

5-2022

Benefits of School Gardening programs in education: Opportunities and Challenges towards Sustainability

Alyssa Conte

Follow this and additional works at: https://digitalcommons.csumb.edu/caps_thes_all



Part of the [Education Economics Commons](#), and the [Liberal Studies Commons](#)

This Capstone Project (Open Access) is brought to you for free and open access by Digital Commons @ CSUMB. It has been accepted for inclusion in Capstone Projects and Master's Theses by an authorized administrator of Digital Commons @ CSUMB. For more information, please contact digitalcommons@csumb.edu.

***Benefits of School Gardening programs in education:
Opportunities and Challenges towards Sustainability***

Alyssa A. Conte

Liberal Studies Department at California State University Monterey Bay

LS-400 Senior Capstone

Advisor: Paoze Thao

May 20, 2022

Abstract

The benefits of school gardening programs in education are numerous; yet, there is still no formal inclusion of these practices into the California State curriculum. Currently, school gardening programs are generated through community effort. The benefits of these programs are limited by their challenges, but when these programs are effective, they enhance the entire curriculum. This senior capstone study takes a look at what school gardening programs have done to be successful, and what benefits may be gained from further funding these programs. Through the use of qualitative research and interviews with local teachers along with CSUMB students, the results indicate that school gardening is beneficial to students when they are properly funded and supported.

Introduction

It is 2022, and the world is still recovering from the global shutdown that was COVID-19. COVID brought up many underlying issues that people face regarding health and wellness, and now the public deals with illness in different ways. Public education was in the spotlight during this time; parents were teaching their kids at home, and health and wellness became a primary focus in our society. Schools in the United States have striven to be at the forefront of social change, and continue to look for new methods to improve. When looking for new opportunities in education to benefit students' lives and their experiences, school gardening programs are gaining popularity as being a multi-faceted approach.

School garden programs can be anything from a few raised beds to gardening in greenhouses. School gardens can be on the school grounds, in a community garden, in the classroom, or even on vertical pellets (Burt, Koch, & Contento, 2017). There are even studies where tower gardens were used in the classroom, and kindergarteners were able to garden in their classroom directly. Forest agriculture or permaculture has also been discussed as enhancing ecosystem services while still achieving education for sustainable development in students (Leni-Konig, 2020). Community gardens have been instrumental in procuring garden spaces for schools that are located in more urban areas. Due to the variance in these types of programs, many of the specific benefits associated with each study can differ. It helps to understand first the background, the literature review, the methodology, followed by the findings, discussion of a qualitative study, and finally the conclusion.

Background

While school gardening programs are on the rise, they have been present in the U.S. since the World War 2 era. During this time it was widely popularized for everyone, including children, to help provide during the war. School gardening has faded in and out of the public's favor multiple times since. School gardening practices rose again in the 1960s-1970s due to the environmental movement, and the popularized "war on poverty" (Kohlstedt, 2008). School gardening programs were initiated to try to ensure that students had proper food while receiving an education, but their present day function is much more diverse.

What is driving this renewed interest in school gardening programs currently? This may have stemmed from Michelle Obama's planting a garden in the White house, or maybe it was when the U.S. started allowing for partial federal funding of school gardening programs. From 2006-2007, there was an 11.9% increase in school gardening programs in the U.S. (Turner, Eliason, Sandoval, & Chaloupka, 2016). Then, in August 2010, the U.S. Department of Agriculture announced that there would be funding allotted for a People's Garden School Pilot program to support the development of school gardens in high- poverty schools. This People's Garden School Pilot program was set to promote the knowledge of primary agriculture production practices and nutrition (Blair, 2009). Afterwards, from 2013 to 2014 there was a 31.2% increase in garden programs (Turner, et al., 2016). There is no data on the increases in these programs from 2014-2022, but future studies will reveal that information.

The benefits of these school gardening programs are numerous; yet, there is still no formal inclusion of these practices into our state curriculum (Zelenika, Moreau, Lane, & Zhao, 2018). With the rise of COVID, and the need for social distancing practices increasing, school garden programs

could be a promising solution in facilitating a more comfortable classroom experience. Currently, school gardening programs and outdoor education tend to be limited to communities that are either rich in money or rich in community support (Huelskamp, 2018). Due to this disparity, students from lower socio-economic groups have less of a chance to experience the benefits that come with school gardening programs. (McCarty, 2013). There are many challenges associated with the sustainability of school gardens, and they often fail. However, California has been a particular leader in this field. The California legislature passed an act in 2006 titled the California School Instructional Gardening Act that allows for a one time grant for every school to start up their own instructional garden. Even still, many school gardens fail for many reasons, but most often due to a lack of continued funding (Huelskamp, 2018).

With this information in mind, there are several scholarships, grants, and different types of state and federal aid that are offered in correspondence with school gardening programs. With the knowledge of these different funding opportunities, many more schools will be able to be successful in their educational endeavors concerning school gardening programs. In California there are yearly allowances in the school cafeteria budget for buying certain gardening provisions like rakes, watering cans, or seeds. In Appendix C, there is a comprehensive list of companies that offer grants specifically for school gardening programs (Growing Spaces, 2022). Outside of California, there are opportunities for funding as well. Many peer-reviewed recommendations for school garden programs incorporate partnerships with local groups to achieve a higher likelihood of sustainability (Graham, 2005) & (Berezowitz, Yoder, & Schoeller, 2015).

