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# Nature-Based Education:

# What Are the Benefits & How to Incorporate it in Schools?

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## Author's Note

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# Chapter One

## Introduction & Thesis

Educators have one of the most important jobs in the world. They are responsible for shaping the future of our children. We all want students to get the best education possible to become well-educated and successful. Many different approaches can be taken for that to happen. Numerous teaching styles, strategies, approaches, methodologies, etc. have been researched and proven to help students excel in their academic and personal life. One popular approach is nature-based education. Nature-based education is when learning occurs outside in nature. Whether it is a nature-based school or a general education school incorporating nature-related lessons, it has multiple benefits for students. It helps strengthen students' academic skills, problem-solving skills, curiosity, resilience, and more.

## History

## Statement of the Problem

What is the best teaching method for students? How do students learn best? The most effective way to teach students to become the best they can has always been a controversial topic. Many students, especially students with academic or behavior issues, struggle in regular general education classes. Their brain and body are just not able to sit at a desk and listen to a teacher speak at them all day. Therefore, they struggle academically, emotionally, and socially. They just cannot seem to be completely successful in an old-fashioned, by the book, traditional type of schooling.

## Background and Need

Students don't all learn the same; every student learns differently. For example, some students learn best by just reading, some learn best by seeing an example be done, others learn

best by trying it themselves, etc. According to psychologist Howard Gardner, there are eight types of intelligences that cannot be measured by a person's IQ. His theory of multiple intelligences includes linguistic (smart with words), logical-mathematical (smart with numbers and reasonings), visual-spatial (smart with pictures), bodily-kinesthetic (smart with your body), musical (smart with music), interpersonal (smart with people), intrapersonal (smart within yourself), and naturalist (smart with nature).

Some students are stronger in these certain area(s) than their peers because they process/learn the information differently. So, what approaches can educators implement that will help all their students learn best when they all learn so differently? One great alternative to general education for some students is nature-based education. Even schools that cannot be entirely nature-based, incorporating nature-related lessons and activities can be very beneficial. Through nature-based experiences there are ways you can incorporate almost all these intelligences within your teaching at some point, and help students strengthen their skills.

For millennia people spent most of their lives outside in nature. They hunted, gathered, built, adapted, etc. so that they could survive in the wild. Since humans now do not have to try and survive in nature, they are forgetting how much nature can teach and benefit them. Within recent years more and more nature-based education programs have been established to try and get students the nature experience they are being deprived of because of modern inventions. According to the Natural Start Alliance, in the United States the first nature-based preschool opened in 1966 and for years the number of nature-based preschools did not grow much. However, when 2010 hit there became a jump in numbers of nature-based preschools all across the United States. As the numbers grew, the news spread, more research was done, interest in

nature-based learning grew. More educators/teachers started implementing it, and more parents began wanting their children to experience it because of all the benefits it was proven to have.

## Purpose of the Study

The purpose of this study is to explore how nature-based education is beneficial to students. It is important to implement nature into learning for students to gain multiple important skills that will be useful throughout their life. This study will collect adults' perspectives on nature-based education, examples of it, how it is beneficial, and ways schools can incorporate it into their teaching. The results of this study are intended to inform educators on how to incorporate nature-based education to improve students learning.

## Research Questions

The research questions to be answered in this study are:

*What are some examples of nature-based education?*

*What are the benefits of nature-based education?*

*How is nature-based education different than general education?*

*How can you incorporate nature-related lessons in general education classrooms?*

*What are adults' perspectives on nature-based education?*

## Significance to the Field

As more and more students struggle with learning in general education classrooms there is an increasing need for ways to help these students, and all students, learn better. The results of this study are intended to improve student learning by giving educators the approach of nature-based education to implement.

## Definitions

The defintions of words pertaining to this study are listed below:

- Nature-Based Education: where learning occurs in the context of nature. The curriculum is entirely based on using nature. In this setting the learning usually takes place outdoors and not in an actual classroom building.
- General Education: (also called "regular"education) is the type of learning that children should receive based on state standards and evaluated by state standardized tests. The curriculum the children learn is based on the common core states standards. In this setting, the learning usually takes place indoors in a generic school building.

## Limitations

There will be limitations with this study. Adults within a nature-based education program will be included in this study but identities will not be recorded for confidentially purposes.

