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Oakland, California

Intertwined

Yarn, twine, and wood

This art piece was inspired by both my relationship to nature and my previous schooling experience. From first to eighth grade I attended a Montessori school in Oakland, California. This environment is very focused on hands-on and self-directed learning. Many of our projects included physical aspects and were directed mainly by the students. We also had dedicated time to explore the school garden and attended annual outdoor trips, where we connected our learning to real-life scenarios. Due to my understanding of the hands-on aspect of Montessori and my involvement in outdoor education, I decided to research the impact of outdoor education on cognitive development in young kids. I have seen how people's mindsets can change and how important it is for youth to develop a relationship with nature. Research has proven that hands-on learning along with using learning outdoors is beneficial to students' functional and social skills.

During my art-making process, I was originally inspired by Alicia Scardetta, who creates giant woven tapestries similar to the one I created. Initially, I was struggling with representing outdoor education as an art piece. After looking through Alicia's work I realized that her woven pieces reminded me of the veins in a leaf. Additionally, I felt like using yarn was a good representation of Montessori learning in terms of being very hands-on and creative. Yarn for myself brings up feelings of nostalgia and childhood, which ties back to elementary education. I didn't have a clear plan of how to create this piece so I started weaving each section, adding on where I thought looked good. At first, my plan was to represent the colors and feelings of natural environments as a weaving inside of a wooden frame. Once the weaving was complete I felt like the industrial look of the loom didn't present the piece how I wanted. I decided to move the piece to sticks that better represented the outdoors and the idea of using nature as learning materials in education.

The Relationship Between Cognitive Development and Outdoor Education



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OS50

Writers Note: Outdoor education is a means of connecting people with the world around them. By providing kids with hands-on learning experiences surrounding nature, we awaken their curiosity to explore. This not only contributes to their academic success but also helps them become more responsible members of society. This paper analyzes the scientific advantages of outdoor education on brain development in addition to exploring teacher and student perspectives.

I. Introduction

Outdoor education is a term widely used in the world of education. In a book called *Curriculum Enrichment Outdoors*, author John Hugs writes, “Outdoor education defines the effective use of the natural environment both to reach those parts of the curriculum that best be taught outdoors and to vitalize other parts through first-hand experience.” In simple terms, outdoor education allows students to learn alongside the natural world to enhance topics covered in the classroom. In recent years, there has been a significant increase in outdoor education, specifically in lower education. “In the past five years, five states have introduced legislation or established pilot programs to support outdoor learning as an alternative to traditional preschool and child-care programs”, as reported by *The Washington Post*. So why is this type of education gaining popularity, and why is it beneficial to student learning?

II. Personal Experience

From first to eighth grade I attended a Montessori charter school in Oakland, California. Montessori education encourages students to explore academic topics on their own self-paced and self-sufficient timeline. Maria Montessori was the founder of the Montessori Method. She

was an Italian educator who started exploring her schooling theory around 1906. According to the American Montessori Society, during the beginning of her career, “She would be working with some of the area’s most disadvantaged, and previously unschooled, children... They soon showed great interest in working with puzzles, learning to prepare meals and clean their environment, and engaging in hands-on learning experiences.” As a result of her physically engaged learning style, her students acquired a better grasp of their place in the world in addition to increased independence. My experience at a Montessori school taught me how to pursue exploration and present my ideas clearly to teachers and classmates. The majority of the work I produced was self-directed and included a physical aspect. In my 5th grade class, I created a pencil case business using only recycled materials to learn about entrepreneurship and sustainability. In these Montessori style classes, we also engaged in outdoor learning projects. I remember hatching rainbow trout, learning about animal life cycles and the importance of those fish to our ecosystem. In addition, we had a small school garden where teachers, parents, and students worked together to grow and care for numerous species of plants. Many of the students working in the garden were learning how their food was produced and cared for, for the first time. As we got older, outdoor education turned from gardens to annual outdoor trips. We would explore a topic related to our class curriculum while exploring California's ecosystems. Back in the classroom, we took our findings and compiled them into a field study to present to other classes and parents. Outdoor education and the Montessori method are both centered around hands-on learning to provide students with real-life experiences.

