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Spring 2016

Bringing Curriculum Outdoors: Implementing Gardening Outdoors

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Aboujaoude, Nicole, "Bringing Curriculum Outdoors: Implementing Gardening Outdoors" (2016). *Capstone Projects and Master's Theses*. 534.

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Bringing Curriculum Outdoors:
Implementing Gardening in Schools
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Abstract

Traditional public schools are not always giving students access to opportunities to experience innovative approaches to learning like garden-based education. Garden-based education uses the garden in everyday curriculum as well as giving students the opportunity to experience hands-on learning. An outdoor garden can be a tool in promoting outdoor education and positive peer relationships. Through interviews with teachers from the garden program and surveys with students who participate in this program, this Capstone examines the benefits of taking the curriculum outdoors and implementing garden-based education. Students and teachers showed high remarks when taking the curriculum outside in the garden. Having the access to a garden-based education can provide challenges, but the paper recommends schools implementing their own garden-based classroom in order to do so as well as provides resources, such as lesson plans, helping teachers educate their students with the use of the garden.

School gardens are gardens that are being seen across schools that are giving students an innovative approach to learning. Fisher-Maltese and Zimmerman (2015) state, that in the United States today there are about 3,000 schools that are implementing school gardens for educational purposes and using school gardens as a helping tool to get students outdoors. “Gardening is increasing in use as the focus of interdisciplinary teaching units in the elementary school curriculum and as a stratagem for student therapeutic, recreational, and social experiences (DeMarco, Relf & McDaniel, 1999, p. 276). There are many positive aspects of school gardens, but having the accessibility of school gardens to achieve these positive aspects are rarely seen.

As a student throughout elementary school to high school there was never the opportunity to learn what it meant to be environmentally conscious of the world or even the surroundings. Even just being exposed to learning curriculum in an outside environment seemed like it was impossible. It’s interesting to have lived in the central valley where agricultural is such a huge part of our economy and never learning about it or having access to it. Going to a traditional public school in Clovis and doing service learning at public schools in the city of Salinas and the city of Seaside there has been a realization that a reason school gardens might not really exist is because there is not much opportunity for students to be able to incorporate hands-on learning or even having the access/resources to do so. It seems like now schools mostly consist of listening to the teacher lecture and then getting a worksheet to show the knowledge of the material. With students learning in this type of classroom environment, it just doesn't seem like it is enough. There needs to be more accessibility with getting students to learn in innovative ways that can inspire students to actually want to learn.

Concern

Traditional public schools are not always giving students access to opportunities to experience or approach learning in different or unique ways, but in modern curriculum there is an acknowledgment of the constructivist learning theory, which is leading to the acceptance of hands-on learning as a powerful teaching tool (DeMarco, Relf & McDaniel, 1999). All students learn in different ways such as visual, auditory, or kinesthetic learning, but how much are students really learning kinesthetically? From being a witness to students in classrooms today, students are mostly learning visually and audibly, but rarely is kinesthetic learning being used. Because of the experiences in my own personal education and also what has been witnessed through participating in service learning, I want to base my capstone project on getting students to learn not only kinesthetically, but to take them outside the classroom and into the environment by implementing school gardens. The problem in doing so is that schools lack the accessibility to take students outside of the orderly classroom setting and away to the outdoors. Which then leads to students not receiving exposure to innovative ways to approach learning while being able to learn about the environment at the same time.

What are School Gardens and Garden-Based Education?

A garden is a space, either big or small, usually consisting outdoors where natural elements such as plants, trees, food, or flowers are set to grow and be enjoyed by many people (“Garden,” 2016). “Gardens can serve as living laboratories in which students can see what they are learning and in turn apply that knowledge to real world situations” (Klemmer, Waliczek, and Zajicek, 2005, p. 452). When schools have the accessibility of a garden it gives students a chance to get away from the everyday classroom setting and use their natural environment to help with their learning. They also help teach valuable lessons of gardening and agricultural approaches

that can support the social and personal aspects of learning (Williams & Dixon, 2013). Students are not finding connections with subjects such as math and science within their everyday lives and by having experiences outside the classroom, with the help of outside tools, students will be more suited to connect to these subjects (Kelmmer et al., 2005).

When students have the opportunity to work outside of the confines of the classroom and work in the garden this type of learning is called garden-based learning. Garden-based education is an instructional strategy that incorporates the garden as a teaching tool, which uses the garden as the foundation to preform activities across the curriculum that helps students learn actively and engage in real-world experiences (Williams & Dixon, 2013). With students being able to cooperate in garden based education, it exposes a different way of learning (DeMarco et al., 1999). By implementing a garden-based curriculum, this type of curriculum can span across multiple subjects, while also providing students with learning on a more personal level (Aguilar, Waliczek, & Zajicek, 2008). “School gardens also offer an important setting in which children can learn about their health, environment and social aspects of food” (Jones, Weitkamp, Salmon, & Orme, 2012, p. 76).

What is the Value of Having School Gardens?

The first value of having school gardens is that it can help with students’ academic performance achievement across the curriculum. Gardening gives students the opportunity to participate in real life experiences that then help contribute to the understanding of the state mandated curriculum (DeMarco, Relf & McDaniel, 1999, p.277). For example, teachers have used educational outlets, such as the garden, in order for students to have diverse experiences with subjects such as math, science, history, multiculturalism, and nutrition, but also students were able to develop decision-making skills as well as problem-solving skills, which ultimately strengthened the

students' learning (DeMarco et al., 1999). Having an understanding of these subjects is very important, but having an understanding in science is pretty much a demand, especially in today's society (Klemmer, Waliczek, & Zajicek 2005). Hoffman, Morales-Knight and Wallach (2007) state that by having school environments that connects students' learning to their everyday experiences or to the community, will not only create an atmosphere for learning outside the classroom, but will also improve students' academic performance inside the classroom.

Secondly, having an awareness of the environment is an issue that should be taken seriously, because the issues that surround our environment are not going away anytime soon (Aguilar et al., 2008). Aguilar et al. (2008) states that in order for students to learn to become environmentally aware, the best possible way is through hands-on learning experiences with the environment. "Not only can a garden and gardening act activities enable students to learn about the environment, but students can also experience ecological processes first hand" (Aguilar et al., 2008, p. 244). Aguilar et al, (2008) states that because of the hands-on learning experiences students were receiving, it has made a positive impact on students' awareness and attitudes when it came to the environment. Because of the positive effect of students' environmental awareness, there has been an increase of gardening programs that aim to teach subjects such as math, science, nutrition, and environmental awareness through hands-on learning experiences (Klemmer, Waliczek, & Zajicek, 2005).

Lastly, school gardening can impact students' behavior in a positive way. "Garden-based education enhances student constructive engagement by, supporting students' experiences of themselves as connected and related to the garden, feeling competent to carry out science and gardening activities, and feeling autonomous in their sense of purpose" (Skinner, Chi, & Group1,

T. 2012, p. 19). Since students have the opportunity in feeling a sense of purpose in their learning, students in turn show more of an interest in their education (Skinner et al., 2012). Fisher-Maltese and Zimmerman (2015) state that the attitudes that students give off is often a result of experimental teaching. Behavior changes within students comes from the opportunities students are given with having a more intimate interaction with not only their peers, but with nature as well (DeMarco et al., 1999). With students' experiencing positive behavior changes and a sense of purpose for school, it can then carry out to a sense of purpose for the community, which can lead to more parent involvement and support for students' learning (Jones et al., 2012).

