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Benefits of School Gardening on Low-Income Elementary School Students

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LS 400: Liberal Studies Senior Capstone

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BENEFITS OF SCHOOL GARDENING ON LOW-INCOME ELEMENTARY SCHOOL STUDENTS

Abstract

The increase in obesity rates in America's youth could be a reflection of undernourished school lunches, a decrease in physical activity, and the lack of knowledge of health and nutrition. Children who come from a low-income family are more likely to be affected by these circumstances. School gardening may be a way of replacing those impacts. This senior capstone research project examines the benefits of school gardening on low-income elementary school students when implementing as part of the curriculum in schools.

Keywords: childhood obesity, school gardens, low-income students, agriculture

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Introduction and Background

Within the system of education, children who come from a socioeconomically disadvantaged household are at a grand disadvantage. To be more specific, low income students are showing higher rates of obesity, heart disease, and diabetes than any other students. This gap while being rather large, often goes unnoticed. This dilemma is partially due to the lack of nutrition presented in school lunches and partially due the students' lack of knowledge of healthy eating. "Over the past three decades, childhood obesity rates in America have tripled, and today, nearly one in three children in America are overweight or obese. The numbers are even higher in African American and Hispanic communities, where nearly 40% of the children are overweight or obese... Many others will face chronic obesity-related health problems like heart disease, high blood pressure, cancer, and asthma." (Obama, 2010, p. 1) This pre-disposition puts children who are from low-income families at a higher risk for substantial health issues. One way in which we can look at this predicament on a more equitable scale, would be to integrate the use of school gardens. According to Bowker and Tearle (2007), "...the experimental group (the gardening students) out-performed the control group (the non-gardening students) in all areas: general information, reading recognition, reading comprehension, total reading, mathematics, spelling and written language" (p. 86). However, school gardening and agriculture are not represented in the state standards, the classroom, and the curriculum.

As a way of looking into this dilemma a little deeper, I want to research the impact of agricultural implementation in classrooms and schools. I specifically want to look at the impacts of school gardening. My primary research question I intend to answer is: How does school gardening benefit low-income elementary school students? According to Bowker et al. (2007), "The project encourages and supports schools to engage in gardening...It also promotes using

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the experience of growing crops to teach children about current global issues concerning food, including our dependence on each other and the importance of using natural resources in a sustainable way” (p.84). Although, the benefits of school gardening are clear, I will focus my research on the benefits of that the school gardens have directly on low-income elementary school students. Some secondary research questions I have are: 1. What does research articulate about the benefits of school gardening on low-income elementary school students? 2. Are there school gardening projects occurring in any elementary schools in the Monterey Bay area currently? If so, where are the schools located? 3. How do teachers implement their school gardening projects into curriculum? And how do teachers achieve student and other teacher involvement? 4. Are school gardening projects in schools in the Monterey Bay area successful? If so, how do they benefit low-income elementary school students? 5. What are the resources that teachers need to successfully implement school gardening to benefit the learning and development of low-income elementary students?

In order to look at the impacts of school gardening, I learned more about the origins, history, and positive/negative factors of integration of gardens in schools. I also, researched information on childhood obesity and how the school system encourages the development of specific health conditions. Then, I researched how school gardening impacted students at the elementary school level. Next, I researched how teachers felt about integrating school gardening into the curriculum and how their attitudes affected the students. Lastly, I researched the resources and efforts it would take to start and implement a garden in a school in the United States and more specifically in the Monterey Bay area. In order to understand the predicament, the research must be explored.

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Literature Review

Childhood obesity in the most recent decade has grown to become a rapid epidemic in the United States. Obesity could be defined as: "...a complex health issue...when a child is well above the normal or healthy weight for his or her age and height. The causes of excess weight gain in young people are similar to those in adults, including factors such as a person's behavior and genetics" (Centers for Disease Control and Prevention, 2016, p.2). Obesity can then, lead to health problems in today's youth that carry on to their adulthood such as: heart disease, diabetes, greater insulin resistance, low self-esteem, low academic performance, and depression (Moxley et al, 2018). Various physical, psychosocial, and emotional consequences of obesity can occur to children that are traumatic enough they carry into adulthood. "Approximately one in six children and adolescents, or 12.7 million youth between 2 and 19 years of age are currently overweight or obese..." (Moxley et al, 2018, p. 13). Obesity rates are also more prominent in minority socioeconomic groups because of their impediments to accessibility of healthy food and health care. According to Moxley et al (2018), "...rates of obesity have increased fastest in minority populations (Strauss & Pollack, 2001). Hispanic (21.9%) and non-Hispanic blacks (19.5%) report a greater incidence than non-Hispanic whites (14.7%) or non- Asian youth (8.6%)" (p.13).

