Implementation and Outcomes of Outdoor Science Education in an Urban Setting on Primary and Intermediate Level Students with Emotional and Behavioral Disorders

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Abstract

The term nature deficit disorder describes the "human costs of alienation from nature" (Louv, 2019). While not meant to be a medical diagnosis, Louv argues that the condition has, "profound implications, not only for the health of future generations but for the health of the earth itself" (Louv, 2008). Children most at risk are those who live or go to school in an urban setting, as well as students diagnosed with Emotional and Behavioral Disorders (EBD). Students diagnosed with EBD are often kept indoors as their teachers and caretakers are frequently trained in the indoor use only of behavior management techniques (Riden et al., 2022). This means that during professional development training, any that pertain to behavior management techniques, procedure, or protocol are routinely taught inside of a classroom, conference room, or recently home office, using an indoor scenario (classroom, auditorium, cafeteria, etc.) as an example of when and how to use these behavior management tools. Outdoor professional development, equipping students with natural tools that can help improve not only their physical but also their mental health, as well as connecting students with nature in a way that teaches them to advocate for the health of the earth, thus becoming citizen stewards are all themes that are part of the massive, currently dysfunctional system that is outdoor education in schools. This study shows that when students are encouraged to interact with nature on their own terms on-task behaviors and motivation increase. Students also retained lesson information and asked follow-up questions after the lesson when taught outside using hands-on activities.

Keywords: emotional and behavioral disorders, special education, outdoors, nature, science education

1. Introduction

1.1 Background

Children going to school in an urban setting are at a disadvantage, when it comes to outdoor activities. Their outdoor landscape usually consists of a small playground that has very little space and greenery, a parking lot and a sprawling city with houses, businesses, and busy streets. While there is no law requiring schools to have recess or outdoor play time, the Center for Disease Control (CDC) recommends, "at least 20 minutes of recess a day" for students in grades K-12 (CDC, 2017), for the cognitive, emotional, and physical benefits (Murray et al, 2013). Outdoor learning is also a tool that can be utilized to equip students with the necessary skills to succeed in an educational and social setting (Stonehouse et al, 2011). Many students struggle to learn in an indoor environment due to its confining nature and lack of stimulation. This is especially true for students with Emotional and Behavioral Disorders (EBD). Stea and colleagues (2022) reviewed studies from the past 30 years to identify outdoor therapy having a significant impact on students with EBD overall mental health; however, a lack of literature is available to explore how the same benefits of outdoor learning can be applied to the school setting. This study aims to explore the academic, social, and emotional benefits of outdoor science education on students with EBD.

1.2 Relevant Scholarship

Students with EBD can receive special education services under the disability category of emotional disturbance. In 2004 Individuals with Disabilities Education Act (IDEA, 2004) defined emotional disturbance as, "a condition exhibiting one or more of the following characteristics over a long period of time and to a marked degree that adversely affects a child's educational performance." Characteristics include: 1) inability to learn that cannot be explained by intellectual, sensory, or health factors, 2) inability to build or maintain satisfactory interpersonal relationships with peers and teachers, 3) inappropriate types of behavior or feelings under normal circumstances, 4) pervasive mood of unhappiness or depression, and 5) tendency to develop physical symptoms of fears associated with personal or school problems. The characteristics of students with emotional and behavioral disorders (EBD) vary, but often include: 1) Externalizing behaviors such as defiance, aggression, and noncompliance, 2) Internalizing behaviors such as social withdrawal, anxiety, and depression, 3) social withdrawal, 4) attention deficits, and 5) social skills problems (Rosenberg et al., 2010, Visser, 2017).