Accessibility of School Gardens

There seems to be many benefits that come from having school gardens, but having access to a garden is a concern. Physical resources are needed in order to promote the outdoor garden as an extension of the indoor classroom (DeMarco et al., 1999). A majority of schools show an absence of the essential facilities needed in order to deliver an adequate garden-based education (Jones et al., 2012). Even though there seems to be an absence, the development of a school garden is not unreasonable, even for those schools that may have disadvantaged circumstances (Jones et al., 2012). School garden programs need to have participants, such as teachers and administration, that are committed to the cause and willing to make that commitment for the long-term in order to have the access to what the garden can bring to the students (Jones et al., 2012).

There are many positive aspects in implementing garden-based learning into the curriculum at any school. These positive aspects include claims that students can have a boost in their overall academic performance, students can learn about environmental awareness through hands-on learning, and students behavior and attitudes about their education can have a positive impact. These aspects can change the way a student understands the curriculum and the subjects that are

not always connected to the student's own real life experiences. The problem lies with not having the accessibility of a school garden in order to explore the values that school gardens obtain. To implement garden-based learning, schools need to administer solutions in order to have gardens that are accessible to students. It is important for students to have the accessibility of school gardens to incorporate innovative ways of learning about the environment and to get students outdoors.

Implementing school gardens into the school curriculum is an alternative way for student's to be engaged in their learning. "Research indicates that providing instructional alternatives, hands-on activities, and rationales for completing tasks maximizes students' learning outcomes" (Winters, Ring, & Burriss, 2010, p. 248-G). Students need to be able to connect with the material they are learning in the classroom with the experiences they already bring and the use of outdoor learning is an extraordinary resource to do just that and will also meet the requirements of students' growth and development (Winters et al., 2010). Author Lori Litchman (2010) indicates that the use of gardening gives students something that is not achievable in the classroom and one of those includes hands-on learning, which lends a hand into long-term memory acquisition (Litchman, 2010).

In order to bring the curriculum outdoors and implement gardening into schools there needs to be solutions that can be attainable to do so. The solutions that will be presented in this paper include; schools developing their own garden-based classroom by creating a outdoor classroom of their own (Blair, 2009), schools working together within the community (Blair, 2009), and a final solution is for students to engage in curriculum literacy learning while incorporating the garden (Pascoe & Wyatt-Smith, 2013).

Potential Solutions

Solution One

The first potential solution is for school sites to develop their own garden-based classroom that will provide students' the opportunity to work in a hands-on way (Winters et al., 2010). Schools that have access to create their own outdoor classroom can experience a "continuum of efforts to increase the horticultural complexity of the schoolyard, including potted plants, raise beds on asphalts, indoor vermiculture composting, in-ground plantings, habitat and butterfly gardens, sunflower houses, and ponds, composting areas accommodating a school's daily lunch waste, and a systematic approach to redesign the outdoor space around schools into learning landscapes" (Blair, 2009, p.16). As we can see, implementing an outdoor garden space covers many aspects of school curriculum, but also includes either environmental education or sustainability aspect that furthers the curriculum (Pascoe & Wyatt-Smith, 2013). A way to evaluate students on the learning outcomes that comes with schools implementing their own outdoor work site can include students writing journals and learning logs, which will show their observations and where teachers can then evaluate the work students are putting forth (Winters et al., 2010).

Solution Two

The second solution to bringing the curriculum outdoors can come from school sites working together with the community (Blair, 2009). Schools can move into place-based learning where school sites can reach out to the community which will help with expediting the learning (Blair, 2009). Dymont and Reid (2005) state that while we are approaching the twenty-first century, as a society we need to come to grips with creating more of a sustainable society within our communities in order to face the challenges that are presented before us when it comes to our environment (Dymont & Reid, 2005, p.297). Research has indicated that providing students with

the opportunities to work within their communities resulted in an improvement in standardized test scores among students, especially students who live in rural communities (Blair, 2009). Blair (2009) states, “that the environment from classrooms to scholars to local nature centers and parks, enables learning that is problem-based and interdisciplinary, with a significant positive impact on achievement” (Blair, 2009, p.16).

Solution Three

Lastly the final solution is for students to engage in curriculum literacy learning in the school garden (Pascoe & Wyatt-Smith, 2013). There are many students that feel disengaged from the mainstream classroom and research indicates that those students’ benefited from literacy lessons that were taken place in real-life settings, such as the school garden (Pascoe & Wyatt-Smith, 2013). Pascoe and Wyatt (2013) looked at one teacher who integrated every subject into the garden lessons. This teacher “taught environmental education using a cross-disciplinary approach and simultaneously taught such core subjects as math, science, and geography” (Pascoe & Wyatt-Smith, 2013, p.35). The teacher was able to evaluate students across these subjects by implementing lessons that used gardening as a tool. For example, the teacher was about to teach about science by observing and documenting lifecycle of plants and nutrient analysis, mathematics covered how to design a garden and measurements of plant growth, social studies looked at the cultural and historical aspects of plants, in English the teacher had students read stories about gardens of the world, and art lessons involved drawing plants and animals in the garden (Pascoe & Wyatt-Smith, 2013).

Solutions	Pros	Cons
<p>1. School sites developing their own outdoor classroom.</p>	<ul style="list-style-type: none"> • Outdoor education provides students with the opportunity to observe their natural surrounding and create data with what they are observing in nature (Winters et al., 2010) • Serves as an extension for academic learning (Winters et al., 2010). • Students will be able to create a deeper understanding with not only the environment, but with what they learn inside the classroom (Winters et al., 2010) • Teachers meet curriculum benchmarks and ensured differentiated instruction to accommodate children’s interests and abilities (Winters et al., 2010). 	<ul style="list-style-type: none"> • Steady source of funding for maintenance, personal, documented curriculum links and resources, feedback mechanisms, enthusiastic leadership, and professional development (Pascoe & Wyatt-Smith, 2013). • Maintenance for long term (Blair, 2009). • “Being outdoors and involved in hands-in-dirt digging, planting, and cleanup—may render it unpopular with teachers who prefer the safety, predictability, cleanliness, and ease of the indoor classroom” (Blair, 2009, p.20).
<p>2. School sites working together with community partners. Students working within their community.</p>	<ul style="list-style-type: none"> • Good way to teach students about giving back to their community (Litchman, 2010). • Provides students with the opportunity to work within their communities and resulted in an improvement in standardized test scores among students, especially students who live in rural communities (Blair, 2009). • Outdoor experiences with nature (Blair, 2009). • No maintenance required for teachers since working with a community partner. • Youth are the creators of the curriculum and not just consumers (Blair, 2009). 	<ul style="list-style-type: none"> • Educators adjusting from their norms may cause discomfort (Blair, 2009). • Requires physical labor (Blair, 2009). • Results happen slowly (Blair, 2009).