# Chapter Two

## Literature Review

When children go to a regular school, some have difficulty sitting still for long periods of time, retaining information, paying attention, and appropriately figuring out how to act in social interactions. These struggles often cause the students to fall behind academically and socially. Teachers want to see these students succeed but have trouble figuring out how to help them in the general education classroom. Nature-based education has had significant results in helping these students succeed and is a great alternative or additive to general education. However, general education teachers have to follow their state's learning standards for teaching. So, how

can they incorporate nature into their lessons while still following their state's learning standards? Is it worth it to even try? What are the benefits?

Nature may not be incorporated into all lessons every day, but it can be incorporated into most lessons. Teachers can incorporate nature into almost all subjects. They just have to look at the standard and find a way to incorporate nature into it, which is a lot easier than they think. Students can learn countless things from just nature itself but when combined with education standards, it can benefit the students academically and socially.

A variety of resources were collected to gather information regarding this topic. Some articles focused more on the benefits of nature-based education while others focused more on examples of teaching nature-based lessons. Although these sources ranged in type, author, date. etc., they all described the importance of nature-based education and why it should be implemented.

The first literary source reviewed was a viewpoint essay titled "Stephen Kellert: build nature into education" published by Stephen Kellert a former Professor and senior research scholar at Yale School of Forestry and Environmental Studies in New Haven, Connecticut. His research states how to build nature into education. It includes what students are missing by not getting out in nature, what they can do in nature, and the benefits they get from nature. It also includes a lot of numerical facts about nature education which is helpful for this research paper. According to his research the "typical child in the United States now spends 90% of the time indoors" (Kellert, 2015). Children today are not outside as much as they used to be because of technology and parent's fear of letting them be alone outdoors. Due to lack of nature experience,

children are missing out on a “wide array of adaptive responses that provoke curiosity, observation, wonder, exploration, problem-solving and creativity”.

In Kellert’s essay he talks about a study done on 90 elementary schools in Australia that found that being in nature “improved the children's self-confidence, ability to work with others, caring, peer relationships and interaction with adults”. He also included that in the book *Outdoor Adventure Pursuits* by Alan Ewert's they studied children in nature programs and found that they “asked more questions than others and were better at solving problems”. He also stated that there was a study done on 262 children (3-12 years) in Chicago, Illinois that proved that because of nature these children “demonstrated richer creative play”.

Nature learning has been proven all over the world to be beneficial for students. My second literary source I reviewed was an article on “The impact of nature on children's wellbeing” by research associate Richard Sheldrake and professor Michael J. Reiss at UCL Institute of Education. It was published by the National Association for Environmental Education. This article states the benefits of nature on children’s mental health when doing certain nature activities and it also includes research results. In England they studied 451 children (mostly 8-9 years of age) by surveying them before and after participating in outdoor activities. Some examples of the children’s responses were 90% said “It showed me that people should care for the environment," 84% said "It showed me that I can do new things if I try," and 81% said "It made me feel calm and relaxed". This study proved that when children spend time outdoors that it helps their “personal wellbeing and health, nature connection and pro-environmental values”.

Nature has many benefits and there are many ways you can incorporate nature learning in a general education classroom. For example, my third literary resource is an article titled “Art in

Nature and Schools: Nils-Udo" by Young Imm Kang Song an assistant professor in the Graduate School of Arts and Social Sciences at Lesley University. In this article Song interviews German artist Nils-Udo about his artwork and how it can be taught in schools. Nils-Undo focuses on wanting educators to teach ecological issues through different creative forms of expression. He concluded that his art piece of "Root Sculpture could be easily integrated into a science curriculum concerning topics such as trees and woods, the nature of soil, dry and wet seasons, and the functions of roots". He wants children to "learn about the environment and come to love nature rather than just be afraid that it is going to be destroyed". By integrating artists like Nils-Undo into school lessons students are being "introduced to a masterful environmental artist, education is given depth and excitement, contemplative and insightful thought is encouraged, and environmental awareness is fostered".

Nature can be taught in art, science, and even math. My fourth literary article is titled "Math through nature, nature through math" published by The Center for Learning with Nature. This article talks about how math is tough for many students; however, when math is taught through nature it can be very successful. This article also gives an example of an actual curriculum you can use to teach math in nature. In this article The Center for Learning with Nature created a seventh-grade math curriculum titled Math Through Nature, Nature Through Math. A pilot of the curriculum showed that "after the course, nearly 80% of 7$^{th}$ grade females expressed an interest in math, a 27% increase over the national average, as well as three-quarters (75%) of the males" and also "two-thirds (66%) of the students expressed greater interest in the natural world". Since many students struggle with math in school incorporating nature into it can be extremely helpful to keep their interest and help their focus and learning.