In order to better understand obesity and some of the factors that led to the rapid increase seen in children, the history of school lunch programs must be firstly discussed. School lunch programs originally started locally in cities, such as Philadelphia and Boston, along the east coast in the early 1900's (Rude, 2016). Hunter (1904) stated that, "...let us render it possible for them to receive it... by making full and (p. 217). Robert Hunter's controversial book, *Poverty*, opened minds to society and policy makers about the possibility of integrating nutrition and providing lunches in school in 1904. Then after the Great Depression in the 1930's, school lunch programs

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helped to relieve hunger and malnutrition for poor and farmer children, which was majority of the population during the time (Rude, 2016). Next, World War I and II hit the United States and by then, school lunch programs were regulated federally across all states. President Roosevelt and his New Deal, financially aided farmers to produce a surplus of food, which in turn was used for school lunches. And in 1946, the National School Lunch Act, was passed by Congress in an effort to “encourage the domestic consumption of nutritious agricultural commodities and other food... providing an adequate supply of food and other facilities for the establishment, maintenance, operation, and expansion of nonprofit school lunch programs” (Rude, 2016, p. 3). Other presidents, such as Eisenhower and Nixon, helped increase school lunch funding for low-income children through the Child Nutrition Act of 1966 (Rude, 2016). In the late 1980’s the Reagan Administration cut funding, which provided less children of low-income with lunches, created smaller lunch portions, cut corners around defining vegetables and fruits. One of the most famous ideas that caused controversies, was when the Reagan Administration considered ketchup as a vegetable to meet the nutrition standards (Rude, 2016). Finally in more current events, the Trump Administration is estimated to cut back funding on the Supplemental Nutritional Assistance Program. This means 3 million people are likely to get cut, including the children who receive free school lunches in that household (Balligit, 2019).

The first implication of school gardens in the United States occurred in the late 1800’s and early 1900’s during World War I. According to Bell (2016), “After the United States entered World War I in April 1917, citizens could support the war effort by buying war bonds, conserving food on "Meatless Mondays" and "Wheatless Wednesdays," and consuming less fuel at home and in their cars. Schools helped, too, as students planted vegetable gardens to increase the food supply” (p. 68). President Woodrow Wilson set aside money to fund the United States

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School Gardens Program in 1919, as a way of supporting the war effort also. Without victory gardens and school gardens the turnout of World War I might have been completely different. School gardens continued to be used “as students learn more about the environment, where their food comes from, and the importance of wholesome food to good health” (Bell, 2016, p.68) and just like that school gardens were born.

There are 103 standards in California Content Standards (California Department of Education, 2019), that included the concepts of agriculture. Of those 103 standards, two of them are for grades lower than seventh grade. Agricultural concepts are not being implemented according to the standards for elementary school level. When “plants” in the subject line of the California Content Standards search, thirty results appeared, according to the California Department of Education (2019). Of those thirty results, zero standards are for grades six and below. Teachers are not required legally to teach certain agricultural concepts to their elementary school students in California, according to the California Department of Education (2019). It is up to the teachers whether agricultural concepts will be integrated into their lesson plans. Only teachers who feel agriculture is important, will teach agricultural concepts to their students.

Teachers not including school gardening into their classroom, can directly affect the students’ views on school gardening and negatively impact the way the students feel about nutrition and gardening. “Unfortunately, teachers’ lack of agricultural knowledge...often match their students’ and have changed little over the last several decades. This is particularly problematic, since agriculture impacts all of our lives in relation to food and fiber production, the resources and environmental implications involved in their production and global trade” (Vallera & Bodzin, 2016, p. 101). Teachers are then doing a disservice to their students. Dillon et al. (2003) highlighted “...in a comprehensive literature review across the UK, USA, and the

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Netherlands, school age students' knowledge and understanding about various aspects of food and farming was poor," (in Bowker & Tearle, 2007, p.87).

