Increasing Environmental Appreciation Through Photography in Public Schools

Community, Environment, and Planning Senior Project 2017

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Abstract

There is a current lack of art and outdoor environmental education within the public school system in Seattle. Outdoor education refers to any topic that is taught outside, while environmental education concerns the natural environment and issues that pertain to the natural environment. Students are often taught about problems relating to our environment, but they are rarely taught to simply appreciate it. Art can be used as a tool to give students enjoyable hands on environmental learning in an outdoor setting. By using photography students are able to interact with their environment, show others how they see the world, and feel a deeper sense of appreciation towards nature. This project was inspired by the Literacy Through Photography program at Duke University and will address the question of how photography in an outdoor curriculum can increase a student's environmental awareness within public schools. To begin answering this question I have compiled a comprehensive literature review and taught a pilot curriculum activity with a K/1 class at Leschi Elementary School that incorporates being outdoors, the environment, and photography. My literature review and observation results suggest that students enjoy interactive activities outside and that outdoor and environmental education is beneficial for student health, environmental awareness, and happiness. In the future, these findings could be studied further with more pilot programs in a variety of school locations, such as within intercity schools where nature is lacking.

Introduction

This project justifies the need for environmental, outdoor, and art education through a comprehensive literature review and a set of repeatable curricula. Outdoor education is described as experiential learning outdoors, which can consist of learning any topic[1]. Environmental education is defined as allowing individuals to explore environmental issues, including expanding their knowledge and understanding of the natural environment, increasing awareness of the environment, forming attitudes of concern and motivation to improve the environment, developing skills to identify and help resolve environmental challenges, and participation in activities that lead to the resolution of environmental challenges[2]. I focused on incorporating both outdoor and environmental education into my curriculum because both have important components. For example, environmental education offers new knowledge about the natural environment as well as environmental protection concerns, while outdoor education offers hands on environmental learning that reinforces environmental concepts. Both types of education work well with each other.

These components of my project have been inspired by my experiences while at the University of Washington. I worked as a tutor at Leschi Elementary School in Seattle for two years. Both years, our classroom received boxed science kits for science lesson plans. One of these kits was a terrestrial and aquatic ecosystem kit that provided clear containers to build your own ecosystem within. My job was to go outside and scoop leaf litter and soil into the terrestrial boxes and fill the aquatic containers with tap water. My thoughts were somewhere along the lines of: why can't we go outside and look at the ecosystem

[1] "What Is Outdoor Education?" Ardroy Outdoor Education Centre, Accessed October 31, 2016,

[2] "What Is Environmental Education?" EPA, Accessed November 4, 2016, https://www.epa.gov/education/what-environmental-education.

that is right outside of the classroom? This experience has led me to explore the possibility of outdoor environmental education in public schools in Seattle.

I also took a class called Literacy Through Photography while at the University of Washington. This class inspired the art component of my project curriculum. In this class we learned how to teach a set of curricula that involved having groups of students take pictures with digital cameras following a prompt. Then we would print the pictures in class and ask the students to write about them. It was incredible how easily a picture sparked writing ability. This experience allowed me to realize how powerful the art of photography can be in assisting a student's ability to learn and how easily it can be incorporated into any subject area. This class also helped me realize that cameras are a great way to see how another person sees and how they view the world and their place. I used this inspiration and test the art of photography as a tool in science.

The goal of my project is to address the lack of art and outdoor environmental education within the public school system first in Seattle, and possibly eventually in a broader region. My project addressed the question: how can the art of photography and writing in an outdoor curriculum increases environmental awareness within a Seattle Public School classroom?

As a result, the product of my project was a repeatable curriculum that can be tailored to different age groups and incorporates outdoor learning, photography, writing, and environmental awareness. I went to one K/1 classroom and practiced the curriculum. Students were be given a prompt that allowed them to go outside, explore nature, take pictures of what they found, and reflect on it through writing and discussion. I made visual observations of student emotions, talked to students in a group setting about how they felt outside, and looked at the writing and photos the students produced to determine what they learned about the environment and what they were able to capture. Lastly, I shared the curriculum with participating teachers and Project Pipeline at the University of Washington.

Literature Review

Introduction

There is a current lack of art and outdoor environmental education within the public school system. Outdoor education is described as experiential learning outdoors, which can consist of any topic.[3] Environmental education explores environmental issues, including expanding our knowledge and understanding of the natural environment, increasing awareness of the environment, forming attitudes of concern and motivation to improve the environment, developing skills to identify and help resolve environmental challenges, and participation in activities that lead to the resolution of environmental challenges.[4] Both outdoor and environmental education are important for student health, environmental awareness and appreciation, and sense of place. The art of photography can be used as a tool to give students enjoyable hands on learning in an outdoor setting with any topic. My project and this literature review will address the question: How can the art of photography in an outdoor curriculum increase a student's appreciation and awareness of the natural environment within public schools? The following literature review attempts to extract and explore the most important aspects and concerns with regard to this question.

My literature review is organized into six parts: the importance of teaching about the environment, teaching outdoors, using the art of photography as a tool in education, the components of a good curriculum, feasibility and funding, and tying everything together. The sources discussed in this review have informed the content within my curriculum and my methods for carrying out the outdoor activity.

[3] Ardroy Outdoor Education Centre.

[4] EPA.

The Importance of Teaching About the Environment

Education has moved far from a well-rounded education. Educators and policy standards now focus on reading, writing, mathematics, and just recently science beginning in the 2005-2006 school year.[5] But even science, which has the potential to be interactive, is studied in a dry, mechanized way. I feel that students are learning to view the environment as a lab experiment, rather than as their home, beauty, the health of an ecosystem, or the potential to heal.

We depend on our environment for the oxygen we breathe, the land on which we live, the food we eat, the medicine we use, and the oil that fuels our cars; almost everything we make use of has been derived from our environment. Consequently, the state of our environment is declining in health. Our air quality is decreasing and ozone is being depleted due to chemical emissions, the earth's climate is rising due to greenhouse gas emissions, municipal solid waste production is increasing due to growing production and consumption, water quality is decreasing due to an overuse of agricultural chemicals,[6] just to name a few of the human acts that are causing a degradation of the natural environment and it's resources. It is important to ensure that environmental literacy is within the public school curriculum in order to give students the knowledge and skills to make informed and responsible decisions regarding the environment.

How should we teach about the natural environment?

People used to be raised on the land, worked on the land, and buried on the land; their lives were directly connected to the land.[7] Today the land is more urbanized. We are raised in apartments in tall buildings and we work indoors. Our current relationship with the land is indirect, yet a direct relationship to the land has a lot to offer. Richard Louv, author of *Last Child in the Woods*, argues that a child's attachment to the land is not only

[5] Public Law 107–110, Sec. 1111, State Plans, Part C (2002).

[6] "Environmental Topics," EPA, December 16, 2016, Accessed January 31, 2017, https://www.epa.gov/environmental-topics.

[7] Richard Louv, *Last Child in the Woods*, (Chapel Hill, NC: Algonquin Books, 2008), 57.

good for the child, but good for the land as well.[8] Children must connect to the land in order to appreciate it and gain it's psychological and spiritual benefits. This connection will instill a long-term commitment to the environment and to the place, which they need in order to care for it.

Robert Michael Pyle, author of *The Thunder Tree*, says there are special places in nature that are "places of initiation, where the borders between ourselves and other creatures break down, where the earth gets under our nails and a sense of place gets under our skin."[9] My special place was at my mom's old house. There was a creek that ran along the side of the house and into the woods beyond the backyard. The creek was lined with compact soil that was of the consistency of clay. It was perfect for sculpting and encasing objects within. My stepsiblings and I used to build dams, make mud pies, and catch frogs in the creek. I remember the feeling the dirt under my nails in the way that Pyle described; I felt connected to the place, but it was not limited to the creek. I still feel connected to any creek and woods that remind me of those times playing. I attribute the way I admire and value nature to the times I played outside when I was younger.

Concurrently, Edward O. Wilson, a naturalist and Harvard University scientist, argues that humans have an instinctual affinity for the natural word. He describes the affinity as "biophilia", which literally translates to the love of life, meaning all forms of life together.[10] He says humans have an urge to affiliate with other life, much like my liking to frogs and plants around the creek.

Students today are taught about environmental issues and the wrong that we are doing, but students are rarely taught how to simply appreciate and exist within nature. Robin Wall Kimmer is a professor at the State University of New York. She described a time when she asked her students to rate their understanding of the negative interactions between humans and the environment and almost 100 of 200 students said that humans and the environment were a bad mix. They were also asked to rate the positive

[8] Ibid., 159.
[9] Ibid., 173.
[10] Ibid., 43.

interactions between humans and nature. This time, their response was "none", meaning that students could not think of any positive interactions.[11] She brought up a very good point that if students could not think of one beneficial relation between our species and the others, how can they begin to move toward ecological and cultural sustainability if they can't imagine what that path looks like? This is why it is vital to teach students to appreciate nature and the positive interactions that currently exist between the human species and the environment. The best place to teach this is outside with hands on activities.

Children today have grown up with a tremendous amount of scientific discoveries in the news that involve the environment. Animals are cloned, forests are restored, and crops are made bigger and better with science. This mindset around science is teaching kids that anything and everything can be fixed, which decreases their respect and increased careless treatment of the environment; because they think their actions are not permanent.[12] When I was in high school, I participated in a Bike to Farm camp during the summer. We spent a week camping at a farm owned by a Buddhist monk and we biked between farms in the White Salmon area in Washington. At these farms we harvested vegetables, milked cows, made mozzarella cheese, and killed chickens in the most humane way possible. Before that experience, I didn't know exactly where my food came from. I didn't consider that some of my food had to grow and die before it was packaged in plastic and sold in the poultry isle, or that it didn't come from an engineering lab. It didn't stop me from eating it, but it did cultivate a deeper appreciation for the food I eat. Some experiences in nature can be morally messy like that experience, but sheltering children from them does neither the child nor nature any good.

Edward O. Wilson said, "Most children have a bug period, I never outgrew mine. Hands-on experience at the critical time, not synthetic knowledge, is what counts in the making of a naturalist."[13] My exposure to how the food system works gave me hands on

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[11] Robin Wall Kimmer, *Braiding Sweetgrass*, (Minneapolis, MN: Milkweed Editions, 2013), 6.

[12] Louv, 21-24.

[13] Ibid., 151.

experience, which gave me deeper feelings than if I had only seen the acts on television; it was my bug period.

The Importance of Teaching Outdoors

How can nature help develop and enhance student's senses?

Isolation from the natural world because of a lack of opportunity is causing a deterioration of the senses. In a classroom, students are confined to the smell of stale air, the feel of paper, pencils, and crayons, they see their peers and teacher with the help of artificial light, and they hear chatter from neighboring classrooms. Robin Moore, a professor at North Carolina State University, says, "Children live through senses. Sensory experiences link the child's exterior world with their interior, hidden, affective world."[14] Outside students smell fresh air with hints of spring flowers, they see trees and clouds in various shapes and sizes, and they hear birds chirping.

Nature can also inspire creativity within. Sebastiano Santostefano, director of the Institute for Child and Adolescent Development, described nature as having the power to shape the psych. Children can interpret and give meaning to a piece of a landscape and that same piece of landscape can be interpreted differently by another child, like the shape of a cloud, for example.[15]

Louv suggests that in a city we spend much of our energy blocking sounds and stimulants, such as the honking of cabs. But in a field or forest, we want to listen to the sounds of birds or the wind; our ears are open and our senses and creativity can grow and develop.[16] Some public schools do not have access to a forest or green space and some are located within the city, where there are sounds of cars driving by; however, sounds are trapped in an indoor environment and they are more diffuse outdoors, allowing students to focus in on other, more pleasant sounds. This is important for creativity because our senses inspire thought. For example, a lot of poetry involves descriptors of

[14] Ibid., 64-66.
[15] Ibid., 53.
[16] Ibid., 187.

the senses. It is important to inspire this creativity in my project because it fosters an interest in learning.