## Summary

Learning through nature has been a part of this world for years. However, in recent years people, especially children, have been spending less time outside than they used to. This is causing children to be deprived of some of the amazing benefits that learning through nature offers. Nature learning is very important for children to learn numerous skills that will help them in the future. Therefore, if all students cannot attend a fully nature-based school then general education schools should at least be incorporating nature-based lessons into their teaching.

# Chapter Three

## Survey Methods and Analytical Considerations

### Introduction

Since all students learn differently sticking to one certain way of teaching will not be helpful for everyone. Teachers must provide a variety of options and ways for the students to learn so that the student can figure out what way they learn best and also learn new skills along the way. Nature-based learning can give students many different types of learning opportunities. Nature-based learning is more student-centered than teacher-centered, meaning that the students are learning through their experiences rather than the teacher just lecturing them.

The following research questions were addressed in this study:

*What are some examples of nature-based education?*

*What are the benefits of nature-based education?*

*How is nature-based education different than general education?*

*How can you incorporate nature-related lessons in general education classrooms?*

*What are adults' perspectives on nature-based education?*

This study examined adult's perspectives on how nature-based education has impacted students within one establishment in Massachusetts. Information regarding the benefits and limitations of nature-based education and if and how it should be incorporated into general education classrooms was collected from four participants who work at a nature-based school program. The information from the four participants was collected via email response. The participants were asked to answer eight questions via email about their opinions and observations regarding the impacts of nature-based education on students considering they are teachers/adults that are implementing nature-related lessons and/or observing nature-based learning occurring every school day.

## Setting

This study took place via email survey but was based upon information from participants who work at a non-profit nature-based education center located in Paxton, Massachusetts. This establishment is called Turn Back Time (TBT) and it helps people "recognize nature's ability to heal and teach" through educational programs, nature play, and farm education. In TBT's programs the students are witnessing nature, using their imaginations and senses, expanding their injury and knowledge, and investigating. TBT have exposed children to over 25,000 hours in nature. Their research "confirms that spending time in nature reduces stress and promotes physical, psychological, and emotional health".

Turn Back Time includes 58 acres of land for individuals to explore. It includes areas such as a beaver pond, several trails into the forest, a small waterfall, playgrounds, farm animals, stables, greenhouse, gardens, yurts, pavilions, interactive classrooms, and more. Within all these areas children can interact, view, and learn about all different types of animals such as beavers,

salamanders, frogs, birds, horses, ducks, chickens, goats, a donkey, etc. The children learn not only about these animals lives and the nature they are in but also how to respect it and care for it as well. They see these animals and parts of nature firsthand, which helps deepen their learning compared to just seeing a picture of it. They learn how to explore and discover on their own therefore strengthening their imagination. They learn to respectfully interact with peers, stand up for themselves, and solve problems. They learn how to plan ahead and adjust when they have a project in their head that they want to build (like a stick fort). They learn how to appropriately regulate their emotions. They simply learn important life skills that children necessarily cannot fully get in a regular classroom setting.

## Participants

The participants in this study were selected based upon their career and background knowledge of working with children in a nature-based establishment. These participants are all adults who directly teach and/or observe the impact of nature on children at Turn Back Time Farm, hence why they were selected for this study.

The participants in this study were asked the following questions:

1. How much experience do you have with a nature-based education program? (Example: teacher, volunteer, prior student, parent of student, etc.)
2. How would *you* define nature-based education/learning?
3. Based on your experiences, what are some examples of nature-based learning? (What are ways that you have seen students learn from nature?)
4. Based on your experiences, what are some benefits of nature-based learning? (What have you seen students learn from being in nature?)

5. Based on your experiences, what are some challenges of nature-based learning?
6. How much experience do you have with a general education classroom experience a.k.a. regular schooling? (Example: teacher, volunteer, prior student, parent of student, etc.)
7. Do you think general education teachers should incorporate nature related lessons in their classrooms, why or why not?
8. If answered yes to question 7 what are some examples of ways that you think a general education classroom could incorporate nature-based learning into their lessons? (What are some lessons they could possibly teach?)

