (1999; 2015) reviews of and research into significant life experiences and Liddicoat’s and Krasny’s (2013) and Knapp’s (Knapp & Benton, 2006; Farmer, Knapp, & Benton, 2007; Knapp, 2006, 2007) use of memory theory, I attempted to discern the current perceptions and uses of those memories. Knapp et al (2007) used qualitative interviews to discern what youth and adults recall many months after a program and made suggestions based on memory theory as to how EE and interpretive experiences can be more memorable. Liddicoat and Krasny used memory theory to determine the impacts of residential outdoor environmental education up to five years after the experience. Chawla and Cushing (2007) focused on childhood life experiences that later led to adoption of pro-environmental attitudes and life-styles and involvement in environmental action.
Memory theory allows for retrospective program evaluation, much of which is based on long-term memory theory (Liddicoat & Krasny, 2013). My research was entirely retrospective and was based on one life experience shared among a small group of individuals. My goal was to determine its significance through exploration of retained memories and perceived impacts.

I currently participate in the TSS Field Education Program with my students and have for almost ten years. Not only did the data collected in individual interviews with former participants of their experiences and memories inform my research, but my own experiences and memories of TSS did also. Peer reviewed literature and popular articles and blogs published by and about TSS were also helpful in guiding my research. I interviewed the teacher, current and former members of TSSs’ faculty, and staff as well.

Research Questions

Recall that this study was designed to explore and answer these questions:

1. What are the memories retained by participants of residential environmental education (REE) experience and what are their perceptions of those memories?

2. How do former participants perceive the effects of those memories in their lives today?

3. How can those memories help inform the decision to participate in REE programs?

My focus on emerging themes, the memories of former participants, and the perceived impacts of those memories led me to a solely qualitative study. Qualitative data “...is equipped to explore the emotional and interpretive side of environmental experience that research has otherwise avoided, but which forms a necessary complement to a full understanding of not only what people do, but why” (Chawla, 2006; p. 361). These data could be gathered through open-
ended interviews and I determined a quantitative or Likert style survey would not enhance my data or my understanding of the themes and impacts of participants’ memories.

**Population and Participants**

**Population.** The population from which I obtained my data was that of a small, rural community. All interviewees had family who still reside in the area, and although portions of the community can appear transient, the population from which I selected participants is quite stable. The rural area was made up of generally Caucasian, conservative, Christian families who were either involved in agricultural enterprises (often with one or more family members who have a job in the nearby town) or work at a nearby business such as the local café or water treatment plant.

**Participant Selection.** Every student from my school, for the past 20 years, has been given the opportunity to attend Teton Science Schools’ Field Education program. In order to promote fundraising and community awareness, particularly of the biennial trip to TSS, our PTA has set up a friends and alumni page on social media that has more than 120 members. I initially contacted potential interviewees through this venue. Many former students responded to my request for participation in my research. I received responses from students from many different classes; all had attended TSS as 4th, 5th or 6th graders.

I talked to Attie Cathcart (the teacher who first attended TSS with students from my school in 1996) by phone prior to selecting participants. I did not record this conversation, but I did take notes and immediately typed up the information after our talk. I sent my notes and my first draft of the paper to the teacher to verify that I had her story right. In return, the teacher sent me a group photo from the original 1996 trip and provided a list of students’ names. Since there were 14 students in the original class, I chose to limit my
interviewees to this one class of students. This decision ensured that all students had attended at
the same time and had the same experience, so the differences in their memories could not be
attributed to having attended during different years.

I contacted the participants using social media. Four responded and shared their contact
information with me. They were sent a consent form through their preferred mode: traditional
mail, email, or in person. The invitation and consent letter explained the purpose of the research
and the participant selection (See Appendix A). I also provided them with information about the
research, participant responsibilities, and confidentiality.

Because I teach at the same school and many of these families still live nearby, I
contacted the families of two other students and through them, found two more research
participants. A colleague shared contact information for the final participant. Of the students
who attended, I contacted eight. I interviewed the first six people who agreed to participate over
a period of 17 days in January and February 2017. All were offered the opportunity to contribute
to a focus group discussion following completion of individual interviews. Three choose to
participate. In my transcriptions, interviewees were assigned pseudonyms to keep their identities
anonymous. All participants were between 31-32 and had attended TSS as 11- or 12-year-olds in
March of 1996 with their teacher and two other adult chaperones.

Data Collection – Instruments

I wanted my participants to tell their stories in the way in which they were most
comfortable. Kvale and Brinkmann (2009) define this approach as a narrative interview.
Narrative interviews often begin with a question about a specific episode, which was
entirely appropriate for my study. However, the participants were expected to recall
specific memories about an event from 20 years earlier and memory evolves or fades
with time. Therefore, my interview tool needed to be semi-structured to encourage recall for the participants, but not lead them to specific responses.

**Open-ended, semi-structured, individual interviews.** Interview questions used to explore and gain deeper understanding about participant experiences five years after TSS in a 2013 study (Liddicoat & Krasny, 2013) helped inform the development of my questions. Two questions were used as the basis of all interviews:

1. What do you remember most about your trip to Teton Science Schools?
2. How does that experience apply to your life now?

Follow up questions were based on initial responses. A blank interview form was prepared prior to each interview (see Appendix B).

I first asked if it was okay to record our interview, then I asked for basic contact information. In semi-structured fashion, I began with an icebreaker. I did not always read questions verbatim depending on how much background I had acquired already. In the icebreaker, I reminded the interviewees of the “Dead Broke Kid Company” and how these funds allowed them to take the trip. I also mentioned the year they attended and that every student in our district now has the opportunity to attend TSS. After the icebreaker, the first prompt was always, “Tell me what you remember most about Teton Science Schools.” Often, I added, “You can start at the beginning or just talk about a specific event that you remember.”

While the participant talked, I recorded notes and ideas or topics that were mentioned. The semi-structured, narrative nature of the interview encouraged spontaneity. Because I am familiar with TSS and had already interviewed their teacher, I could prompt the students if they could not remember specifics about trip planning and organization. For example, I knew that 13 students had attended and knew all their names. Occasionally, I reminded students of a
classmate’s name who also attended. A student remembered weighing the food leftover after eating, and struggled to recall the term, "They called it 'ork' or 'offal,'" she recalled. I could remind her that Teton Science Schools uses the word “ort”, meaning a morsel left at a meal, (Webster’s Third New International Dictionary.)