Louv described a time when he used his senses as a child. "I would walk around the fallen fruit from a pear tree, hold my nose and bend at the waist, a careful distance from the small mounds of ferment, and then experimentally inhale."[17] Children use their senses when they are getting to know the world. It's a lot of trial and error, which is why some educators call outdoor learning experiential learning. Students learn through their experiences, which involve the use of their senses.

Many education professionals agree with the idea of experiential, or hands on learning. Gerald Lieberman, Director of the California State Education and Environment Roundtable, says, "Behavior leads to behavior."[18] For a long time the maxim was that knowledge led to behavior, but now education experts like Lieberman believe that behavior leads to behavior.

How can nature improve student mental and physical health?

Much of the core curriculum taught in public schools is taught indoors in a classroom setting. Howard Frumkin, M.D., previous director of the Center for Disease Control's (CDC) National Center for Environmental Health says that children are naturally more active when they are outside.[19] Students who are taught indoors are sedentary because chairs are made to be relatively stationary and there is simply less room to move around indoors.

Two-thirds of American children cannot pass a basic physical. According to the President's Council on Physical Fitness and Sports, 40% of boys and 70% of girls ages 6 to 17 cannot manage more than a pull up and 40% show early signs of heart and

[17] Ibid., 9.
[18] Ibid., 223.
[19] Ibid., 48-49.

circulation problems.[20] Our children's greatest danger is not actively learning outdoors, but sitting indoors.

James Sallis, program director of Active Living Research Program for the Robert Wood Johnson foundation says, "An indoor, sedentary childhood is linked to mental health problems."[21] Children who are have a sedentary lifestyle are receiving less physical exercise and children who exercise more have better cognitive function, including an attenuation of memory and faster processing speed.[22] In addition, Jane Clark, a University of Maryland professor explains how kids are "containerized". Kids are placed in high chairs, strollers, car seats, and chairs connected to desks in school. Most of this "containerization" is done for safety, but in the long term it is harming the mental health of children.[23]

The effects of a sedentary lifestyle are evident in the mental health of children. The journal *Psychiatric Services* published a survey in 2003 that found the rate at which children are prescribed antidepressants almost doubled in five years. Preschool children had the highest increase at 66%. Likewise, Medco Health Solutions analyzed data from 2000 and 2003. They found that for the first time, money spent on psychotropic drugs surpassed spending on antibiotics and asthma for children.[24]

Not only can more time outdoors foster a more physically active lifestyle, but it can also have an impact on the amount of stress a student takes on from both school and their home life. A study conducted by Cornell University psychologists reported that a room with a view of nature can help protect children against stress. The same study also found that life's stressful events appear not to cause as much psychological distress in children who live in high nature conditions compared with children who live in low nature

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[20] Ibid., 132.
[21] Ibid., 32.
[22] Michelle Ploughman, "Exercise is brain food: The effects of physical activity on cognitive function," *Developmental Neurorehabilitation*11, no. 3 (2008): 236-40, Accessed January 31, 2017, http://www.tandfonline.com/doi/pdf/10.1080/17518420801997007?needAccess=true.

[23] Louv, 35.
[24] Ibid., 49-50.

conditions.[25] Taking students outside for curriculum activities would have a similar positive effect. Again, not all schools have access to a green space, but even on an asphalt or woodchip playground students are able to feel the benefits of a wide-open space. They can enjoy the view of the clouds, feel the wind on their skin, or splash in the puddles that accumulate after it rains.

An inside environment also poses numerous environmental health hazards. The Environmental Protection Agency (EPA) warns that indoor air pollution is the nation's number one health environmental threat to health. Indoor air pollutants such as toxic mold spores, bacteria, allergens, carbon monoxide, radon, and lead are contained in small indoor spaces, while the same pollutants are more diffuse in large outdoor spaces. Indoor Air pollution is two to ten times worse than outdoor air pollution (Louv, 131). However, air quality both indoors and outdoors varies widely from building to building and by region.

Family therapist, Michael Gurian, says, "Neurologically, human beings haven't caught up with today's over stimulating environment." 70 to 80 percent of children adapt, but the rest don't. Gurian has seen nature make a difference in the children who have trouble adapting, but has not been able to prove it yet.[26] Richard Louv says, "Unlike television, nature does not steal time; it amplifies it."[27] Nature can heal a child that is having trouble adapting, or living in a destructive family by finding freedom, fantasy, and privacy away from the adult world.

Students who are taught outdoors also focus better than when they are taught in a sedentary indoor classroom. Richard Sherman, a nature photographer said, "I was a kid who could not sit still for more than a few minutes, so school was painful for me. But nature always gave me this incredible calmness and joy."[28] Studies suggest that nature may be useful as a therapy for Attention Deficit Hyperactivity Disorder (ADHD) when

[25] Ibid.
[26] Ibid., 103.
[27] Ibid., 7.
[28] Ibid., 52.

used with or sometimes as a substitute for medication or behavioral therapies. Some researchers also recommend that educators make time for more nature experiences for children with ADHD.[29]

Two researchers from the U.S. Forest Service attempt to explain why nature is so calming and joyful for children who have trouble paying attention. Stephan and Rachael Kaplan describe two types of attention: directed attention and fascination. In the 1970s they followed wilderness program participants for two weeks. During their study, subjects reported experiencing a sense of peace and an ability to think more clearly. Stephan Kaplan said, "If you can find an environment where attention is automatic, you allow directed attention to rest."[30] This idea of a "restorative environment" has the potential to be largely beneficial in schools. Students often are mentally worn down sitting in a classroom. Having time to go outside and restore their attention would allow students to have better direct attention during class indoors.

The concept of a "restorative environment" is true for teachers as well. In Canada, two studies in the Toronto school district and one British Columbia found that teachers were positively impacted when teaching outdoors. One teacher said, "When I am teaching outside, I feel excited again… I realize that I still have a lot of passion for teaching." In an time of increased teacher burnout, nature can have restorative qualities.[31]

Outdoor education has the potential to improve student both student learning and student behavior. At Hotchkiss Elementary School in Dallas, Texas, the passing rates of 4th graders in outdoor or experiential based programs surpassed students in a traditional class by 13%, which according to the Texas Education Agency's Division of Student Assessment, this gain is "extremely significant" when compared to the statewide average gain of 1% during the same period.[32] The study also reported better attendance and

[29] Ibid., 100.
[30] Ibid., 103-104.
[31] Ibid., 220.
[32] Ibid., 207.

behavior than students in traditional classrooms.[33] Concurrently, Little Falls High School in Minnesota reported that students in the experiential learning program had 54% fewer suspensions than 9th graders at other traditional high schools.[34] Louv suggests that the reason these programs are continuing to be cut is because they are hard to put on a standardized test.[35]

How do schools, teachers, parents, and students perceive outdoor education?

Richard Louv, author of *Last Child in the Woods*, says that our institutions unconsciously associate nature with doom and this is scaring teachers and children out of nature.[36] This is because institutions and teachers fear the risk of legal liability. Students are more at risk to get hurt while exploring the outdoors than if they were sitting at their desks in a classroom. Fear of liability ranks behind the fear of strangers.[37] Philip K. Howard, author of The Death of Common Sense and The Collapse of the Common Good, says, "Polls and focus groups show that educators will do almost anything to avoid the unpleasantness of legal hearings."[38] There is uncertainty about the number of lawsuits involving school property due to lawsuits that are settled out of court, lawsuits that are poorly tracked, and threatened lawsuits that are not tracked at all; all of which affect public behavior.[39] Having students spend more time outside to begin with would also decrease the risk of injury as they become more familiar with their own physical capabilities and the hazards of the natural world. However, asking judges and legislatures to create clearer standards on who can sue for what would also help alleviate this fear.

Parents are also beginning to associate nature with crime and fear. In Olympic National Park in 1998, there were 82 car break ins, 47 cases of vandalism, 64 drug and alcohol abuse incidents, one sexual assault, and one aggravated assault with a weapon.[40] The news and other media features stories and statistics like these, but fail to put them into

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[33] Ibid., 208
[34] Ibid.
[35] Ibid., 209.
[36] Ibid., 2.
[37] Ibid., 239.
[38] Ibid., 241.
[39] Ibid., 242.
[40] Ibid., 130.

context. Olympic National Park had 4.6 million visitors in 1998.[41] A city with the same population would have a much higher crime rate.

In the 1980s Louv interviewed nearly 3,000 children and parents about their relationship with nature. He said that kids spoke of nature with puzzlement, detachment, and yearning.[42] Students are often taught about the ozone and the rainforest on another continent, but not about what is in their own backyard. Jarred Grano, a ninth-grader that Louv interviewed said, "Although the canyon was magnificent, I felt that I was not part of it – and without being part of it, it seemed a little more than a giant whole in the ground."[43] Students cannot care about something that they do not feel part of. If students are given more time outdoors, they will feel connected to it. My project aims to give students more time outdoors, allowing them to feel connected to nature and appreciate the natural environment and the place. Ultimately, students will feel a greater need to preserve the natural environment if they feel connected to it.

Using the Art of Photography as a Tool in Education

Kelley Wilder is a photographic historian at De Montfort University. She argues that photography is a type of scientific method. Photography can illustrate science by recording and saving an image for later analysis.[44] Photography can capture microscopic DNA, Jupiter's moons, or deforestation over time. It is a tool that lets us see what the human eye sometimes cannot see. Although this is a powerful use of photography in science, we will not be using it in this way.

Photography has the potential to capture and reproduce reality with accuracy. It also provides an excitement catching and freezing a moment in time and looking back at it. It involves the child physically and mentally. Photography makes education more interesting for students. Ravi Chopra, an Indian movie producer and director, worked

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[41] Ibid., 131.
[42] Ibid., 10-13.
[43] Ibid., 69.
[44] Kelley Wilder, "Photography and Science," *London, Reaktion Books Ltd.*, 2009, Accessed January 14, 2017, http://www.terrynathanphoto.com/articles/Nathan-Review-Proof-2011-07-11-7-TN.pdf.

with underprivileged children in India and exposed them to topics such as air, noise, and water pollution, wildlife conservation, environmental awareness, and cultural pride through photography. Photography gave the children a new sense of confidence and job-oriented skills. It also inspired creativity in them, which provided a chance to contribute positively to society. Chopra also said that the children took their work very seriously and showed a great interest in photography, which strengthened their desire to express themselves. He observed kids of different social classes working together in teams, taking pictures of whatever interested them; it strengthened the relationship between them, their environment, and their community.[45]

Photography gives students the power to show and speak their thoughts and reality. A study called *Out of the Dark Room* examined two participatory photography projects in Canada in which disadvantaged women and children explored the issues of power and identity through photography. As a result of the project itself, many of these women and children became activist artists and were able to speak publicly and creatively through images.[46]

Another study explored a meaningful and effective way to incorporate digital photography into early childhood education, specifically kindergarten and first grade. In this study, students documented their daily activities with a digital camera and were required to keep journals, which support social and cognitive reflection. The results revealed that students were successfully able to take on the role of both photographer and participant in school activities.[47]

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[45] Ravi Chopra, "Photography in Education," *Indira Gandhi National Centre for the Arts*, 1998, Accessed January 23, 2017, http://www.k12photoed.org/wp-content/uploads/2014/03/Chopra_Photography_in_Education.pdf.