A limitation of this study was that there were only a few participants. Also, these participants were all adults who work with only a certain number of children at the same nature-based education center location. This study did not include the student's perspectives due to confidentially purposes. However, in an ideal situation, this survey would be responded by a large population of teachers and students across the world. Therefore, results would differ if taken from different teachers and students at different school locations. Although, despite these limitations, this study aims to begin to inform educators about how beneficial nature-based education and lessons can be.

As stated above, in order to inform educators about how beneficial nature-based education and lessons can be, teachers/workers at a nature-based education program were selected for this study. The participants remained anonymous for confidentiality purposes and were sent a survey pertaining to this study via email. The survey question responses were matched to answer the initial research questions. Although the survey will include a list of questions to be answered and the results will vary, the findings will ultimately answer two important questions: what are some benefits and examples of nature education?

## Intervention

The independent variable measured in this research outlined examples and benefits of nature education. The survey was given through email. The same survey questions were given to each participant. All participants had the choice to whether accept or decline to fill out all, some, or none of the survey. The dependent variables were the answers the participants provided, and each person's different experiences and opinions were written down. Although the questions were the same, there was no right or wrong answer, rather just what they have witnessed and believe based on their experience with nature education.

## Materials

The survey was completed by using a Word document to type the questions that were ordered with numeric numbers. The participants either filled out a printed version on paper by using a pen or pencil or used the attachment in their email to fill out the survey.

## Measurement Instruments

The tool that was used to collect the data was through a survey that was given to the participants. There were eight total questions and responses within the survey. The unique answers from the individuals were put together into one Word document to organize the data. The validity of the study was determined through the same exact questions that were asked to each participant. However, each participant was given the opportunity to fill in their own responses about their experience and opinions on the research topic, which is where the reliability is made. Then, using the participants' answers, the data was put into specific results.

## Procedures

The data was collected through surveys that were given through email. The data took a total of about two weeks to gather from the various participants. Each participant had the freedom to choose what answers, opinions, and stories they wanted to share from their own experience.

This study was a qualitative study. The participants were given the survey with expectations to fill out responses for each question. They could answer it in as many or as few sentences and/or words as they saw feasible. After all the data was collected from each participant, the data was then organized into one Word document with all the questions and each response from each person listed below it and color-coordinated to show the different individuals' responses while still respecting confidentiality.

## Data Analysis

The data for this survey was collected through a survey given through email. However, the number of participants and variety of participants in this study is a limiting factor. Only four adults who all have experience with a nature-based education program were surveyed within this study. Each adult had varying experiences and answers, but all collectively agreed that nature learning has positive benefits for students. However, if the survey was sent out to more participants and/or participants with no experience of nature-based education results may have varied. Also, due to availability, all the participants work at the same establishment in Massachusetts; therefore, location is another limitation to this study.

Despite these limitations, this study is a great start to understanding the benefits of nature-based education and by surveying adults who have firsthand experience with it, it gives a

unique insight into it. This study will be helpful for any educators looking to improve their student's learning or parents looking to learn more about the importance of their children experiencing nature-based learning.

# Chapter Four

## Survey Results

Nature-based education is beneficial to children and should be incorporated in all schools in some capacity. In this study participants who currently work at a nature-based education center were surveyed about their history, experience, and opinion on nature-based education/learning.

In order to gather the collected data in the best way, the results section will review each question asked in the survey and pull answers from each question. There was a total of eight questions in this survey, questions 1 and 6 were primarily to include the adult's history and experience, and the remaining questions pertain to nature-based learning.

### Question One

The first question asked was "How much experience do you have with a nature-based education program (Example: teacher, volunteer, prior student, parent of student, etc.)"? The answers to this question are very straightforward. The most experienced participant was the founder and executive director of the establishment where the participants were interviewed: Turn Back Time, a non-profit nature-based education center. She has overseen Turn Back Time for nine years now. The newest participant into nature-based education has been a part of Turn Back Time for two years. She started out as an intern and then became a preschool teacher there.