Knobloch (2008) indicated that, "In particular, the study of food, agriculture, and natural resources in elementary classrooms can bring learning to life. Elementary teachers' decisions to teach non-required topics are informed by their personal beliefs and contextual pressures to teach required content that is aligned with state learning standards," (p.529). School garden activities can be replicated at home increasing food security and food quality (Bowker & Tearle, 2007). The benefits that school gardens have on elementary school gardens are never ending. Some of them include: stronger self-esteem, an increase in academic achievement, an increase in community involvement, and a decrease in obesity rates. In recent events, Capra (2001) discovered that "developing and using a school garden is an ideal way of helping children to understand the natural world and the principles of ecology in action..." (in Bowker & Tearle, 2007, p.86). Furthermore, students gain an enhancement in their academic performance and self-confidence (Bowker & Tearle, 2007). The benefits relate all the way back to the 1920's, where students participated in learning about agriculture and integrated gardens into their schools. The students showed their patriotism to their country while gaining vital knowledge on nutrition and healthy eating.

School gardens also provide children the opportunity to connect what they are learning to the real world. According to Stubbs (2016), "...both agricultural and STEM education have emphasized experimental education, knowledge in the context of real world issues, and problem solving skills" (p. 88). Stubbs (2016) also indicates that science, reading, and math academic performance was increased after using the implementation of agriculture in the classroom. Students have also shown an increase in self-confidence and a positive attitude adjustment, post

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school garden integration. Since school gardening is easily used through an interdisciplinary approach, the concepts can be connected across all subjects in the curriculum. Knobloch (2008) states, specifically how agriculture integration in elementary classrooms “bring learning to life”. Research has confirmed that gardening has directly benefitted students who have learning disabilities, students who fall along the autistic spectrum, and students classified as emotionally disturbed. Sarver (1985) states, “Some of the positive effects noted were enhanced nonverbal communication skills, developing awareness of the advantages of order and structure, seeing the value of becoming agents of change, discovering the concept of growth, learning how to participate in cooperative effort and forming positive relationships with adults” (in Hendren, 1998, p. 10). However, some people argue school gardening is a waste of funding and that school gardens often fail due to the lack of support and resources.

Although the benefits of school gardening seems promising, the work, support, funding, and resources it takes to make a school garden successful, some might argue outweigh the benefits. With recent changes in curricula and integration of interdisciplinary approaches to learning, teachers and administration were challenged at all levels (Stubbs, 2016). According to Stubbs (2016), teachers and administrative staff have difficulty with “time constraints and diverse ability of the level of students” when integrating gardening into the classroom instruction (p. 98). Gardens require full attention, therefore if a school lacks support or resources to tend the garden, the garden will die out. If a school garden dies, there is no benefit to the students. According to Clausen and Petruka (2009), “While we all must look out for our own small plot of sanity to see that the fruits of our labor do not wither on the vine it is important for all members of a school to understand the symptoms...and help provide support and relief” (p. 191). Without

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successful support from administration and staff, school gardening programs will most likely fail and students will not have the opportunity to reap the benefits.

Even though, researchers debate whether school gardening offers a solution that benefits elementary school students, the data for benefits on low-income children is lacking. A gap in the research of low-income children and the integration of school gardens is presented partly because of the decline in research funding. Another obstacle would be, certain human ethics prohibit researchers to divide children into groups and directly test theories. However, research on the impacts of school gardening has related all the way back from the early 1900's. Because our youth are widely protected and crucial to our future, policy makers and educators dispute on a regular basis about change in the system of education. More specifically policymakers and educators compare and contrast the idea of changing the system in the parts such as: extra-curricular activities, new ideas of technology application, more play time, less homework, and etc. This means that it is extremely difficult to get school gardens to be represented in state and federal standards. This leaves the role of integration of school gardening all on the teacher, which in turn just adds another item on a teacher's to-do list.