Solutions	Pros	Cons
<p>3. Students engaging in curriculum literacy learning in the school garden.</p>	<ul style="list-style-type: none"> • Curriculum literacies flourish in concrete learning settings (Pascoe & Wyatt-Smith, 2013). • Authentic purposes (Pascoe & Wyatt-Smith, 2013) • Focus on literacy (Pascoe & Wyatt-Smith, 2013) • Environment builds on curiosity, skills, and confidence, especially for at risk students (Pascoe & Wyatt-Smith, 2013) • Increase engagement and forms concrete learning experiences (Pascoe & Wyatt-Smith, 2013) 	<ul style="list-style-type: none"> • Funding (Pascoe & Wyatt-Smith, 2013) • Teachers need assistance in the form of training and teaching resources in order to make the most out of the resource (Pascoe & Wyatt-Smith, 2013) • No guarantee for effective student learning (Pascoe & Wyatt-Smith, 2013).

Solution and Justification

Solution one details that school sites could develop their own outdoor classroom, that includes elements such as an amphitheater, student-work stations, a wetland, a greenhouse, a tracking pit, and a culinary herb garden (Winters et al., 2010). With solution one, students will be able to create a deeper understanding with not only the environment, but with what they learn inside the classroom (Winters et al., 2010). “The outdoor environment allows children to learn in ways not possible in the traditional indoor classroom. The outdoor classroom is not isolated from indoor learning. Outdoor learning activities serve as an extension for academic subject areas; in the outdoors, children reinforce, apply, and enrich transitional skills” (Winters et al., 2010, p. 248G-248H). Outdoor learning is an extension of what they are learning in the classroom, which include subjects such as math and science, but outdoor learning gives students a real-life context, which can serve students in their everyday lives (Winters et al., 2010). As Blair (2009) states, youth are the creators of the curriculum and not just consumers (Blair, 2009).

Students need to be able to connect with the material they are learning in order to have the best potential for academic success. The solutions stated above are all solutions that could be implemented into the classroom curriculum and give an alternative approach to the material that is being taught in schools. When looking at the pros and cons of these solutions, I understand how implementing school gardening can and will take a lot of work from administration, teachers, and the students, but the benefits of implementing a school garden at the school site or working within the community which engages in environmental-based learning is something that should be considered. Students need the opportunity to work outside of their normal range and beyond the walls they are accustomed to which create life-long experiences and with using the garden as a tool it can provide a way for students to be involved with the outdoors.

With the research that has been shown throughout the paper, the audience has been able to develop a deeper understanding of what school gardens are, why students should have access to school gardens, and what solutions are possible in order to make school gardens accessible in schools today. Traditional public schools are not always giving students access to opportunities to experience or approach learning in different or unique ways, but in modern curriculum there is an acknowledgment of the constructivist learning theory, which is leading to the acceptance of hands-on learning as a powerful teaching tool (DeMarco, Relf & McDaniel, 1999). Even though school gardens are picking up momentum in the United States and are being used for environmental purposes and a way to get students outdoors, there are still many schools that don't have the accessibility or funds to incorporate gardening within their school (Fisher-Maltese & Zimmerman, 2015). While developing this paper, the hope is to discover ways that schools can incorporate garden-based education as part of their curriculum and also see how students are responding to the opportunity of having this type of education.

Research Questions

Teachers are a big portion of the stakeholder group to help improve the issue of bringing the curriculum outside by implementing school gardens. They have the ability to take their students into the garden and have their students benefit from the opportunities that teaching in the garden can bring. DeMarco et al., (1999), states that, seventy-eight percent of teachers expressed a high interest of the use of gardening as a teaching tool. Many educators recognize and expound the value of gardening in a interdisciplinary curriculum in elementary schools (DeMarco et al., 1999). In order to improve the issue, teachers have stated three factors that need to be evaluated in order to integrate gardening into the school curriculum. Those three factors include; “student and faculty ownership or commitment to integrate gardening into the curriculum, availability of physical resources, and faculty knowledge and skill in using gardening as a method to enhance an interdisciplinary curriculum” (DeMarco et al., 1999, p. 277). Klemmer, Waliczek, and Zajicek (2005) state that, even though it has been seen that teachers have expressed interest and advocate for gardening as an effective method for fostering authentic learning, in order to incorporate gardening as part of the curriculum effectively, there needs to be supplemental training in order to do so (Klemmer et al., 2005).

Action Project Significance/Need

Throughout this project the researcher has read and analyzed research and has noticed that there are many benefits that comes from schools incorporating school gardens into the education setting and as part of the curriculum. These benefits are important because it gives students the opportunity to achieve the outcomes that school gardens set out to achieve such as, an improvement in school achievement, which comes from students being able to participate in curriculum that is relatable and also something that can be used in everyday life, it brings ecological

and environmental awareness, such as gaining knowledge of the importance of recycling and composting, it develops knowledge about the food systems and why it is important to nourish your body with the right nutrients in order to live a healthy life, and lastly it creates a positive youth environment (Skinner & Chi, 2013).

For future educators it is important to find the significance of incorporating school gardening into the curriculum and more importantly taking the classroom outside because it gives students a chance to learn from new and innovative perspectives. Philosophers such as Dewey, “believed that experience was the starting point of all learning” and incorporating school gardens can bring those experiences for children to learn because “environmental education provides children with the opportunity to practice responsible environmental action, which then helps them to develop new environmental behaviors” (Aguilar, Waliczek, & Zajicek, p.243, 2008). There is a need for more integration of relatable experiences and practical work in curriculum and experiential learning has proven to be an efficient interface by connecting direct experiences to learning (Pogacnik, Znidarcic, and Stragar, 2014).

Benefits of Action Project

The expected benefits that comes from the action research include the interviewees being able to reflect on the problem/concern itself, which is that schools don't have the accessibility of incorporating school gardens and what solutions can be provided in order to create the need for accessibility. Another benefit will come from the students by providing surveys in order to demonstrate an understanding of why school gardens are beneficial to students' learning. These interviews and surveys will provide suggestions of what researchers can do in order to make school gardens accessible and give suggestions of what students would want to see school gardens used for in order to reach the students own interests and needs as educational learners.

The action project that will be developed will benefit the stakeholders who play a role in solving the problem/solution. The researchers will observe and analyze lessons/lesson plans in order to help educators further develop lessons for the innovative approach of garden-based education and in doing so will provide students with opportunities to get the most out of their education.

Methods and Procedures

Context/Setting

The site location that the research will be further developed at is a school site located in Carmel, California, which is a city in Monterey County, California, situated on the Monterey Peninsula (Carmel-By-The-Sea, California, n.d.). The student demographics at this site found on the website great schools, are sixty-three percent White, twenty percent Hispanic, and fifteen percent other. The organization that the researcher has also used for further research is adjacent to the school site and already works with students and teachers in a variety of programs to connect students in meaningful ways to themselves and the world around them (“MEarth Programs,” 2016).

Researcher

The researcher was motivated to learn about and develop a project that deals with taking the curriculum outside and implementing the garden as a learning tool, because there aren't enough schools that give students an innovative approach to learning. Implementing school gardens is a way for students to connect to the environment, while learning about the curriculum that is already set in place. School gardens can give students the opportunity that they might not have otherwise to be involved in hands-on learning and also be involved with the resources that

are right outside their door (DeMarco et al., 1999). The connection the researcher has to the context of this research stems from wanting to become a teacher and bringing new and innovative ways to teach. Being a student at CSUMB, the researcher has learned a lot, particularly through the service learning opportunities, that students deserve to feel connected to what their learning and students should have the feeling of connectedness to the environment and to the garden because it's a resource that is right at their fingertips. The experiences the researcher has had to develop this project is the experience the researcher has with working with students through service learning. The researcher doesn't have much experience with garden-based learning or with gardening, but by working with the school site and organization it is something that has been developing and the researcher would want to implement into the classroom as a future educator.

