

School-Based Experiential Outdoor Education: A Neglected Necessity

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Abstract

In this research study, we hear the voices of middle school students, preservice teachers, and practicing middle school teachers in support of school-based experiential outdoor education. The benefits of engaging youth in memorably relevant learning, immersing them in physically active, field-based education, and providing them with authentic, contextualized opportunities to extend classroom-based learning are examined. This research addresses the question, “Is experiential outdoor education for middle school-aged students a valuable use of school time?” The answer is a resounding “YES!” School-based experiential outdoor education, although often neglected as a part of the curriculum in our current era of high-stakes test-based accountability, is definitely a necessity.

Keywords

outdoor education, experiential learning, field experiences, environmental education, camp

Introduction

For more than 100 years, the works of John Dewey (1916/1944) have espoused the values of experiential education. Dewey emphasizes that experiential learning (hands-on, active, in-context) is an essential ingredient in meaningful and comprehensive student learning. During the past 20 years, the negative consequences attached to low standardized test scores have influenced schools and teachers to narrow the curriculum so their efforts can be focused on test preparation (Berliner, 2011; Blazer, 2011; Cawelti,

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2006; Erskine, 2014; Faulkner, 2006). Consequently, untested curriculum and time-intensive, student-centered, experiential learning that integrates subject matter in meaningful ways have been de-emphasized or eliminated (Amrein & Berliner, 2003; Erskine, 2014; Faulkner, 2006; Ives & Obenchain, 2006; Mora, 2011).

One type of education that is currently receiving less emphasis in schools is experiential outdoor education. Because of the increased emphasis on test-based accountability, there are fewer school-based opportunities for children to experience nature and actively participate in environmental science outside (Faulkner, 2006; Larkin, 2011; Mora, 2011). While much science is learned in classrooms through teacher lecture, textbook reading, laboratory experiments, and interactive discussion, this is not enough to develop in-depth conceptual understanding. Application of environmental science concepts in experiential, real-life field contexts is extremely valuable. Scaffolding the learning from the classroom to the field and then back to the classroom results in memorable, comprehensive, and long-term learning (Barlow, 2015; Breunig, Murtell, & Russell, 2014; Council on Environmental Quality [CEQ], 2011; Fägerstam, 2014; Association for Science Education Outdoor Science Working Group [ASE OSWG], 2011; Thornburn & Marshall, 2014). Although this type of learning holds immense benefits for all students, it is particularly valuable for students who struggle with traditional school tasks or have developed an apathetic stance toward school and learning (Barlow, 2015; Bass, Yumol, & Hazer, 2012; Bredderman, 1983; Breunig et al., 2014; Breunig et al., 2008; Haury & Rillero, 1994; Ives & Obenchain, 2006; Moulton, 2008; Parry, 2011; Resource Area for Teaching [RAFT], 2013; Scott, Boyd, & Colquhoun, 2013).

Because schools increasingly de-emphasize or eliminate outdoor education, this study attempts to examine the value of school-based outdoor education on youth (middle school students in particular) engagement in and motivation for learning. Moreover, this study fills a void in the research by obtaining the participants' perspectives on these matters (Allison & Pomeroy, 2000).

Review of Literature

Public school accountability movements have influenced public education for more than 50 years. For the past 14 years, nonproficient standardized test scores have resulted in high-stakes consequences for schools, teachers, and students. One unintended negative consequence of this high-stakes environment is a narrowing of the curriculum as educators increasingly teach with the purpose of assuring proficient reading and math standardized test scores (Berliner, 2011; Blazer, 2011; Cawelti, 2006; Erskine, 2014). To prepare their students for the high-stakes tests, teachers often rely on time-efficient instructional models that teach lower level fact and skill acquisition through teacher-centered lecture, drill, and rote memorization. Much research indicates that active, subject-integrated, experiential, in-context learning is the most effective way to reach students (Bass et al., 2012; Bredderman, 1983; Chen & Chou, 2015; Haury & Rillero, 1994; Ives & Obenchain, 2006; Jones et al., 2015; RAFT, 2013; Wiggins & McTighe, 2008). These instructional practices are often abandoned,