One participant on top of working at Turn Back Time Farm for two years also said she worked as:

> an AmeriCorps service member with Montezuma School to Farm Project in Mancos, Colorado for one year. There [she] taught garden education to students in grades PreK through 6th. [She] also collaborated with community partners, such as the town library and the Montezuma Inspire Coalition. [She] also served as an AmeriCorps member with the University of Arizona Agricultural Extension, helping Arizona educators bring garden resources to their classrooms and school. [She also]… worked two summers as a camp counselor at Camp Mary White in Mayhill, New Mexico.

Another participant has been working as lead teacher and assistant director at Turn Back Time for almost two years now but has been a part of the Turn Back Time community since 2013. She previously had sent her own children to Turn Back Time and worked there as a consultant, curriculum coordinator, program developer, and board member. This participant is also:

> a Massachusetts State-Licensed teacher for children PreK-2 and [she has] a master's degree in Foundations of Experiential Education from Antioch University, a bachelor's degree in Early Childhood Education from Worcester State University, and hold[s] a master's Certificate in Nature-Based Education from Antioch University as well… [She] worked previously at Tanya's Family of Schools in Westborough MA as a kindergarten and preschool teacher and [she] owned and operated The Neighborhood Playroom, a nature-based daycare, from 2013 until 2020.

These participants were chosen because of all their unique backgrounds with nature-based learning. Some have experienced nature programs through course work, being a teacher, a mother, director, founder, etc. They all have different viewpoints and opinions that they can bring to the topic of nature-based education that is valuable to this study.

## Question Two

The second question asked was "How would *you* define nature-based education/learning"? The results were overall the same. All participants said that nature-based education is not just learning about nature but is learning *in* nature. One participant said it is "a more autonomy-supportive education in an environment that exposes children to the most natural environment that is provided to them. It is a chance for discovery, creativity, and understanding with the best educator available – nature – and with the support of teachers and peers to support this discovery". It is a type of learning where nature is "the third teacher". One participant also stated that a full nature-based education occurs in a natural setting "with at least 60-75% of the day outdoors. It uses emergent curriculum focused on nature themes and seasonal flows".

## Question Three

The third question asked was "Based on your experiences, what are some examples of nature-based learning? (What are ways that you have seen students learn from nature)"? The results varied in examples of where these adults have seen nature-based learning occur. One participant said by visiting the farm and forest areas she has seen students learn social emotional skills, resilience, and age-appropriate skills. Another participant gave a more specific example of students learning about salamanders in nature. She said she helped the students find salamanders, had them describe their color and patterns, compare their sizes with their peer's salamanders, and

count the dots, legs, and toes on them. She stated that this activity "involves learning how to collaborate with one another, works on a lot of social-emotional development, and involves gross and fine motor skills like digging, lifting rocks, moving leaves around, etc.". It also helps them with their academic skills, like math, without them really noticing they're doing math.

Another participant gave another specific example of nature-based learning that she has seen. She said one year at Turn Back Time they were in a drought and the garden was not getting enough water. The children worked together to get water from a pond on the property using a large hose pump system. By doing this the children "understood the real-life issue of what happens to our food supply when in the midst of a drought, and problem-solved ways to remedy their garden. Selecting which part of their crop was the most important to save".

## Question Four

The fourth question asked was "Based on your experiences, what are some benefits of nature-based learning? (What have you seen students learn from being in nature)"? The general consensus for this question was that there are several benefits to nature learning such as it being a place where the children can show their strengths, it is therapeutic, healing, and a safe space to make mistakes and learn from them. All participants agreed that nature learning benefits all students and especially those who struggle in general education classrooms since they are given more opportunities to thrive and show their strength since it is not as restrictive.

For example, one participant said that nature-based learning includes "much more autonomy. It allows children to be just that, children". She said that she has seen a lot of students exhibit resilience. For example, she has seen children get upset about not being able to climb a tree but from help from their peers and trying many times they finally were able to climb it even

if it took weeks or months. This experience she states, teaches the child so much. It teaches them "resilience, listening to other suggestions, calculations for the best places to put their hands and feet, etc.". Another benefit of nature that was stated was that when students get to observe part of the world they otherwise would not they

> grow in compassion and learn about the interconnectedness of the entire ecosystem. Children can identify problems such as an eroding embankment and find ways that they can in turn fix it. It makes them think about real world problems… They have to cooperate to solve problems and use the next generation science standards to do it. They are making models, testing, adjusting, and testing again until they find the best solution.