Methods and Procedures

Besides conducting a literature review, several surveys and interviews were used to collect data for this Senior Capstone Project. Teacher interviews, anonymous teacher surveys, and anonymous student surveys were all used throughout this project. The subject participants involved in the study included, one third grade teacher, four elementary school teachers, and twenty-four third grade students. One third grade teacher, whose school does not have a school garden in the Monterey Bay area, was interviewed. One teacher from a school with a garden and one teacher without a garden was interviewed, as a way of specifically looking at the benefits of

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school gardens on the students. The school with a school garden (School B) was used to compare the benefits of school gardening in another school where there isn't a garden (School A). School A is also considered a Title I school, which means majority of its students are from low-income households. In addition, an anonymous online google survey was used to collect the data with elementary school teachers in the Monterey Bay area. This was done by emailing the principals of the two previously mentioned schools in the Monterey Bay area. Next, twenty-four third grade students were anonymously surveyed between the schools, as a way of gaining the students' perspectives on school gardens.

The first step was emailing principals of elementary schools founded in the Monterey Bay area. Out of all of the principals, four principals (of schools in the Monterey Bay area) were selected and emailed. Of the four principals I received two responses, therefore I used those two schools as a part of my research. The link to the teacher survey was included in the email sent to the principals, in which I asked the principals to further send out to the teachers at their school. The plan was to interview the principals to see their perspective of school gardening and whether their attitude shapes the way the teachers viewed school gardening (See Appendix D for Principal Interview Questions). By using an online google form for the teacher survey, plenty of time was saved because I did not have to physically pass out the survey to the teachers. Of the twenty-four teachers at School A (school without a garden) only two answered and of the eleven teachers at School B (school with a school garden) two answered, making a total of four responses. The survey consisted of seven questions (See Appendix B for Teacher Survey Questions) that relate to all of my research questions.

Likewise, I interviewed a third grade teacher from School A, whose classroom I have been volunteering in for my service learning classes. Teacher A was interviewed in person one of

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the days I was volunteering at School A. I then did not have enough time to interview Teacher B. This was due to the fact that our schedules were completely different. Teacher A was asked six questions that relate to my secondary research questions, (See Appendix A for the Teacher Interview Questions). I wanted to interview the teachers in the most efficient way, therefore I met in person with one teacher and had to interview over the phone for the other interview.

Lastly, another anonymous survey was done with the students of a third grade classroom from School A. Firstly I took five minutes to explain some terms used in the survey questions. I then, passed out half sheets of paper that included four questions (See Appendix C for Student Survey Questions). I surveyed the students of School B next, by repeating what I had done with School A. After explaining some vocabulary of the questions, I passed out the student survey papers to eighteen students. Twenty-four third grade students were anonymously surveyed in total. By surveying the students in person, I was able to quickly receive feedback on how students felt about school gardens. This was one of the reasons I wanted to survey the students in person. I also did not want to factor in the access and ability of technology to the students with an online google survey, therefore I completed the student surveys in person.

Results and Findings

After reviewing the literature on school gardening on low-income elementary school students and conducting the interview with teachers as well as surveying with students, the subsequent paragraphs contain syntheses and discussion of the results and findings based upon the secondary or related research questions posed in the Introduction and Background section:

Firstly, *what does research articulate about the benefits of school gardening on low-income elementary school students?*

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Hendren (1998) indicates that school gardens “enhanced their daily academic curriculum...gained pleasure from watching the products of their labor flourish, and had the chance to increase interactions with their parents and other adults” (p. 3). According to Hendren (1998), children gain emotional attachments to their plants and become angry or frustrated when they are harmed. This provides the students with a sense of responsibility and emotional maturity. Teacher A stated in a personal interview, “it (school gardening) is the same as caring for a class pet, it teaches students responsibility and shows them they have an impact on something that they did. It is a very rewarding experience for all they can learn how to eat clean and cook” (Personal Communication, 25 Oct 2019). In addition, Hendren (1998) describes a group of low-income students benefitting through increased attendance, an improvement in grades, and positive behavioral adjustments in classrooms after the completion of a school gardening project. Four out of four or 100 percent of teachers answered “yes” to Question #4 (See Appendix B) of the teacher survey. When asking the students Question #4 of the student survey (See Appendix C), twenty-one out of twenty four or 87.5 percent answered “yes” to being interested in learning about health and nutrition in school.