In order to further investigate this topic, several research questions have been posed to help guide the research. The primary question is, what are the benefits that school garden programs provide to students, and can further funding support these programs? Are there opportunities and

challenges for the existing school gardening programs in local school districts in the Monterey Bay area? In addition, there are many school gardens that fail due to ill-maintenance, poor communication, and lack of funding or time. What differentiates successful school gardening programs from ones that ultimately fail? There are many viewpoints to question, so there will be a total of 10 teacher surveys to gather research from and a shorter survey administered to CSUMB college students. Given the benefits of school gardening and their lack of funding, does President Biden's new initiative of 30/30 Vision provide new opportunities to sustain these programs according to teachers? Then, if Biden's 30/30 Vision can provide new opportunities for funding, how could that be carried out? First, these questions and this needed background information will be discussed in the literature review.

Literature Review

This research takes a look at the opportunities as well as the challenges towards sustainability with school gardening programs. The basic benefits of these programs and inclusion into the state legislature of California is included. Several perspectives are considered in this qualitative study; those of teachers, students, and those of case studies. The benefits are first listed then described. Then, the research provides an overview of challenges toward the sustainability of school garden programs. The main challenges will be addressed, followed by opportunities for sustainability of school gardening programs as cited and recommended by the literature. The literature consists of research from many different grade levels, further showing that school gardening programs can evolve over time for students. This also demonstrates that school gardening programs can be applicable for students at any level of primary education, adding on to the argument that these programs should be incorporated into public education.

Benefits of School Gardening Programs

The benefits of school or community gardening programs are many and multi-faceted. There are positive effects such as an increase in the physical, socio-emotional, and mental health that can be cultivated in your students (Blair, 2009) & (Mastropieri, & Scruggs, 2018). There are socioeconomic benefits for families and communities when there is increased participation in these programs. There have also been multiple studies where academic outcomes were the primary focus. Many subjects were listed as having the potential to enhance curriculum with environmental studies and nutrition being the most commonly occurring (Graham, 2005). In this extensive study the results demonstrated that there were many positive behavioral and social outcomes. Observed was an improved sense of self, heightened motivation, enthusiasm, teamwork, community, and increased parental involvement. (Skelly & Bradley, 2007)

Indeed, it is not only the teachers who see these benefits in the students. It is the students themselves who gained a sense of responsibility through accomplishment and were reported as having a more positive environmental attitude after participating in a school garden program (Skelly, et.al, 2007). Through a study of 427 third graders, this was determined by a before and after survey following their participation in school gardening activities. This study had conflicting data; there were no considerable benefits in vegetable preference after these students' experiences in the school garden. Conversely, all the other studies having to do with vegetable preference and nutrition were positively linked to school gardening practices.

The remaining literature agrees; there is a considerable increase in fruit and vegetable consumption for students who participate in school gardening programs. This is reason enough to consider school garden programs as a potential tool to combat childhood obesity, yet school garden

programs aren't always supported. Much of this research focuses on these types of school gardening programs for younger students. There is also a multitude of research on how students benefit through vegetable consumption, and by enhancing engagement (Parmer., Salisbury-Glennon, Shannon, & Struempfer, 2009) & (Sharma, Hedberg, Skala, Chuang, & Lewis, 2014) & (Johnson, 2020). Many of us get our food from "formal" sources, such as the grocery store. Yet, by incorporating reward snacking, or good snacking, the likelihood that students will choose healthy snacks in the future increases. By merely being surrounded by plants, fruits and vegetables, students were more likely to choose healthier options. The main takeaway is that studies have found that fruit and vegetable preferences can be increased by student participation in school gardens.

The benefits to funding these school gardening programs tend to be good for your students, but also for the community as well. A study took a look at the ways entire communities can benefit from having a school garden in their region (Day, 2022). The data found that there were considerable benefits in almost every regard. Then, "The informal economy, healthy food options and alternative urban food systems are interconnected in important ways." (Bussell, et al., 2017, p. 139) This research indicates that by utilizing community or school gardens the communities themselves can profit through availability of healthy food options, and even potential economic gain. There were also economic benefits associated with community gardens in a study done in San Diego, thereby indicating that these gardens can be used as a source for economic profit or eaten by those involved. These studies both saw economic benefit in participating communities, and further demonstrate the ways school gardens can help more than just the students involved.

Some functions of school gardens contribute mainly to educating students on sustainability and their primary focus is academic (Fisher-Maltese, 2017). These school programs tend to focus on specializing in being either edible, native, agricultural or sensory gardens. Out of the studies done on

the multi-disciplinary benefits of school gardening programs in education, there are certain subjects that were cited by multiple peer-reviewed articles as being extremely applicable to incorporate into the curriculum (Berezowitz, et al., 2015) & (Graham, 2005) & (McCarty, 2013) & (Skelly, et.al, 2007). These subjects include science, history, art, mathematics, literature, and nutritional health.

There are several studies that point out the ways disadvantaged students in particular benefit from being involved in school gardening programs,

“While there is no silver bullet to solve all the challenges children face as a result of living in poverty, schools and communities have access to immediate, practical, and effective measures to begin to close the gap in educational achievement and overall health, both in the short and long term. By embedding holistic programs such as REAL School Gardens into the school and the community, children in low-income families will have access to educational enrichment and healthy practices that will help them succeed. (McCarty, 2013, pg. 5).