Participants

The first participants that will engage in the action research will be sixth-grade students from the school site located in Carmel, California. The students range from both boy and girl participants. The students met the selection criteria by being students who participate with the organization site, which provides students with opportunities to perform garden-based activities. The second participants that will engage in the action research will be a teacher and co-teacher who teach and provided lessons for the garden activities the students are able to be participants in. The teacher and co-teacher met the selection criteria by being the instructors for the garden program lessons which gives them the first-hand insight of teaching these lessons and knowledge of garden-based education.

Procedures

Initial contact with the participants of the study will be from the organization site. The organization site works with a class of sixth-grade students who participate in an ecoliteracy

course at the school site, located in Carmel, California, and the students who are part of this course perform activities in the garden with the organization every Friday afternoon. The researchers will be observing three lessons with the first lesson beginning on March 11, 2016. After the third lesson the researcher will ask the participants to take part in either interviews, which will be provided for the teacher and co-teacher of the garden program or surveys, which will be provided for the students who participate in the garden program. The interviews will be conducted face-to-face and the participants will be asked to discuss the experiences with working with students in the garden program and solutions of how to make a garden program such as this accessible in more education sites. The interviews will take place after the third lesson that is observed at the organization site and will take approximately twenty minutes. The surveys provided will be in the form of a paper survey given to the student participants to fill out and these surveys will ask questions about the ecoliteracy course and the garden program they participate in and if these types of courses benefit the students interests and needs. The surveys will also be provided after the third lessons in the garden program at the organization site once the class has concluded for the day and the survey will take approximately five to ten minutes.

Risks/Protections

The rights, welfare, and privacy of all of those who are participating in this study will be protected by having the participants sign consent forms or if they are under the age of eighteen, the parents of those participating will sign the consent form in order for the student to participate in the research study. To protect the privacy and anonymity of all who are participating there will be no mentioning of any names. These surveys and interviews will only be used for education purposes and for presenting our research at the capstone festival being held at CSUMB at a later time.

Instruments and Equipment

The interviews that are intended for the teachers who are part stakeholders in implementing garden-based education will be asked approximately five to ten questions in regards to the garden program that is in place and also what type of solutions can help solve the problem of schools not having the accessibility to school gardens and what type of obstacles can schools face in trying to access school gardens. These interview questions are intended in further developing the capstone project and developing a solution where teachers and students can have access to this type of innovative approach to learning. The surveys are intended for the sixth-grade students who are also part stakeholders in the problem of having the opportunity to participate in garden-based education. The students will be surveyed with approximately five short answer questions and also provide a rating for another five questions that will be provided. These survey questions are also intended to further develop the research and give insight to the students interests and needs when it comes to implementing gardening as a teaching tool.

By now the research has helped the audience create a deeper understanding of what school gardens are, the reasons behind schools having access to school gardens, solutions on how to create opportunities for school gardens in the educational environment, and a glimpse of the research that has been conducted showcasing the stakeholders involved in the issue presented. The issue being that traditional public schools today are not giving students access to opportunities to experience or approach learning in different or unique ways. Gardening gives students the opportunity to participate in real life experiences (DeMarco, Relf & McDaniel, 1999, p.277). developing the action project, the researchers will observe and analyze lessons that will contribute in providing the stakeholders with the materials to implement school gardening in the curriculum.

Description/Justification of Potential Solutions

As mentioned previously, in order to bring curriculum outdoors and implement gardening to school sites there needs to be solutions in order to do so. The researchers have organized three potential solutions, one of them is for school sites to develop their own garden based classroom, which would include elements such as; an amphitheater, student-work stations, a wetland, a greenhouse, a tracking pit, and a culinary herb garden (Winters et al., 2010). The second solution is for schools to work within their community. Outdoor learning opportunities have positive impacts, including improvement in student's attitudes about the environment that has three outlooks such as affects, beliefs and good behavior. Blair (2009) states, "that the environment from classrooms to scholars to local nature centers and parks, enables learning that is problem-based and interdisciplinary, with a significant positive impact on achievement" (p.16). Lastly the final solution involves students engaging in garden curriculum literacy. There are many students that feel disengaged from the mainstream classroom and research indicates that those students' benefited from literacy lessons that were taken place in real-life settings, such as the school garden (Pascoe & Wyatt-Smith, 2013).

The solutions stated above are all solutions that could be implemented into the classroom curriculum and give an alternative approach to the material that is being taught in schools. The students will gain responsibility, confidence, social skills, good behavior and have a positive attitude towards their surrounding of nature. "The outdoor environment allows children to learn in ways not possible in the traditional indoor classroom. The outdoor classroom is not isolated from indoor learning. Outdoor learning activities serve as an extension for academic subject areas; in the outdoors, children reinforce, apply, and enrich transitional skills" (Winters et al., 2010, p. 248G-248H). Students need the opportunity to work outside of their normal range and beyond

the walls they are accustomed to which create life-long experiences and with using the garden as a tool it can provide a way for students to be involved with the outdoors.

Description of School/Organization

The site location that the action project will be further developed at is a school site located in Carmel, California, which is a city in Monterey County, California, situated on the Monterey Peninsula (Carmel-By-The-Sea, California, n.d.). The organization that the researcher has also used for further research is adjacent to the school site and already works with students and teachers in a variety of programs to connect students in meaningful ways to themselves and the world around them (“MEarth Programs,” 2016).

This organization is surrounded by nature: 600 bushes, succulents, flowers and grasses of 42 species on the soil covered roof of the green building next to other organizations (“MEarth Programs,” 2016). This organization has an organic garden, an outdoor kitchen, demonstration gardens, greenhouse and an amphitheater for ornithology and owl boxes (“MEarth Programs,” 2016). “The buildings in the Hilton Bialek Habitat are used for classes and events that includes the eco literacy program. This program works with about 1,000 students throughout monterey county, through partnership of the boys and girls club and other schools” (“MEarth Programs,” 2016).