[46] Darlene E. Clover, "Out of the Dark Room: Participatory Photography as a Critical, Imaginative, and Public Aesthetic Practice of Transformative Education," *Journal of Transformative Education*4, no. 3 (July 01, 2006): 275-90, Accessed January 26, 2017, http://journals.sagepub.com/doi/abs/10.1177/1541344606287782.

[47] Ching, Cynthia Carter, X. Christine Wang, Mei-Li Shih, and Yore Kedem, "Digital Photography and Journals in a Kindergarten-First-Grade Classroom: Toward Meaningful Technology Integration in Early Childhood Education," *Early Education & Development*17, no. 3 (2006): 347-71, Accessed January 31, 2017, http://www.tandfonline.com/doi/pdf/10.1207/s15566935eed1703_3?needAccess=true.

Photography, along with other forms of art, has the potential to bridge the gender gap in science, technology, engineering, and math (STEM) fields. A recent study conducted in 2016 showed that more boys than girls are likely to pursue careers in math and science fields and art could be the key to closing this gender gap. In a survey that analyzed children's interests beyond the classroom, 99% of parents with daughters found their children use forms of arts and crafts in their free time. Art has the potential to make subjects like math and science more appealing for girls. This article urges a change from a STEM curriculum to focus on a more encompassing science, technology, engineering, art, and math (STEAM) curriculum, which would help close the gender gap.[48]

What are the challenges and risks of using photography at a public institution?
Photography puts forward an important privacy risk when used at a public institution. Some students and parents may not want their pictures taken and would prefer confidentiality. A study investigated the challenges and risks that arise when people use cameras to document their lives. The researcher examined the unanticipated problems that both the author and the participants encountered. The study identified the main problems as surveillance, invasion of privacy, images for profit, and advocacy.[49] This study specifically documented people and their lives, not nature. For my curriculum, students will be taking pictures of nature. Students are also required to return a parent/guardian signed slip (appendix III) to have their pictures and pictures of them shared for educational purposes.

The Components of a Good Curriculum

What makes a good curriculum?

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[48] Sophia Lepore, "Why Art Is the Key to Closing the STEM Gender Gap," Take Part, December 2, 2016, Accessed January 31, 2017, http://www.takepart.com/article/2016/12/02/why-art-key-closing-stem-gender-gap.

[49] Esther Prins, "Participatory photography: A tool for empowerment or surveillance?" *Action Research*8, no. 4 (2010): 426-43, Accessed January 30, 2017, http://journals.sagepub.com/doi/pdf/10.1177/1476750310374502.

A good curriculum is objectively difficult to define and depends on the students as individuals. Students have many different learning styles, including visual, auditory, kinesthetic, verbal, logical, social, and solitary. Frank Wilson, a professor of neurology at the Stanford University School of Medicine, argues that we are creatures identified by what we do with our hands and that we learn by doing, making, and feeling with our hands.[50] I will focus on combining kinesthetic, visual, social, and solitary ways of learning through photography, group reflection, and individual written reflection.

In a more general sense, the International Bureau of Education described the components of good curricula as having values, organization and structure, incorporating how children learn, implementation, learning environment, systems and authority, purpose and scope, validity, and who should teach the curricula.[51] Another document from the United Nations Educational, Scientific, and Cultural Organization and the International Bureau of Education states that content and delivery, how the curriculum is documented, the development process, inclusiveness, future-orientation, differentiation, and teacher roles are all important components in a child-centered curriculum.[52] I believe all of these are important factors that contribute to a good curriculum. A good curriculum must be intentional in order to achieve a specific learning goal.

What topics will the curriculum address?

In order to test if photography is a useful tool in teaching about the environment outdoors, I will need to select and develop curriculum topics carefully.

Outdoor Education Australia is a case study for outdoor curriculum that provides many examples of topics for outdoor education. Some of these topics are exploration, outdoor living knowledge and skills, safety and well being outdoors, environmental awareness,

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[50] Louv, 67.

[51] International Bureau of Education, "What Makes a Quality Curriculum?" International Bureau of Education, Accessed October 18, 2016, http://unesdoc.unesco.org/images/0024/002439/243975e.pdf.

[52] "What Makes a Good Quality School Curriculum?" Academia, Accessed October 10, 2016, http://www.academia.edu/3008064/What_makes_a_good_quality_school_curriculum.

environmental management, conservation, culture, ecological literacy key themes, and health and the outdoors.[53] All of these topics are feasible to teach outside with photography as a tool. Most of these ideas also teach about the natural environment, which fits nicely with my environmental education goal.

Feasibility and Funding

Is there policy that supports funding for environmental, outdoor, or art education?

In 2015, President Obama reauthorized the Elementary and Secondary Education Act (ESEA) by signing into law the Every Student Succeeds Act (ESSA). This new bill includes language making environmental education and environmental literacy programs eligible for federal funds for the first time. The grant programs are described in Title IV, which specify environmental education programs to be eligible for funding under a $1.6 billion to the well-rounded education grants program, environmental literacy programs are eligible for funding as part of the $1 billion 21st Century Community Learning Centers program, and prioritize STEM activities that include hands on learning and field based service learning.[54]

The No Child Left Inside (NCLI) Act was proposed in 2008 by Congressman John Sarbanes and supported by Senator Jack Reed. The purpose of the NCLI Act was to provide funding for environmental literacy plans through the amendment of ESEA (formerly the No Child Left Behind Act). Although this specific act was not passed, ESSA includes language that supports environmental education as described above largely because of the NCLI Act proposal.[55]

Are there enough teachers, parents, and community members to support experiential learning activities?

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[53] "Curriculum for Outdoor Education," Outdoor Education Australia, Accessed October 8, 2016, http://outdooreducationaustralia.org.au/education/curriculum-guidelines/.

[54] "NAAEE Policy Initiatives," NAAEE, March 02, 2016, Accessed January 30, 2017, https://naaee.org/our-work/programs/naaee-policy-initiatives.

[55] "H.R.882 - 114th Congress (2015-2016): No Child Left Inside Act of 2015," Congress.gov. Accessed January 20, 2017, https://www.congress.gov/bill/114th-congress/house-bill/882.

Most current progress in education comes from parents, community volunteers, teachers, and principals who are passionate about changing the current status of education. Service organizations and committed individuals can accomplish an enormous amount.

Richard Louv suggests that it would be beneficial for schools to build long-term relationships with environmental organizations, rather than just one time visits for school field trips. Environmental organizations should help teachers learn how to integrate school grounds, nearby parks, woods, and fields into the core curriculum. He suggests that regions create networks of businesses, conservation organizations, civic groups, and garden clubs and the movement should be grounded in these networks. Networks can provide increased funding, personnel, direct information and knowledge, and a better community.[56] They would help create ongoing outdoor education programs, rather than one time visits. In this scenario, students could also educate the public. Business owners, policy makers, community leaders, and voters would become more aware of student needs and education gaps.

Does current schoolyard habitat support outdoor education?

Nature can be more than just plants and animals. As long as there is a space for students outside, they can experience nature. Even on an asphalt basketball court, students can enjoy the sun on their faces, gaze at the clouds, feel the wind on their skin, and look at reflections in puddles. Nature is the phenomena of the physical world. However, it is not to be confused with human creations, such as the asphalt itself or the school building.

There are organizations that provide funding, advice, and other support for the implementation of green spaces on school campuses. The National Wildlife Federation (NWF) has a Schoolyard Habitat certification program that encourages the creation of outdoor learning opportunities that cannot be duplicated in an indoor classroom setting.

[56] Louv, 222.

Their webpage offers advice and concrete steps that educators, students, parents, and community volunteers can follow to create a wildlife habitat on school grounds.[57]

[57] "Schoolyard Habitats," National Wildlife Federation, Accessed January 31, 2017, http://www.nwf.org/Garden-For-Wildlife/Create/Schoolyards.aspx.

Methodology

Please note that it may be helpful for you to first look at my sample lesson plan (appendix I).

First, my methodology included curriculum development based upon findings from my literature review and a kindergarten/1st grade class visit to test my curriculum. Then, I expanded my curriculum to include more age groups based upon my findings from the class visit. Lastly, it included a written conclusion and feasibility summary to share with the distribution of my curricula.

Literature Review Use and Curriculum Development

My literature review is organized into five parts: the importance of teaching about the environment, teaching outdoors, using the art of photography as a tool in education, the components of a good curriculum, and feasibility and funding. Together, these sections provided a framework for how I decided to create my curriculum for the k/1 class visit.

In the environment section of my literature review, I learned that communities are becoming disconnected from the natural environment. I also justified the need to teach about the environment in a positive way. For example, teaching about positive human-environment interactions, rather than human induced environmental degradation. I was able to include both of these elements into my curriculum by talking about the importance of the natural environment, or "nature", first in the classroom and then practicing ideas with a hands on approach outdoors.

The section of my literature review that was focused on teaching outdoors taught me the potential benefits of teaching outdoors. This section describes the positive mental and physical health benefits of learning while outdoors. For example, time outdoors provides

a space for students to move physically, which increases physical fitness and allows the student to develop their senses. I was able to incorporate these elements into my curriculum by giving students time to wander and explore outside with supervision.

In the art section of my literature review, I found that photography within public schools could be quite controversial. I found that photography is a great method of documenting memories, natural phenomena, perspectives, and students. However, photography is only controversial if students are photographed in public schools. To avoid this issue, I was able to send permission slips (appendix III) home to student families and guardians months in advance of my visit, which state that it is okay for me to use photos and artwork of students and by students for educational purposes. I also gave students clear instructions during my lesson for students to only take a photo of their favorite thing in nature, which avoids any students being photographed by other students. Apart from controversies, it still stands that photography is an effective way to document memories, perspectives, and the natural environment. I also found that art, in general, is a way to help close the gender gap in science, technology, engineering, and math fields of interest, which is currently mostly male dominated. To help close this gap, I was able to give all genders, cultures, and abilities within the class an equal opportunity to practice their scientific observation skills with the art of photography.

I learned even more about curriculum development in the education section of my literature review. Most importantly, I learned that a good curriculum has a defined scope, is intentional, and child-centered, which means that students take charge of their own learning. The scope of my curriculum was defined by the learning goals that I set, which were to define what nature is, learn how to use the cameras, and to admire and respect nature. My curriculum was also intentional in that each component had a purpose, as explained in my methodology. It was also child centered by allowing the students to take one photo of their favorite thing in nature. They were able to guide themselves outside and take their own direction when it came to taking their photo. They were also able to illustrate and write about their favorite part of nature in whatever way they wanted to during the art reflection time. Restricting students to take only one photo also pushed

them to be intentional in their own work. In this section of my literature review, I also learned that students have different learning styles. Some students learn with visual aids, some by listening or speaking, and some with hands on activities. I made sure to use plenty of visual aids in my lesson. For example, I used mostly photos and very little text in my introductory presentation and I used the cameras to model how to use them. I also gave the students time to talk, for those who learn by speaking. For example, I asked students to turn and talk to a partner about what they thought nature was and then allowed them to share with the larger group. We also had a larger circle group reflection discussion outside after the photo activity. For those who learn by listening, I also gave my own definition of nature verbally after our turn and talk exercise. I also gave verbal instructions before and while we were outside as to what to take a photo of. For those students who learn with hands on experiences, the outdoor and art reflection activity (appendix V) fulfilled these needs.