These studies point out different ways to help mitigate the experiences of disadvantaged children by giving them access to nature, and healthy and free food choices (Sharma, et al., 2014) & (Turner, et al., 2016). Many of these case studies were able to access funds from the 2015 Farm to School program, and used the money in different ways. One school used the money to hire a local farmer, Omar, to teach the students how to grow and harvest over ten crops. Omar also instructed the students on irrigation systems, pest management (such as using ladybugs to deal with an aphid infestation), and money management skills (Farm to School Grows with USDA Grants, 2017). How exactly a school garden program cultivates money management skills will be further covered in the challenges and opportunities section of the literature review.

Opportunities and Challenges towards Sustainability

Many challenges towards the longevity of these school gardening programs were identified. A comprehensive list is included in Figure 1 (Huelskamp, 2018). However, even with all these issues, the California legislature is still in favor of school garden programs;

51795. The Legislature finds and declares all of the following:

(a) School garden projects provide an interactive, hands-on learning environment to teach composting and waste management techniques and the fundamental nutrition concepts embodied in the Dietary Guidelines for Americans and to foster a better understanding and appreciation of where food comes from, how it gets from the farm to the table, and the important role of agriculture in the state, national, and global economy.

(b) Encouraging and supporting a garden in every school creates opportunities for children to make healthier food choices, participate more successfully in their education experiences, and develop a deeper appreciation of both their community and each other.

This was taken from the 2005 California Education Code Sections 51795–51798 and from Assembly Bill California School Instructional Garden Act. Then Article (c) continues on to explain the multidisciplinary applications of school gardening programs. This includes subjects such as science, health, environmental education, math, reading, writing, art, physical education, history, and geography. Article (d) creates the Instructional School Garden Program. This program's creation was intended to help support instructional school gardens for “eligible educational agencies”. Article (e) goes on then to define eligible educational agencies as any county office of education or school district. The support that is offered is a one time grant of \$2,000, but at the bottom of the legislature they add a final line which details that this act can only be implemented while there are funds available (*2005 California Education Code Sections 51795–51798 School Instructional Gardens*). A year after, the Assembly Bill 1535 was authorized. The California Department of Education was then awarded \$15 million total in grants to promote, create, and support California Instructional School Gardens. These grants are not guaranteed to every school that applies, and the money will eventually run out.

These challenges are echoed in a comprehensive look at the health of school garden programs found in Huelskamp's (2018) study. This study identified sixteen peer-reviewed articles that address the challenges to school gardens. After identifying the main points in each article, there are some similarities to be gathered from the data that help to answer several research questions. Seven out of those sixteen articles agreed; there is a lack of adequate training for current school teachers in school gardening practices. This challenge can lead to a lack of interest in the teaching of gardening due to the amount of time that teacher would need to become proficient in gardening. That challenge also limits the effectiveness of these school gardening programs. If teachers do not know how to effectively use the material, how are they expected to teach proficiently?

There were several other challenges to school garden sustainability that were cross-examined in Huelskamp's (2018) study. These challenges were well agreed upon; at least three other sources out of those sixteen that were peer-reviewed came to a similar conclusion. The literature saw great challenges in receiving sustainable funding, creating appropriate lessons, and notable time constraints. The issue with creating more time for school gardening is that there will need to be another subject that is sacrificed in the school day. More challenges to sustainability included a lack of space, lack of community support, or a lack of materials to create projects with. There were other challenges to school gardens that were listed by Huelskamp (2018). At least two peer-review articles discussed that programs are limited when grant funding is not renewed. There are plenty of grant programs that offer funding for a start-up school garden (See Appendix C), but once that funding runs out the school garden programs tend to fail (Huelskamp, 2018).

There was one research study in particular that spoke of the need for an increased support system to the recipients of different grants that provide funding. That research goes on to include that the USDA should better prepare the schools they provide the school gardening funds to. There are many school garden programs that have utilized this funding from the USDA, but not all of these programs are successful. This is a failing system if the funding is wasted year after year. Another unsustainable practice cited was the bringing in of external instructors to deliver the school gardening curriculum. This study spoke of the need to provide financial incentives for teachers to work in the gardens. Yet, even as multiple studies were able to tell that teachers were overburdened, only two sources voiced the need for a fulltime garden coordinator. This data is contradictory; some sources advocate for further teacher training in school gardening practices, while others identify that a full-time garden coordinator is preferable. All in all, there still remain to be many imperfections with the school gardening programs in our schools here in the U. S. However, there are many opportunities for alternative funding.

For example, President Biden recently signed an executive order popularly referred to as Biden's 30x30 initiative (Jones, 2021). The plan is to conserve 30 percent of U.S. lands and waters by 2030. This plan is unique by focusing on also making reparations to certain disproportionately disadvantaged groups of people. The 30x30 vision prioritizes areas that are lower socioeconomically, and previously disadvantaged minority groups. There is a particular focus in trying to preserve more Indigenous peoples' lands. The aim is to try to increase access to natural areas for these disadvantaged groups, as the research shows that these groups often have less of an opportunity to interact with nature (Turner, 2016) & (Sharma, et al., 2014). The executive order offers reparations to private land-owners or farmers if they turn their lands over to restoration projects. Unfortunately, even though it is known that pollinator hotspots and wildlife corridors will be included in this

funding, the exact areas that will be preserved won't be determined until the end of 2022 (Thompson, 2022).