Another participant stated that nature-based schools "erase some of the stigma around learning, and allow [students] to learn through play, and find their own excitement, and [they] have the space to follow where that leads [them]". Some people when they see children playing or exploring do not think they are learning anything valuable from it, when they actually are. By using "emergent curriculum and checking back in the with standards regularly ensures [that teachers] are offering a high-quality educational experience that is developmentally appropriate and rewarding for children and teachers alike".

## Question Five

The fifth question asked was "Based on your experiences, what are some challenges of nature-based learning"? There was a range of examples given within these answers. Some participants stated that for some students, it takes more adjusting for them to thrive in nature-based education, especially when they have previously experienced a regular education setting. For example, some "children may initially feel overwhelmed by not being surrounded by four

walls. At times, it can even be anxiety-provoking for students who are so used to getting immediate help and being assisted with everything". However, with time they eventually become more comfortable and learn to work through problems on their own.

Some other challenges stated by the participants were the weather, and amount of physical activity. Depending on the weather of a certain day changes to lessons have to be made. For example, if they have planned on flying paper planes in the wind that day but it's raining then they have to do a different lesson. Also, by being outside all day running and walking around by the end of the day the children get extremely tired. Nature-based learning compared to learning in a standard classroom is "more demanding physically, so it takes time for some children to build up the stamina that nature-based learning may require".

In general education classrooms students' basic needs are met, such as "safety in shelter, body temperature regulation, proximity to bathrooms, [and] food and water". However, when students are outside almost all day, it is harder to make sure a child's needs are met regularly. For example, when the children go on small hikes they tend to get tired, hungry, wet, thirsty, or have a sensory overload, and the teacher cannot help them fulfill this need until they get to their destination, which with some children can cause a tantrum. When these issues happen, "it can't be fixed by going to the nurse or just sending them off with someone else, as the lead teacher you help the child cope with the feelings and make a plan to help them fix whichever issue is hindering their success".

Another unfortunate challenge to nature learning is teaching students to respect nature. For example, one participant said in her class she has "children with diagnoses that include impulsivity, and some children will step on a bug, or destroy something a child made outdoors due to their impulsivity". Although this happens it paves a way to teach the children how to be

respectful to not only others but objects in the world around them too, which is an important life skill. Despite there being some challenges to nature-based learning, all participants agreed that the benefits of nature-based learning are worth the hardships.

## Question Six

The sixth question asked was, "How much experience do you have with a general education classroom experience a.k.a. regular schooling (Example: teacher, volunteer, prior student, parent of student, etc.)"? The results for this question were very straightforward. All participants graduated from a general-education high school, and all attended a general-education college at some level, so they personally have experienced being a student in a general education classroom. Two of the participants have children of their own who are currently enrolled in a general education school. Also, all participants except one have previously been a general education teacher in some capacity (student teacher, substitute teacher, kindergarten teacher).

The fact that all participants have experience with a general education setting in some way shows that these participants are aware of the differences of general education and nature-based education. Their knowledge of the two different types of education is useful for this study because they have seen the benefits and challenges of both firsthand, so their opinion isn't as biased since they have experience with both education types instead of just one.

## Question Seven

The seventh question asked was "Do you think general education teachers should incorporate nature-related lessons in their classrooms, why or why not"? The results varied in reasoning, but they all collectively agreed that yes they think general education teachers should incorporate nature related lessons in their classrooms. One participant stated that it is important

in order to “to be sure [teachers] are meeting the needs of students who may thrive in those settings… [It] can have a calming effect and mental health benefits which all children can benefit from”. Another participant stated that she was shocked when she learned how many different topics that are taught in regular schools naturally come up when teaching outdoors. Therefore, general education can easily teach these topics outside if they are aware of them. One participant even gave an example of a video she saw of a general education school that was actually implementing nature-related lessons. The school calls it “Forest Fridays. The goal of this program is to take learning outside one day a week, regardless of weather”.

## Question Eight

The eighth question asked was “If answered yes to question 7 what are some examples of ways that you think a general education classroom could incorporate nature-based learning into their lessons (What are some lessons they could possibly teach)”? All participants completed this question due to answering yes on the previous question of “Do you think general education teachers should incorporate nature related lessons in their classrooms”. One participant suggested for general education schools to “consider ‘fun Friday’ which is allowing for 2-3 hours of outdoor instruction, so [they] can see the benefit with little risk to the curriculum that is already in place”. Another way she suggested was “to create units in [the] STEAM curriculum that are focused outdoors”.