The feasibility and funding section of my literature review gave me reassurance that my curriculum could be practical without my lead and personal connections. For the test run of my curriculum with the k/1 classroom, I was able to use the help of my friends and classmates during the lesson and I was also able to borrow cameras from Project Pipeline, a resource at the University of Washington. However, I realize that when I move away, Seattle Public School teachers and community organization leaders will need volunteers and camera equipment. In this section of my literature review, I found that there is funding available through the 2015 Every Student Succeeds Act because of the newly enacted environmental literacy standards. Both teachers and organizations are eligible to apply for funding. I also found that long-term partnerships between schools and community organizations are a great way to form a volunteer network. By long-term, I mean organizations that visit on a consistent basis, rather than a one-time visit.

Class Visit

After pulling in elements from my literature review, I was able to create a full lesson plan and try it out in a k/1 classroom at Leschi Elementary School. Permission slips were sent home with students two months in advance in order to be able to use the photos of and by

students that are minors for informational and educational purposes (Appendix II). I was able to recruit 4 volunteers to help with the activity and I was able to borrow cameras and printers from Christine Stickler, the Director of the UW Pipeline Project.

Curriculum Expansion

After the lesson had been tested in the k/1 classroom. I expanded my curriculum to fit multiple age groups. I also referred to my literature review for this step because the Outdoor Education Australia website had great ideas for age appropriate themes. I also used the Next Generation Science Standards to inform my theme decisions. These standards state what students should be learning in each grade and were broken up into prekindergarten through 2nd grade, 3rd grade through 5th grade, 6th grade through 8th grade, and 9th through 12th grade. I created the set of curricula accordingly with these age groups. The full set of curricula can be found in my results section.

Data and Distribution

Lastly, I interpreted the data based on my observations, discussion responses, and literature research to find reoccurring themes. I also shared the curriculum with participating teachers and the Pipeline Project at the University of Washington.

Product and Distribution

Product Composition

My product consists of a title page, table of contents page a brief letter of introduction that describes the purpose and importance of my project, a sample lesson plan, the set of curricula for prekindergarten through 12th grade, and a funding resource page. This document (appendix VI) is meant to be as brief as possible, so that my audience is not overwhelmed. The PowerPoint slides that I used for my k/1 lesson were also included separately so that they could be reused with the sample lesson plan.

Product Distribution

This document has been sent to Project Pipeline, Tilth Alliance, 21 Acres, Washington Park Arboretum, Audubon Society, NatureBridge, Seattle Professional Photographers Association, and Seattle Photography Club.

Results and Discussion

Class Visit

The k/1 lesson plan (appendix I), in short, included a short PowerPoint presentation (appendix II) about our learning goals, what nature is in the opinion of the students, what nature is in my opinion, how to use the cameras, and directions for when we go outside. When students were asked for their definition of nature before I gave my own definition, their responses mostly consisted of negative anthropogenic effects on nature, rather than qualities of nature itself. All human interactions with nature mentioned by the students were negative. Some responses also included plant life, but no responses were given that indicated animal life, soil, or the atmosphere. See the full list of responses below. After the presentation, students were prompted to take one photo of their favorite thing in the nature outside of the school building. Then, students were broken up into five groups led by myself or another UW student volunteer. Students were given about 10 minutes to take their photo outside and then we circled up outside to discuss three reflection questions (appendix IV) about the activity outside. When asked why students liked using the cameras, their responses were all positive and observant. One student described how you could take a picture at one time and look at it later and remember that moment, even if you're not there. When asked why they liked going outside, their responses were not only positive, but they were also informative as to what the students learned. One student said, "I like the mud and when it rains it makes more mud." This student used their observation skills and was able to learn about the physical phenomena of rain and the transformation from soil to mud, without being prompted to do so. Other students used their senses. Another student said, "I like the fresh air." Students had similar responses about their senses and mud when they were asked why they took the photo they took. Students also had very similar responses in their artwork and writing (appendix IV).

A summary of student discussion responses are shown in the table below:

Initial Discussion Question	**Student Responses**
What is nature?	• "If we cut down all of the trees then there will be no more paper towels." • "In the Lorax, they cut down all of the trees." • "We need to use less water." • "Grass." • "Trees." • "Flowers."
Concluding Discussion Questions	**Student Responses**
Did you like using the cameras? Why?	• "You can take a picture of something outside and look at it later, even though you're not there anymore." • "It's fun!" • "I like using technology." • "You can see what other people see at a another time." • "You can remember something."
Did you like going outside? Why?	• "I like the mud and when it rains it makes more mud." • "It's fun." • "You can climb trees." • "I like trees with fruit." • "I like the fresh air." • "I like puddles!"
What did you take pictures of? Why?	• "Flowers! They smell good!" • "Trees because you can build tree houses." • "Plants because they're pretty." • "The mud because it's fun."

Curriculum Expansion

After the k/1 lesson plan was tested, I created a set of curricula for more age groups. The full set of curricula is shown in the table below.

Age Group	Next Generation Science Standards	Theme	Photo prompt	Reflection Question(s)
PreK – 2nd	• Make observations • Communicate ideas	Exploration and Appreciation	Take a photo of your favorite thing in nature	• Describe why this was your favorite thing in nature
3rd – 5th	• Examine evidence	Ecology	Take a photo of an ecosystem	• What creatures might live there? • What abiotic factors are there?
6th – 8th	• Connect evidence and explanations	Environmental Phenomena	Take a photo of an environmental phenomenon	• What do you think is causing that phenomenon ?
9th – 12th	• Coordinate patterns of evidence	Cultural Approaches to Nature	Take a photo of a landscape	• How have/will cultural practices influence this landscape?

Product

I have not yet received any responses or feedback from the organizations that were sent my product document.

Areas for Further Research

Green Spaces

There is still much more research that could be done on this topic. If my project were to be continued, I would research how to use this curriculum in areas with very little or no green space. However, the natural environment is all around us and the curriculum could focus on less obvious parts of the natural environment, like the atmosphere.

Weather

It would also be worth researching and brainstorming how this curriculum could be taught regardless of weather. I was lucky enough to teach outside on a day that was about 55 degrees Fahrenheit and sunny, but this is not always the case, especially in Seattle. One idea that would make this style of curriculum practical in cold or rainy weather could be to take a photo of articles of clothing that are needed in harsh weather, such as rain boots or gloves. This would teach students how to be safely and comfortably active in the natural environment.

Technology

The role of technology plays an interesting role in teaching about the natural environment. They are opposites, but can be integrated in a meaningful and useful way. More research and review of current literature is needed in this area. I found that the use of technology in terms of using cameras can be beneficial.

Reflection and Implications

Reflection

Looking back, I wish that I had asked someone to video the lesson. This would have been beneficial for myself when reflecting on how I can improve my teaching skills and it also would have been beneficial in recording more student responses.

Overall, I think the lesson was taught well. Students loved being outside, exploring the environment, and having college student visitors. I also learned a lot from this experience, including how to create a curriculum and lesson plan, manage a classroom, and manage my time during a lesson. These skills will be useful in my teaching career after graduation and are very in line with my environmental education focus in CEP.

Time management during the lesson proved to be the most difficult aspect of this project. The lesson plan was intended to be one hour and actually lasted one and a half hours. This was because we had a lot of fun exploring outside and students pushed for staying outdoors, which in itself was a success. In the future, it may be best to reserve a longer amount of time outside or if the time is not available, it may be beneficial to be stricter on time limits.

Implications and Importance

My research and curricula has the potential to be integrated into the public school curriculum with funding from the 2015 Every Student Succeeds Act and long-term partnerships within the greater community. With this potential change, students will spend more time outdoors improving their physical and mental health, developing their senses, connecting, learning, and appreciating their natural environment, and potentially closing the gender gap in STEM fields with the art of photography. These are all changes that will positively impact students personally and help positively impact the environment physically.

Acknowledgements

I would like to acknowledge Christine Stickler, Kelly Hostetler, and Chris Campbell for their guidance and knowledge during the creation of this project. I would also like to thank Project Pipeline for the use of their cameras and printers. My CEP peers have also been incredibly helpful during the process of creating and testing my curriculum. I would to thank Danielle Guzman and her class for participating in my lesson. Lastly, I would like to acknowledge Kayla Carrington, Ali Kolberg, Brian Tillinger, and Erica Weisman for volunteering to be group leaders during my lesson.

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Appendices

Appendix I

Nature and Photography Lesson Plan

Learning Goals:

1. Define nature
2. Learn how to use cameras
3. Admire and respect nature

Overview

Activity	**Duration**
Powerpoint presentation and brief introductions • Learning goals • What is nature? • The cameras	10 minutes
Get into small groups	5 minutes
Transition outside	5 minutes
Take photos outside	10 minutes
Transition inside	5 minutes
Indoor group discussion Activity introduction and example	5 minutes
Indoor activity	15 minutes
Conclusion	5 minutes

Powerpoint Presentation & Small Groups

11:30-11:45

Volunteers: Participate in introduction and set up printers

- Title slide
- Learning goals
    - Today we are going to:
        - Define nature
        - Learn how to use a camera
        - Admire and respect nature
    - Take one photo of your favorite thing you see/feel/hear/smell in nature
        - See – crawling bugs, colors
        - Feel – leaf textures
        - Smell - flowers
        - Hear - birds
- What is nature?
    - Turn and talk to a partner
        - Brainstorm an example of nature
    - What is not nature?
        - Man made materials
    - Examples:
        - Living plants
        - Non-living plants
        - Fungi
        - Seeds, leaves, moss, tomatoes
        - Soil, roots, rocks
        - Clouds
- The cameras
    - Power button
        - This turns the camera on
    - Shutter button
        - This takes the picture
    - Lens
        - This is like the camera's eyes
- Let's go outside!
    - Count off?
    - Colors of the rug?

Take Photos Outside
11:45-12:05
Volunteers: Lead a small group of 4-5 students
Meet near the door (where we came outside) when finished

- Take one photo of your favorite thing you see in nature
- Remind students to be respectful of nature and the camera
- If students finish early:
    - Ask students what they like about nature and why
    - How does being in nature make them feel?
    - What do they like about taking pictures?
    - Have they ever used a camera before?
    - What do they like about being outside at school?