Although I hoped to conduct the interviews in person, all but one was conducted by phone. I use a voice recording instrument on my smart phone to capture precise language from interviewees and the Rev® app to initially transcribe the interviews. I also took notes to avoid the potential for misinterpretation or bias and listened to interviews several times to capture inflection and meaning from emotions and tone of voice. Immediately after an interview transcription arrived (within 24 hours), I reviewed the transcriptions while listening to the interviews and made corrections as necessary.

In the individual interviews, the topics that emerged guided the follow-up questions or the prompts, therefore each interview was unique. The discussion usually evolved naturally toward the second question, “How have your memories of TSS impacted your life now?” Generally, this was followed by cues from me: hobbies, career, etc. Often interviewees had already mentioned activities they still like to participate in that are in some way connected to TSS; hiking, being in the outdoors, hunting or fishing.

I concluded the interview asking, “Do you have anything else to add?” I reviewed the main topics I had noted during the conversation. I thanked the participant and asked that they contact me if they would like to share anything else.

**Focus Group Discussion.** Because much of the benefit of the trip to TSS is the team building and bonding built into the experience, I provided an opportunity for the interviewees to come together. It was a goal for the class and teacher that attended to reward themselves for a job
well done (personal communication, A. Cathcart, December 4, 2016). A focus group discussion was conducted to encourage additional recollections and to provide confirmation or clarification of memories while sharing these memories with others from the group.

Following Krueger’s suggestions for conducting a focus group, introductions, ground rules and background were provided and a single question was asked to initially spark discussion and to allow for participants to speak about their personal experiences and provide additional detail about memories that were relevant or important to them. The guiding question for the focus group was, “What do you remember most about TSS?”

To prepare the focus group discussion, I acquired schedules from Teton Science Schools from the late 1990s. In addition to topics from the individual interviews, I used the schedules and Liddicoat’s study at TSS (2013) to create a list of possible topics and activities that the focus group might be able to discuss or remember from their TSS trip. Eliot & Associates (2005) suggest a focus group should contain 12 or fewer questions. I created 12 questions asking for specific memories, lessons, social components, overall reaction, value, and one experience students who attend TSS today should have (See Appendix C.)

I contacted the six interviewees again via email or phone calls and invited them to attend a Saturday morning focus group on my university's campus. Two attended in person and one attended via the Zoom videoconferencing app. Like the individual interviews, the focus group was recorded and transcribed.

After the focus group, I conducted an interview with Dr. Doug Wachob, a current university faculty member and former faculty member of the Graduate Program at Teton Science Schools. I did this to gain insight into the history and goals of TSS. It also helped to enhance
my literature review. Like all interviews in this study, I recorded and transcribed this interview to assure accuracy in future reference.

**Data Analysis**

Using grounded theory, I began by sorting statements made in interviews into topics. Grounded theory is “inductively developed during a study and in constant interaction with the data from that study. [It is] ‘grounded’ in the actual data collected, in contrast to theory that is developed conceptually and then simply tested against empirical data (Maxwell, 2005, 42-43).” From transcribed interviews, I developed a vignette of each participant and their teacher (shared in Chapter 4) then worked to identify topics, which could lead to common themes and directed my data analysis as such (Glaser & Strauss, 2009). I listened to and read the interview responses and the focus group discussion multiple times.

After editing each interview for misspellings and for the few words that were not transcribed correctly, I used the transcripts to create a list of topics covered for each interview. Again, I listened to each interview as I read the transcript and typed a single word or short phrase to describe the topic being discussed. I color-coded these initial topics and found 20 general topics that were covered by more than one of the interviewees. There were several topics discussed by only one person. For example, only one interviewee sang the “Scat Song” for me:

“It starts with an “s” and it ends with a “t”
It comes out of you and it comes out of me.
I know what you’re thinking, but don’t call it that!
Let’s be scientific and call it SCAT!”

To focus only on the topic being addressed in the memory and to avoid interpreting statements before I had sorted topics, I listened again to each interview and reread the edited transcript and wrote a more detailed and specific list of topics covered, reviewing the transcript.
line-by-line and editing the list of topics as I went with the documents side-by-side on my computer screen. In this second list, I made a point of using the interviewee’s actual words and kept the order as per the transcript.

In the first list, I had combined topics mentioned more than once and used my own words to summarize or restate similar ideas. I color coded the topics from red to orange/yellow to green to blue to indigo to violet based on who and when an interview occurred (first interview, red; final interview, violet.) This was to familiarize myself more with the text of each interview and to account for changes in the structure of the individual interviews due to my semi-structured format and to the possibility that I changed the way I interviewed as the interviews progressed. I chose not to list participants by name, only by a color. I then cut the statements apart and physically sorted the strips of paper by topic (color, at this point, only represented an individual and the order in which they were interviewed.) I then cut the statements apart and physically sorted the strips of paper by topic (color, at this point, only represented an individual and the order in which they were interviewed.)
Sorting this way, I counted how many of the six responded and how many responses in the topic each interviewee had. The emergent topics were similar among respondents. I created a spreadsheet of data listing the revised topics (see Figure 3.) Rows represented the 16 topics covered in the interviews. Each interviewee’s responses were sorted into a column and were placed in the corresponding topic by row. Because I was interested in whether TSS is seen as a positive and negative memory, I separated positive and negative comments into sub-columns for each response; however, these data were not used to develop themes, since my research was not designed to explore this area and this information was not necessary to answer my research questions.

Figure 3. *Table of sorted topics from interviews*

To move from topics of discussion to themes that would help answer my research questions, I listened again to each interview. I focused on the emotions of the speaker’s voice as
well as general themes only and not specific topics. Although written transcripts provided accuracy, they lacked the emotional context of the voice recordings. In the process of developing themes, I also revisited my emergent topics. Some topics could be combined with other topics. For example, I found “hands-on” generally meant the same as “outdoors/environment”. I included memories from a short stop in the town of Jackson as part of the trip. Themes emerged from the variety of topics, based on how often a topic was discussed and how often a specific memory overlapped with beliefs stated in the interviews.