however, because of the time they take away from test preparation (Berliner, 2011; Blazer, 2011; Cawelti, 2006; Erskine, 2014). The State Education and Environment Roundtable (Lieberman & Hoody, 1998), a cooperative endeavor of 12 state education agencies in the United States, has been working to improve student learning by integrating experiential outdoor education into K-12 curricula. Research supports that integrating experiential outdoor education into K-12 curricula results in better standardized test performance, reduced discipline and classroom management problems, and increased engagement in and motivation for learning (Breunig et al., 2008; Fägerstam, 2014; Garst, Scheider, & Baker, 2001; Lieberman & Hoody, 1998; Scott et al., 2013).

Apathy for school-related learning is high among adolescents (Moulton, 2008; Tita, 2010; Wang & Holcombe, 2010). The 2013 Gallop poll on school engagement administered to more than 600,000 sixth- through 12-grade U.S. students found that 45% were disengaged in school-based learning (Blad, 2014). This report contends that emotional engagement in school is the noncognitive factor that most directly correlates with academic achievement (Blad, 2014). Many studies indicate that outdoor education programs hold high emotional engagement for students and, as a result, increase motivation for the learning taking place in this environment. Experiential involvement in active, in-context, outdoor environmental education is exciting and emotionally engaging for children and consequently leads to deeper and more effective learning (Bass et al., 2012; Bredderman, 1983; Breunig et al., 2014; Haury & Rillero, 1994; Ives & Obenchain, 2006; Parry, 2011; RAFT, 2013; Scott et al., 2013).

Bredderman (1983) contends that students who struggle with academics, motivation, attentional focus, or social skills gain the most from activity-based, experiential, in-context outdoor education. Research indicates that, oftentimes, pupils who tend to be “invisible” in school demonstrate critical thinking skills and even take on leadership roles in the outdoors, thus leveling the academic playing field (Barlow, 2015; Breunig et al., 2014; Breunig et al., 2008; Moulton, 2008; Scott et al., 2013).

Children are spending more time engaged in sedentary, often technology-related, indoor activities, and less time in the outdoors (CEQ, 2011; Dillon, 2010; Kennedy, 2011; Larkin, 2011; Richtel, 2010). This is partly because parents are more reluctant to let their children engage in unsupervised outdoor play for safety reasons (Little, 2015). In a study of more than 2,000 U.S. 8- to 18-year-olds, it was found that, on average, they spend more than 7 hr a day interacting with media (CEQ, 2011). This is even more remarkable when contrasted with the finding that children this age spend an average of only 30 min a week outdoors. Because they have spent so little time outdoors, some of our youth have developed a view of the outdoors as being remote, mysterious, and frightening, and have acquired a fear of the unfamiliar—weather, insects, wild animals (CEQ, 2011; Larkin, 2011).

There is compelling research evidence of the wide-ranging educational benefits of applying science through experiential outdoor education fieldwork (Dillon, 2010; Fägerstam, 2014; ASE OSWG, 2011; Rickerson et al., 2004; Scott et al., 2013; Thornburn & Marshall, 2014). Professor Steve Jones, President of the Association for Science Education, states, “The study of biology, geology and the rest is a living

experience, and without fieldwork it can be (and often is) killed stone dead” (OSWG, 2011, p. 2). Applying classroom-learned educational content in concrete and relevant real-life contexts leads to deeper understanding and more effective development of critical thinking skills. Providing this in-context application is more effective than learning these same concepts only through classroom-based lecture, lab experiments, discussion, textbooks, and worksheets (Dillon, 2010; Fägerstam, 2014; ASE OSWG, 2011; Rickerson et al., 2004; Thornburn & Marshall, 2014). In essence, work in the field should scaffold on prior well-designed classroom learning. Similarly, building on field-obtained information once back in the classroom adds even more depth to the learning (Barlow, 2015; Breunig et al., 2014; CEQ, 2011; Fägerstam, 2014; ASE OSWG, 2011; Parry, 2011; Rickerson et al., 2004; Thornburn & Marshall, 2014).