Students with EBD tend to exhibit difficulty with reading, writing, and math tasks due to their emotional and social needs that tend to worsen over time, causing higher than average drop-out rates (Bettini et al., 2017; Freeman et al., 2019). Additionally, it is common for students with EBD to be diagnosed with additional disabilities or medical disorders such as a Specific Learning Disability (SLD), Attention-Deficit/Hyperactivity Disorder (ADHD), or Autism thus creating greater challenges to learn in the formal school environment (CDC, 2021). Educational practices such as academic interventions (shortened assignments, technology assistance and self-monitoring checklists), social/behavioral interventions like token economies and replacement behaviors, early intervention, and having a vocational specialist or job coach to help transition into adult life are used to assist children with EBD (Rosenberg et al, 2010). Many practices can and should be used in an outdoor learning setting. However, when educators are trained in their implementation during academic time the setting is mostly indoors.

In a typical school, children with EBD are taught using the same methods as the entire classroom population. In some cases, students with EBD may be able to adapt to standard teaching methods but, in most cases, adapting can be extremely difficult. Students enrolled in schools that specialize in emotional support are still required to take state standardized tests based solely upon what grade their age would put them in rather than their academic abilities. A critical conclusion that emerges from careful scrutiny of these teaching methods is, "the connections between cognitive processes, core learning modalities, and instructional designs should be examined from the perspective of broader issues related to the structure of human society, the fragile ecology of our planetary home, and the essential nature of the human condition (Cassel & Nelson, 2010)."

According to the National Center for Education Statistics students in the US are in school between 6-7 hours a day, 5 days a week (NCES State Education Practices survey, 2020). Data from the School Health Policies and Programs Study in 2014 shows that on average students spent 26.9 (Ramstetter & Murray, 2017) minutes per day outside at recess. There are several countries where students spend more time learning outdoors including Finland, Denmark, France, Spain, New Zealand, and Singapore (Lee, 2022). This nature-deficit disorder is a metaphor used to describe, "Western society's increasing disconnection from nature." (Louv, 2008). While outdoor learning can provide children with health benefits (vitamin D), children are also more likely to take care of the environment around them as they grow if they spend more time doing things in it. Bringing children outside to learn can encourage children to be more physically active.

Children also benefit mentally from being outdoors. Numerous studies show a link between positive behaviors and emotions and being outdoors in comfortable weather (Yildirim et al, 2017; Oberle et al, 2021; and Szczytko et al, 2018). Many students with EBD are easily overwhelmed by indoor sensory input, which causes them to either shut down or react erratically, violently, and unpredictably. Because students with EBD are reactionary, they learn by watching rather than doing. But this can lead to incomplete understanding of the topics being taught. Having an outdoor learning space would help this population of students feel more at ease while learning and would then facilitate more hands-on learning exercises (Szczytko, 2018), while also showing the potential to impact the physical and mental well-being of urban youth in a positive manner (Cohen et al., 2021).

In 1970, Craig C. Chase and Irwin Rosenstein developed an outdoor education curriculum and defined outdoor education as being, "concerned with direct learning experiences which utilize the natural environment in attempting to achieve the goals of education (Chase & Rosenstein, 1970)." However, Chase and Rosenstein had not planned for urban development to become the barrier to outdoor education that it is today. Teachers in British Columbia, Alberta, and Ontario, Canada were interviewed and asked about the barriers and supports they thought were factors in outdoor education in their respective districts (Oberle, Zeni, Munday, & Brussoni, 2021). Interestingly, the researchers

concluded that the barriers and support factors were interconnected (Figure 1). Szczytko et al. (2018) studied students with and without EBD and found that the teachers with EBD students expected them to struggle outdoors, predicting shorter attention spans and more disruptive behaviors. However, as the study progressed teachers reported improved attention spans and less disruptive behaviors.