**Correlating Focus Group with Individual Interviews.** I followed the same protocol for the focus group as I did for the individual interviews. The interviews were completed by January 31, 2017 and the focus group was conducted and recorded on February 11. Although I had begun to think about the possible themes from my initial impressions and data from the individual interviews, I had not yet discerned those themes prior to conducting the focus group interview. I did not use the focus group discussion to develop themes, but later compared the topics and emotions expressed in the focus group to the themes developed from the interview data. These data from the focus group reiterated the themes that eventually emerged.

**Individual interviews.** I frequently compared the transcripts of my interviews to discover the similarities and differences between individuals’ memories and reflections to develop themes and explore their TSS experience. As per Glasser and Strauss’s (2011) ideas, I did not predict which memories would be retained nor how they would be perceived, but I used this data to develop themes.

**Limitations**

Some limitations of this study included the small sample from a homogenous group of students. However, this qualitative study was designed to explore the memories of a specific
event and develop themes using the data. It was not designed to provide sweeping generalizations or even insight into what other students or groups may have remembered or experienced. Six interviews provided an ample amount of data. The fact that all students experienced the same event at the same time meant that they should have similar memories; however, the reliability and validity of memories, particularly twenty years removed from an event, can be questioned. The episodic memories reported in interviews vary in some ways, but overlap in most. For example, almost everyone remembered the rustic cabins in which the students slept, but only one person remembers a pillow fight in those cabins, which he described as a “very vivid” memory. Data collection was limited to a single interview. It was necessary to depend on self-reporting, but this exposed results to a level of subjectivity, particularly when interpreting emotional responses. My questions were open-ended and allowed any response and there was no way test the validity or reliability of the questions. My position as a teacher at the participants’ former school and as a teacher who currently attends TSSs’ Field Education program with students could have influenced the participants. Some of them may have thought I was attempting to promote TSS and our continued attendance. My background with TSS and my interview with their teacher prior and my ability to answer questions or fill in blanks may have influenced their memories or the topics they chose to discuss.
Chapter 4
Results and Discussion

Introduction

Although my initial query on social media garnered several responses and volunteers for my research, many were unsure of whether they attended with the first class from Pleasant Valley School. I called the teacher to see if she remembered who attended and when. Although the teacher’s comments were not part of the data used to answer my questions, she had very accurate rosters of attendees, dates of attendance, and topics of study. She also provided other valuable background information. Like all six participants, Attie Cathcart had a long and strong connection to the rural community in our school district. Although none of the participants now live in the attendance area of the school, all of their parents do. As stated in Chapter 3, the area is mainly politically conservative, religiously Christian, and nearly completely Caucasian. The area remains thus today.

Character Vignettes

Attie, the teacher, is now retired and living on her own ranch, Attie spent 30 years in the rural schools of our district. Raising her own children on a ranch, she identified with the needs of her rural, ranching students. Although place-based education was not a part of Attie’s professional jargon in 1996, she adhered to the principles defined previously in this paper. During the summer, she had developed a yearlong unit that would meet the needs of this specific group of children. In her preparation and planning a program of study she focused on the lives of her students, she led them to volunteer in the community, spend time outdoors near the school, create a profitable classroom based business, and to present their successes publicly. The project became the central focus of learning for the entire school year. The culminating trip to TSS,
while memorable, did not create the lasting semantic memories that the year of preparation, planning, and earning the trip created. While the project was thoroughly prepared for and planned by Attie, the trip was not a planned outcome for the yearlong project. It was a serendipitous opportunity that the students and Attie agreed would be an achievable, but challenging reward for a year of learning.

Flynn, who was a sixth-grade student at the time, grew up on a small ranch near the school, where his parents continue to reside. Flynn lives in town, 20 miles from his parents. He owns a welding and fabrication business and feels that the opportunity to run their classroom-based company, earn money, and learn that hard work is necessary to achieve goals was the most important part of the TSS experience. He said, “Granted, it was great going there, but it almost was more rewarding that we were actually able to raise the money to actually take a trip.” Flynn hopes to return to the rural area and would choose to send his own children to the same rural school he attended. He looks forward to their opportunity to attend TSS. He attended and donated to our school’s fundraiser for TSS.

Elle’s upbringing did not involve ranching or farming, but growing up one-mile past Pleasant Valley School (pseudonym) and twenty miles from the nearest town was a decidedly rural upbringing. She admits she is not “a sporty person” and due to a congenital heart condition, and felt that perhaps other students had very different experiences a TSS due to their advanced skiing ability. Elle’s parents still live near the rural school and she grew up feeling comfortable in the outdoors, but prefers classroom academics. During free time, her choices have always been indoor activities like reading, relaxing and watching TV. Elle has a bachelor’s degree in art and is currently working on a master’s degree that combines art and geography. She finds both academic and emotional value in excursions like the TSS trip and feels students
should have similar experiences today. However, she also expressed that the work involved in achieving the trip can be as important as the trip itself.

**Kendra**, like all six interviewees, attended Pleasant Valley School from kindergarten through sixth grade. Kendra currently lives in a similar rural area in a nearby state. She has horses and “runs barrels” (a timed rodeo event for women only) at rodeos on weekends. She owns a five-acre horse property and helps her husband with his work at a nearby ranch. She enjoys the outdoors, spent her honeymoon in Yellowstone, and visited the National Elk Refuge with her husband. When she visits her parents, who still live near the school, she spends time cross-country skiing the same trails where she learned to ski prior to the trip to TSS. She has never attended another program that was similar to the week at TSS. Inspired by her mother and Attie at Pleasant Valley, Kendra earned an undergraduate degree in elementary education. She supports students attending programs such as TSS as part of their formal elementary education.

**Gina** has returned to temporarily live with her parents about three miles from Pleasant Valley School where she grew up. She plans to return to college in the near future and hopes to major in forestry. She does not attribute her love of the outdoors nor her desire to major in an environmental field directly to her experience at TSS, but stated that it may have impacted her decisions today. Mainly, however, she remembers feeling comfortable in the outdoors whether at school, home, or TSS. She recalls a well-rounded experience in which she felt very comfortable, but faced some achievable challenges. She thinks all kids and teachers can learn from being outdoors and believes that time spent learning outdoors, both at school and during the week at TSS was the most important part of her experience.
Leah’s father had some health concerns leading Leah to develop an early interest in science, particularly animal and health sciences. Throughout school, she was active in 4-H and FFA. She grew up in the rural area 20 miles past the school and 40 miles from town, where her parents still live today. Leah’s class used the acres around her home to practice cross-country skiing during her fifth and sixth grade years. Currently she lives in a metropolitan area in the Mid-west where she works at a public university and hopes to enter nursing school. She maintains a fondness for the outdoors and for her upbringing in Wyoming, but does not feel able to appreciate nature or spend time in the outdoors in her current life. Although she is not aware of a residential outdoor environmental education program in her area, if available, she would send her own children to a program like TSS. Leah felt that preparing for the trip and learning to have manners and to be respectful away from the school setting was an important part of her TSS experience.