This research study, which is described in detail below, adds to the literature in support of school-based, experiential, outdoor education as one of many powerful ways to engage our students in meaningful, memorable, and motivating learning.

Method

Setting and Participants

In total, 56 seventh- and eighth-grade students who attend a school of choice in the Rocky Mountain West are the participants of this study. Outdoor education is a major curricular emphasis for this school. As they progress through the grades, kindergarten through ninth-grade students participate in increasingly challenging fall and winter outdoor education experiences. For these seventh and eighth graders, the overarching theme of “water and its environmental impact” was learned through the lens of physical, earth, and life science. In-classroom learning was accomplished through textbook reading, video, teacher lecture, lab experiment, and interactive discussion. In-context outdoor field experiences provided opportunities to explore this theme in more depth under the tutelage of environmental scientists. Back in the classroom following the field experience, four 100-min class periods were devoted to making sense of the data collected by the students in the field, and making connections between in-class learning and field experience. Moreover, teacher-facilitated class discussion helped students make connections among the eight environmentally focused, outdoor science centers. For example, the teacher facilitated as the students analyzed data from water quality measures, soil samples, and plant transects to determine the effect of water health and abundance on plant and animal biodiversity. In addition to these science centers, the middle school students participated in team-building activities, archery, nature hikes, nighttime astronomy, campfire cooking, tent pitching, and camping.

Three middle school science teachers and eight preservice teachers facilitated the learning and mentored the students as they participated in this outdoor education experience. With extensive mountainous wilderness areas close by and a school devoted to experiential outdoor education, many of these 56 seventh and eighth graders have spent a lot of time in the outdoors with their families and on school camping trips. Several of these students are extremely interested in and knowledgeable about

environmental science, and feel quite comfortable in nature. Eight students (14%) are new to the school and the Rocky Mountain Region. When preparing for the outdoor education overnight camp, it became evident that they have little experience with and lack confidence in wilderness settings. Thirteen (23%) of the middle school students struggle with behavior, attention, motivation, and/or social issues. Three of these students (all boys) have one-on-one paraprofessional support for much of each school day. In addition, seven students (13%) struggle with traditional academic tasks involving reading and writing, but are motivated learners and excel in hands-on, active, experiential learning.

Research Design and Data Analysis

As this research study seeks to gain an in-depth understanding of the value of a field-based, experiential, outdoor learning camp from close field observation and participants' perspectives, the more flexible, naturalistic, information-rich, and illuminative qualitative phenomenological research methodology is utilized (Ballad & Bawalan, 2012; Goetz & Mahoney, 2012; Mack, Woodsong, MacQueen, Guest, & Namey, 2005; Merriam & Tisdell, 2016). Phenomenological research describes the understanding of shared experiences from the perspectives of each participant (Ballad & Bawalan, 2012). This hermeneutic approach to research enables a deep understanding of the context-specific experiences of real people rather than a statistical generalization of a nonexistent "average" person (Ballad & Bawalan, 2012).

The constructivist epistemology is appropriate for this study because our ontological vision as researchers complements the constructivist nature of experiential learning (Allison & Pomeroy, 2000). As experiential research is complex and filled with uncertainties, the constructivist approach is open to a broad range of research questions (Allison & Pomeroy, 2000). This research study goes beyond the more simplistic question "Is school-based experiential outdoor education beneficial?" by attempting to analyze *how* and *why* it is beneficial. It seeks participants' perspectives and close observation of this particular school-based, experiential, outdoor education program and the processes at work in this situation that made it beneficial. This research study attempts to deeply understand the complexities of this particular school-based, experiential, outdoor education experience (Allison & Pomeroy, 2000).

There are two researchers for this study. One is a college of education assistant professor who was previously a fourth- or fifth-grade teacher in the targeted school. The other is a current science teacher of these students. Both know most of the participating seventh and eighth graders well from interacting with them in a teacher-student relationship over the past 5 years. This personal knowledge of the students has been helpful for the researchers in comparing students' in-class behaviors and attitudes with their field behaviors and attitudes.