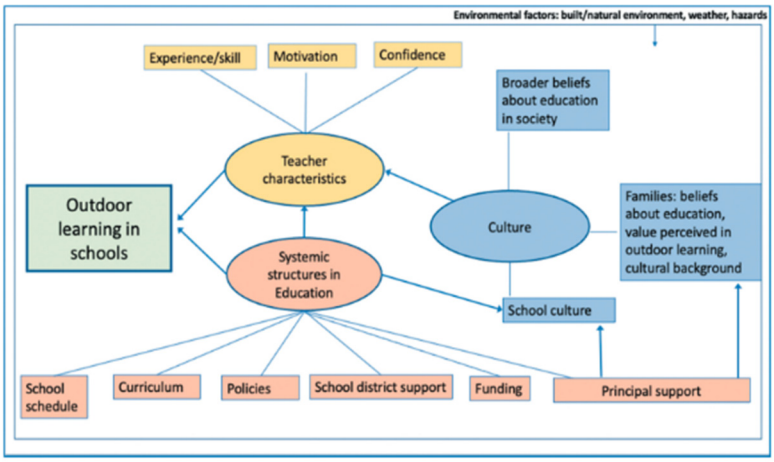

Figure 1. Themes and Sub-Themes of Outdoor Learning Barriers and Supports in Schools (from Oberle et al, 2021)

Instructors of an outdoor education program (Project Connect) in Toronto, Canada were interviewed in order to analyze how they, "perceive the experiences, meanings, and impacts of urban programs designed to enhance nature connectedness among children (Grimwood et al., 2018)." The conclusion was that, "instructors perceive Project Connect as being part of a broader network of outdoor learning they feel is facilitating a novel vision, philosophy, and culture of nature connection (Grimwood et al, 2018)." Another key issue was the perception of "nature" and that it was a nonsocial, nonpolitical biophysical world, perpetuating the dichotomy that humans are continually and increasingly outside of nature (Grimwood et al, 2018).

1.3 Research Question

In this study, we examine students diagnosed with EBD who attend an emotional support program school in an urban setting. Students with EBD suffer the most from 'nature-deficit disorder': they do not have access to a rural outdoor area to play in or explore nor can they easily go on field trips. In an effort to improve behavioral problems, take on a proactive role in environmental stewardship, and learn how to grow and maintain a basic pollinator garden, this study seeks to address the following research question: What is the effect of an outdoor science education on K-6 students with emotional and behavioral disorders?

2. Method

This study utilized an action research design by collecting and analyzing both quantitative and qualitative data. The researcher worked in the educational setting and explored the impact of a specific teaching method on students with EBD academic and functional performance. Davis (2010) maintains the importance of action research because although it is not linear, it is a continuous spiral constituted by a flow of interrelated events over time. Action research is also pragmatic and can be based in problem-solving and the improvement of teaching practice.

Several forms of data were collected throughout the six-week implementation of this study. Students completed a pre-and post-test that consisted of eight open-ended questions specific to science education. These tests were graded and used to measure the student's mastery of the lesson's science objectives. During the intervention, three science lessons were conducted in the outside learning environment that focused on pollination, compost, and the rock cycle. During each lesson, qualitative data was collected. The researcher observed and took note of the student's participation and communication. Additionally, students completed brief surveys at the conclusion of each lesson that consisted of four open-ended questions to get their feedback regarding their engagement and overall emotional well-being during the lesson.

Because the activities were considered part of the regular instruction sequence, no Institutional Review Board (IRB) approval was required. Permission from all teachers and administrators was requested and received to allow the lessons and research to proceed. Students' guardians were also informed of the ongoing activities.

2.1 Author's Role

The lesson plans, surveys, and pre- and post-tests were developed by the authors and lessons were delivered by the primary author, with guidance from the second author and the first author's professional colleagues and administrators at the school. The author worked as a personal care assistant, then as an emergency certified teacher at the study location for two years. Having worked with many of the students in the study the year prior, the author was already familiar with their accommodations and behavioral struggles. Having a consistent support team is vital to the education of students with EBD as it is often more difficult for them to create relationships with their educators (Bettini et al., 2020; Lloyd et al., 2019). The bonds created with returning students helped to ease the minds of new students. This helped encourage students to talk about what they learned with the author, each other, their families, and other teaching personnel.