Site Observations/Volunteer Work

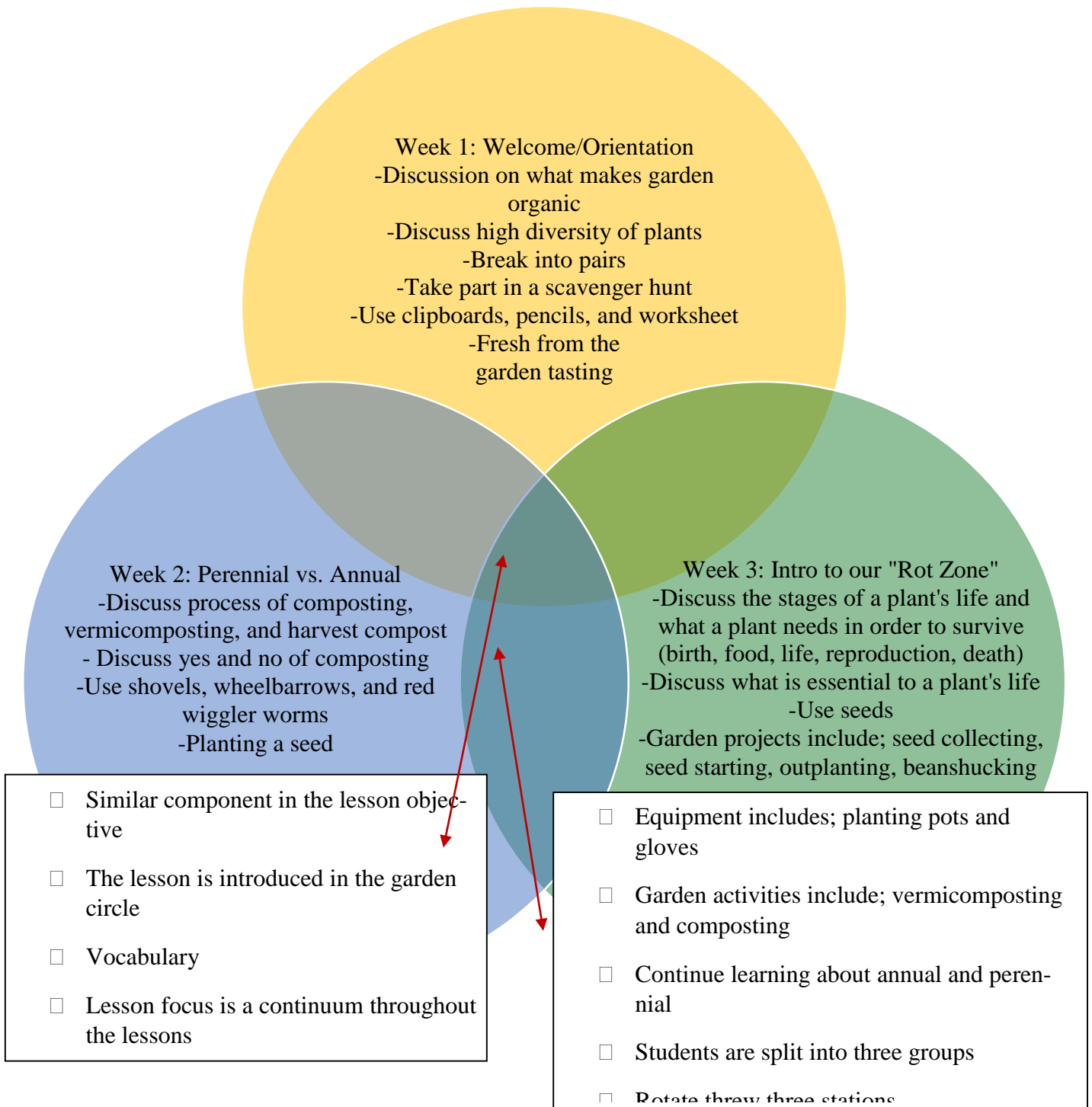
The researchers first meet with some of the staff at the organization in order to be have a site where the researchers could observe the gardening activities taking place. The staff members gave the researchers a broad overview of their expectations in order to maintain the wellbeing of the students and the facility. The researcher’s expectations were to observe the lessons, based on the lesson plans the organization gave us prior to observing. Once the researchers attended the

first week of the gardening course, the expectation changed from just observing to also volunteering in the garden stations.

Before the students came out for class, the researchers helped the instructor organize the stations in which the students would be participating in. The researchers helped gather the wheelbarrows that the students were going to use to gather the crops, and helped put together the planting pots that the students would use when planting the seeds. During week three the researchers were in charge of one of the stations that the students would be rotating to. It was the researcher's job to introduce the students to cover crops and explain the purpose of those cover crops. The students were then able to pull out the cover crops from the dirt and put them in the wheelbarrow and once the wheelbarrow was full, the researcher directed the students to location they would dump the cover crops.

After the three lessons the researchers observed were complete, the researchers gathered together the observation notes that were made from the three days of lessons. These observation notes can be found in appendix A.

Analysis of Lesson Plans



As shown in the illustration above there are plenty of similarities and differences between each lesson. One of those similarities is that each lesson has a component of the lesson objective that is similar. For example, each lesson objective highlights that students will be able to gain knowledge of the vocabulary that will be presented and discussed. Each lesson is also being introduced in the garden circle, which is where the students meet at the beginning of each lesson. The garden circle is also the point of the lesson where new vocabulary is introduced to the students.

The reader can also see illustrated above the similarities between week two and week three of the lessons. One of those similarities is the common use of equipment which includes: planting pots and gloves. The activities are also a continuum of each other which include, vermicomposting and composting that then leads to the discussion of annual vs. perennial. As noted above, the lessons involve three different stations of activities and ended with a similar conclusion of coming back together in the garden circle and discussing the activities that the students participated in.

After analyzing the organization's lesson plans, the researchers noticed that there were elements of the lesson plans that need to be refined, such as the lesson objective. These lesson plans also did not include a standard for the lesson or the framework where the lesson was being taken from. These lesson plans can be seen in Appendix B.

Since the lesson plans that were provided from the organization are in need of refinement, the researchers formed a new lesson plan that could potentially be used in garden-based education. This lesson plan can be found in Appendix C.

Analyzation of Results

Through the action research, the researchers have been able to analyze the problem of schools not having the accessibility to school gardens, the obstacles of incorporating school gardens, and the benefits that have risen from the students who have the accessibility for school gardens. DeMarco et al. (1999) states that, the most important factors to creating and sustaining a school garden include; “student and faculty ownership or commitment to integrating gardening in their curriculum, availability of physical resources, and faculty knowledge and skills in the application of gardening to enhance an interdisciplinary curriculum” (p.276). When students don’t have the accessibility to school gardens, students will not be connected to the foods they eat. In order for students to be connected to this type of learning, there needs to be more knowledge about the benefits that gardening can create for students. There are obstacles that were discussed when it came to incorporating school gardens. Funding was one of the biggest obstacles that can be seen when it comes to incorporating school gardens and also teacher involvement. Even though funding is a big factor when it comes to beginning school gardens at sites that may not have accessibility to them, it can be said that school gardens do not have to be on such a grand scale, they can be simplified to designated areas, raised beds, or planting pots.

The researchers have also been able to develop the research from the student’s point of view. Students are also stakeholders in implementing school gardens and their interests also take into account if there is a need for school gardens to be incorporated into educational sites. Of the student participants there were very high scores when it came to the student’s interests of gardening, having the opportunity to take a hands-on approach to their learning, and the enjoyment of taking the classroom outdoors. When it came to the students expanding their knowledge about

the environment and continuing gardening after this gardening course is completed, there were also very high marks. To see more of the student's participation surveys, refer to appendix D.

Conclusion

In order for students to be able to connect with the material they are learning through gardening, the first solution in the process is having the accessibility to do so. The next step would be to have lessons made available where students can participate in garden-based learning. Throughout this project the researchers have observed and analyzed lessons taking place at an organization site that is set up for students to experience hands-on learning with the use of the garden. These lessons that were analyzed and refined can be used for stakeholder groups to implement garden-based education in the curriculum. Students deserve the opportunity to work outside the four walls and utilize the materials and tools provide for them to engage in their education, and taking the curriculum outdoors and implementing the garden is a step in the right direction.