Loren grew up ranching and feels very comfortable in the outdoors. Loren connected his rural upbringing and previous experience outdoors with being comfortable in the wilderness of GTNP. However, general anxiety about the trip and the fact that he acquired a severe sunburn early in the week caused Loren to recall an overall negative experience at TSS. He remembers the Dead Broke Kid Company (the classroom based company they had set up to earn funds for the trip) and feels that students today should promote their own experiences in education; in the way his class earned their trip to TSS. He applied this philosophy when he taught middle school and encouraged his students to promote their own interests and earn their own opportunities. Currently, Loren lives in town but continues to hunt and spend time in the outdoors with his daughter. Despite his experience at TSS, he is looking forward to her opportunity to attend.
Results

This study included six participants from the first class of 13 students to attend TSS from a small rural school; however, my findings are not intended to represent the memories and experiences of the entire class or other classes who attended TSS. My goal was not to generalize my findings to students from the rest of my district nor to other rural schools. The data I gathered did, however, answer my research questions:

1. What are the memories retained by participants of residential environmental education experience and what are their perceptions of those memories?
2. How do former participants perceive the effects of those memories in their lives today?
3. How can those memories help inform the decision to participate in REE programs?

The answers to the first two questions were often mundane and vague. Upon further inspection, however, the variety of answers and topics recalled led to the themes discussed, which can help inform schools planning to attend TSS today.

Themes

Upon reviewing and sorting more than 300 unique comments made by the six students, three themes emerged from 16 different topics. They were (a) preparation, (b) connection to self, and (c) place (See Figure 4).
Upon review of the topics, the greatest number of responses fell into the topic of “teacher preparation and follow-up”. Thus, the theme, preparation, emerged throughout many topics and during all six interviews. Overall, the largest number of comments were related to activities working to earn money and prepare for or feeling prepared during the trip. Leah and Flynn expressly stated that preparation for the trip was the foremost memory they have. Leah focused on behavioral preparation:

I think the thing that I remember most was we had to learn basic manners before we went. [Mrs. C.] was stickler about manners. She taught us all of these things before we left because she wanted us to be on our best behavior. I remember when we were [at TSS] the instructor said that we
were the most well-behaved class that they'd ever had. That was really cool.

Flynn, Loren, and Elle also mentioned the emphasis of rules, manners and structure provided by Mrs. Cathcart during their months of preparation for the trip. Flynn expressed many vivid episodic memories of the time at TSS and recalls positive events throughout the trip, but stated, “I go back to the amount of work that we put into preparing, raising the money. I actually tie more of the memory to that than the actual science camp. I feel (sic) more rewarded by the work that we put in as far as raising the money. ... for some reason that sticks as more of a positive thing than the actual trip.” In his interview, he also recalled their presentation to the PTA to get initial funding for the Dead Broke Kid Company, work on crafts, and the business sense he gained as secretary for the company.

Kendra stated that raising the money in preparation for the trip was a central part of her memories of TSS, saying, “[It was] just kind of a reminder that if you want something bad enough you'll figure out a way to do it.” The topic of fundraising in preparation included comments such as, “we learned to work hard to get something we want” and was stated by four other interviewees.

Preparation as a theme also emerged when students expressed their comfort with the outdoors and with being ready to ski and spend a day in the field, regardless of weather. “We skied before we left...I still cross-country ski all the time” and “Katie (pseudonym for the class paraprofessional and a chaperone on the trip) had us trained up [to ski]”, were comments made by Gina and Flynn. Kendra and Leah also recalled that their advanced preparation in cross country skiing and their overall comfort in the outdoors helped facilitate positive memories. Although both Loren and Elle made more negative comments about the trip than other
interviewees, they both remember that they learned to ski prior to the trip, but felt that their struggles with not having mastered the skill may have negatively impacted their experience.

TSS emphasized preparation as well. Prior to the trip, teachers and chaperones receive documents that included a season-specific list of equipment that each participant should have. Elle remembered shopping specifically for the trip and the difficulty of finding and purchasing the necessary wool socks for days in the field. Flynn recalled preparing for the field each morning at TSS by, “putting on our gaiters, and making sure that we had the right socks on, you know, not everybody had the right socks. If we're going to go out for a long time, you just wanted to be prepared, and so they were really strict on that.”

Connections to Self. A second theme, connections to self, emerged from topics like homesickness (whether it impacted the trip or not), health concerns, emotions (either positive or negative), and readiness, which also connected back to preparation. In each interview, students expressed a personal struggle, strength, or belief that they felt was supported or neglected during their TSS trip. Elle felt she had a very positive experience at TSS. She said that due to her rural upbringing and her time at a rural school she was accustomed to the outdoors and she was comfortable outside. For Elle, preparation and going to Grand Teton National Park were both important. However, her congenital heart condition that affected her comfort level with the challenges of skiing and physical activity. Not surprisingly, she found herself most comfortable during indoor activities at TSS and had more memories of the indoor portions of the trip than any other interviewee. Although the Field Education Program at TSS focused on “hands-on/minds-on learning in the outdoors” (https://www.tetonscience.org/field-education/home/), Elle recalled, “I've always been a bit of a homebody. Given… the choice, I will stay in my apartment.” Elle’s
comfort level was enhanced by the classroom activities in the evenings, due to her perceived personal strength in classroom academics.