The qualitative data collection involved close participant observation and contextual note-taking during the outdoor education experience. Following the field experience, semistructured, individual interviews were conducted with all participants (56 middle school students, eight preservice teachers, and three classroom teachers). The

two-day, one-night experiential outdoor education experience was referred to as “camp” when talking with the middle school students. They were asked to respond to the following questions: (a) Was the camp a worthwhile experience for you? Why? (b) What camp activities were valuable? Why? (c) What camp activities were not valuable? Why? and (d) What would you do to change this camp to make it a more valuable experience? Demographic information including gender, number of years living in this region and attending this school, and teacher-perceived motivation for and success in traditional school learning was also collected.

The data collection was emergent; the researchers asked questions to clarify the meaning of their field observations and asked follow-up questions to delve more deeply into unpredictable interviewee responses. Observations of these students in the field and oral statements from these students and the adult mentors in their postcamp interviews were sorted and categorized to arrive at these major themes: (a) evidence that supports or refutes engagement in experiential outdoor education and (b) evidence of the value or lack of value of this outdoor education camp.

Research Limitations

While being systematic in the inductive analysis of the data, the researchers occasionally encountered challenges related to their subjective interpretations because of pre-conceived ideas from knowing the students. This may have introduced some bias into the results. Most of the middle school students had developed a close, respectful relationship with the researchers because they were currently or had been their teacher. Because of this, some may have responded to interview questions in a way that they thought would be pleasing to the researchers, thus skewing the data. It should also be kept in mind that adolescents, driven by their developmental need for autonomy and independence, often test rules and boundaries stipulated by adults (Spano, 2004). In an effort to exert their autonomy and independence, some of the middle school students may have stated the opposite of what they thought was expected of them. This, too, would skew the data.

As school sites are situated in varying social, economic, and geographical contexts, the conditions of this study may not be replicable and, therefore, the results cannot be generalized to all school situations. Naturalistic generalizations, however, can be made by individuals depending on the relevance and usefulness of this study in relation to the reader's own circumstance (Allison & Pomeroy, 2000). It is the researchers' hope that other teachers and schools will use the results of this study to integrate experiential outdoor education experiences into their curriculum.

Results

Evocative accounts of this experiential outdoor education experience quoted directly from participants provide a rich interpretation of its benefits. When analyzing postcamp interview responses from the seventh- and eighth-grade students, it was evident that most considered this outdoor education event to be a valuable experience. Forty-four of

the 56 seventh and eighth graders (79%) indicated that the outdoor education camp was worthwhile. Middle school student responses indicated that they enjoyed learning environmental science concepts in a hands-on, active, and experiential way. "I got to learn a bunch of stuff, and hands-on activities make it easier to remember," commented J. Jackson (personal communication, October 8, 2015). D. Storey stated, "It is a wonderful way to learn because you get fresh air and you're not cooped up in a classroom" (personal communication, October 9, 2015). Most students found it worthwhile to collect real data to learn about the environment. As one student succinctly explained, "We didn't just get data from some worksheet; we saw *how* the data was collected, and that makes it much more meaningful" (M. Rose, personal communication, October 6, 2015).

We all know students who have little confidence in the classroom because of their lack of comfort or competence in traditional school-related skills involving a lot of reading and writing, sitting, and listening. It is these students who often become the leaders in outdoor education environments. These students often excel and thrive in outdoor field experiences, where they can demonstrate their high-level thinking skills in a more hands-on, active, and experiential manner (Barlow, 2015; Bredderman, 1983; Breunig et al., 2014; Breunig et al., 2008; Moulton, 2008; Scott et al., 2013; Thornburn & Marshall, 2014). A case in point from this study is a seventh-grade student who could read and write only at a second-grade level but was very engaged in this in-context learning environment. His hand was constantly waving in the air in eagerness to make his thinking visible in every center, and his contributions demonstrated insightful critical thinking skills.