III. Cognitive Development

Studies have proven the majority of brain development happens in our younger years. As stated by the *National Library of Medicine*, “Although basic sensation and perception systems are fully developed by the time children reach kindergarten age, other systems such as those involved in memory, decision making, and emotion continue to develop well into childhood.” This is important to note because the experiences we have and the environments we are exposed to have lasting effects that will determine how we function later in life. In an article called “How the Timing and Quality of Early Experiences Influence the Development of Brain Architecture” by Sharon E. Fox, Pat Levitt and Charles A. Nelson III, the authors note that “The foundations of brain architecture are established early in life through a continuous series of dynamic interactions between genetic influences and environmental conditions and experiences.” *The Centers for Disease Control and Prevention* similarly stated that “Children grow and learn best in a safe environment where they are protected from neglect and from extreme or chronic stress with plenty of opportunities to play and explore.” These pieces of evidence show that early schooling environments are extremely important as a backbone for future cognitive development in addition to education.

IV. Why Outdoor Play Matters

As a child, most things you learn are because of play. According to UMKC's *The Importance of Outdoor Play and its Impact on Brain Development in Children* by Edgar L. and Rheta A. Berkeley, “Outdoor education allows kids to experience sounds, textures, and smells.” This is important because it gives the child a stronger understanding of the world around them. As a child gets older, outdoor play gives kids the space to make their own decisions and develop

strong social and emotional skills. In the same article by UMKC School of Education, they wrote that “Studies of how young people learn have proven, that children, especially acquire knowledge experientially, through play, exploration, experimentation, and discovery.” They learn about the world around them and how they can interact with it. Outdoor play gives kids the space to see plants growing out of the ground and understand the role of different animals like ladybugs or snails. UMKC states that “The act of play by a child simulates brain development and function and has key roles in building the foundation, organization, and capabilities of the brain.” By playing outdoors kids can learn in a way that entertains them and improves their cognitive development.

V. Outdoor Education in Schools

In hopes of providing developmentally beneficial schooling environments, educational institutions have included outdoor education in their curriculum, based on Maria Montessori's method of hands-on learning. The Master Gardener Garden Classroom Project is a non-profit that provides inner-city children in San Antonio, Texas with an outdoor gardening curriculum. They want to provide a safe and stress-free environment for their students for them to develop healthy habits along with a relationship with nature. In an article called “The Master Gardener Classroom Garden Project: An Evaluation of the Benefits to Children” by Jacquelyn Alexander, Mary-Wales North, and Deborah K. Hendren write that “From her work with inner-city children in Rome, Montessori came to believe that teaching children to work in gardens would lead them to contemplate nature intelligently, and to moral education.” The Master Gardener program has a goal of implementing a garden in every elementary school because “The Master Gardeners believe that youth from all economic and cultural backgrounds can benefit from exposure to

gardening instruction.” These benefits look like “Delayed gratification, independence, cooperation, self-esteem, enthusiasm/anticipation, nurturing living things, motivation, pride in their activities, and exposure to role models from different walks of life.” Students who were a part of the Master Gardener program were shown to begin wanting to come to school and start feeling accomplished with their work in the classroom. These students loved watching their plants grow and they even brought these practices home to their families. The Master Gardener Program has proven successful in many ways in addition to giving students access to outdoor education.

VI. Student Experiences

From an outside perspective, outdoor education programs seem extremely successful. To understand what students were taking away from this learning style, there was a study called “Elementary Students’ Perceptions of Their School Learning Experiences: Children’s Connections with Nature and Indigenous Ways of Knowing” by Jodi Streelasky, that surveyed five students about their experiences in outdoor school. Streelasky notes, “Over the course of the study, the majority of the children's multimodal representations (83%) focused on their interactions outside.” Many of the students drew pictures that represented both strong connections with nature but also with their classmates. Students talked about how they had found their sense of place or belonging in their outdoor classroom environment. One student named Parmis said, “I was born in Iran...I wouldn't like it so much in Iran...I like the freedom in Canada. My favorite thing at school was the Outdoor School.” Most of the students attending this school were refugees or immigrants and had previously not held a connection to their homes. Now at this school in Canada, many of the kids love exploring outside with their friends. Even

students who did not attend the Outdoor School stated that “Their most valued school experience was their outdoor experiences at their urban schools.” Outdoor education brings forth a sense of connection to the world that learning only in the classroom can not do.