Indoor Discussion & Activity Introduction
12:05-12:10
Volunteers: Print photos, place one photo frame worksheet on each desk

- Discussion
    - Ask students what they like about nature and why
    - How does being in nature make them feel?
    - What do they like about taking pictures?
    - Have they ever used a camera before?
- Photo frame example
    - Name
    - Photos will be printed – glue these on last
    - Write
        - Why do you like this photo of nature?
            - I like this photo of nature because…
    - Illustrate
        - What you like about nature

Photo Frame Activity
12:10-12:25
Volunteers: Print photos, pack up printers and cameras, assist students with activity, take photos of finished photo frames

- Assist students with the activity
- Ask them about their work
    - Informal interviews

Thank you and Goodbye
12:25-12:30
Volunteers: Say goodbye ☺

Appendix II

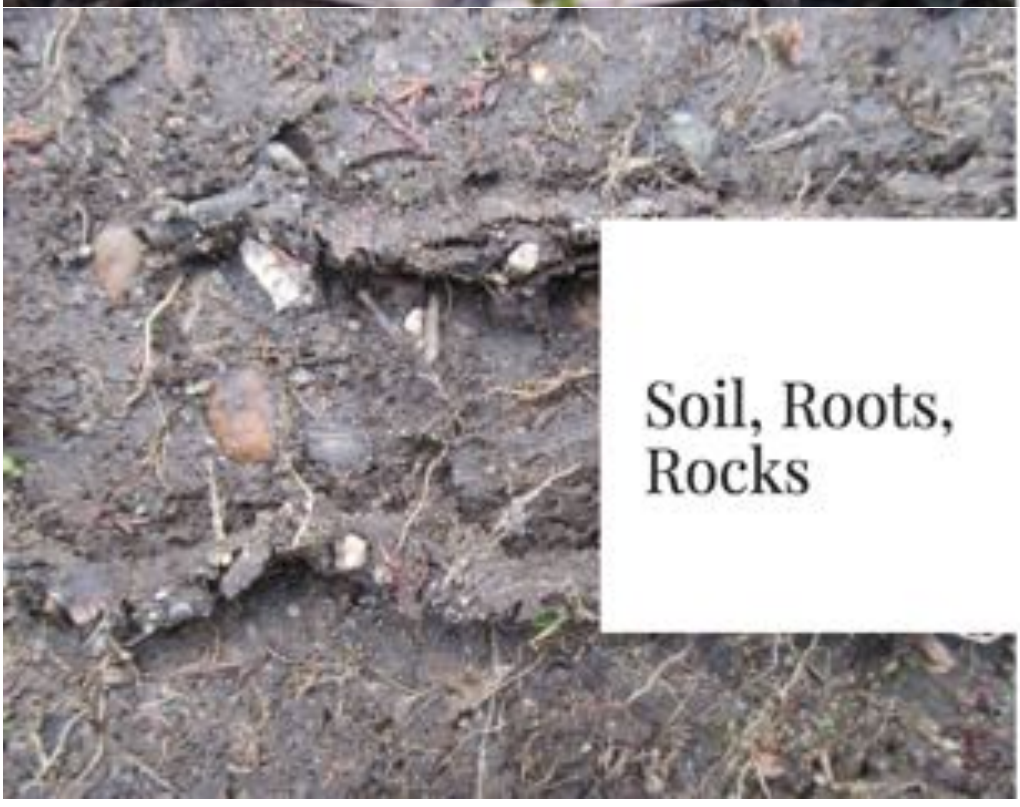
Learning Goals:

- Define nature
- Learn how to use cameras
- Admire and respect nature

What is Nature?


Non-Living
Plants
Fungi


Seeds,
Leaves,
Moss,
Tomatoes


Soil, Roots,
Rocks


Clouds


The Cameras
Power Button
Shutter Button
Lens
Canon

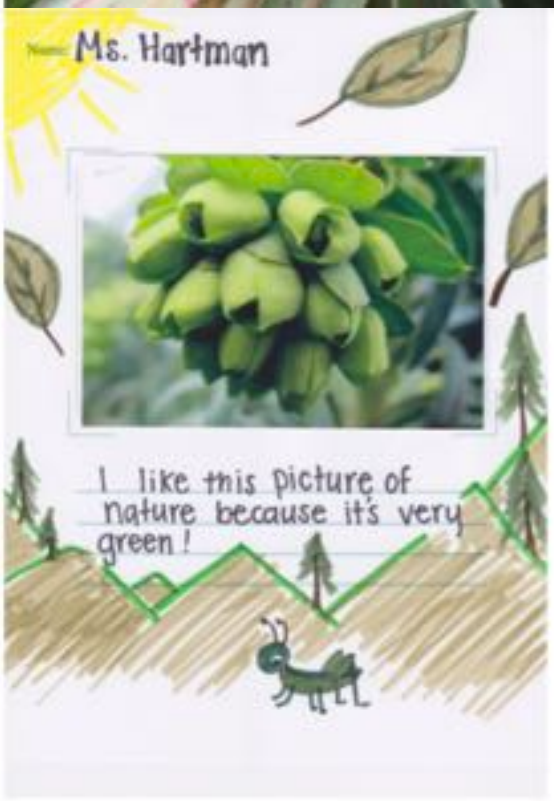


Photo Frame Activity

Appendix III

Photographic Permission (Students)

I, the undersigned, hereby grant the University of Washington – Pipeline Project permission to make photographs of my son/daughter participating in educational activities at (school or district) and any photographs they make _____, and to reproduce the photographs in print/web-based educational and informational materials which the UW produces and makes available for educational purposes.

SON/DAUGHTER'S NAME: _____

PARENT OR GUARDIAN'S NAME: _____

ADDRESS: _____

PHONE NUMBER: _____

SIGNATURE: _____ DATE: _____

Appendix IV

Activity Reflection Questions

Grade level: K/1

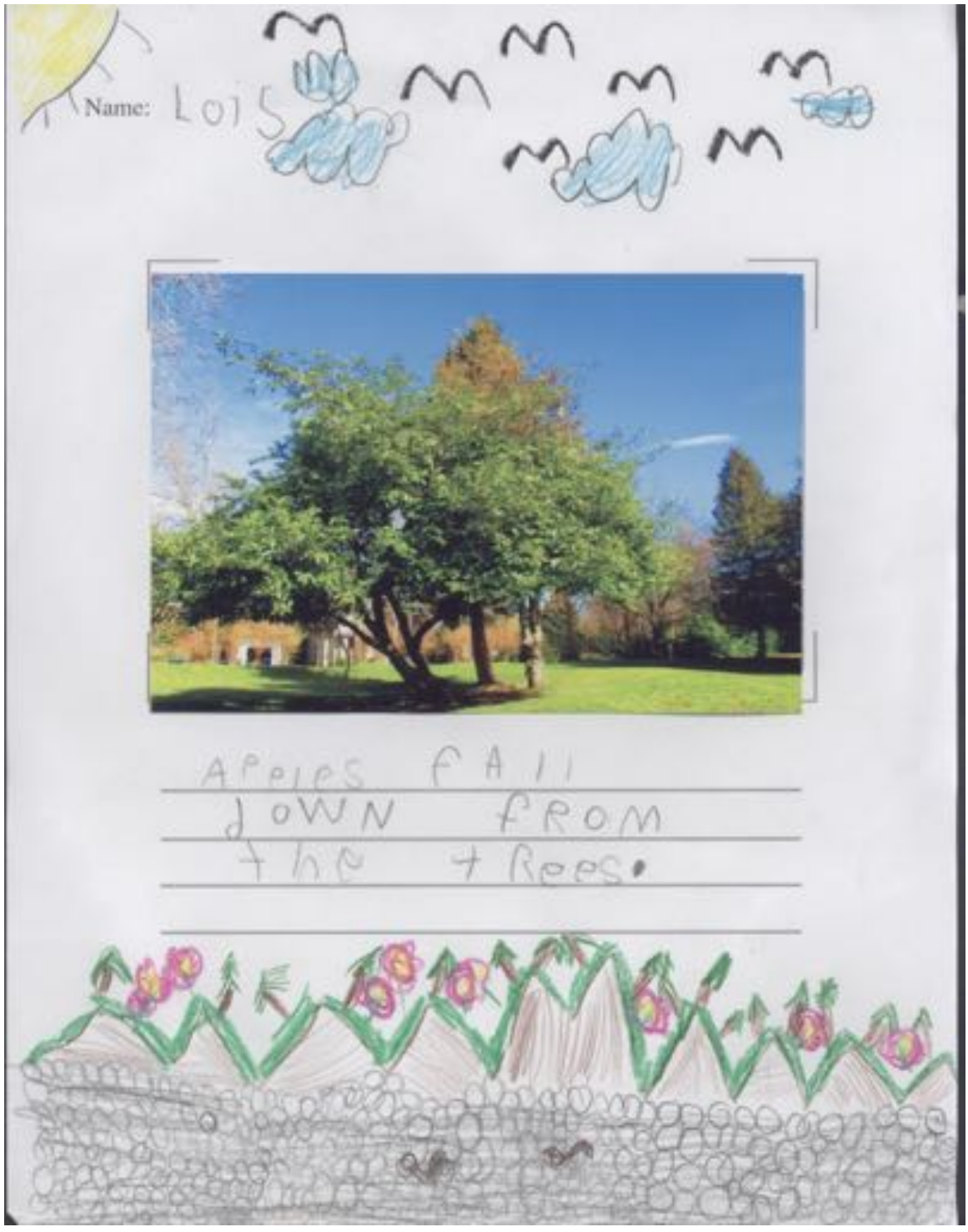
1. Did you like using the cameras? Why?

2. Did you like going outside? Why?

3. What did you take pictures of? Why?

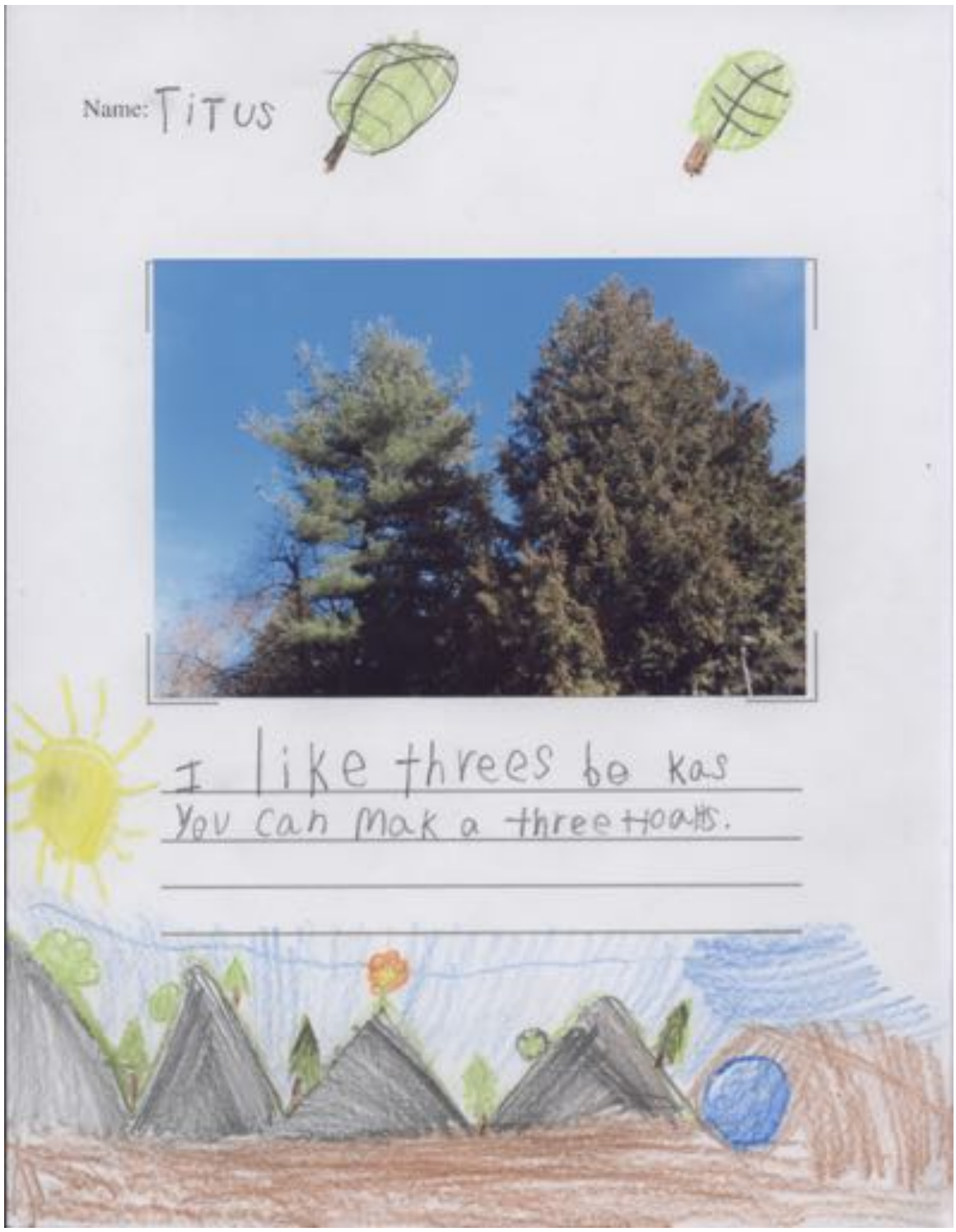
Appendix V

Student Activity Sheets




Name: Menary T.
PLANT
I Love Plant smells Good


Name:
I Love flowers
Because trey smell
great


Name: TiTus
I like threes be kas
Yev can mak a threeHoams.