2.2 Lesson Plan Development and Instructional Format

Each lesson involved 30 minutes of outdoor instruction conducted over six weeks in the spring. The 30-minute lessons were broken into a 10-minute introduction that included review of behavioral expectations, 15 minutes of hands-on activities in the outdoor learning environment, and 5 minutes to conclude the lesson and student completion of the lesson surveys. The first lesson had the students build a pollinator garden by planting wildflower seeds (Figure 2).

Figure 2. Left: Class A's Class Starter Plants. Right: garden plots divided into 6 sections, one for each class

The second lesson focused on composting with a compost bin and the third lesson focused on geology with rocks. The lessons, end-of-lesson surveys, and the pre-and post-tests to the intervention were implemented by the researcher and additional support staff including instructional assistants, personal care assistants, and registered behavior technicians due to the student's special education services.

Lessons were tailored to the individual learning needs of the students based on their IEP requirements. Time was spent in each class observing students interacting with peers and staff in order to understand how they participated in an indoor academic setting. Behavior analysts were consulted before lessons to gauge students' emotional and behavioral status before going outside.

2.3 Participants and Study Location

This study took place in an urban community in southeastern Pennsylvania at an emotional support school with approximately 36 students in grades K-6, ages 6 years old to 11 years old. Each student in the school has an IEP (Individualized Education Program) and has been diagnosed with an emotional or behavioral disorder and qualified for special education services under Emotional Disturbance (ED) as their primary disability. Science is not a mandatory class for most grades because it is not something the students will be tested on when it comes time for state standardized testing. Six classes, identified as Classes A-E, participated in the study with five to 10 students in each class section. Classes A-D had science on an irregular basis, class E was taught science on a bi-weekly basis, class F was not taught science at all. Accommodations and modifications for students specifically included: having clear rules and expectations in place, using non-verbal cues to communicate, taking breaks as needed, visual supports, word banks, and allowing students to draw or dictate their responses. Staff and aides were instructed to assist students only with

reading and understanding of questions and not in answering them. Table 1 shows the demographic breakdown of the student participants.

Table 1. Demographics of Participating Classes

Class	Grade	# Students	Male	Female
A	K-2	10	8	2
B	2-3	5	4	1
C	3-4	5	3	2
D	4-5	6	6	0
E	4-6	4	3	1
F	5-6	6	4	2

2.3 Data Collection

Students were asked to complete a pre and post-test (Table 2) to identify and measure knowledge of concepts covered during lessons. The tests consisted of eight short answer questions. Students completed a pre-test prior to the implementation of the science lessons and a post-test at the conclusion of the intervention. Items in both pre- and post-tests are shown in Table 2. Two separate tests were given, one for students in grades K-2 and one for students in grades 3-6. Students K-2 were allowed to draw their answers if they chose to. Students in grades 3-6 were prompted to provide written responses but did have access to a word bank to support their thinking.

Table 2. Pre- and Post-Tests Items for the Two Grade Bands (K-2 and 3-6)

K-2 Pre-Test	**K-2 Post-Test**
Where does the food you eat come from?	What did we use to grow our flowers?
Why do you think bees are attracted to colorful flowers or plants? What are they doing?	What can go in the compost?
What types of animals and plants live near where you live?	Circle all the pollinators that will come to our garden.
Which picture is showing pollution?	What can you find in sedimentary rocks?
Do you recycle? What are two things you might recycle?	How do pollinators help flowers?
Where does the water go when it rains?	What makes igneous rocks?
How do you get to school or other places? Bus, walk, car, bike.	What are we going to use our compost for?
Who is responsible for taking care of the Earth? Everyone or only adults?	
3-6 Pre-Test	**3-6 Post-Test**
What do you know about climate change?	What kind of flowers did we plant in our garden?
Where does the water go when it rains?	Name one thing we can put in our compost and one thing we cannot.
Who is responsible for taking care of the environment?	What type of rock is made from volcanoes?
What is an endangered species? Name one.	How are flowers pollinated?
If something is sustainable what does that mean?	What is compost used for?
What does conserve mean?	Why is Earth Day important?
How are flowers pollinated?	Why is our pollinator garden important?
What might happen if the water on Earth gets polluted?	