Another participant stated that there are endless opportunities to teach children in nature and it is extremely important to. Some ways for general education schools to do that can be something simple as a walk outside, then have them engage in nature journaling where they write down a description and/or draw something they viewed or experienced. Also, general education

schools could start a community garden or a playground in the forest (built mostly by items in nature such as logs, rocks, etc.).

According to one participant there are resources already available to general education teachers that can be utilized to implement nature learning. For example:

> National Agriculture in the Classroom has an entire database filled with lessons and ideas for Agricultural science studies. There is Project Wet, Project Wild, and Project Learning Tree available. Every state has a cooperative extension that provides resources for education in agriculture. There is the Audubon society and Learning in Places. The National Association of Environmental Educators and National Association of Agricultural Educators. The list goes on and on. Teachers and organizations across the nation have realized and built ways to get children outside during a school day.

Therefore, since there are resources readily available with proven benefits regarding the implementation of nature-based education, but some schools still ignore it or do not know about it, she believes “educators need to advocate and stand up for what we know is right and developmentally appropriate for our students: that they need to be outside”.

Some other specific examples that a participant gave of nature-related lessons involved subjects like math, English, art, etc. She stated that an example for math is taking the students on walks in nature to have them find and identify shapes. They can also find items in nature such has sticks that they use to compare and contrast sizes of their sticks with their peers. They can also use leaves, acorns, sticks, etc. as money which “creates opportunities for learning about entrepreneurship, counting, organizing, etc.”. Also, leaves can even be used to teach the children about colors and to make art projects.

# Chapter Five

## Conclusion

Finding the most effective way to teach all students is a struggle. All students learn and process information in different ways than their peers, and teachers are responsible for providing a way of teaching that meets all these students' diverse needs. It is especially difficult finding ways to successfully teach the students who may struggle in the traditional classroom. However, nature-based education is a great alternative or additive to general education that can help meet some of these needs that aren't necessarily being met in the regular classroom.

Although, the literature sources and survey included in this study listed important information on what nature-based education is, the benefits, and how to implement it in schools, there unfortunately were still some limitations to this study. The studies and survey only touched upon one certain area of the world therefore the results and findings are only based upon that one area that the study or survey was conducted in. Also, the survey conducted was conducted using a question format consisting of eight questions sent out via email to only four participants all employed at the same nature-based education center.

By using an open response question format for the survey, the participants were able to take their time to think about the questions and write down their responses in as little as much detail as desired. However, this led to some participants writing too much, too little, or skipping some of the survey questions. Also, due to all the participants working at the same establishment and in the same location of the world their responses were similar in some ways. Also, since student perspectives were not able to be recorded because of confidentiality purposes this study

only includes an adult's perspective of nature-based education and not how the students actually feel about it.

The purpose of this study was to inform educators and adults of what nature-based education looks it and the benefits that come with it in hopes they will implement it in order to improve their student's learning. It also was to inform general education teachers of examples of how they can incorporate nature related lessons into their classroom and/or school, and despite the limitations this study was successful in providing sufficient information and evidence on these topics.

In this study, the various research and survey results listed examples of benefits that students gain from learning in nature and how. For example, they gain various important life skills such as: academic skills, problem-solving skills, regulating emotions, curiosity, resilience, compassion, respect, and more. Students can learn almost any subject in nature; teachers just have to get creative with how to implement it. Some examples of how that were listed in this study were: having students count, sort, and describe different types of sticks, learn about the weather, learn about the colors by using leaves, learn about different types of animals, what they eat, and their habitat, etc.

The conclusion that can be made from this study is that whether students are emersed in a full nature-based education program, or their general education school is incorporating nature-related lessons, students benefit from it in several ways. In additional research there are many more in-depth examples of the benefits of nature-based education and how to implement it, but this study provides a starting point. It is important for all teachers to be aware of this type of

teaching and the benefits that come with it in order to engage their students and improve their learning.

References

Beery TH and Lekies KS (2021) Nature's Services and Contributions: The Relational Value of Childhood Nature Experience and the Importance of Reciprocity. Retrieved from https://doi-org.ezan.ez.cwmars.org:3443/10.3389/fevo.2021.636944

Callaway, G. (2004). *The early years curriculum : A view from outdoors*. ProQuest Ebook Central https://ebookcentral.proquest.com

Gabrielsen, M. A., & Holtzer, C. (1968). *The role of outdoor education*. Center for Applied Research in Education.