Name


Name: Borrad
I like trees

Name: CONNOR

PRIDE

It is pretty


Name: MKRIAM
HOW
FAMRSAERNISBCUS
TASMELGOG
AGTNGANSNTWINA
TAHAVTOTOS

Name: Sara

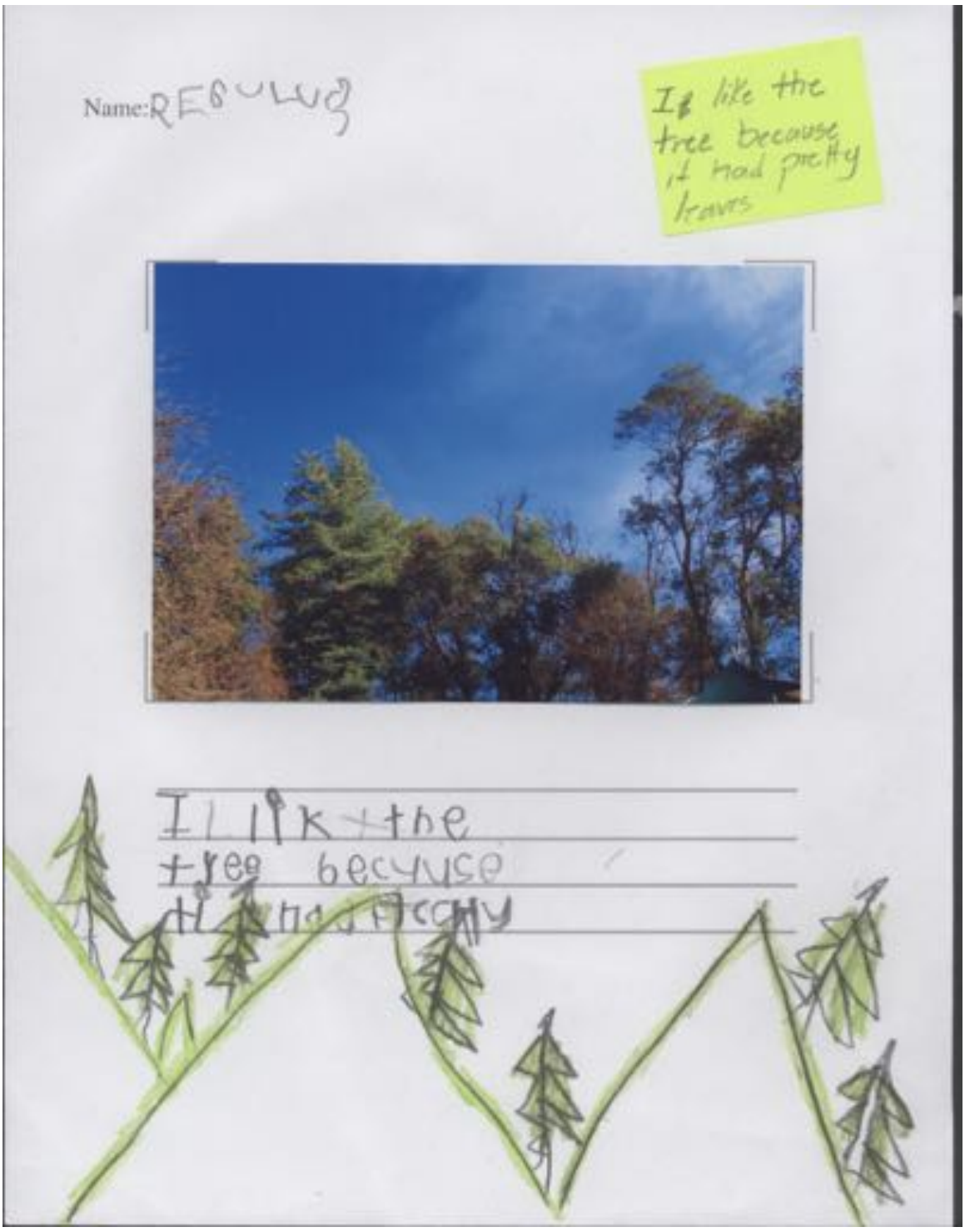
I love this

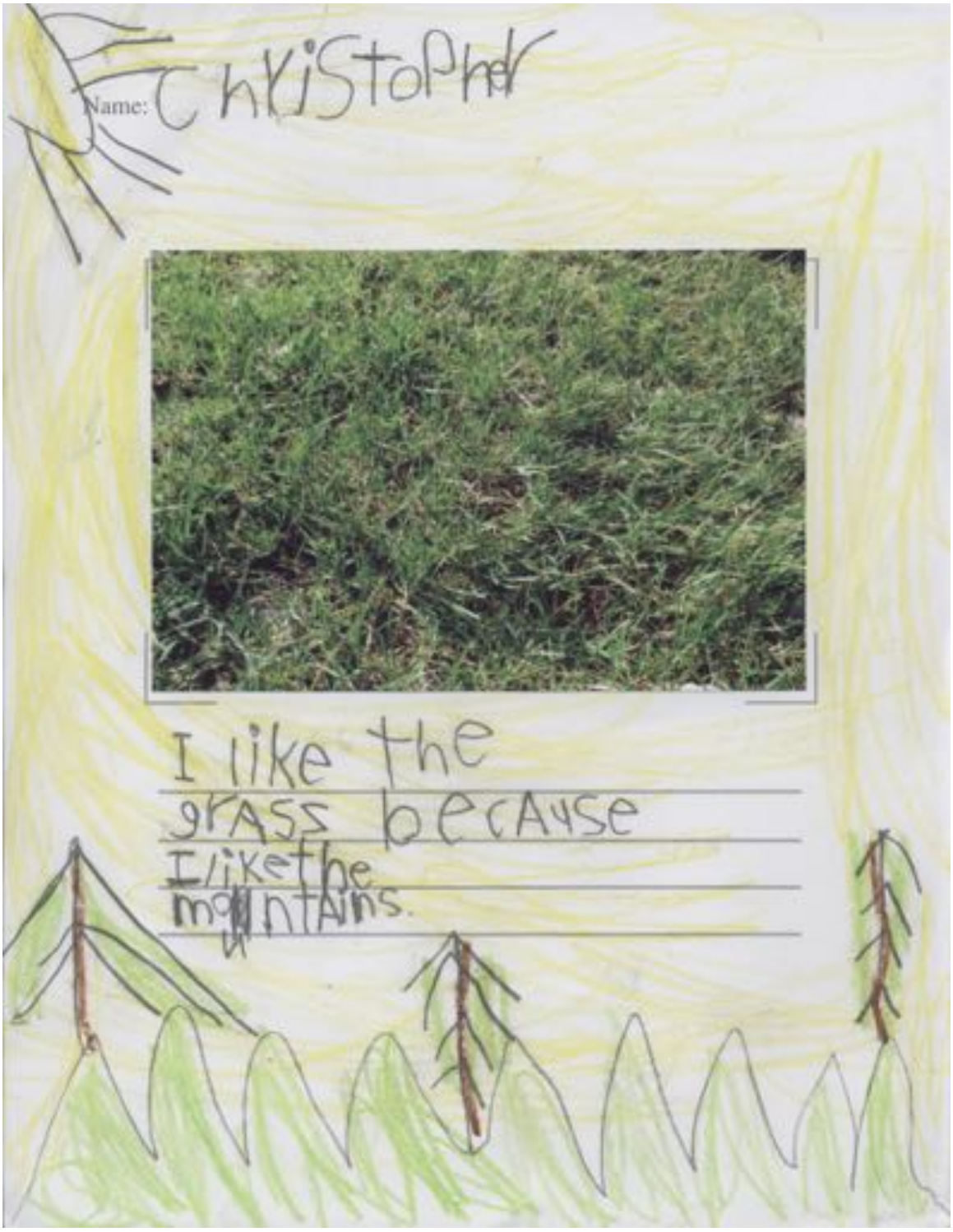
picture because
It has flowers

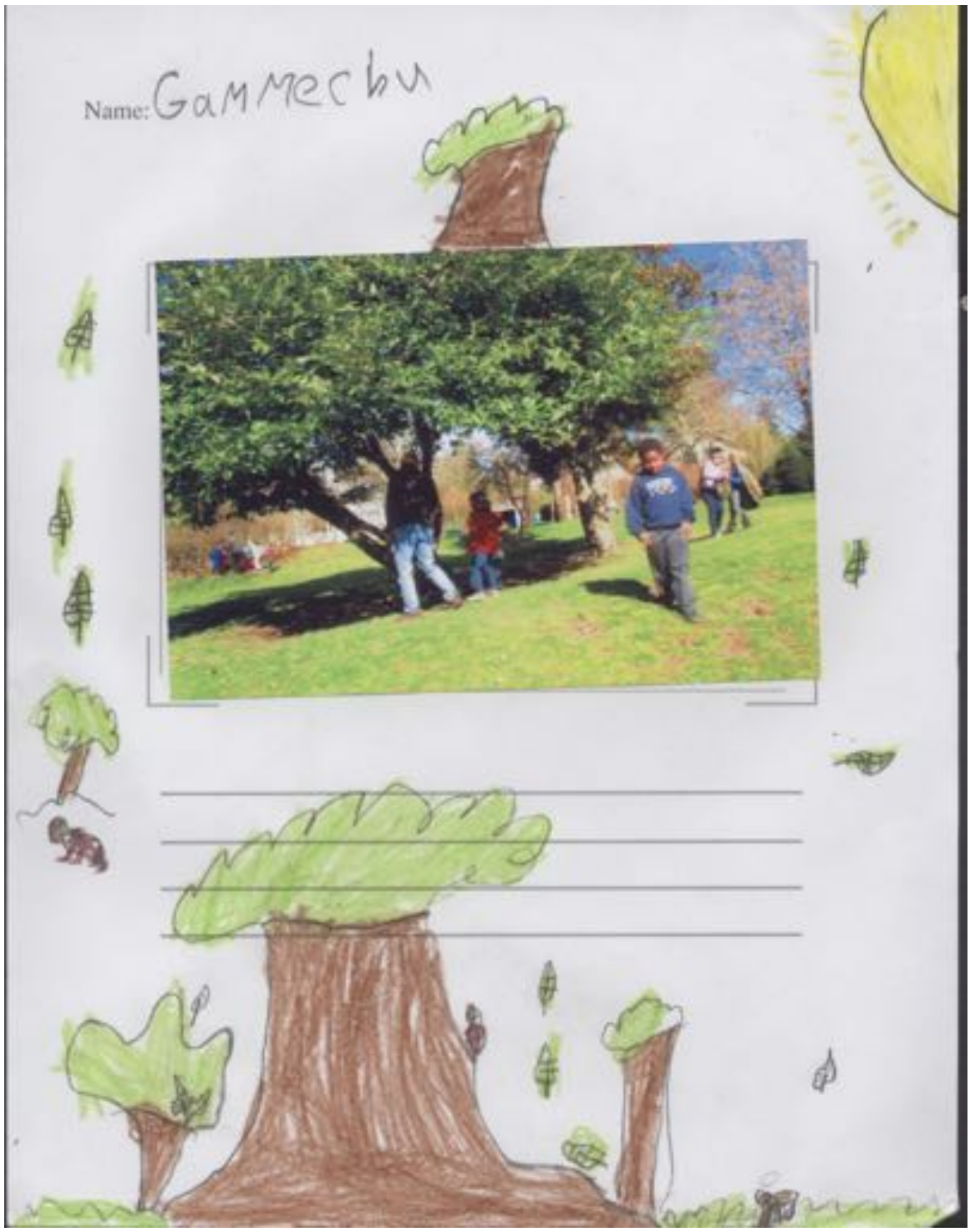
Name: Bryson