Students also completed a short survey (Table 3) at the conclusion of each science lesson that consisted of four short answer questions specific to their engagement and emotional well-being.

Table 3. End of Lesson Survey Questions

	Questions
1)	What did you think about the lesson?
2)	Is there anything you did not like?
3)	What is one thing you would change?
4)	How are you feeling right now?

3. Results

3.1 Quantitative Data

Five of the six classes took both the pre- and post-tests (one class was unable to do so due to time and logistical constraints although this class did take the post-test). Both pre- and post- tests were worth 100 points; grades were calculated then interpreted using a t-test (Figure 3). Of the five classes included, one class (Class A) scored higher on the pre-test, however this result was concluded to be not significant. The pre-and post-tests were graded and used as a form of quantitative data to measure the student's mastery of the science lesson objectives.

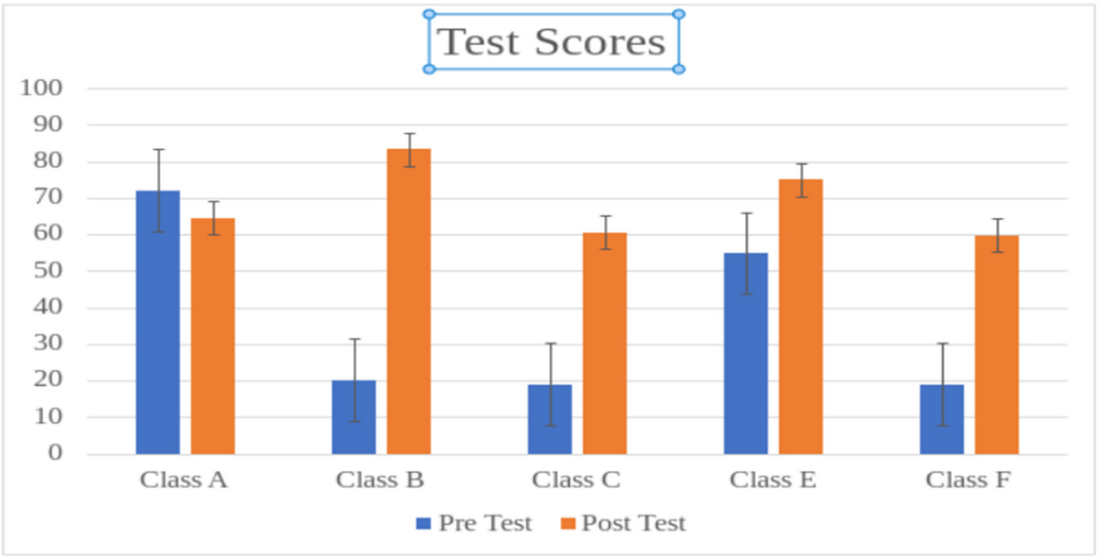

Figure 3. Classes B, C, E, and F Scored Higher on Post-Test. Class A scored higher on pre-test however, as shown by the overlapping error bars it is conclusive that it is not significant.

3.2 Qualitative Data

The surveys administered at the conclusion of each of the three outdoor science lessons were then analyzed for recurring themes occurring across student responses of their perception of the lessons. The four questions on each survey provided the students an opportunity to reflect on the lesson by identifying their level of interest, recommendations, and overall feelings. Data analysis was performed on the surveys using open coding initially performed by the primary author (and teacher of the lesson) and then independently by the second author. Significant words and short statements from the participants who completed the surveys were highlighted and identified. The authors then met to discuss their results and the assignment of categories to establish reliability in their coding system. The authors reached consensus to assign just two categories. Responses were initially classified as either “positive” or “negative” based on the words and the connotation in which they were used in responding based on the authors’ interpretation. Overall, the number of positive comments (136) was significantly higher than the number of negative comments (14), with positive comments using a variety of positive words and phrases, whereas the negative comments were less varied (see Figures 4 and 5).