Secondly, are there school gardening projects occurring in any elementary schools in the Monterey Bay area currently? If so, where are the schools located?

In the teacher survey, four out of four answered “yes” to Question #2 (See Appendix B) of being interested in having a school garden at their school. Two of the teachers currently had a school garden and two teachers did not currently have a school garden from the teacher survey. This is of statistical importance because the two teachers who did not currently have a school garden, answered “yes” to wanting one. When asking the students through survey Question #3 (See Appendix C), fourteen out of twenty-four or 58 percent answered “yes” to wanting to see a

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school garden at their school. Eight out of twenty-four students or 33.3 percent answered “no” to wanting a school garden. Whereas, two out of twenty-four students or 9 percent answered “other”. Interview Question #2 inquires teachers if they have ever thought about starting a school garden at their school. Teacher A answered interview Question #2 (See Appendix A), “Yes, but an after school program though” (Personal Communication, 25 Oct 2019).

*Thirdly, how do teachers implement their school gardening projects into curriculum?
And how do teachers achieve student and other teacher involvement?*

Interview Question #1 (See Appendix A), asks third grade teachers if they implement school gardening into their curriculum. Teacher A, responds to interview Question #1 with the statement, “No, I do not have enough time in the day” (Personal Communication, 25 Oct 2019). Sixteen out of twenty-four students or 66.7 percent, answered “yes” in survey Question #2 (See Appendix C) in regards to teachers teaching them about agriculture in class. Seven out of twenty-four or 29 percent of students, answered “no” and one out of twenty-four students answered “other”. Three out of four teachers or 75 percent answered “yes” to Question #5 (See Appendix B) in regards to current staff interest in providing support for school gardening programs. One out of four or 25 percent of teachers responded “no”. Four out of four teachers or 100 percent, responded “yes” when asked survey Question #6 (See Appendix B) in regards to interest of communal and student involvement in a garden program. Teacher interview Question # 3 examines how teachers would get students involved in a school garden program. One response to interview Question #3 was, “I would talk about gardening with my students, also research the resources that it requires to make a school garden, and offer student jobs that relate to the garden in order to better get students involved” (Teacher A, Personal Communication, 25 Oct 2019).

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Next, are school gardening projects in schools in the Monterey Bay area successful? If so, how do they benefit low-income elementary school students?

Of the four teachers that responded in the teacher survey, two have successful school gardens. The other two teachers do not have a school garden at their school. According to the student survey Question #1 (See Appendix C), twenty-three out of twenty-four students or 95.8 percent answered “yes” when asked if they were interested in learning about healthy eating and nutrition in school. One out of twenty-four students or 4.2 percent, answered “no”.

Lastly, what are the resources that teachers need to successfully implement school gardening to benefit the learning and development of low-income elementary students?

Teacher interview Question #4 (See Appendix A) inquires what resources a teacher would need to make a successful school garden. “I would need funding/money, soil, seeds, plants, and etc... I would also need administrator support, and other support from teachers” (Teacher A, Personal Communication, 25 Oct 2019). When asked teacher survey Question #7 (See Appendix B), Teacher 1 stated, “Seeds (often donated), garden beds, chicken wire, watering system/ tools, fencing” (Personal Communication, 5 Nov 2019). Teacher 2 exclaimed, “We have a 3rd grade garden program that is well supplied and has a robust curriculum. Our main issue is personnel funding and expanding the program to include more grades. Most grants seed only the starting of gardens but not the long term maintenance and supervision or salaried staff” (Personal Communication, 5 Nov 2019). Teacher 3 responded, “Money, vegetables/ fruit seeds, soil, time, volunteers” (Personal Communication, 5 Nov 2019). Teacher 4, left interview Question #7 blank. The survey of teachers for Question #3 (See Appendix B) showcased 50 percent

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answering “yes” to having the correct resources to start a school garden. Whereas, two out of four or 50 percent of teachers answered “no” to teacher survey Question #3.