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Appendix A

Observation Notes

Week One: March 11, 2016

Before the students came out for the lesson the researchers observed the instructor set up her discussion board which stated, what makes this garden organic and how this particular garden contains no chemical pesticides, no chemical herbicides and no chemical fertilizers. Once the students came out to the garden, the students gathered in the garden circle where the instructor introduced the garden and went over what makes this particular garden organic and also discussing the diversity of plants that this particular garden has access to. The students then received a clipboard and a scavenger hunt worksheet and paired up with another student to participate in a garden scavenger hunt, where students would hunt for the diversity of plants that were discussed in the introduction. Once the pairs were finished with the garden scavenger hunt, the students had the opportunity to taste fruits and vegetables from the garden.

Week Two: March 18, 2016

Once the students came out to the site, the students gathered in the garden circle for the start of the lesson. The instructor introduced the use and purpose of composting, the yes and no of composting, and harvest composting. The instructor spoke about the anatomy of the compost pile as lasagna layers, so it was easy for students to remember. The layers of the compost pile include; greens, browns, water, air, and bacteria. The instructor also introduced vermicomposting, which uses red wiggler worms, which help provide nutrients to the soil.

Once the garden circle discussion was complete the instructor then split the students into three groups. Each group would go through each station after about ten minutes. For one of the

stations students contributed to the compost pile. There was a pile of leafy plants, a pile of roots, and a pile of manure, and it was the student's job to shovel those piles into one big compost pile, according to the lasagna layers that was previously mentioned in the discussion. For the second station students worked on vermicomposting and composted using red wiggler worms. For the third station students were introduced to planting seeds, that would be an introduction to the garden activity for week three. Once the students were finished going through each station, it was time for the students to head back to their classroom.

As the researchers were observing the lesson, the researchers noticed that the conclusion of the lesson was missing. According to the lesson plan the conclusion of the lesson would include students coming back to the garden circle and discussing what they had done in their activities and how it related to the discussion prior to the start of the activities.

Week Three: March 25, 2016

Before the students came out to the site for the lesson, the researchers observed the instructor setting up the discussion board of what the students were going to touch base on. The discussion board incorporated questions that drew from what the students learned the week prior, such as what do seeds need in order to grow, which include appropriate soil, oxygen, light, water, and space. Once the students came out to the garden for the lesson they all gathered in the garden circle for the start of the lesson. The students raised their hand in order to answer the questions of what they learned the week prior before being introduced to a new topic. The instructor then introduced a new concept which was the difference between perennial and annual and what it meant for a plant to be either of those. For example, there are plants that can grow annually, depending on the season and then there are plants that grow perennially, which can persist for many growing seasons.

Once the discussion ended the instructor split the class into two groups, which the two groups would rotate through the two stations every fifteen minutes. The first group went over to the planting station, which the students were able to participate in seed collection and seed starting, this was a continuum of the planting of the seed that was introduced in week two. The second group was led to the part of the garden which had cover crops. For this station students were introduced to the purpose of the cover crop, which the cover crop provides the nutrients to the soil that will in turn give nutrients to the spring plants that would be planted at a later date. Since the cover crops had done their job by providing the nutrients to the soil for the spring season, students were able to pull the cover crops out of the dirt that were then transferred to the compost station. After each group rotated through the two stations it was time for the students to head back to their classroom.

As the researchers were observing the lesson, the researchers noticed that there were a few steps missing from the actual lesson that were mentioned on the lesson plan. This week students were learning about perennial and annual plants and the life cycle of a plant. During the introduction the researchers noticed that the instructor did not discuss the life of a plant (germination to sprout), the reproduction (when it matures and reproduces) and death (how long does it take to complete the life cycle of a plant). The instructor also didn't discuss what environmental factors lead to robust plants to produce lots of seeds. During this observation there was about half the class missing, so the instructor had to adjust the garden projects from three stations to two stations. Also according to the lesson plan the conclusion of the lesson would include students coming back to the garden circle and discussing what they had done in their activities and how it related to the discussion prior to the start of the activities.

Appendix B

Organization Site Lesson Plans

Week 1: Welcome/Orientation

Grade: 6th

Lesson Objective: Students will be able to describe what makes this particular garden organic, understand the high diversity of plants, and gain knowledge of the vocabulary that will be presented and discussed. Students will then break into pairs and take part in a scavenger hunt that deals with the diversity of plants here at MEarth.

Equipment needed:

- Clip boards and Pencils
- Scavenger hunt worksheet

Introduction (10 minutes):

Discussion: Garden Circle

What makes this garden organic?

- NO Chemical Pesticides
- NO Chemical Herbicides
- NO Chemical Fertilizers

Discuss the high diversity of plants

Vocabulary: organic, pesticide, herbicide, fertilizer

Lesson Focus:

An introduction into the garden and what the garden at MEarth consists of.

Lesson (30 minutes):

We will have students participate in a garden scavenger hunt (in partners) that will introduce the students to the garden at MEarth. During this garden scavenger hunt students will hunt for the diversity of plants that was discussed in the introduction.

Conclusion (5 minutes):

Fresh from the garden tasting: After the students have completed the worksheet for the garden scavenger hunt, they will have the opportunity to taste some of the fruits and vegetables that has been grown in the garden at MEarth.

Week 2: Intro to our “Rot Zone”

Grade: 6th

Lesson Objective: Students will be able to describe the process of composting and the use of vermicomposting. They will gain more knowledge of the vocabulary that will be presented and discussed. Students will then rotate to three different stations and participate in composting, vermicomposting, and planting a seed.

Equipment Needed:

- Gloves
- Shovels
- Wheelbarrow
- Planting Pots
- Red Wiggler Worms

Introduction (10 minutes):

Discussion/Introduction: Garden Circle

- Vermicompost: Worm anatomy and other common decomposers
- Compost: Anatomy of the pile (lasagna layers...greens/browns/water/air/bacteria)
- Yes & No of Compost
- Harvest Compost

Vocabulary: decomposer, vermiculture, biodegradable/compostable, Red Wiggler Worms

Lesson Focus:

Continue with learning about the garden and the aspects of composting.

Lesson (30 minutes):

Students will be split into three groups and rotate after 10 minutes

Garden Projects:

Station 1: Pile Compost (Green waste, soil, roots, leafy plants)

Station 2: Vermicompost (Composting using Red Wiggler Worms)

Station 3: Plant a seed

Conclusion (5 minutes):

Once the students have completed all three stations we will come back into the garden circle and discuss the activities that they participated in.

Week 3: Perennial vs. Annual and Life Cycle of a plant**Grade:** 6th

Lesson Objective: Students will be able to describe the stages of a plant's life and what plants need in order to survive. Students will also learn about the life cycle of a plant and what makes a plant annual and perennial. They will gain more knowledge of the vocabulary that will be presented and discussed. Students will then rotate through 3 stations and participate in different activities involving the seed.