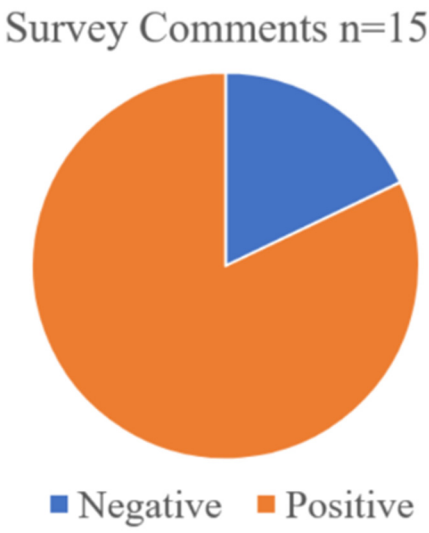

Figure 4. Comment Counts of Positive and Negative Comments from Post-Survey

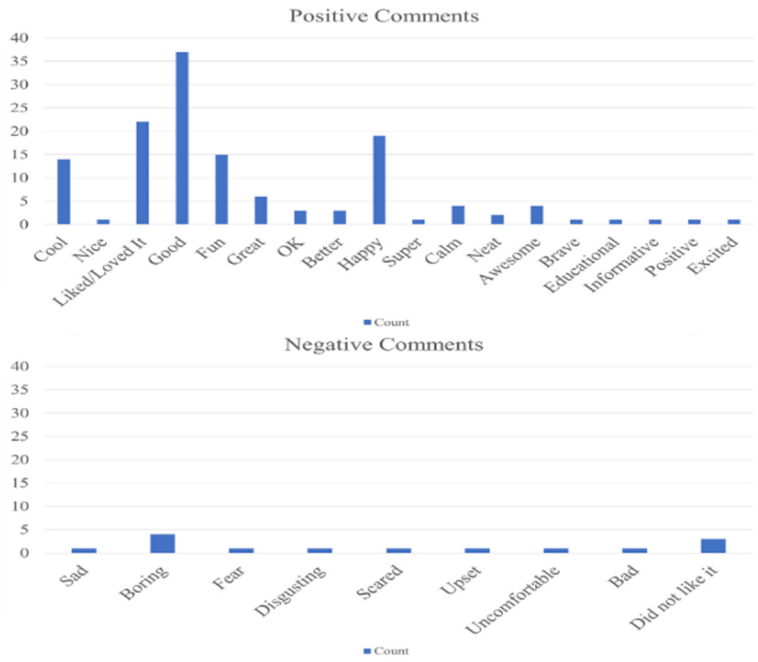

Figure 5. Code Counts of Positive and Negative Comments

3.3 Observational Data and Feedback

During the intervention, the researcher and additional staff members observed the student's interactions and conversations during and after each of the three outdoor science lessons. The students in Classes B, C and F (grades 3 through 6) gave the most input with their surveys by writing many of their responses in complete sentences and with no assistance from staff. These classes did not perform well on the pre-test (18-20% accuracy), however all three classes improved their scores on the post-test (60-85% accuracy) as displayed in Figure 3.

Classes were informally interviewed a week after the last lesson ended about their experiences outside and what they took away from the lessons. During the interview students indicated that they enjoyed being outside but did not like the heat. Classes B and C were able to recall specific details from the lessons, for example, rock types, what we put into the

compost bin, and what types of flowers we grew. Students from Classes B and C also asked questions pertaining to the lessons in order to learn more about the topics taught.

During the beginning phase of the first lesson in the intervention, regarding pollination, students did not have much interest in the garden. They often referred to it as simply, "the garden" or "[author's] garden". Nearing the end of the intervention (June) students visiting the garden would point out their specific flower and remark on its progress and eventually began to refer to it as "our garden."