There have been several exploratory studies done on students to determine the benefits and long term sustainability of certain school gardening programs. In one study they used descriptive statistics as well as multidimensional scaling and hierarchical cluster analysis to determine the most effective school garden practices from grades K-8. This project used a qualitative data analysis that consisted of thematic coding, pattern matching, explanation building and cross-case synthesis to determine the intensity of student involvement in the school gardening program (Burt, et al., 2017). This was just one of several studies created within the past ten years that are aimed at increasing the effectiveness of school gardening programs (Zelenika, 2018). In addition, there was a dissertation on the effects of indoor, smaller tower gardens that conserved space, but also increased students' vegetable preferences (Johnson, 2020). These two highly analytical studies demonstrate the variability of school gardens, and the documentable improvements in dietary preferences that are shown when students are involved.

This literature review contains just one of three sources used to determine the benefits and sustainability of school garden programs in education. There were many opportunities for funding listed throughout the literature. This could be by application and acceptance to grants, non-profits, state and federal funding, or through community support. School gardens and their potential benefits are still growing; through a look into this study's methods, an idea of what the main takeaway here begins to become clear. The challenges toward sustainability to these types of programs may be many, but the benefits demonstrated by the data are hopeful as well.

Methods and Procedures

In California, there is a heightened interest in school gardening programs and the benefits they can have on students. Conversely, there were school garden plots appearing in local neighborhoods and surrounding cities, but most were filled with wilted plants and weeds. There were many garden plots that were just empty. To find out why local school garden plots in parts of California were empty and why some were thriving, a further literature review was conducted on the current research in this field. Through the CSUMB library database, it became evident from the beginning that there are many benefits of school gardens on students and communities. This brought the research to a new focus; why then do school garden programs tend to fail?

To begin, ten peer-reviewed research articles relating to “school gardens”, “sustainability”, and, “funding for school gardens” were picked to answer some of these questions. Through extensive research in the CSUMB library database the many benefits of school gardening in education were confirmed. Most of the resources came from within California, but there were a few case studies from states such as Washington, New York, Florida and Illinois. Then came the formation of a primary and several secondary research questions relating to those peer-reviewed articles. Those questions were formed from the research and sent out to 35 local teachers in the Monterey Bay area. The teacher surveys were put in place to observe what local teachers vocalize as the biggest challenges to having a school garden. Those challenges were listed with the potential opportunities for funding and engagement that can be utilized to help offset those challenges. The local teacher surveys are listed in Appendix A. Through a cross analysis of the surveys with the qualitative research from the CSUMB Library database, several similarities between what the literature supported and the teachers identified as the main problems with school gardening programs. In addition, the viewpoints of local CSUMB students were surveyed. The aim in surveying local college students was to determine the current popular opinion of school gardening. Sustainability was a

guiding principle in this study, and predicting social preferences towards school gardening is an important indicator toward its success. College students may be young now, but once they have families of their own they will be directly influencing the community support of these programs. A quantitative method seemed most appropriate in this simple yes or no survey, but the information gained was qualitative. This variety of sources demonstrates how well known it is that school gardening programs are beneficial and they should be further funded based on the research and surveys.

Throughout the research process and by careful consideration of qualitative evidence, it becomes apparent that there are some central themes paramount to the application of school garden programs. These outcomes are testament to some central findings that are further discussed in the results section. The results are organized in a way that follows the primary research questions that guided this senior capstone project. These results were gained through a careful consideration of what local teachers say, along with a thorough analysis by comparing different peer-reviewed articles on school gardening programs. The findings of this study incorporate opportunities for funding sustainability which are finally explored more deeply in the discussion section.

Results and Findings

The percentage of US elementary schools that have school garden programs has increased substantially over the last 8 years, but still over two thirds of US public elementary schools go without (Turner, et al., 2016). This trend is representative of the college student data gathered, shown in Appendix B. In the survey, 12 out of 20 students chose “not applicable” for the question relating to their experience with school gardening, yet 19 out of 20 said that they would recommend that we increase these programs. This quantitative data shows that while current college students surveyed

had low participation in school gardening while in primary school themselves, they would still recommend that these practices be increased in schools. This is a common way of thinking, so why are school garden programs often limited?

What differentiates successful school gardening programs from ones that ultimately fail? The local teacher surveys provide some context with answering this research question. The effectiveness of the school gardens is determined by their purpose. School gardens can vary widely, but there were particular recommendations that separate the successful programs from the ones that fail. One teacher, teacher Z, identified the need for a position in the school for a garden coordinator or a gardening teacher. The garden coordinator would be in charge of everything garden related. They went on to list some of the responsibilities a garden teacher or coordinator should spend their hours doing. These recommendations were as follows; that they would plan lessons that meet grade level standards, maintain and grow the garden, apply for additional funding/grants, oversee the projects and heavy work, and also communicate effectively with the classroom teachers. Every teacher interviewed had something similar to say in that way; having a specific gardening teacher is paramount and everyday teachers do not have time for this added element in their already busy schedule.