Another personal challenge, Elle remembers being separated from friends because she was not one of the advanced skiers, although she was one of the older kids, who tended to be the more advanced skiers. She recalled, “when we first split up [into field groups based on skiing ability], I was a little resentful of not being with my friends, but once we got out doing things, we had fun.” Leah expressed this same challenge in an opposite direction. She was one of the younger students, but was an advanced skier. She found herself separated from her closest friends during outdoor skiing activities and in the cabins, “I guess when we first got there it was kind of weird because we had to be separate from the boys [and] I was one of the only girls in my class…” Friends were mentioned 19 times as a topic and by all six interviewees, but did not emerge as a separate theme since most comments about friendships were semantic memories expressing ideas of friendship in general. "Friends" and interacting with them were not discussed as a part of the trip to TSS, but as a general idea. Kendra said, "...so many of us that had grown up together. Everybody knew everybody's mom..." And Leah expressed, "I think I was annoyed that they split me from my friend group... [but I] knew everybody." Few expressed specific episodic memories involving events at TSS with specific friends.

Despite all the preparation, Loren felt he was possibly too young for the trip, as he had never spent a night away from home prior to his TSS experience. Although the class had practiced cross-country skiing prior to the tip, Loren remembers feeling left behind while skiing and being badly sunburned early in the trip. One of his friends from class decided not to attend and Loren remembers disappointment in her absence. Loren’s most personal connection and strongest memory, albeit a negative one, was with the TSS practice of weighing ort as a lesson in
conservation and to waste less food. Since he was feeling ill from the sunburn, Loren had little appetite most of the week. He said he connected the practice at each meal to a rule at home of “clean your plate before you play”. Having to clean his plate at home was frustrating and because of this, Loren struggled with any emphasis on food. He expressed an aversion to scraping food into a bucket at TSS:

It actually made me physically ill seeing leftover food mashed together... I would almost be throwing up, dry heaving over the part that I had to scoop in... I had a lot of anxiety towards mealtimes and stuff because I thought, ‘Oh, my gosh, I got to look at this can that's going to make me want to throw up again.’ Yeah, that whole trip was kind of miserable, actually.

Other students mentioned the practice of weighing the ort, but saw it as a contest or a beneficial lesson in conservation.

Flynn, on the other hand, felt completely ready physically and emotionally and he personally connected to TSS through his rural ranching life at home. At TSS, he remembered being asked to always be aware of his surroundings. He felt, however, that while at TSS his personal connections to nature as a rancher were not were appreciated. In recalling the directive at TSS to “Think like a Naturalist” Flynn remembers discussing with a friend, "What do you mean by naturalists? Don't we just think like ranchers?" He and Elle discussed this idea during the focus group and they agreed that their rural, agricultural school had given the students an affinity for the outdoors that may have been different from many groups TSS hosted at the time. Elle stated, “A lot of the stuff they were trying to teach us we knew already, because that's what we grew up with [in the outdoors].” Their agricultural perspective toward the environment, however, may have contrasted with the environmental approach at TSS. Flynn recalled his feelings at TSS, “We kind of took a step back. Nothing against them, but they're kind of tree
huggers. We're just ranch kids, and we always respected everything to a high standard. They just approached it in a different way than we were doing.”

**Sense of Place.** Often, the connections students made to themselves were part of the topic of rurality and spending time outdoors at their rural school and home; and those personal connections between TSS and home lead to the third theme of place. This group of rural students all felt that they arrived at TSS with a definite sense of comfort in being outdoors. Having grown up in an agricultural environment, they spent mornings at home outside doing chores. Twenty years ago, they didn’t have video games to absorb their time waiting for the bus or on the ride to school. All of the students rode the school bus across open fields of a high mountain valley with snowy mountain peaks rising in the west, much like the environment in GTNP. The rural school they attended had already adopted a “place based” philosophy of teaching before the philosophy had a name. Elle recalled another teacher who used resources from their conservation district to encourage these students to identify with their place. Elle said, “That snow fence out at [school], when I was in kindergarten, we planted that... At least at [our school], there has been a focus that ‘nature is important’.” She also mentioned the importance place as the location of TSS within the national park, “There is an experience there that you're not going to get anywhere else.” Elle also recognized the importance of place when she collected a sample of GTNP dirt for her grandmother, who had a collection of soil in jars from significant trips.

Gina made the connection to place, her home life, and her sense of self while cross country skiing, “we went on ski field trips, and I actually always thought that that was one of the funnest things that we did [at school], and I really enjoyed learning that. My family had been taking me cross-country skiing since I was really little.” Even Loren, who remembered the trip
as “miserable” felt strongly connected to and impacted by the place of Jackson, TSS, and GTNP and related this sense of place to his comfort in the outdoors that he learned at home:

I just remember how this amazing and beautiful Jackson was, it was the first time I've been to Jackson...Not that [our home community] is not pretty, but I didn't realize we had something like Jackson in Wyoming. I just didn't conceive of there being a high-end community like that...That was, I wouldn't say a culture shock, but it was definitely new and something I wasn't expecting.

Although he recalled several events that made the trip difficult for him, he connected with the sense of place that TSS works to instill students. He said, “I love being outdoors. I'm a hunter. I grew up in the country. Kids [at our school], we're all country kids, so it wasn't some big shock to be out in the wilderness.”

Flynn remembered skiing further down the river than TSS had expected the class to ski. He remembers the beauty of the river and the grandeur of the Tetons in the distance. He recalled that the “...one memory, that probably stood out more, just being in that setting, [was] being able to see the Tetons down by the river.” He also connected the experience to his rural place:

I guess as far as Teton Science goes, you [teachers] already cater to us [rural school] kids because we're still interested in the outdoors and that stuff, too…. We knew the ins and outs of all that stuff, you know?

Grounded theory dictates that the themes emerge from the data. Flynn’s comment ties all three themes together. He mentions teachers catering to students’ rural selves in preparation for the trip and in tying the experience to their students’ sense of place outdoors and at home in the rural school setting.

Discussion

Developing themes from interview responses. The fact that I used open-ended questions may have contributed to the large number of topics generated by the interviews. In
addition, the way each interviewee approached the questions led to more variation in the topics and themes than closed-ended questions would have generated. My first question, “What do you remember most about TSS?” was answered in a variety of ways. How they approached the question provided evidence as to their initial impression or memory of the trip. Some, like Flynn, began a narrative that began with loading the bus at school, driving up to Jackson, arriving at TSS, unpacking, and waking the first day. Gina began with a specific episode during the trip that she most remembered. Others responded with a personal reaction. For example, Kendra began, “Obviously, it was a blast. We had a lot of fun.”