VII. A Teacher's Perspective

At ASCEND Elementary and Middle School in Fruitvale, California, the administration has set up an outdoor education program for all its students. In an interview with Leah Jaffe, ASCEND's Special Education Teacher, she reflected on her experiences with these outdoor education trips. She said that once a year each class will take an outdoor learning trip that allows students to connect with each other, their teachers, and themselves. She stated, “I just got back from the 8th grade trip in Napa Valley, where we worked with people at the park, collected water samples, and explored the natural environment.” In addition to spending time in nature, students help with cleaning, cooking, and setting up around the campsite. This is important because students learn how to collaborate and work together outside of a classroom environment. Leah found that “Some students who have behavioral challenges did not have behavioral challenges outside.” Also, in her position as the special ed teacher, she was able to work closely with one of her students and his family to ensure he could attend the trip with the rest of the class. When asked about overall student engagement she said, “A couple of students didn't attend this trip. There were about 10 out of 66 that didn't go...Due to different reasons like parental permission, some students just really don't like camping, and some were just nervous...In the end, everyone (all students who chose to attend) was really grateful and it ended up being a great bonding experience.” For the majority of the students, this is their first time camping and they learn to face their fears while also supporting their peers in uncomfortable situations. When they returned

to school the students not only brought new information back to their classrooms but also developed stronger relationships with each other and their teachers.

VIII. Accessibility of Outdoor Education

Equity and accessibility remain ongoing struggles in outdoor education, reflecting broader societal issues. In a report called *Inclusion and Social Justice in Outdoor Education* by Karen Warren and Mary Breunig, “Issues of inclusion and social justice in outdoor and environmental education (OEE) mirror the struggles in larger society to embrace equity in a world historical, structural, and institutional forces impede equal access and opportunity.” The issues of inclusion are not limited to outdoor education but rather reflect current struggles in our society as a whole. Media platforms typically reinforce stereotypes, showing only certain groups of people exploring the outdoors and interacting with nature. “Hegemonic interpretations of concepts such as adventure and risk can also alienate marginalized groups from interacting with outdoor experiences” (Warren and Breunig). These dominant representations limit groups based on race, gender, physical abilities, and even prior outdoor knowledge. In addition, land that is now used as National Parks or “public land” once belonged to Native people which highlights the importance of confronting historical injustices. To tackle these issues outdoor education should be provided to everyone while also addressing systematic inequalities. Warren and Breunig write that “As one decolonizing act, educators can preface lessons with thanks to the people who previously resided there... These frameworks for teaching and learning provide educators with the opportunity to engage the various and diverse learning styles of students with the aim of developing students' critical consciousness.” Outdoor education can function as a space to better grasp these problems and bring about awareness. Alongside that, we must engage as many

people from all backgrounds in outdoor education. Programs like the Master Gardener are currently working towards inclusion in and accessibility of outdoor education as “More than 10,000 children (70% minority) are involved in gardening each week.”

IX. Challenges

While there are many positive aspects of outdoor education, there are also challenges that may prevent success with this style of learning. The biggest concern brought up from both Jodi Streelasky and the Master Gardener, is that schools may not have the resources to provide the students with adequate outdoor education. There is no damage done by this but it can be hard for schools to find time or money to fund trips or projects outside of their regular curriculum. From a teacher's perspective, while outdoor education is beneficial for their students, it takes a lot of extra effort to set up. There is a lot of planning and training (due to safety measures) that needs to be completed by staff to allow these experiences to happen. In addition, teachers have to be mindful of students' mental and physical capacities when participating in certain activities. All of these challenges are manageable with the right resources and time.

X. Outdoor Education in Our Society

Incorporating outdoor education into kindergarten and elementary school classes can shape kids' futures for the better. Not only does this improve social and emotional skills, but it evokes a curiosity to learn. As our brains are developing most it is important to set us up for success. By providing this education early on, kids will develop healthy habits that will support them throughout adulthood, making them better equipped for both work and social situations. Outdoor education also encourages collaboration and helps build a deeper connection to the environment.

These are important traits for us to have in order to build the kind of world we want to live in. Students can take what they are learning in the classroom and apply it to real world situations. Overall, integrating outdoor education into lower education could help inspire a generation of learners who are eager and enthusiastic to explore and understand the world.

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