Interestingly, many of the literature's ideas coincide with a lot of the recommendations given by local teachers towards increasing garden sustainability. Teacher W brought up that it was ridiculous to expect teachers to take on additional responsibilities when they already have to do all that is required in the classroom. They mentioned how successful their school gardening program continues to be at Carmel Unified, and that it's entirely due to the designated gardening teacher. Teacher R felt that having administrators and fellow teachers' involvement in these programs helped to sustain them. Teacher R believes school gardens fail because the responsibility is entirely on the

regular teachers, and they just don't have enough time in their schedules for the maintenance and creation of brand new lessons. Teacher S agrees, they say it is a skilled gardening expert that makes the ideal school garden teacher. They commented that it is best for the program when the school garden teacher is someone other than the regular classroom teacher. An additional factor that contributes to sustainability of school garden programs is a comprehensive schedule and someone to be in charge of that schedule. Teachers R, S, T, U, W, and Y all listed this particular issue as being a barrier towards sustainability. This is again a similarity between the literature and the teacher surveys, The literature and California legislature agree; school gardening programs have applications that are multi-disciplinary (Berezowitz, et al., 2015) & (Graham, 2005) & (McCarty, 2013) & (Skelly, et.al, 2007). Teachers S, T, Y and Z all identified multi-disciplinary benefits as well (Teacher surveys, Personal communication, Appendix A). There were a wide variety of different disciplines school gardening could be incorporated into. Some of the interdisciplinary subjects mentioned were math, science, art, writing, nutrition, vocabulary development, environmental studies, and communication skills all in a hand-on manner.

While there still remain to be many barriers and challenges towards this sustainability, many teachers are still seeing benefits from even a limited engagement with school gardening programs in their students. All teachers addressed the benefits of school gardening programs on their students. Teacher Y feels as if the effects of school gardening are "...very therapeutic and calming, and it combines science with meeting social/emotional needs." (Teacher Y, personal communication, May 2, 2022). Teacher T also had many positive comments to make about the benefits of school gardening. Teacher T noticed students would go to their school garden to decompress, and experienced enhanced engagement while in the garden. The teacher's weren't the only ones to notice objective benefits in their students. There was, "Uniformly, the qualitative studies of kindergarten to sixth-grade gardening

show the following positive behavioral and social outcomes: heightened motivation and enthusiasm, improved sense of self, teamwork, community, and parental involvement.“ (Blair, 2009, p.35). These are the qualities of effective school garden programs, ones that enhance the learning of all other subjects.

Are there opportunities and challenges for the existing school gardening programs in local school districts in the Monterey Bay area? Opportunities for local funding are numerous, but require a bit of work and luck to be accessible. There were many grants that will only provide for the start-up costs of the school gardens. Here were some school gardening grants that are offered on the west coast; Whole Food Market , Chef Ann’s Foundation, Salad Bars to Schools, The Bee Cause Project, Kids Gardenin, American Heart Association Teaching Gardens Network, Big Green Real Food Grow Here, National Geographic, Bonnie Plants 3rd Grade Kids Cabbage Program, California Fertilizer Foundation. The California Fertilizer Foundation grant alone gives 24 schools \$1,200 each year alone for start ups or for helping to sustain their own school gardens. The Bee Cause project provides bees to schools to help with pollinator issues. Whole Food Market, Chef Ann’s Foundation, Salad Bars to Schools, and Bonnie Plants 3rd Grade Kids Cabbage Program, all deliver food resources to the classroom but are only accessible through a lottery and application process.

Teacher X added that the participation in an Eco Ambassadors club for the students as well as a dedicated staff helps to generate a culture and community around the school garden. The Eco Ambassadors is a club at their elementary school, but its creation was aided by Return of the Natives (RON), a restoration group created at CSUMB. RON assists in training teachers and donating supplies to schools in the state to aid in the creation of school garden programs. Teacher U also mentioned RON. They stated “...help from Return of the Natives Eco Ambassador programs has been vital in getting our school garden set up and running (supplies and teaching how to sow and grow

seeds)”(Teacher U, personal communication, May 2, 2022). This broadcasts how a local group in Monterey Bay has made substantial contributions to school gardening education programs in the surrounding schools.

Given the benefits of school gardening and their lack of funding, does President Biden’s new initiative of 30/30 Vision provide new opportunities to sustain these programs according to teachers?

Initially, President Biden’s Conserve 30 Percent of U. S Land by 2030 was considered as a potential way for schools to receive funding/land allotments. Private property and agricultural land is what is planned to be put aside in this, but there is still hope that schools could be in the vicinity of these suggested sites. If a school happened to be in the vicinity of one of the areas to be conserved, the entire school would benefit. An interesting intersectionality happens to be occurring, and there is a growing field of forest farming in education. Most of these studies have been done in Europe and Switzerland, but the benefits are even further reaching than the school gardening programs recommended here (Leni-Konig, 2020).

Then, if Biden’s 30/30 Vision can provide new opportunities for funding, how could that be carried out? If an area were to be conserved within the proximity of the school, the school might feel some of the benefits and contribute to the health and well-being of the entire school. Not only would the school feel these effects, but there are also substantial ecosystem benefits that are cultivated in the process. This could also further educate students on types of ecosystem systems, and provide more space for students to live and grow. There are many opportunities for funding school garden programs in schools, but there would need to be some serious change in policy to include school garden programs in President Biden’s conserve 30 percent of U. S land and sea by 2030 executive order.

Discussion

There was not one local teacher who was aware of additional funding for school garden programs from the government. However, the California legislature is in favor of school garden programs, and many such programs do actually exist. One of the primary issues here may be that the government only offered up a one-time start up fund, and didn't necessarily teach the schools the best way to use the money. Another issue teachers have complained about is the lack of training that is given to the teachers involved. This is not just something that teachers complain about, the research backs up their testimonies. Teachers who have no experience gardening are being asked to integrate their regular lessons into a garden curriculum. Teachers reported being too busy with their everyday classroom responsibilities, and found it unrealistic to incorporate gardening into their schedule. However, most teachers agree that the best thing to do would be to hire an additional teacher whose main focus is the school garden (Teacher surveys, personal communication, May 2022).