Joyce, Rosaleen. *EBOOK: Outdoor Learning: Past and Present*, McGraw-Hill Education, 2012. *ProQuest Ebook Central*, https://ebookcentral.proquest.com/lib/annamaria/detail.action?docID=863804.

Kellert, Stephen. Stephen Kellert: build nature into education. *Nature*, vol. 523, no. 7560, (2015), pp. 288+. *Gale Academic OneFile*, link.gale.com/apps/doc/A422328538/AONE?u=mlin_c_annamc&sid=bookmark-AONE&xid=afd813de.

Manookin, K. L. (2018). The Benefits of Nature-based Writing for English Language Learners. *Theory and Practice in Language Studies*, *8*(1), 17+. https://link.gale.com/apps/doc/A528960724/AONE?u=mlin_c_annamc&sid=bookmark-AONE&xid=6c80e737

Math through nature, nature through math. *The Center for Learning with Nature.* (n.d.). Retrieved from https://www.learningwithnature.org/math-through-nature-nature-through-math/.

Merrick, C. (2018). *Feature story*. Natural Start. Retrieved from https://naturalstart.org/feature-stories/nature-based-preschools-take-national-stage.

*Multiple intelligences: What does the research say?* (2016). Edutopia. Retrieved from https://www.edutopia.org/multiple-intelligences-research.

*Our mission*. Turn Back Time Inc. (2020). Retrieved from https://tbtinc.org/#.

Pirchio S, Passiatore Y, Panno A, Cipparone M and Carrus G. (2021). The Effects of Contact With Nature During Outdoor Environmental Education on Students' Wellbeing, Connectedness to Nature and Pro-sociality. Retrieved from https://doi- org.ezan.ez.cwmars.org:3443/10.3389/fpsyg.2021.648458

Quay, J., & Seaman, J. (2013). *John dewey and education outdoors : Making sense of the 'educational situation' through more than a century of progressive reforms*. ProQuest Ebook Central https://ebookcentral.proquest.com

Sheldrake, R., & Reiss, M. J. (2020). The impact of nature on children's wellbeing. *Environmental Education*, *124*, 16+. https://link.gale.com/apps/doc/A660141574/AONE?u=mlin_c_annamc&sid=bookmark-AONE&xid=f9fd0d83

Song, Y. I. K. (2010). Art in Nature and Schools: Nils-Udo. *Journal of Aesthetic Education*, *44*(3), 96+. https://link.gale.com/apps/doc/A557024427/AONE?u=mlin_c_annamc&sid=bookmark-AONE&xid=50965243

9 Easy Nature Based Learning Techniques That Inspire Students. *Nature Mentoring*. Retrieved from https://nature-mentor.com/nature-based-learning/

# Appendix


**Consent Form for Participation in a Research Project by a Student**

**Dear Participant,**

I am asking for your participation in a research study titled Nature-Based Education

This study is being led by Alyssa Wentworth , a student at Anna Maria College.

The faculty sponsor for this research is Craig Blais

**Study Purpose and Procedures** *(be specific about any experimental procedures)*

I plan to survey adult participants about nature-based education, the benefits, and how to incorporate it in general education classrooms. The survey will be conducted via email and will consist of 8 questions.

**Risks, Benefits, Voluntary Participation** *(include time commitment, compensation or lack thereof)*

There are no risks for this research. Participants identity will be kept confidental. Participants contributions will be anonymous, and their employer will not be informed of their participation nor their job affected in any way by participation in this project. There is no compensation for participation in this study.

You should be aware that the Anna Maria College Institutional Review Board may inspect study records as part of its mission to protect the safety of research participants. If you have any additional questions related to this study, please contact Alyssa Wentworth at anwentworth@amcats.edu or Craig Blais faculty sponsor at cblais@annamaria.edu . Should you have any questions related to your rights as a research participant, please contact the Anna Maria Institutional Review Board Chair at irb@annamaria.edu .

I have read this information and have had the study purposes, procedures, risks, and benefits explained to my satisfaction. My signature indicates my informed consent to participate in the study. I acknowledge that I have received a copy of this consent form.

Printed name of participant

Signature of participant

Date

Witness

This form was adopted from the University of Connecticut.