Equipment Needed:

- Seeds
- Planting Pots
- Gloves

Introduction (15 minutes):

Discussion/Introduction: Garden Circle

- Stages of a plant's life
 - Birth: Seed-What does it need to grow?
 - Food: Appropriate soil, CO₂, Light, Water, Space
 - Life: Germination to Sprout
 - Reproduction: Matures and Reproduces
 - Death: Dies and Composts Annual vs. Perennial: how long it takes to complete a life cycle?
- What is essential to life, what environmental factors lead to robust plants that produce lots of seeds, therefore perpetuating the species into the next generation?
 - Biodiversity of surrounding ecosystem
 - Healthy Soil

- Plant Companions and Allies

- How long does it take for a plant to produce seed? Annual vs. Perennial

Vocabulary: Perennial vs.. Annual, germination, monoculture, propagating

Lesson Focus:

Continue learning about the garden and the aspects of what makes a plant perennial and annual and also what plants need in order to survive.

Lesson (20 minutes):

Students will be split into 3 groups and rotate after approximately 7 minutes

Garden Projects:

Station 1:

- Seed Collection
- Seed Starting

Station 2:

- Outplanting
- Bean Shucking

Station 3:

- Vermicompost and Compost Harvest

Conclusion (5 minutes):

Once the students have completed all three stations we will come back into the garden circle and discuss the activities that they participated in.

Appendix C

Action Project Solution Description

Garden-based Curriculum Lesson Plan

Topic

What do plants need in order to survive?

Focus

Second Grade

Context standard:

2-LS2-1. Plan and conduct an investigation to determine if plants need sunlight and water to grow.

Objective

Students will observe and collect data on five plant samples that are deprived of at least one of the key elements that plants need in order to grow.

Summary

For the activity as a class we are going to discuss the four elements (water, sun, nutrients, and air) that plants need in order to grow. Students will then use the “we’re missing something log” in order to draw predictions of what they think will happen if plants lack at least one of the basic elements needed for plants to grow. In groups of five, each group will be given five small plants. Four of the plants will be deprived of one of the elements discussed and one of the plants will be given all the elements needed in order for a plant to grow. Students will label each plant according to what element the plant will be deprived of. One will have no sunlight, one with no water, one with no air, one with no nutrients, and one that will have all the elements needed. Students will then observe over the next few days the growth of the plants. Students will record their

observations in the “we’re missing something log” as each day passes. After a few days the class will come together and each group will present their findings and observations. We will then conclude with a discussion of the best growing conditions for a plant, emphasizing that a plant will grow best when all four elements are presented.

Framework

Winters, Ring, and Burriss (2010) states that school sites could develop their own outdoor classroom, that includes elements such as an amphitheater, student-work stations, a wetland, a greenhouse, a tracking pit, and a culinary herb garden. Students will be able to create a deeper understanding with not only the environment, but with what they learn inside the classroom (Winters et al., 2010). “The outdoor environment allows children to learn in ways not possible in the traditional indoor classroom. The outdoor classroom is not isolated from indoor learning. Outdoor learning activities serve as an extension for academic subject areas; in the outdoors, children reinforce, apply, and enrich transitional skills” (Winters et al., 2010, p. 248G-248H). Outdoor learning is an extension of what they are learning in the classroom, which include subjects such as math and science, but outdoor learning gives students a real-life context, which can serve students in their everyday lives (Winters et al., 2010).

Context

The organization where this lesson could be implemented in is an environmental education nonprofit organization in Carmel Valley, CA. Their goal is to education students with the skills that will empower them to become environmental leaders. This facility is surrounded by a wildlife habitat garden. The organization provides student with hands-on activities where students are taken outside of the normal classroom setting and surrounded by the environment.

They customize science based education for school's world language, science, history and English-language art classes.

I DO

The instructor will first discuss with the students the four elements that plants need in order to grow, which is water, sun, nutrients, and air and the importance of having all those elements together. The instructor will then demonstrate how to set up the five plant samples and how four of the plant samples will exclude one of the elements and the fifth plant sample will include all elements a plant needs in order to survive.

WE DO

As a class we will begin to discuss the predictions of what we believe will occur to each plant that neglects one element. The instructor will draw five sections on the board representing each plant where students will then be chosen to draw their predictions on the board for the class to see. These predictions will consist of what students believe the plants will look like at the end of five days. These predictions will be a precursor to the observations the students will make once the students begin the activity. The instructor will take a picture of the predictions to share after the five days of observations, to essentially see where the students started.

YOU DO

The students will then start doing the activity on their own. This activity will be done in groups of five and each student will have a plant to take care of individually. The students will then use the "we're missing something log" to keep track of their observations throughout the five days. Since they are working in a group and will have a log to fill out it will be each student's responsibility to describe to the group what their plant looks like, describing the growth of their

plant throughout each day. The class will then come together after the five days of observation to discuss the results of their observation. Each group will present their results to their classmates.

Abbreviated Lesson Plan

Subject: Science

Topic: What do plants need in order to survive?

Grade: 2nd

Learning Objective: Students will observe five plant samples that are deprived of at least one of the key elements that plants need in order to grow.

Summary: For the class activity as a class we are going to be discussing the four elements (sun, water, nutrients, and air) that plants need in order to grow. Students will then participate in an activity where they will see if plants grow and survive without one of the four elements that are needed.

Implementation

Context: This activity fits into previous lessons on what plants depend on.

Time Allotment: 25 minutes, 5 class sessions

Procedure

I Do: Modeling- The instructor will discuss the elements needed in order for plants to grow and survive. The instructor will then demonstrate how the students will be setting up the five plant samples.

We Do: Guided Practice-As a class we will begin to discuss the predictions of what we believe will occur to each plant that neglects one element. The instructor will draw five sections on the board representing each plant where students will then be chosen to draw their predictions.

You Do: Independent Practice-The students will start doing the activity on their own, where they would split into groups of five and be responsible of taking care of the plant they choose. They will also be responsible of describing the growth each day to their group members.

Materials & Resources

Instructional Materials: Five small plants, labels, water, watering can, we're missing something log.

Standards & Assessment

Standard: 2-LS2-1. Plan and conduct an investigation to determine if plants need sunlight and water to grow.

Assessment:

Criteria:

- 1. Students will observe five plant samples**
- 2. Students will document their observations**
- 3. Students will be able to discuss orally there observations**
- 4. Students will be able to demonstrate an understanding of what plants need in order to survive.**

Rubric:

3. I will be able to completely be able to demonstrate an understanding of what plants need in order to survive. I will observe five plant samples and completely document my observations. I will also be able to describe my observation orally.

2. I will be able to somewhat demonstrate an understanding of what plants need in order to survive. I will observe plant samples and somewhat document my observations. I will be able to somewhat describe my observations orally.

1. I was not able to demonstrate an understanding of what plants need in order to survive. I was able to observe plant samples but I was not able to document my observations. I was not able to describe my observations orally.

Appendix D

Interview/Survey Action Research

Student Survey

Rating:

Please rate each response with a score of “1” (not true at all) through “5” (very true):

I was interested in the Ecoliteracy course prior to taking it: _____

Learning about Ecoliteracy has been something of interest for myself: _____

Learning about all the things you can do in the garden has been an interest for myself: _____

I’ve enjoyed being able participate in hands-on learning through the use of the garden: _____

Being able to have a hands-on approach with this course has helped with my learning: _____

I’ve enjoyed taking what I’ve learned from the classroom and it being translated to outside the classroom: _____

I would like to expand my knowledge about the environment and how to become more sustainable in my daily life: _____

I will continue gardening in my free time: _____

Teacher Semi-Structured Interview Protocol 1

1. How long has MEarth been an organization?
2. How long have you been part of this organization?
3. What does the organization offer or what is your aim/goal?
4. How long have students been able to be a part of the organization?
5. What is your goal with teaching the garden course and bringing the students onto the property?
6. What do the students get out of the lessons?
7. Do you find any importance of having these types of lessons being taught to students. And why/why not?
8. What do you see as the problem with schools not having the accessibility to school gardens? And what do you think should be done about it if anything?
9. What are some obstacles of incorporating school gardens at more education sites?