However, I found that topics could be related to particular themes or none. For example, everyone mentioned cross-country skiing. But the way they talked about it led to this topic being coded in different themes. For example, Gina’s comment, “Mostly getting to ski around and look at everything around there” was coded to sense of place, and only that theme because she continued by discussing the place of GTNP. She did not mention skiing as part of the preparation for the trip, which was a common for the rest of the group. Flynn also related skiing on the river to the place (of GTNP and TSS) in the context of being at TSS, but Elle’s comment, “I think I’m the only person who could ski into a hill instead of on a hill (emphasis added)” could instead be related to her sense of self and personal challenges of being at TSS, which I coded to the theme of connections to self. Loren also discussed skiing as part of the connection to self at TSS when he felt like he was not a part of the group. He also related skiing to the theme of preparation, although he personally felt unprepared to be skiing. Flynn, Leah, and Kendra related their comments about skiing to preparation and fundraising. Their examples included: skiing prior to the trip, purchasing the skis for the school, and skiing farther than expected at
TSS. Gina’s and Kendra’s *connections to self* were related to their experiences skiing with their families. They also made a connection cross-country skiing as adults.

In retrospect, the students’ focus on preparation could be a result of Attie’s intense preparation and fundraising, which were not initially conducted to attend TSS. As stated in Chapter 1, Attie believed this group of rural students accustomed to hard work in the outdoors would benefit greatly from a creative, active, hands-on program that they could relate to their own lives. She began a classroom-based “company” to achieve these goals and to raise funds, but had not committed to any particular use for the funds that were raised. Thus, the matching funds that made the trip possible were donated because of the work the class did as part of an integrated, place-based unit designed by Attie prior to considering TSS as an option. The matching funds were donated on the condition that the trip be “educational”, and TSS, normally booked a year in advance, serendipitously had an opening for the class. *Preparation*, planning and fund-raising, and *connecting* the experience to *themselves* were central memories for all of the participants. These were integrated into Attie’s desire for a quality education at this rural school, without concern for the *place* that was eventually chosen as a reward, although sense of place at TSS and at home appeared as a theme.

**Making meaning from memories.** Liddicoat (2013) looked “specifically at the characteristics of remembered program components.” She found, “experiences that were active, offered opportunities for achievement, involved social interactions, and were both distinctive and applicable at home were found to be particularly memorable” (pp. iii-iv). Other than skiing outdoors and observing, tracking, and identifying wildlife at TSS, my data showed that students remembered "active, social, and achievement oriented activities" mainly as preparation for TSS,
and less as a part of their experiences there. Like Liddicoat, the activities that were applicable "at home" were important. Liddicoat’s study at TSS was five years after attendance and much of the group had attended TSS twice during elementary and secondary school. They also lived closer to GTNP. My interviews were conducted twenty years after attendance with a group who had no experience with TSS or GTNP. It may also be significant that these students had Attie Cathcart as a teacher for second, and later for fifth and sixth grades. Their school population was small and their connection to Attie as their teacher was probably quite powerfully established prior to their trip. During my focus group discussion, the participants explicitly stated and agreed that the greatest value of the trip was a sense of what they had achieved. Running a business, working, keeping track of funds, and earning a special trip as a reward made it worthwhile. During several interviews, they asked me how kids today “earn” the trip. I encouraged the participants to attend our second annual alumni dinner, because my classes spend much of the winter and spring planning and preparing the event to raise funds to attend TSS.

**Considering place and defining TSS.** The attempt to define TSS and its Field Education Program has been a struggle. The idea of place and PBE are constantly and significantly evolving. Surely it is a highly regarded and well-researched program with an impressive 50-year history and a relationship with both the National Forest Service and the National Park Service. It has a yearly budget of millions of dollars and owns millions in property. TSS produces experts in ecology, environmental and science education. But starting with *place-based education*, and *field education*, I struggled to find succinct definitions that fit the program, even at the very basic question: What is “place”? TSS has embarked on redefining PBE for itself and a redefining of PBE for all educators and programs could prove beneficial.
The teacher’s role in the value of TSS relates to his or her commitment to PBE and the experience in general. Preparation (including fundraising experiences) and the incorporation of PBE in the classroom prior to and after the trip can significantly impact student memories of the experience. Doug Wachob explained that during his tenure (1996-2006), TSS made the teacher’s role more influential by becoming more place-based and attempting to relate the Field Education Experience to the students’ places at home. He noted a recent shift at TSS. While in the past a standard curriculum was offered, more recently students' home curriculum is considered in program development prior to their trip.

In this age of virtual experience and the ability to travel to or view almost any place, global thinking has been making progress. Can “place” based education and even “local” connections become anything that motivate students to act and become involved? We now, as an entire planet, can see refugees, oil spills, and natural disasters. We can decide whether to act locally and globally. A land-locked Wyoming student enamored with dolphins can have a virtual hands-on experience with an ocean creature provided by modern technology. In their Mountains to Main Street project TSS works to help urban kids make connections and apply what they learn when they return home. Place is local, place is where you are, but teachers and TSS could look into that meaning of place. TSS’s early goals of environmental conservation ring true today, even as the world becomes more urban. The concept of place and connectedness will be refined, but its significance will not wane.

A week at a “camp” is not going to create the kind of learning that PBE aspires to. In *Place-Based Education: Connecting Classrooms and Communities*, Sobel says, “in-depth school-based programs are more likely to change behavior than programs at the camp that are
not integrated into the curriculum.” And “the schoolyard is going to have more of an effect on students’ environmental behaviors than a week-long stay at a nature camp” (p.34-35). In 1996, the students and their teacher practiced many aspects of PBE, but their goals were not related to environmental education or connecting with GTNP. Attie Cathcart said, “I've been wracking my brain trying to remember what the buzz word we used years ago was for ‘place-based education’, but it escapes me.” (personal communication, December 4, 2016.)

**Recommendations**

**Deciding to attend TSS.** As frustrating, time consuming, and distracting as fundraising, gathering equipment, and planning and preparing meaningful place-based lessons can be, *preparation and fundraising* should be central to the process prior to attending TSS. Although the trip is one week that produces episodic memories for all participants, the idea of working hard and earning something is what students in this study retained as adults. Teachers should consider the planning and preparation, even the fundraising, part of an integrated curriculum in the months prior to attendance. As part of planning and preparation, principles of PBE incorporated into the curriculum can encourage students to identify with the *place* around home and school so that they can make *connections to self* during the trip. Appropriate to their age, elementary students focus on personal challenges they may face, particularly if a trip to TSS is a novel experience. Using the preparatory paperwork provided by TSS or another method of identifying potential personal struggles prior to attendance can help alleviate distress from these challenges.