The second lesson in the intervention, regarding compost, received the most feedback and out of the 32 surveys collected for that lesson, 14 stated they would change something or there was something they did not like. Each of the 14 surveys indicated sensory related issues as students did not like the smell or feel of the fruit, grass, or paper. However, one student (who was removed from the pollinator garden lesson due to behavioral problems) noted that he felt "brave" because he was the only student in his class to volunteer to put in the rottenest pear. This student became diligent with his composting in the classroom, even going so far as to bring in compost items from home.

Each class was provided with a bucket in which they could put their compost items throughout the day. During the entire time of this study, not once were non-compostable items placed in this bucket. Students were also assigned roles (line leader, paper collector, pencil sharpener, etc), and some teachers allowed students to go outside at the end of the school day to deposit items into the compost bin (see Figure 6), including a student from one class who enjoyed the task of composting so much it became a reward that she worked for during the day, this in spite of the fact she expressly stated she did not like bugs (which were present in the compost bin). During an end of the year assignment this student wrote these experiences were her favorite science lesson of the year.

Figure 6. The Compost Bin Was Located Near the Pollinator Garden

3.4 Post-Intervention Observations

Shortly after the conclusion of the intervention and school year, Extended School Year (ESY) began and the researcher returned as an emotional support teacher supporting several of the students who participated in the outdoor science intervention. ESY is a five-week program for students who receive special education services and in need of additional support to retain academic and/or behavioral skills during the summer. During this time the students cared for live caterpillars with the plan being to put them in the pollinator garden once they became butterflies. On the last day of ESY the butterflies hatched and were taken to the pollinator garden to see them in action. After silently observing the butterflies in the garden, one student remarked, "That's why we did this. For them, for the butterflies. For all of them, right?"

4. Discussion

This study sought to address the following question: What is the effect of an outdoor science education on K-6 students with emotional and behavioral disorders? Cameron et al. (2019) reported significant improvement in on-task behaviors and motivation not only during outdoor lesson activities but also afterwards, meaning that for the rest of the day students exhibited increased motivation and on-task behaviors during indoor lessons. During this study, students reported significantly more positive emotions (136) than negative (14) when asked how they felt at the conclusion of each science lesson. Additionally, most students were observed to actively participate during the outdoor science lessons and willing to complete the post-lesson surveys with teacher prompting. The researcher observed this improved behavior throughout the school day.

This study found that outdoor science learning had a positive impact for students with EBD both academically and behaviorally. On the pre-and post-tests, four out of the five classes demonstrated at least a 40% increase in their scores demonstrating their understanding of the science objectives. During the science lessons, the majority of the students were observed engaged and several became greatly motivated by "our garden" and compost bin. Lastly, approximately 91% of the student's comments on the lesson surveys indicated positive feelings regarding their emotional well-being.

Szczytko et al. (2018) found that teachers who have students with EBD expected them to struggle with outdoor lessons and this study found that to be true as well. Teachers involved with this study had several concerns such as; student elopement, lack of concentration, increased problem behaviors, and decreased on task behaviors. Students were given the option to leave or not attend the lesson which resulted in a total of four students asking to either leave or not attend throughout the study, and one student was removed in the first lesson due to behavior problems. However, most students (31) participated in the lessons with minimal teacher prompting.

As with the study done by Oberle et al (2021), there were several barriers and supports that occurred during the process. Many faculty and staff members were supportive of the lessons, however when encouraged to take the students outside for continuing lessons on their own or to spend time in the garden, they chose not to. This barrier stems from all three themes; teacher characteristics, systemic structures in education, and culture. The students attended a specialized school for students who demonstrate emotional and behavior concerns making the primary focus on behavior management and such, there may have not been an understanding of the value outdoor learning has on the student's academic achievement and self-regulation skills. As such, there may not have been an understanding of the value of outdoor learning and the positive impact it could have both with behavior management as well as education.