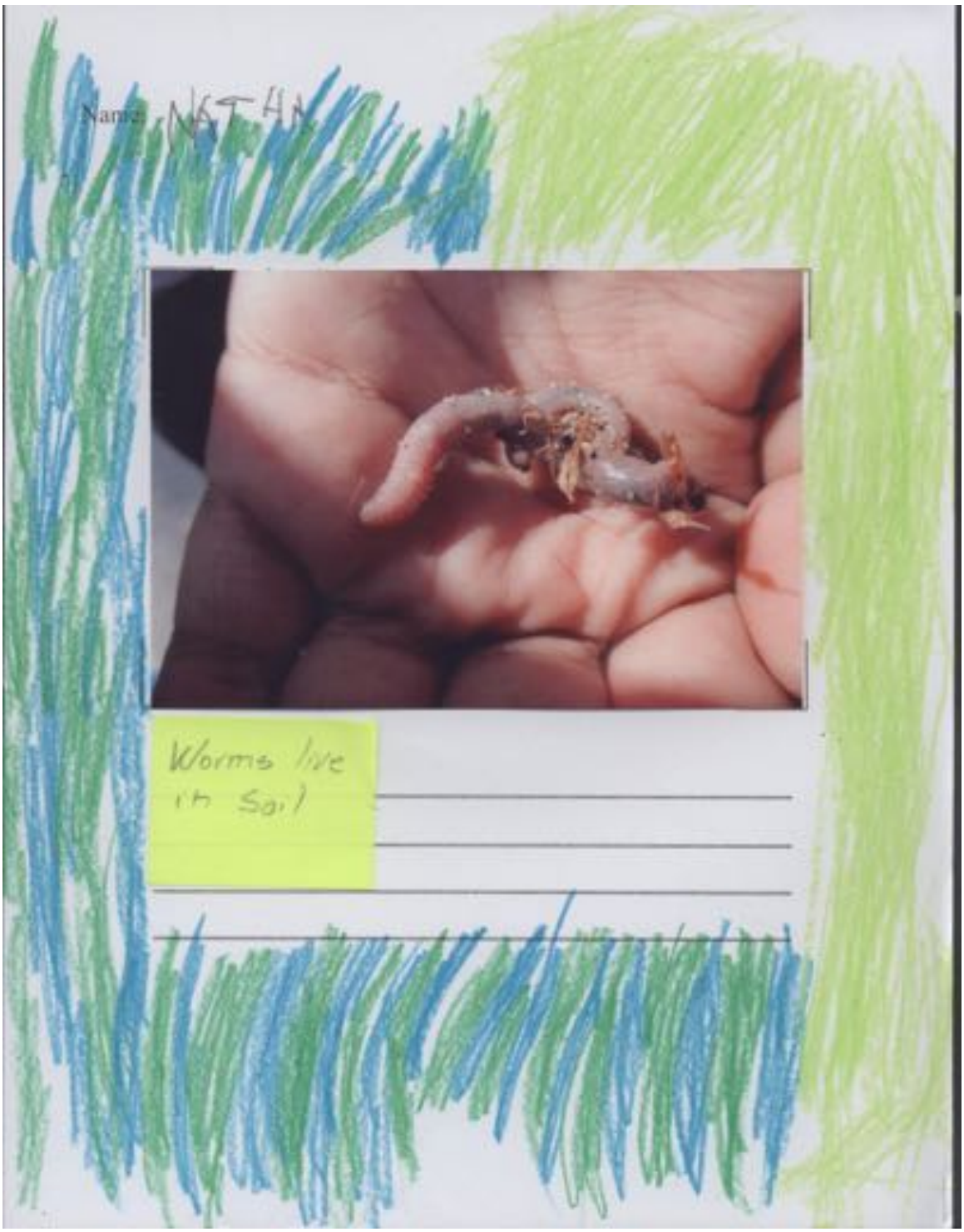
I have mountains and flowers. and Dirt


Name: Alan I!
I like this pic

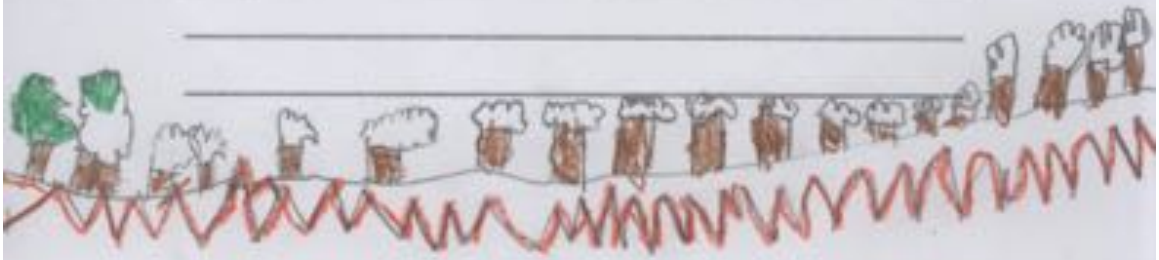

Name:
I like the tree because it had pretty leaves
I like the tree because it has

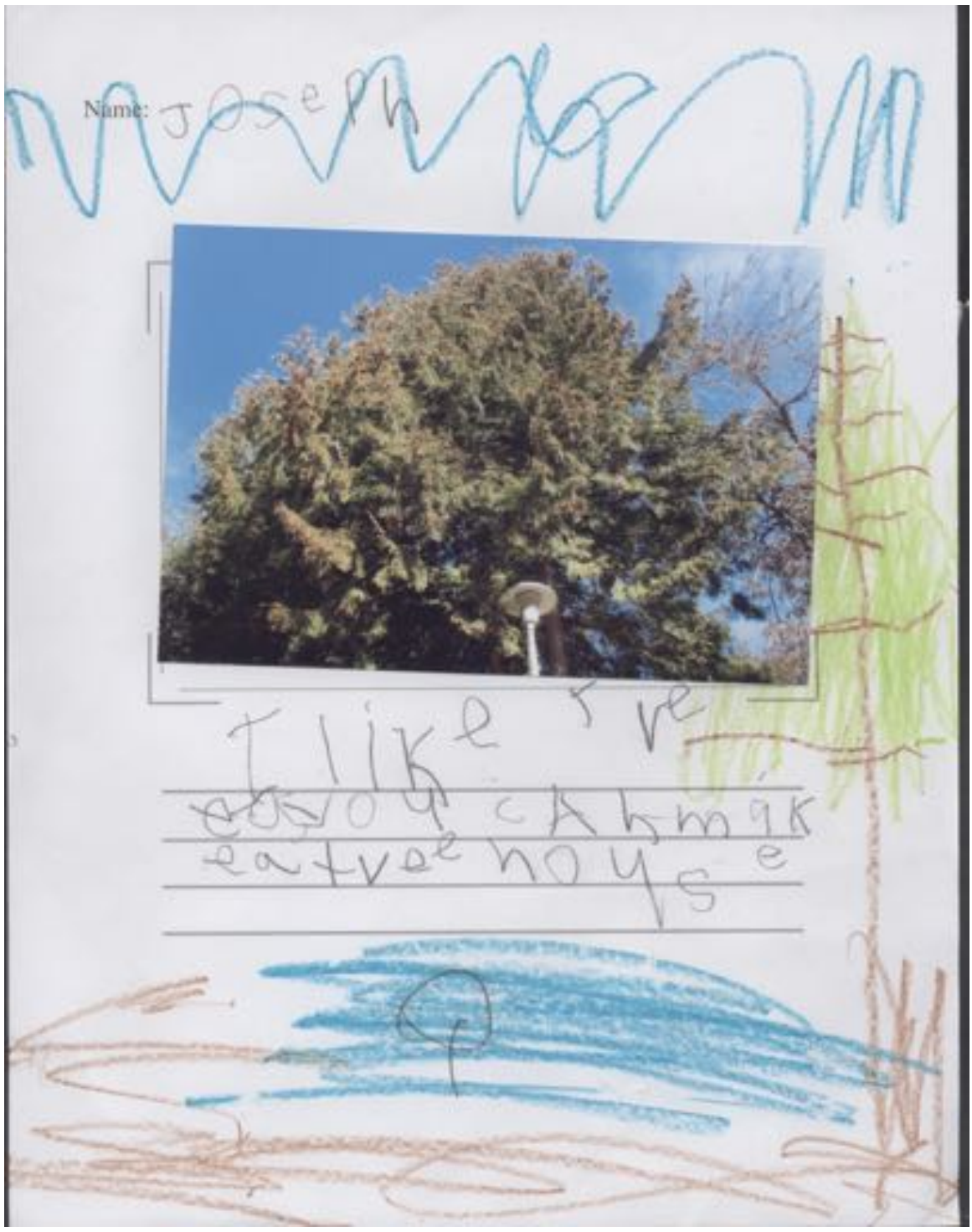

Name: ChrisTopher
I like the
grass because
I like the
mountains.