The decision to attend TSSs' Field Education Program may not be left up to an individual teacher, but whether the decision is made by the teacher or by parents, administrators, or other groups, making the days at TSS more than a field trip requires a certain amount of commitment
to preparation and PBE prior to attending. Districts, administrators, and TSS should understand that a teacher who has not been given the opportunity to decide to attend will need additional support to prepare students.

**Preparing to attend.** Tools such as Semken and Freeman’s (2008) instruments, methodology and course development practices could be helpful in developing and assessing the sense of place prior to and during attendance at TSS. While increasing *sense of place* isn’t explicitly stated as a goal of TSS’s Field Education Program or part of their new mission statement, it was a significant theme in my research and is intricately tied to PBE. TSS and my district could also use these or similar instruments to measure gains in sense of place of our students.

TSS has a long-standing relationship with nearby universities. They provide professional development that classroom teachers who are preparing to take students can attend to enhance their preparation. In their pre-trip questionnaire, TSS provides an opportunity prior to attendance for teachers to request programs that enhance PBE that is being taught in their home curriculum. Teachers and districts who decide to send students to TSS can take advantage of this to enhance the connections students make while attending.

**Additional research.** Initially, while reviewing the literature, I found long-term research into residential environmental education and place-based education lacking. I relied on Liddicoat's dissertation (2013) and Everson's thesis (2000) as initial models for my research, but found little else. Although a challenge to conduct, much more research into the long-term effects of residential environmental education and place-based programs is necessary to answer further questions encountered during my research.
**Other stakeholders.** In my experience, parents have been supportive of our trip to TSS. As I talked with the students about their memories, I wondered what the parents and teachers remember from the experience. Leah's mother was present while I interviewed Leah. Some of her comments are included in the transcript and she jogged Leah's memory several times during the interview. Several interviewees had siblings who attended TSS after them. Would parents of multiple children be able to offer a unique perspective into the long-term effects of a program like TSS? With years of attendance at TSS throughout a district, school boards, administrators, and teachers could also provide insight into the long-term effects of residential environmental education and PBE.

**Meeting new goals and standards.** These education programs are costly in many ways, and even with support from stakeholders in many areas of education, new standards and expectations are placing demands for research to back up educational practices with results. Recently, my district implemented Professional Learning Communities and asks all teachers to create SMART goals to be posted and attained for students in mathematics and language arts. In 2016, the State of Wyoming adopted a state specific version of the NGSS. Research that ties an educational experience to long-term impacts and standards based goals can help justify the time and expense put into these programs.

**The significance of place.** During interviews and the focus group, the participants asked about current fundraising and work required of students to "earn" and prepare for the trip. The emphasis on preparation led me to wonder if the "educational" trip to TSS was necessary. Would a trip to the amusement park in Denver have been just as memorable? One of our district’s elementary schools now attends a different field education program. The teacher who
made this decision said the decision was due to cost, time, and her own expertise. Students who lived near TSS (Liddicoat, 2013) were found to have connections to the place at and remembered learning about local flora and fauna. Students in my study were repeatedly impressed by the beauty of place. Stern, Powell and Ardoin found that urban kids show greater gains at residential environmental education programs than rural kids. Research into the importance of place as part of environmental education programs could help when choosing the location of a program or field trip.

*Negative experiences.* Although it was not part of my research, I sorted the responses into positive and neutral/negative categories. Of the 336 unique responses covering 16 general topics throughout the six interviews, 245 were positive statements and 91 were neutral or negative statements. Even Loren who said, “It was not the best trip, so probably not the kind of thing you would want down for your deal...” and, “…I was fairly miserable the whole trip...” and, “Yeah, that whole trip was kind of miserable, actually” had 42 positive and 39 neutral/negative statements. In my review of the literature, I found little commentary on negative experiences at environmental education programs. Through the lens of memory theory, grounded theory, or another approach a long-term study into negative experiences at programs like TSS could be informative.

**Conclusion**

I have attended Teton Science Schools' Field Education Program with five different groups of students over a ten-year period. I have directed and participated in intensive fundraising opportunities for my students. I have held to a place-based teaching philosophy most of my career and I have planned what I have hoped are meaningful place-based experiences and field trips for my students, whether we are attending TSS or not. Concerns about the meaning
and impact of my teaching methods and about the time and expense involved in my district's commitment to a trip to TSS for almost all students led me to my research questions. I have answered my research questions; however, throughout my research new questions emerged. In addition to my own questions, questions arose from teachers I talked with and worked with during the research period and from the students I interviewed. In the end, I found that the students recalled less about TSS specifically, and recalled more of the preparation and work towards it. This preparation was critical, but I wondered if the long and costly trip to this beautiful, familiar, but distant place is necessary. Perhaps not. However, toward the end of each interview I asked, "Should we continue to go to TSS?" The answer was a resounding “Yes!” All six participants said they would send their own children and felt that Pleasant Valley and district students should continue to make the trip to TSS in elementary school.
References

Adkins, C., Simmons, B., & ERIC Clearinghouse on Rural Education and Small Schools. (2002). *Outdoor, Experiential, and Environmental Education: Converging or Diverging Approaches? ERIC Digest.*


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Appendix A
Consent Form

Dear _________________________________,

I am currently a teacher at [Redacted] and a graduate student at the Science and Mathematics Teaching Center at the University of Wyoming in Laramie. I take my students to Teton Science Schools every other year. This week-long trip first took place [Redacted] in 1996. You were a participant in one of the first [Redacted] classes to attend TSS. The memories you retain of TSS could help me study the impacts and influences of this significant experience in the lives of elementary students.

In order to study the impacts and influences of [Redacted] bi-annual trip to Teton Science School, I would like to conduct interviews with TSS participants from those first classes. Your memories can help determine the importance of attending Teton Science Schools for [Redacted] students. The trip to Teton Science Schools is still an opportunity for [Redacted] students.