Due to the urban landscape, all outdoor play took place in the parking lot. The only interaction they had with any kind of greenery was during the outdoor science lessons. Students were also allowed to interact with nature in a way that felt comfortable to them as per Grimwood et al. (2018). However, over the duration of the study, the students became more interested in their outdoor learning space as time progressed, often taking upon themselves to provide updates about the garden and referring to the space as, "our garden," thus truly becoming "citizen stewards" (Cassel et al. (2010). This is good not only for students learning to experience and interact with nature (as they may not have prior) but may also be a useful coping skill for emotional management. This process may also teach students basic life skills such as gardening, weeding, identifying native and harmful plant species, composting, recycling, and sustainability.

4.1 Limitations

Some limitations were identified during this study:

There are several limitations to identify when discussing the results of this study. First off, this study looked at a relatively small sample size of participants. There was a total of 36 students, however, each class session had four to ten students in each. It is important to note that students with emotional and behavioral disorders make up a relatively smaller percentage of the school population, with approximately 6% of students receiving emotional support services in the United States (National Center for Education Statistics, 2023). Additionally, the setting was a special education school specific to supporting the needs of students with emotional and behavioral concerns. The setting also only had one outdoor area, limiting the exposure to different outdoor learning environments.

Secondly, investigator bias is another limitation of this study. The researcher was an employee of the school where the study took place. The researcher worked at the study location well over a year before the study took place and continued to work there throughout the study. This might have caused the participants more likely to have developed a relationship with the investigator that could have influenced their actions before, during, and after the study. However, this is a key aspect of action research, that allows an educator to also serve as a researcher to improve educational practices for students (Davis, 2010). Due to these limitations, it is difficult to say how these results would apply to a

broader group of students, schools, or researchers. However, there are several recommendations for future educational implications and research in the next section.

4.2 Recommendations and Conclusion

It is critical to continue research on the impact of outdoor learning in an urban setting with children who have an emotional or behavioral disorder as a useful educational and behavioral management tool. As evidenced by the significant increase in overall test scores, strongly positive comments, observations, and casual conversations with students, they not only enjoyed the lessons, but they also benefited educationally as well. Moving forward, our recommendations should be taken into consideration:

1. A team should be assembled, and classes assigned to each member of the team so that each member can work with that class throughout the school year. A single teacher may find it difficult to monitor the emotional and behavioral state of the students while engaged in planting seeds, or developing a compost bin, among other outdoor related tasks.
2. Teachers need professional development training on outdoor lesson planning and the benefits of outdoor lessons (Chase & Rosenstein, 1970; Cassel & Nelson 2010). As a teacher in the school where the study was conducted, there was no professional development training or faculty meetings devoted to any type of outdoor activity, educational or otherwise. The lack of enthusiasm observed in other teachers of the participating classes may reflect their lack of self-efficacy in this outdoor lesson domain.
3. Inventory of usable green space on urban school property and in the immediate vicinity is necessary. Limited green space must be cleaned and maintained to be turned into outdoor classrooms. This includes clearing out trash debris, removal of old sheds, and researching, installing and utilizing a new, more efficient method to store the construction equipment. Adjacent property owners, and the municipality officials, should be contacted to encourage conversion of paved open lots into green space for students. Partnerships with the school and the students can allow students to see how resources are transformed and used.
4. Additional research is required to explore the academic, emotional, and behavioral impact that outdoor learning in the school setting can have for students with EBD. This population of students is at risk for the most negative outcomes in and out of the school setting and require interventions for support. This study has shown the positive impact three lessons can have on this population, but future research can explore more opportunities for outdoor learning.

In viewing the "new" landscape of the school grounds, the connection that students made with nature benefited their emotional and cognitive ability. Students can feel more positive emotions and gain a level of conceptual understanding, and ownership, due to their work and interaction with the natural area on their own terms. We encourage teachers and administrators of students with EBD and additional disabilities, in any setting - urban, rural, or suburban - to examine their own student population and work to incorporate more outdoor learning and project-based lessons.

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