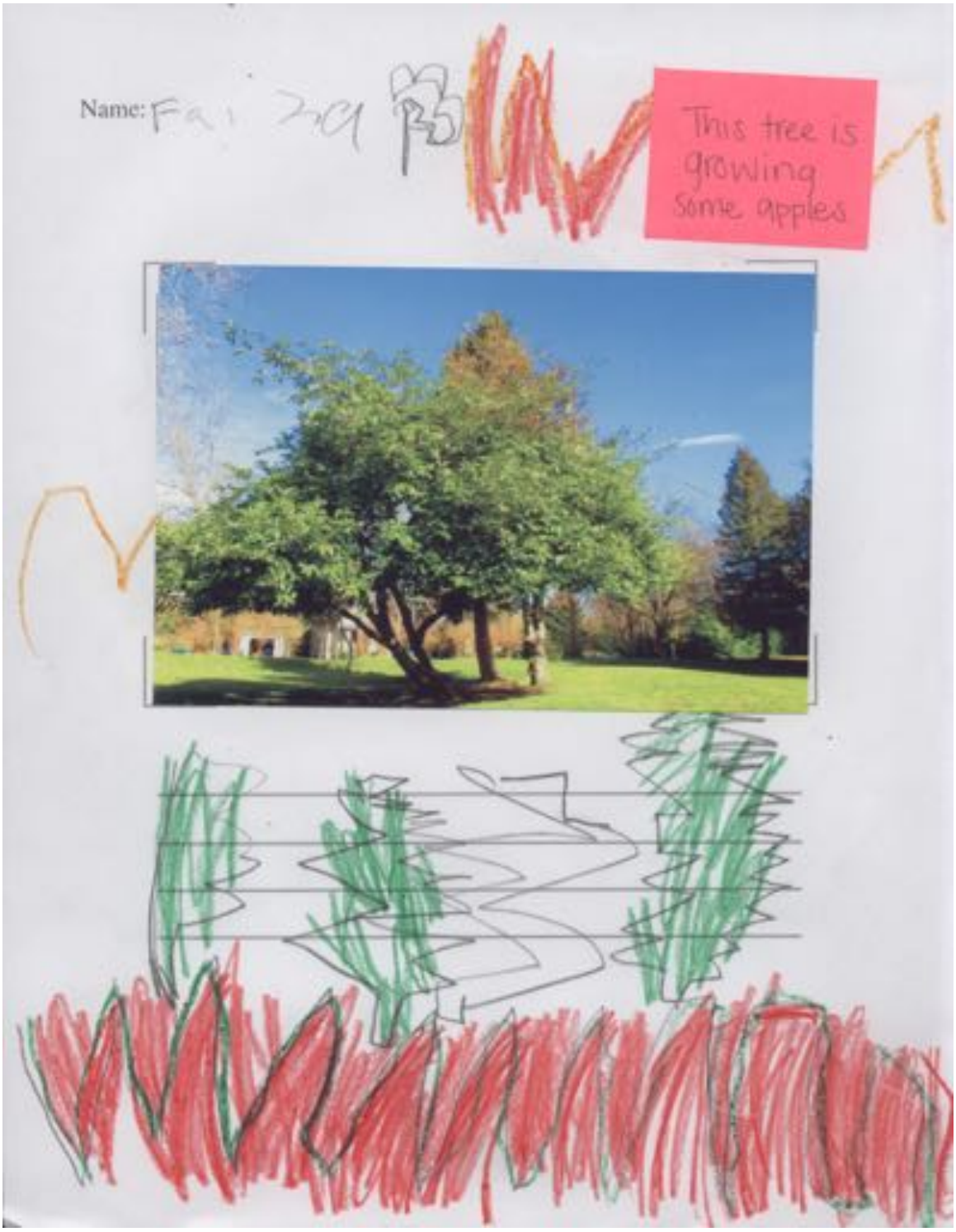

Name: Gammechu


Name NATHAN
Worms live in Soil

Name: LAVEANA




Name: Joseph
I like tree


Name:
This tree is growing some apples


Name: SiLAS
Pond

Name: EMILY

I LOVE FLOWERS
BECAUSE

I love flowers because they are pretty.


Name: Theo
I like tAKing

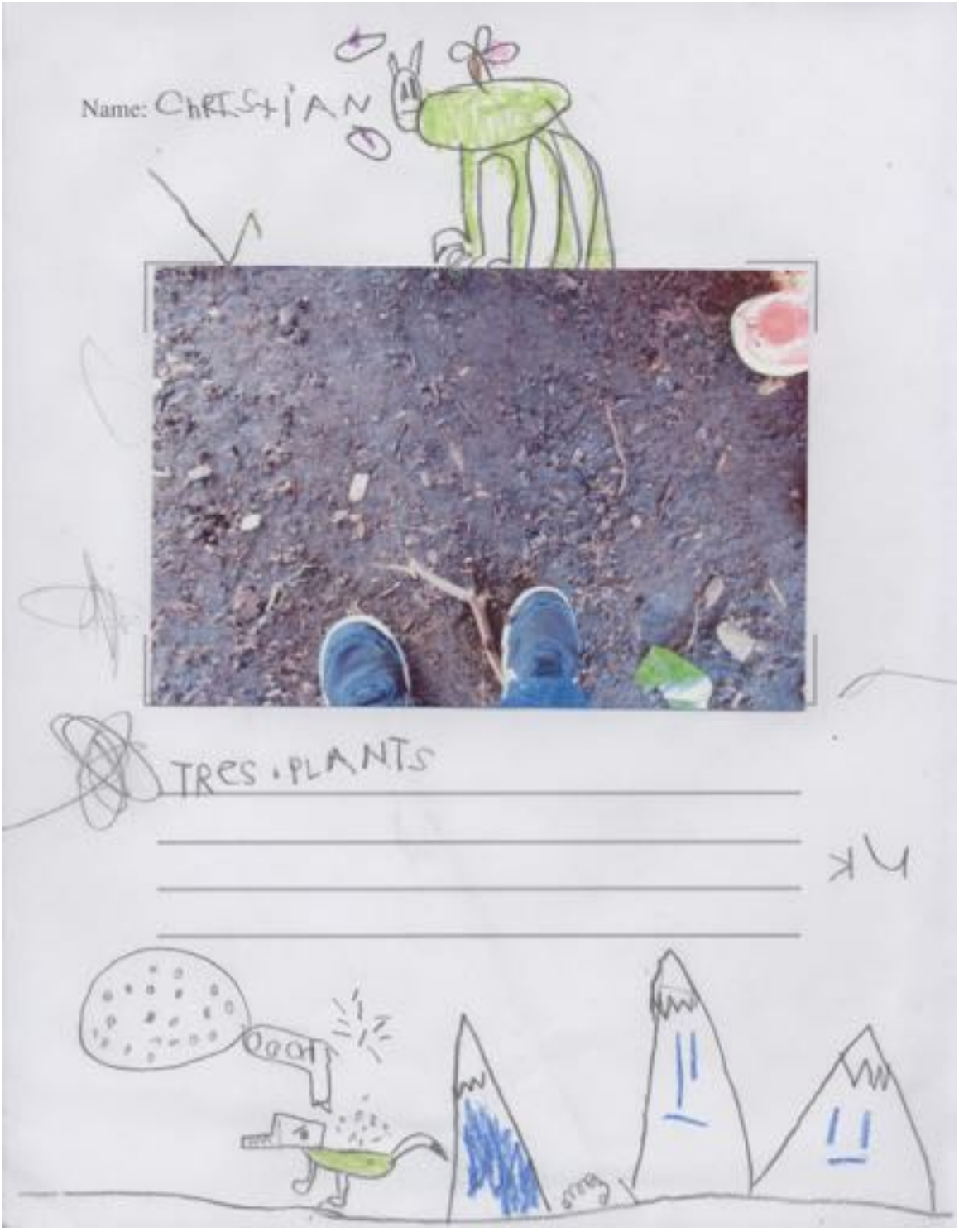
Name: GRACE

I like leaves because they are pretty


Name: AUBREY
TREES

Name: Althea

I like this picture
Because I like flowers
Because they smell
good


Name: CHRISTIAN
TRES . PLANTS
OOOH


Name: Fanta
I Love FLowers
Bcuese ther Sall
good and ther are
BetrLas

Name: A. Mora

I love flowers

I love flowers.

Appendix VI

Increasing Environmental Appreciation Through Photography in Public Schools

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Community, Environment, and Planning Senior Project 2017

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Letter of Introduction

Dear (community organization),

I am pleased to present to you a product of my senior project for the Community, Environment, and Planning major at the University of Washington. My project seeks to provide a tool for community organizations and schools to form long-lasting partnerships, and also to teach students how to appreciate and interact with their natural environment in a positive way. To do so, I have created a set of curricula that combine environmental science concepts, the outdoors, and the art of photography.

As part of my project, I conducted an extensive literature review. In short, I found that students are currently being taught about negative human-environment interactions, such as deforestation, when they should really be taught how to simply appreciate their environment. This positive attitude can help build a respect for the natural environment. I also found that teaching outdoors could provide students an opportunity for hands on learning, development of the senses, and physical and mental health benefits. Art can also help bridge a current gender gap in the science, technology, engineering, and math fields of study because females are more likely to show interest in activities that involve art.

Your role, as a community organization, is to build long lasting partnerships with schools to help put more positive environmental experiences, outdoor education, and art integration into (or out of) the classroom. This document provides the tools to do so. Here you will find a sample lesson plan (including the attached PDF slides), curricula (prompts) for different age groups, and funding resources for equipment. I encourage you to use these tools and reach out to schools to build partnerships.

Sincerely,

Carolyn Hartman

Sample Lesson Plan

Nature and Photography Lesson Plan

Learning Goals:

4. Define nature
5. Learn how to use cameras
6. Admire and respect nature

Overview

Activity	**Duration**
Powerpoint presentation and brief introductions • Learning goals • What is nature? • The cameras	10 minutes
Get into small groups	5 minutes
Transition outside	5 minutes
Take photos outside	10 minutes
Transition inside	5 minutes
Indoor group discussion Activity introduction and example	5 minutes
Indoor activity	15 minutes
Conclusion	5 minutes

Powerpoint Presentation & Small Groups

11:30-11:45

Volunteers: Participate in introduction and set up printers

- Title slide
- Learning goals
    - Today we are going to:
        - Define nature
        - Learn how to use a camera
        - Admire and respect nature
    - Take one photo of your favorite thing you see/feel/hear/smell in nature
        - See – crawling bugs, colors
        - Feel – leaf textures
        - Smell - flowers
        - Hear - birds
- What is nature?
    - Turn and talk to a partner
        - Brainstorm an example of nature
    - What is not nature?
        - Man made materials
    - Examples:
        - Living plants
        - Non-living plants
        - Fungi
        - Seeds, leaves, moss, tomatoes
        - Soil, roots, rocks
        - Clouds
- The cameras
    - Power button
        - This turns the camera on
    - Shutter button
        - This takes the picture
    - Lens
        - This is like the camera's eyes
- Let's go outside!
    - Count off?
    - Colors of the rug?

Take Photos Outside
11:45-12:05
Volunteers: Lead a small group of 4-5 students
Meet near the door (where we came outside) when finished

- Take one photo of your favorite thing you see in nature
- Remind students to be respectful of nature and the camera
- If students finish early:
    - Ask students what they like about nature and why
    - How does being in nature make them feel?
    - What do they like about taking pictures?
    - Have they ever used a camera before?
    - What do they like about being outside at school?

Indoor Discussion & Activity Introduction
12:05-12:10
Volunteers: Print photos, place one photo frame worksheet on each desk

- Discussion
    - Ask students what they like about nature and why
    - How does being in nature make them feel?
    - What do they like about taking pictures?
    - Have they ever used a camera before?
- Photo frame example
    - Name
    - Photos will be printed – glue these on last
    - Write
        - Why do you like this photo of nature?
            - I like this photo of nature because…
    - Illustrate
        - What you like about nature

Photo Frame Activity
12:10-12:25
Volunteers: Print photos, pack up printers and cameras, assist students with activity, take photos of finished photo frames

- Assist students with the activity
- Ask them about their work
    - Informal interviews

Thank you and Goodbye
12:25-12:30
Volunteers: Say goodbye ☺

Curricula by Age Group

Age Group	Next Generation Science Standards	Theme	Photo prompt	Reflection Question(s)
PreK – 2nd	• Make observations • Communicate ideas	Exploration and Appreciation	Take a photo of your favorite thing in nature	• Describe why this was your favorite thing in nature
3rd – 5th	• Examine evidence	Ecology	Take a photo of an ecosystem	• What creatures might live there? • What abiotic factors are there?
6th – 8th	• Connect evidence and explanations	Environmental Phenomena	Take a photo of an environmental phenomenon	• What do you think is causing that phenomenon ?
9th – 12th	• Coordinate patterns of evidence	Cultural Approaches to Nature	Take a photo of a landscape	• How have/will cultural practices influence this landscape?

Funding Resources

The Washington State Recreation and Conservation website provides a fantastic description of the grant process as well as tips for how to apply for grants.

Please see the website here:
http://www.rco.wa.gov/grants/apply_for_grant.shtml