Participation in this study is voluntary, refusal to participate will involve no penalty or loss of benefits to which you are otherwise entitled, and you may discontinue participation at any time by ending the interview or leaving the group. I will interview you at a location and time convenient to your schedule. Participants will be asked to discuss their memories of TSS. Interviews should take approximately one hour. Any interested participants will also be asked to participate in a one-hour group follow-up discussion.

Although complete confidentiality cannot be guaranteed, all interview responses and data gathered will be available only to and kept secure by Dr. Ana Houseal (my faculty supervisor) and me. Pseudonyms will be used for any quotes. Dr. Houseal can be reached at ahouseal@uwyo.edu or (307) 766-4925. I can be reached at mamen@uwyo.edu or 745-5720.

The data will be destroyed after completion of the study and publishing of the paper. Although risks of this study are minimal, participants may feel discomfort while remembering embarrassing moments from TSS. During the focus group, participants may find their memories are different from others, which could be confusing or embarrassing. However, participants may also enjoy the chance to reminisce during the interview or the focus group.

If you have questions about your rights as a research subject, please contact the University of Wyoming IRB Administrator at 307-766-5320. Please consider joining me in this research study. If you are willing to participate, please sign below and check the appropriate boxes and return this form to me via mail, email, or message.

______________________________
printed name date participant signature

_____ I am willing to participate in the follow-up focus group.

_____ I am willing to be audio and/or video recorded.

Thank you for your consideration,

Molly Amen-Peterson, Teacher

email@email phone (school) phone (cell)
Appendix B
Teton Science Schools: Study of Field Education 20 Years Later

Individual Interview Protocol

Interviewee: ________________________________________________________________

Method: ______________________ Date/Time start: _____________ / End ____________

Address: ___________________________________________________________________

___________________________________________________________________________

Phone: _____________ Second phone: ______________________

Email: ____________________________________________________________________

Ice breaker: Thank you for participating in this interview. As you know, I am currently teaching at [redacted] and since your class first went to Teton Science Schools in the spring of 1996, every 4-6th grader at [redacted] has been offered the opportunity to attend. Most students in [redacted] attend TSS because of that first trip you took with [redacted] said your business [redacted] and that raised funds in fall and winter, received some matching funds, and went to TSS for a week in the spring. I hope you’ve had a chance to remember the trip because I am mainly interested in what you remember and your feelings about it today. Is it okay if I record this interview?

Consent form: If I don’t already have your consent form, can I please send one with an addressed envelope that you can return to me as soon as possible?

Questions:

1) What do you remember most about your trip to Teton Science Schools? (If you can’t remember anything specific, you can just start with whatever you do remember or start and the beginning of the trip and tell me everything that comes to mind.)

_________________________________________________________________________

_________________________________________________________________________

_________________________________________________________________________

_________________________________________________________________________

_________________________________________________________________________

_________________________________________________________________________
2) How has that memory affected your life now? (For example, do you enjoy/avoid the outdoors, work in a career inspired by the experience, know more about your environment? How might have your memories or experience at TSS influenced your decisions? Career choice, where you live, college major, hobbies?)

More notes:
Closure and summary: Thank you so much for talking with me! I would be happy to send you a copy of my paper if you’d like.

Mostly you talked about ____________________________________________________________________, is that right? Is there anything more you want to add?

__________________________________________________________________________________________ Please call me at (phone) if you have any questions or anything to add. Can I call you if I need more information or clarification? When would be best to call? __________________________________________________________________
Appendix C
Focus Group Interview Protocol

Teton Science Schools

Harmony School has been attending Teton Science Schools’ Field Education Program for 20 years. Some of it has changed, but much has remained the same. I’ve interviewed you all individually, and today we have ___________. You were either in 5th or 6th grade at ______ with ______ when you attended the program in March of 1996. (Show picture, artifacts)

1. What three things do you remember most from your trip?
2. What lessons do you remember participating in?
3. What do you remember about the social or overnight components of the trip?
4. What was your overall reaction to the Teton Science School?
5. How did these experiences fit with previous experiences? Fit with each other? Had you been to Grand Teton National Park before? How did these experiences fit with experiences since then? Have you been back or done similar things?
6. As someone who lives in Wyoming, did you feel that you had gone somewhere or that you were right at home at the Science School? How did that influence your experience?
7. How would you describe the value of your experience at the Science School?
8. What influence, if any, did the experiences have on you personally or socially?
9. What influence, if any, did the experiences have on your views of nature or environmental issues? On your environmental behaviors? On your views of National Parks?
10. What influence, if any, did the experiences have on your academic interests or career plans?
11. How often do you think or talk about your experiences at the Science School? For what reasons? With whom?
12. Can you give me an example of something that you did or learned at the Science School that you are still doing or using today?

I have talked to ______ and I got some typical schedules from 1998 (1996 wouldn’t open!) and put together a list of some of the activities at Teton Science School. Because each class chooses their own lessons, you may or may not have done these things. If you did, please tell me what you remember about them:

Weather presentations

gear preparation

ski lessons

teambuilding, games, songs

museum (classroom)

the Muries (Polis)

winter hazards
Greater Yellowstone Ecosystem

communities (SCAR: sage, aspen, conifer, riparian)

tracking and sign

wildlife viewing

Elk Refuge

Gros Ventre slide

thinking like a naturalist

special spot focus (using your sense of...taste? touch?)

wildlife mural, drawing

cabins

scat, scat song

kitchen (breakfast, lunch, clean up, dinner, clean up).

We can also talk about: (You may or may not have experienced these as well):

a. Getting ready for your trip to TSS
b. Traveling to there
c. Arriving and moving in
d. SCAR
e. Sage community
f. Conifer community
g. Aspen community
h. Riparian community
i. Research question and project
j. Presenting your project
k. Map and compass
l. Thicket and other games, songs (it starts with an “s”)
m. Night walk
n. Elk bugling, elk refuge
o. Hiking
p. Your journal
q. Specimens of the day
r. Snow ecology
s. Snowshoeing, skiing
t. Snow pits or caves
u. Living in a cabin.
v. The weather
w. Meals
x. Clean up after meals
y. Clean up on the last day
z. Your teachers, chaperones, and program leaders
   aa. Time with friends
   bb. Activities back at school

To close, I was wondering if you could pick one thing that you experienced at the Teton Science School that you hope students today will get to experience.

Thank you! Do you have any additional comments or memories to share? Any questions for me?