As indicated above, students identified with special needs often took on leadership roles in this environment. A poignant example of this was expressed by two middle school teachers describing the collaborative tent-pitching activity. Teacher B. Matthews stated, "This small group activity let the students persevere in solving a problem together without any adult interference. These tents were not super easy to assemble, so it was a true challenge for most groups and all groups succeeded" (personal communication, October 19, 2015). Teacher D. Fricke added, "I watched a student with special needs direct three other students in a seemingly dysfunctional group to succeed [in pitching their tent] before all other groups" (personal communication, October 20, 2015).

Some students who had long since developed a stance of disinterest and apathy for all school-based learning were astonished at their own intrinsic involvement and love of learning occurring in this experiential outdoor education atmosphere (Bass et al., 2012; Blad, 2014; Bredderman, 1983; Garst et al., 2001; Moulton, 2008; RAFT, 2013; Tita, 2010). For example, a transfer student, who had been suspended 8 times at his previous school and was unmotivated and inappropriately disruptive in the classroom, started out by being off-task and disrespectful in this unfamiliar environment. Soon, however, he immersed himself in the activities and visibly changed his demeanor and attitude. In his postcamp interview, he stated, "This camp was a very worthwhile experience. I learned a lot in a really fun way and it was awesome to camp with friends. We should have stayed two nights" (R. Campbell, personal communication, October 18, 2015). Another behaviorally challenged and unmotivated student in the classroom was very engaged and on-task in the centers involving active, hands-on learning. He was

observed immersing himself in collecting and identifying land and aquatic macroinvertebrates, weighing and measuring live fish, and much more.

Eight of the seventh- and eighth-grade students were new to the school and/or to the Rocky Mountain Region. When preparing for this outdoor education experience, it was clear that each of these students had spent little time outdoors. Some of them expressed some fear and concern about spending 2 days and a night living and learning in a remote wilderness area. As supported in the literature (CEQ, 2011; Larkin, 2011), their inexperience with the outdoors led to a fear of the unfamiliar—weather, insects, wild animals—and they viewed the outdoors as being remote, mysterious, and frightening. A couple girls who were afraid to touch a fish or an insect at the start of the camp were proud of themselves for stepping out of their comfort zone and trying new things. As one girl commented, “I was not looking forward to camp at all because I am not an outdoor person . . . Even though I was afraid, I held a live fish and caught some insects” (C. Cooke, personal communication, October 9, 2015). A boy who was anxious about spending the moonless and cold night in a tent had a stomachache and hung close to the teachers until being persuaded to climb into his sleeping bag. He persevered through the night and expressed pride in his accomplishment the next morning.

No matter the learning environment (indoor or outdoor classrooms), when learning is active, experiential, and applied in real-world contexts, it is memorable and more easily committed to long-term memory. Student-centered learning where students are engaged in constructing their own knowledge through experience often has the effect of bringing learning alive or rekindling a love of learning (Bass et al., 2012; Bredderman, 1983; Chen & Chou, 2015; Fägerstam, 2014; Haury & Rillero, 1994; Jones et al., 2015; Parry, 2011; RAFT, 2013; Scott et al., 2013; Thornburn & Marshall, 2014; Wiggins & McTighe, 2008). These middle school students had a strong desire to be engaged, active participants in their learning and expressed little tolerance for centers that involved a lot of lecture, passive listening, or even interactive discussion. The seven students (13%) who did not think this outdoor education field experience was valuable expressed that the centers needed to be more activity-based with less sitting and listening. One student commented, “I didn’t like the centers where we didn’t do much. I love hands-on activities” (A. Markley, personal communication, October 7, 2015). Another concisely stated, “It was like school outside” (C. Patterson, personal communication, October 13, 2015). Still another indicated, “The nature was nice, but the lessons were too long and relatively boring” (E. Case, personal communication, October 8, 2015).