Co-teacher Semi-Structured Interview Protocol 2

1. How long have you been apart of this organization?
2. What have you learned from volunteering at MEarth?
3. What type of influence if any have you witnessed in students participating in the garden program?
4. Do you find any importance of having these types of lessons being taught to students? And why/why not?
5. What do you think can be done in order for more schools to have access to school garden programs if any?
6. What are some obstacles if any do you see with schools incorporating garden-based education?

Appendix E

**PARENTAL/LEGAL GUARDIAN CONSENT
FOR MINOR TO PARTICIPATE IN RESEARCH**

PROJECT TITLE: Bringing Curriculum Outdoors: Implementing Gardening in Schools

We would like your child to participate in a research study conducted by Nicole Aboujaoude and Stephanie Escalera, undergraduates of the Liberal Studies Department to be used for a capstone project at California State University, Monterey Bay (CSUMB).

The purpose of this research is to observe and assess how schools are taking the curriculum from inside the classroom and bringing them outside with the implementation of gardening.

Your child was selected as a participant in this study because they are taking part in the Ecoliteracy course provided by Carmel Middle School, which also works with the organization MEarth. This gives us as student researchers for our capstone project the ability to see first hand how teachers are incorporating learning from inside the classroom and bringing them outside with nature.

If you decide to allow your child to participate in this research, [he/she] will be asked to take part in a survey in helping develop our research. The survey will be of questions that we have composed about the Ecoliteracy course and your child's involvement with working with MEarth. We are also asking for permission to include photographs of your child involved in the activities with MEarth in our final capstone festival presentation.

There are no risks/discomfort that should come from your child participating in our research survey. The survey will be composed of questions about their involvement with the Ecoliteracy course and how having a course such as this has benefited or not with their own interests.

Any information that is obtained in connection with this study and that can be identified with your child will remain confidential and will only be disclosed with your written or witnessed verbal permission or as required by law. The survey that your child will be participating in will be anonymous and will only help us in furthering our research. Also the photographs that will be taken will be confidential in the way that there will be no faces shown within them. They will only be shown doing the activities and being involved with the outdoor education. These surveys and photographs will only be used for education purposes and for presenting our research at the capstone festival being held at CSUMB at a later time. After the presentation the information will be erased.

Allowing your child to take part in this project is entirely up to you. You can choose whether or not to allow your child to participate. If you consent to your child's participation in this study, you may withdraw that consent at any time without consequences of any kind. Your child may also refuse to answer any questions [he/she] does not want to answer and still remain in the study. The investigator may withdraw your child from this research if circumstances arise which warrant doing so.

If you want to know more about this research project or have questions or concerns, please contact me at email: naboujaoude@csumb.edu or at sescalera@csumb.edu. Or you can contact our Liberal Studies professor Dr. Browning-Neddeau at email: bneddeau@csumb.edu.

If you have questions about CSUMB's guidelines and policies for human subject research, they're posted online at: If you have questions about CSUMB's guidelines and policies for human subject research,

they're posted online at: <http://spo.csumb.edu/guidelines>. To speak with someone about human subjects, please contact the CPHS Chair, Dr. Chip Lenno, at (831) 582-4700, clenno@csumb.edu, or in person at CSU Monterey Bay, 100 Campus Center, Media Learning Center (Building 18) , Seaside CA 93955.

You will get a copy of this consent form. Thank you for considering participation.

Sincerely,
Nicole Aboujaoude and Stephanie Escalera, Liberal Studies Students at CSUMB

Parental Consent Statement

I have read the contents of this consent form. My questions have been answered to my satisfaction. I freely give my permission for my child to participate in this study. I know that I can withdraw my consent at any time.

Signature

Date

Signature of Researcher

In my judgment, the participant is voluntarily and knowingly giving informed consent and possesses the legal capacity to give informed consent to participate in this research study.

Signature of Researcher

Date

CONSENT TO PARTICIPATE IN HUMAN SUBJECT RESEARCH

PROJECT TITLE: Bringing Curriculum Outdoors: Implementing Gardening in Schools

We would like you to participate in a research study conducted by Nicole Aboujaoude and Stephanie Escalera, undergraduates of the Liberal Studies Department to be used for a capstone project at California State University, Monterey Bay (CSUMB).

The purpose of this research is to observe and assess how schools are taking the curriculum from inside the classroom and bringing them outside with the implementation of gardening.

You were selected as a participant in this study because you are a teacher or co-teacher of the garden program provided by MEarth. This gives us as student researchers for our capstone project the ability to see first hand how teachers are incorporating learning from inside the classroom and bringing them outside with nature.

If you decide to participate in this research, you will be asked to take part in an interview in helping develop our research. The interview will be of questions that we have composed about the organization MEarth and your involvement with teaching the gardening program. The interview will be conducted at the site and approximately take about twenty minutes.

There are no risks/discomfort that should come from you participating in our research study. The interview will be composed of questions about your involvement with the garden program and how help find solutions can be provided in order for schools to have accessibility to school gardens.

Any information that is obtained in connection with this study that can reveal your identity will remain confidential and will only be disclosed with your written or witnessed verbal permission or as required by law. The interview that you will be participating in will be anonymous and will only help us in furthering our research. The interviews will only be used for educational purposes and for presenting our research at the capstone festival being held at CSUMB at a later time. After the presentation the information will be erased.

Taking part in this project is entirely up to you. You can choose whether or not to be in the study. If you volunteer to be in this study, you may withdraw at any time without consequences of any kind. You may also refuse to answer any questions you do not want to answer and still remain in the study. The investigator may withdraw you from this research if circumstances arise which warrant doing so.

If you want to know more about this research project or have questions or concerns, please contact me at email: naboujaoude@csumb.edu or at sescalera@csumb.edu. Or you can contact our Liberal Studies professor Dr. Browning-Neddeau at email: bneddeau@csumb.edu

If you have questions about CSUMB's guidelines and policies for human subject research, they're posted online at: <http://spo.csumb.edu/guidelines>. To speak with someone about human subjects, please contact the CPHS Chair, Dr. Chip Lenno, at (831) 582-4700, clenno@csumb.edu, or in person at CSU Monterey Bay, 100 Campus Center, Media Learning Center (Building 18) , Seaside CA 93955.

You will get a copy of this consent form. Thank you for considering participation.

Sincerely,

Nicole Aboujaoude and Stephanie Escalera, Liberal Studies Students at CSUMB

Consent Statement

I understand the procedures described. My questions have been answered to my satisfaction and I freely agree to participate in this study. I know what I will have to do and that I can stop at any time.

I have been given a copy of this Consent Form.

Signature

Date

Signature of Researcher

In my judgment, the participant is voluntarily and knowingly giving informed consent and possesses the legal capacity to give informed consent to participate in this research study.

Signature of Researcher

Date