Discussion

The first research question, (What does research articulate about the benefits of school gardening on low-income elementary school students?), was used to pin-point specific benefits of school gardening. Based off my research, the impacts of school gardening on low-income children include both physical and mental benefits. Teacher A felt as though school gardening would provide students with a sense of responsibility, which correlates with Hendren’s ideas. The teachers who responded in the Teacher survey also felt that in their opinion school gardening benefitted low income students. This shows that even though they deemed school gardening beneficial they still were not implementing it into their classroom. Because the teacher’s responded based off their opinion it is unclear whether or not the teachers had done research on the benefits to low-income students. Therefore, it makes the results of the teacher survey not as valid. The majority of the students were interested in learning more about healthy learning and eating, which could be a result of integrating school gardening. I asked this to see if there was any interest in the students benefitting from a school garden, directly from the students. The research I completed through literature was deemed more reliable than my qualitative research.

The second research question, (Are there school gardening projects occurring in any elementary schools in the Monterey Bay area currently? If so, where are the schools located?), was used to locate schools in which had benefitted from school gardens. Through my research, I located which schools I communicated with had school garden programs and which did not. Because two teachers had school gardens and two teachers did not have school gardens my

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teacher survey results made the data look skewed. Teachers who did not have a school garden were interested in starting one. The students and the teacher I interviewed, were also interested in starting a school garden at their school. This showcased the interest was there to start a garden and that there might be other reasons as to why they did not have a school garden to begin with.

The third research question, (How do teachers implement their school gardening projects into curriculum? And how do teachers achieve student and teacher involvement?), looked at what was being done by the teachers already and how to support the teachers to start school gardens. The results showcased that teachers did not already implement gardening into their curriculum. The students stated that some might have been taught about agricultural concepts precious to third grade and some have not. When asking the teachers about achieving student and staff involvement majority stated the stakeholders would be of interest. Teacher A also exclaims that achieving student involvement would be the easy part. Teachers could provide students with certain task and jobs relating to the garden to help maintain student involvement.

The fourth research question, (Are school gardening projects in schools in the Monterey Bay area successful? If so, how do they benefit low-income elementary school students?) described whether or not gardening would survive in the Monterey Bay area. My results show that there indeed is an interest in school gardening in the area. This portrays that the success of school gardens in the area is more likely. The data shows that of the teachers who had school gardens at their schools, 100 percent felt they were successful. The benefits to the students will be much greater if the garden is successful therefore, it was important to research on the success of the garden programs currently.

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The last research question, (What are the resources that teachers need to successfully implement school gardening to benefit the learning and development of low-income elementary students?) stresses the fact that schools will need funding or donation of resources to have a successful school garden. In order for low-income students to benefit from a school garden, they need the following resources: fencing, wood, tools, soil, access to water, seeds, time, money, and support from staff. Teachers feel that without these resources the school garden programs will not be successful and likely die out. The data enhances the teachers' perspective on the work it takes to successfully implement a school garden. It also highlights the importance of the need of support from staff and the community.

Problems and Limitations

One problem I faced was the lack of respondents of principals in the Monterey Bay area. Communication via email made it difficult to be efficient in my data collection, for it would take up to two weeks sometimes for a principal to reply. This most likely is because the principals are busy with their own work. Once the principals responded, it was even more challenging to arrange a day to meet that would best fit for both of our schedules. Therefore, I gained zero qualitative or quantitative data regarding the interview of the principals. Another problem I came across was the lack of the involvement of the teachers for the teacher survey. Because the teacher survey was through an online form I was able to email multiple teachers more efficiently. However, this made the survey less personable and intimate which in turn made teachers less likely to respond quickly or at all. Since my data is based on a survey, there are specific biases presented. Such biases include: voluntary response bias, non-response bias, and social desirability. Voluntary response bias and non-response bias refer to the fact that the survey was completely voluntary so only those who chose to take the survey completed it and some chose to

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not respond. Social desirability refers to the participant in making themselves appear better in the survey as to not feel threatened or bad about their answers. All of these might have been skewing my overall research data. In addition, I also found a problem with the statistical reliability of my results. Since my data was only collected from two schools, my data cannot be reflective of all the schools in the Monterey Bay area. If I had a larger population size for my research, it would make my data more credible. I also felt if I was given more time to do the project, I might have been able to go out to other districts and compare within districts as well. With that being said my data and research cannot be applicable to schools in California or schools in the United States without additional research.