Unfortunately, not many grants would provide the kind of funding that would allow for the hiring of a full-time gardening teacher that many teachers recommend here in Monterey Bay (Teacher surveys, personal communication, May 2022). This is the main recommendation put forth by the teachers; in order to have a sustainable school garden, you need an educator who is solely responsible for that garden and that program. The regular teachers don't want to take all that responsibility on themselves, they already have more than enough to do. Perhaps by the hiring of the school garden teacher, regular classroom teachers could utilize that time to refine the many subjects they already teach.

The surveys done with the CSUMB students show that even among a population that has hardly participated in such programs the interest is extremely high; over 90% of students said they

would like to see these programs increased. Then, there are also the teacher surveys. All teacher participants found school gardening programs to be helpful and beneficial to students. Almost half of the teachers surveyed had a designated school gardening teacher. Those who did have a designated teacher spoke very highly of the school gardening program. Many of the teachers surveyed also spoke highly of different nonprofit groups that enhance their programs. Then, of the local teachers who had participated in RON lead activities, all spoke highly of RON. What we can gather from those two sources is that experiences in school garden programs are beneficial when accessible. As school gardening practices are still growing, perhaps many of the schools in the local area who have yet to experience RON will do so in the coming years.

Problems and Limitations

This research project is based on a new and growing trend in schools, so there were some limitations with the scope of the research. There was this notable issue; while many school gardening programs in the early grades focus on nutritional and health benefits, the latter grades tend to focus on science and STEM applications. That discrepancy may have impacted the data, as the only local teacher responses were from teachers from the lower grades only. There were zero responses from the high school science teachers these surveys were sent out to. There were 25 surveys sent out to local teachers at first. Unfortunately, there were no responses until late April, and it was only one response. Receiving one response for research was not nearly good enough. Shortly after reaching out to the one teacher that had responded to the survey in the area and asking them to resend the survey to their colleagues, there was finally enough data. There were a total of ten teacher statements regarding their opinions and experiences with school gardening programs. This research study may have the

potential for biases because most teachers who replied either were involved in these programs themselves, or looked favorably upon these programs.

In addition, there are many articles and research that were not available to the public. Using the CSUMB database, most of those disadvantages were mitigated; yet it still appears as if there is still missing information. Using google chrome, I also did an advanced search using the keywords “school gardens”, “sustainability”, and, “funding for school gardens”. I was able to find a lot more research articles and subsequent findings, but this project was limited because access was never granted to those articles. A step to take in the future would be to ask for access months before the research needs to be done. Even still, the mere fact that research is unavailable for free to a university student who is conducting research speaks of a greater limitation of our college system.

However, much of the literature about this subject still in fact needs to be written. There needs to be further studies on the effects of the national science curriculum ten years from now, on those students who went through that educational process. In addition, COVID played a large role in the failure of many school gardens. During COVID the schools were mostly empty; unless there was a professional in charge of the garden, the garden most likely failed due to ill-maintenance and care. Perceptions of school gardening programs were anticipated to be low due to this, but most teachers in the Monterey Bay area did not demonstrate that prediction. Another problem is that most school gardens differ from one to the next, and that makes it difficult to measure comparative success. For example, some programs use the national science curriculum for their school garden programs. Then there are other thriving school garden programs that don't use one specific gardening curriculum at all. There is lots of room for variation in these programs, so school gardens have the potential to be extremely accessible for a diverse group of schools.

Recommendations

Therefore, a major recommendation is that districts create a school gardening teacher position. A close look at the teacher surveys done throughout the Monterey Bay area show this to be a common thought among local teachers, and there must be a reason why. Nearly all the literature on sustainability recommends a professional specifically in charge of the school garden, or that teachers receive increased training in the school garden curriculum. In addition, the literature and teacher surveys put forth that this solo teacher should be in charge of other garden related activities and curriculum. These similarities between the data point to a common trend; school garden programs are successful when there is a specific school garden teacher.

School garden programs have proven themselves to be a meaningful enhancement to the K-12 learning experience in a large variety of ways, yet continue to be limited by a lack of funding, and community support. Time will tell if government funding for this portion of the education system will increase, or if school gardens support will remain locally driven. In the meantime, there are community or local resources available to fund school gardens. It is important to note, however, that these tend to be more widely available in the more affluent areas. This research is of interest to current day elementary school gardening programs, middle school programs, and high school programs. This study contains information about current scholarships and grants that are available to help fund school gardening programs. This research highlights the ways school gardening programs can become sustainable by partnering with local groups, or by creating a full-time gardening teacher position. In addition, this research is important for all current students who are looking to become teachers. If school gardening can provide a multifaceted approach to combating poor nutrition and

declining interest in school activities for all ages, then prospective teachers need to be aware of these benefits.

Administrators may find use with this research, especially pertaining to the health benefits awarded to the student population. It is important for the administration to know what the public wants their children to be taught. If school gardening is a growing trend, perhaps more principals should look into incorporating school gardening into the curriculum. As described by the locally surveyed teachers, a popular reason that school gardens fail is that these programs are not supported or cared about by the administration. These teachers mentioned their principles having a large impact on the success of their school gardens. In addition, much of the literature agreed that lack of support from administration was an indicator of a failing school garden system (Huelskamp, 2018). That data would suggest that if administrator's were more supportive, school garden programs would be more successful.