The value of hands-on, experiential activities in engaging students in the learning was a theme that emerged from the preservice teacher responses as well. G. Vernon stated, “Yes, it was a worthwhile experience because it’s something different from the classroom setting. It is more hands-on, and the students can see and learn from real things. It is a different avenue for learning with more engagement” (personal communication, October 12, 2015). Another preservice teacher remarked, “The camp was a worthwhile experience because it got the kids out in nature and they learned a lot of material in a little bit of time” (A. Benko, personal communication, October 13, 2015).

It is beneficial when students are given opportunities to apply their in-class learning in real-life contexts (Dillon, 2010; Fägerstam, 2014; ASE OSWG, 2011; Rickerson et al., 2004; Thornburn & Marshall, 2014). When in the school classroom, learning about science concepts occurs through well-designed instruction involving textbook reading, videos, laboratory experiments, and interactive discussions. When students are able to scaffold on this learning by applying it in actual outdoor fieldwork, their understanding is deepened as their critical thinking skills are developed. All eight of the preservice teachers who accompanied and mentored the seventh and eighth graders pointed out the benefits of connecting in-class concept learning to application in the field. One preservice teacher commented, "I definitely think the camp was a worthwhile experience for the students because it put their class learnings into action which really helped some of the students understand the science concepts much better" (J. Johnson, personal communication, October 12, 2015). Another remarked, "This camp was an extremely worthwhile experience for the middle-school students because it taught them class-related things like science and math, and even about different careers and content they wouldn't have otherwise known about" (T. Marks, personal communication, October 13, 2015).

Deep and meaningful learning occurs when in-context fieldwork scaffolds prior classroom learning. Following up on the learning from the real-life field experiences once back in the classroom adds even more depth to the learning. It is indeed helpful when the learning in both contexts (in class and in the field) build on and support each other (Barlow, 2015; Breunig et al., 2014; Fägerstam, 2014; ASE OSWG, 2011; Parry, 2011; Thornburn & Marshall, 2014). All three teachers contended that the students very effectively integrated their classroom-based and field learning. Teacher B. Matthews reflected,

The camp was worthwhile for a number of reasons. First of all, the students were able to explore science in place. For example, they were able to see and touch the fish they were studying, and they were able to make real-world connections between water chemistry and the reasons why rainbow trout are able to thrive in the reservoir. (Personal communication, October 19, 2015)

Teacher C. Claflin commented, "Students were able to apply class-based learning as they participated in actual scientific research and data collection" (personal communication, October 21, 2015). Students not only applied their classroom learning in the field, they brought the learning from the field investigations back to the classroom where teachers provided time and support to analyze and make sense of their data. An example of this was related by teacher, D. Fricke:

Generalized pre-camp concept learning about symbiotic relationships was applied in the field where the real-life symbiotic relationship between pine bark beetles and the blue stain fungus was investigated. In post-camp work, students seamlessly integrated the learning from multiple outdoor centers that related to this basic scientific concept. (Personal communication, October 20, 2015)

The value of school-based experiential outdoor education is evident. It connects classroom-based learning with in-context field-based experiences. It is effective in engaging all students in active, experiential, environmental science. It is successful in motivating the apathetic and bringing learning alive for those who are unsuccessful in more traditional learning contexts. It builds confidence in those who have a fear of the unfamiliar wilderness. School-based experiential outdoor education is, indeed, beneficial.

Discussion and Implications

Is experiential outdoor education for middle school students a valuable use of school time? As supported by much research (Barlow, 2015; Breunig et al., 2014; Dillon, 2010; Fägerstam, 2014; Garst et al., 2001; Jones et al., 2015; Larkin, 2011; ASE OSWG, 2011; Rickerson et al., 2004; Scott et al., 2013; Thornburn & Marshall, 2014), the findings of this study underscore the value of school-based experiential outdoor education.

It is apparent from most participant responses and supported by research (Breunig et al., 2014; Chen & Chou, 2015; Jones et al., 2015; OSWG, 2011; Wiggins & McTighe, 2008) that active, experiential learning is key to the effectiveness of this experience. It is evident from the responses that most of the students have little or no tolerance for centers where they are expected to passively listen and absorb information whether the instruction is in a classroom or in the field. When the students are engaged in “doing” the science, their motivation to participate is strong and their active engagement is obvious, which will likely lead to memorable, long-lasting learning. This finding alone sends a strong message to educators who hope to implement successful outdoor education programs or effective classroom-based learning.