Recommendation

After working closely on researching and expanding my knowledge on school gardening, I feel it could positively impact all students. There is no harm in implementing school gardens to benefit our youth. With the expansion of technology and new interdisciplinary strategies being integrated into the classroom today, it is even more important to have students experience first-hand the impacts of school gardening. Schools should look into starting school gardening programs and adapting these programs into the curriculum or everyday lessons. I encourage schools go above and beyond by getting more involvement of teachers, staff, parents, and students to ensure students receive the full potential of the benefits to gardening. By partnering with other gardening programs and the community, schools will better be able to provide students with the resources required to successfully have a school garden. One way to better support the success of these school garden programs, would be to connect with an outside program or company that provides funding and resources to schools. Another way to ensure the success of the school garden would be to ask for donations of supplies for the gardens from the

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communities in the area. Lastly, teachers, administrative staff, students, and parents can all access Learnaboutag.org. Free resources, educational opportunities, grants, and scholarships can all be found on the website to better provide support for school gardens and the integration of agricultural concepts in the classroom.

Conclusion

The benefits of school gardening are clear. Students gain crucial life skills and nutritional knowledge that will impact them even when they are adults. Students showcase an increase in self-confidence, academic performance, and knowledge of agriculture. Teachers stress the importance of faculty, staff, administration, and school engagement with school gardening. Resources such as: seeds, soil, fencing, wood, water access, and assistance are all required to make a school garden successful. As for low-income students, school gardening can be a way for them to connect with real life and participate in hands-on learning. Consequently, low-income students can gain additional knowledge on health, nutrition, and clean eating. The goal is for low-income students to learn how to garden, in hopes of starting a garden at home. Like Muir (1911) stated, “When we try to pick out anything by itself, we find it hitched to everything else in the Universe” (p. 211). Students can learn how to take the knowledge they learn in school and apply it to the rest of the world. The flexibility of school gardens allows for the use of interdisciplinary approaches of learning to be used in the classroom. This in turn allows teachers to not take time from other academic areas to teach about agriculture.

By asking current teachers who do not have school gardens questions regarding their support, resources, and issues as to why they could not integrate school gardening into their curriculum, I am probing to see which schools have the tools to successfully start a garden program. Because many school gardens just die out, I wanted to make a communal connection

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with some schools that had the resources to hopefully start a school garden of their own. I also wanted to provide the right resources and steps required to make school gardens successful at schools that do not have what they need to make a gardening program successful. I aspire to remain in contact with some partners that I have met throughout my research in hopes of starting school gardens in the schools in the area. As a future educator, I plan on fully integrating a school garden at whichever school I end up teaching at. I also wish to integrate agriculture, plant life, nutrition, health, and gardening into the curriculum of my classroom. This I hope will continue my project into the future.

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Appendix A

Interview Questions for Third Grade Teachers:

1. Do you implement school gardening into your curriculum?
2. Have you ever thought about starting a school garden at your school?
3. How would you get your students involved if you were to start a school garden?
4. What resources would you need to make a school garden successful at your school?
5. Is there anything else you want to add or want me to know?
6. In your opinion, do you think school gardens benefit low income students?

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Appendix B

Survey Questions for 3rd, 4th, and 5th Grade Teachers:

1. Do you think that integrating agriculture into the curriculum would benefit students?
2. Would you be interested in having a school garden at your school?
3. What kind of resources would you need to start a school garden?
4. Do you think you have the correct resources to have a school garden at your school?
5. Do you think other staff members would be interested in a school garden as well?
6. Do you think you could get students or community members involved with a school gardening project?
7. Is there anything else you want to add or want me to know?

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Appendix C

Survey Questions for 3rd, 4th, and 5th Grade Students

1. Would you be interested in learning about nutrition and healthy eating in school?
2. Have any of your teachers taught you about school gardens or agriculture in school?
3. Would you like to see a school garden at your school?
4. Would you like to learn about how to grow food at home?

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Appendix D
Interview Questions for Principals:

1. Do you think that integrating agriculture into the curriculum would benefit students?
2. Have you ever thought about starting a school garden? If you already have a school garden, describe how it has been implemented.
3. Have you seen personally the school gardening impact the students, the teachers, the school, or the community? If so please explain.
4. Is there anything else you want me to know about school gardens?