The ideas put forth by the literature had to do with community support, and partnering with local groups to maintain the sustainability of these programs. The qualitative research also showed that school gardening programs can be extremely effective in enhancing nutrition in urban, or low income groups. It is super beneficial for students who come from urban areas to get to experience the health and socio-emotional well being that comes from being in natural spaces. The teacher surveys agree, community support and funding are what are lacking. When a school garden fades away due to ill-maintenance, or due to a lack of resources, there's really no one to blame. If a specific school gardening teacher were hired they could be in charge of the overall maintenance, finding additional funds, planning lessons that meet grade level standards, overseeing the projects and heavy work, and communicating with the classroom teachers. The hiring of a person in charge could take the blame off administration if these programs fail.

Conclusion

In conclusion, this senior capstone examined the benefits of school garden programs on students as well as challenges and potential sources for funding sustainability. The benefits are many which is reflected in school gardening's current popularity.. If school gardening can provide a multifaceted approach to combating poor nutrition and declining interest in school activities for all ages, then it is our duty as educators to determine its' place in the curriculum. There are many additional benefits that come with incorporating school gardening practices into the curriculum and may pose as an advantageous and time effective way to make learning more accessible. Currently, funding is one of the biggest issues in sustaining the longevity of school garden programs. This reflects the answers to the question that began this research; *What are the benefits that school garden programs provide to students, and can further funding support these programs?*

The literature and local teacher surveys provide some context with answering this primary question. The literature and California legislature agree; school gardening programs have applications that are multi-disciplinary (Berezowitz, et al., 2015) & (Graham, 2005) & (McCarty, 2013) & (Skelly, et.al, 2007). Teachers S, T, Y and Z all identified multi-disciplinary benefits as well (Teacher surveys, personal communication, Appendix A). There were a wide variety of different disciplines school gardening could be incorporated into. Some of the interdisciplinary subjects mentioned were math, science, art, writing, nutrition, vocabulary development, environmental studies, and communication skills all in a hand-on manner. Due to the versatility of school gardening applications, there are many different ways to receive support, and many opportunities for funding exist.

Yet, this research shows that while there are many opportunities for funding, there needs to be a dedicated individual who is in the pursuit of that funding. If schools cannot hire a gardening teacher,

there needs to be a community group formed to delegate those responsibilities. Partnering with local nonprofits is how many schools accomplish this currently. This affects schools disproportionately; low-income schools tend to not have the time nor resources to form those types of groups. In addition, there are many different grant opportunities available for school or community garden funding that can be used to help offset the initial cost of a school garden program. For school districts in California, part of the school cafeteria budget can be set aside each year for the allocation of materials for school gardens, which would stand as a sustainable source. So, if your school is unable to procure a grant, there is still funding available. The state of California also offers a one time start up fund to help with the whole creation of a school garden.

What this funding lacks, however, is the main recommendation and request of teachers; that there be a specific garden teacher hired. Far too often we ignore the voices of the educators who are in the classroom with the students each and every day. Arguably, the teacher surveys in this research paper are the most important and newsworthy section. It is there that it is demonstrated that the teachers are happy when there is a specific school garden teacher. These teachers see socio-emotional and academic benefits, while at the same time their students are participating at higher levels of engagement. If school garden programs are to be sustainable, there needs to be an appropriate support system, even if that just happens to be one person.

References

- Berezowitz, C. K., Yoder, A. B. B., & Schoeller, D. A. (2015). School gardens enhance academic performance and dietary outcomes in children. *Journal of School Health, 85*(8), 508–518. Retrieved from <https://doi.org/10.1111/josh.12278>
- Blair, D. (2009). The child in the garden: An evaluative review of the benefits of school gardening. *Journal of Environmental Education, 40*(2), 15-38. Retrieved from <https://csumb.idm.oclc.org/login?url=https://www.proquest.com/scholarly-journals/child-garden-evaluative-review-benefits-school/docview/61913872/se-2?accountid=10355>
- Bussell, M. R. (2017) UC pursues rooted research with a nonprofit, links the many benefits of community gardens. *California Agriculture, 71*(3) Retrieved from <https://doi.org/10.3733/ca.2017a0029>.
- Burt, Koch, Contento, I. (2017). Development of the GREEN (Garden Resources, Education, and Environment Nexus) tool: An evidence-based model for school garden integration. *Journal of the Academy of Nutrition and Dietetics*, Retrieved from <https://doi.org/10.1016/j.jand.2017.02.008>
- Day, Kelli, (2021) To plant a garden is to believe in tomorrow: A case study of a Chicago community-based organization focused on health education through school gardens. *Journal of Prevention & Intervention in the Community*, Retrieved from <https://doi.org/10.1080/10852352.2021.1915938>.

Farm to School Grows with USDA Grants. (2017). USDA. Retrieved from

<https://www.usda.gov/media/blog/2017/06/15/farm-school-grows-usda-grants>

Fisher-Maltese, Carley, (2017) Can learning in informal settings mitigate disadvantage and promote urban sustainability? School gardens in Washington, DC. *International Review of Education*, 64(3) 295–312. Retrieved from, <https://doi.org/10.1007/s11159-017-9663-0>.