As supported in the literature (Barlow, 2015; Breunig et al., 2014; Fägerstam, 2014; ASE OSWG, 2011; Parry, 2011; Thornburn & Marshall, 2014), the bridge of learning from school to field and back to school is another huge key to the effectiveness of this experience, and emphasizes the importance of connecting classroom and field learning to deepen conceptual understanding. Such connections will likely result in more meaningful, memorable, long-lasting concept acquisition.

Field observation and participant responses clarify the immense value of outdoor education for children who struggle with the tighter structure and more passive “sit and get” nature of traditional classrooms (Barlow, 2015; Bredderman, 1983; Breunig et al., 2014; Breunig et al., 2008; Moulton, 2008; Scott et al., 2013; Tita, 2010). Adolescents who had, over the years, come to view school-based learning as meaningless and disengaging were motivated and immersed in this experiential, in-context, field-based learning. Several of these students face the daily struggle of sitting still and focusing their attention on textbook reading and lecture/discussion learning. In this more active, experiential setting, these students often became the leaders of their peers. Instead of avoiding learning by being unfocused, off-task, or disruptive, most were intently engaged and likely learning deeply as a result. As they shared their questions and insights and immersed themselves in the hands-on activities, it was apparent

that these students had strong critical thinking abilities that were rarely evident in the classroom. Some of these students even expressed a desire to learn more advanced concepts, which was rare for them in the traditional classroom setting. The few students who were fearful of the unfamiliar aspects of the wilderness that they had never been exposed to faced their fears and gained an appreciation of nature.

In this outdoor education environment away from the support of their parents, these students enhanced their sense of independence and responsibility as they collaborated and cooperated with peers to master naturally occurring challenges like figuring out how to pitch their tents. This outdoor experience also required them to persevere in difficult situations such as making it through a cold night on hard, rough ground.

The active, experiential nature of in-context, outdoor education that is effective in engaging all students in motivating and meaningful learning. The bridge of environmental science learning between in-class learning and real-life application in the field. The enhanced sense of independence and responsibility as students face unique challenges. For all these reasons, it is evident that experiential, outdoor education is valuable to include as a part of environmental science learning. Further research is needed on the unique and subjective experiences of individuals and groups concerning *how* and *why* school-based, experiential, outdoor education might be beneficial.

Conclusion

For the past two decades, the emphasis in education has increasingly been on improving academic achievement and raising standardized test scores. This has led to a narrowed curriculum where active, experiential, in-context learning has been de-emphasized or eliminated (Berliner, 2011; Blazer, 2011; Cawelti, 2006; Erskine, 2014; Faulkner, 2006). Consequently, there has not been a lot of research done on the value of outdoor environmental education, especially from the viewpoints of participants. This research study helps to fill that gap as it taps participants' perspectives concerning the value of school-based experiential outdoor education. Similarly, since Lieberman and Hoody's (1998) study by the State Education and Environment Roundtable, there has been little research conducted on the effectiveness of outdoor experiential education in closing the academic achievement gap and raising standardized test scores. Future research studies could explore this connection in more depth.

Analysis of the field observations and participant interviews has led to a rich, comprehensive understanding of the value of school-sponsored experiential outdoor education. It is obvious from the student responses that they engage with learning and acquire knowledge best when instruction is meaningful, active, and experiential. As teachers, we need to strive to immerse our students in concept learning of this nature whether in the classroom or in the field. Outdoor education that effectively bridges classroom and field learning is also beneficial. Pairing dynamic in-class learning with authentic contextualized application of scientific concepts is extremely valuable in engaging the most apathetic and unmotivated students in minds-on learning. Building confidence and independence by solving problems on their own and with a team is often an unplanned benefit of experiential outdoor education.

Indeed, experiential outdoor education is a necessary, but often neglected, aspect of school curriculum.

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