Growing Spaces. (2022). *Garden grants for schools, communities, and nonprofits*. Growing spaces greenhouses. Retrieved from, <https://growingspaces.com/gardening-grants/>

Graham, Heather, (2005) Use of school gardens in academic instruction. *Journal of Nutrition Education and Behavior*, 37(3) 147–151, Retrieved from, [https://doi.org/10.1016/s1499-4046\(06\)60269-8](https://doi.org/10.1016/s1499-4046(06)60269-8).

Huelskamp, A C. (2018) Enhancing the health of school garden programs and youth: A systematic review. *Shibboleth Authentication Request*, Retrieved from, <https://search-ebshost-com.csUMB.idm.oclc.org/login.aspx?direct=true&db=eric&AN=EJ1196093&site=ehost-live>.

Johnson, T. (2020). *Influence of tower gardens on vegetable preference and consumption among kindergarteners* (Order No. 28088531). Available from ProQuest Dissertations & Theses Global: The Humanities and Social Sciences Collection. (2456470796). Retrieved from, <https://csUMB.idm.oclc.org/login?url=https://www.proquest.com/dissertations-theses/influence-tower-gardens-on-vegetable-preference/docview/2456470796/se-2?accountid=10355>

- Jones, Benji. (2021) The Biden administration has a game-changing approach to nature conservation. *Vox*, 7, Retrieved from, <https://www.vox.com/2021/5/7/22423139/biden-30-by-30-conservation-initiative-historic>.
- Kohlstedt, S. G. (2008). A Better Crop of Boys and Girls: The School Gardening Movement, 1890–1920. *History of Education Quarterly*, 48(1), 58–93. Retrieved from, <https://doi.org/10.1111/j.1748-5959.2008.00126.x>
- Leni-Konig. (2020). Beyond school gardens: Permaculture food forests enhance ecosystem services while achieving education for sustainable development goals. ProQuest Dissertations Publishing. Retrieved from, https://csu-mb.primo.exlibrisgroup.com/permalink/01CALIS_UMB/r44bh4/cdi_proquest_journals_2480285164
- Mastropieri, M. A., & Scruggs, T. E. (2018). *The inclusive classroom strategies for effective differentiated instruction*. Pearson.
- McCarty, J. (2013). REAL School Gardens Program: Learning gardens and teacher training to improve student engagement and academic performance in low-performing elementary schools. *Journal of Applied Research on Children*, 4(2). Retrieved from, <https://search-ebshost-com.csumb.idm.oclc.org/login.aspx?direct=true&db=eric&AN=EJ1188881&site=ehost-live>
- Parmer, S. M., Salisbury-Glennon, J., Shannon, D., & Struempfer, B. (2009). School gardens: An experiential learning approach for a nutrition education program to increase fruit and vegetable knowledge, preference, and consumption among second-grade students. *Journal of*

Nutrition Education and Behavior, 41(3), 212–217. Retrieved from,
<https://doi.org/10.1016/j.jneb.2008.06.002>

School gardens. (2022). CalRecycle Home Page. Retrieved from,
<https://calrecycle.ca.gov/education/gardens/>

Sharma, S. V., Hedberg, A. M., Skala, K. A., Chuang, R. J., & Lewis, T. (2014). Feasibility and acceptability of a gardening-based nutrition education program in preschoolers from low-income, minority populations. *Journal of Early Childhood Research*, 13(1), 93–110. Retrieved from, <https://doi.org/10.1177/1476718x14538598>

Skelly, S. M., & Bradley, J. C. (2007). The growing phenomenon of school gardens: measuring their variation and their effect on students' sense of responsibility and attitudes toward science and the environment. *Applied Environmental Education and Communication*, 6(1), 97–104. Retrieved from,
<https://search-ebshost-com.csmb.idm.oclc.org/login.aspx?direct=true&db=eric&AN=EJ884685&site=ehost-live>

Thompson, A. (April 22). *How Conserving 30 Percent of U.S. Land by 2030 Could Work*. Scientific American. Retrieved from,
<https://www.scientificamerican.com/article/how-conserving-30-percent-of-u-s-land-by-2030-could-work/>

2005 California Education Code Sections 51795–51798 School Instructional Gardens. (2005). Justia Law. Retrieved from, <https://law.justia.com/codes/california/2005/edc/51795-51798.html>

Turner, L., Eliason, M., Sandoval, A., & Chaloupka, F. J. (2016). Increasing prevalence of US elementary school gardens, but disparities reduce opportunities for disadvantaged students. *Journal of School Health, 86*(12), 906–912. Retrieved from, <http://dx.doi.org.csUMB.idm.oclc.org/10.1111/josh.12460>

USDA Renews People's Garden Initiative. (2022, May 3). [Press release]. Retrieved from <https://www.usda.gov/media/press-releases/2022/05/03/usda-renews-peoples-garden-initiative>

Zelenika, I., Moreau, T., Lane, O., & Zhao, J. (2018). Sustainability education in a botanical garden promotes environmental knowledge, attitudes and willingness to act. *Environmental Education Research, 24*(11), 1581–1596. Retrieved from, <https://doi.org/10.1080/13504622.2018.1492705>

Appendix A

Teacher Z Responses to Interview Questions/Answers: April, 25, 2022

Here are some thoughts about the gardening projects I have observed over the last 25 years of teaching.

1. What benefits do you see in your own students who participate in school gardening programs?
 - a. Students who may not do well academically can shine in the garden, and feel successful at school. By working hard (physically) they contribute to the overall success of the garden program.
 - b. Students have a living lab for hands-on science. Concepts that may be vague or misunderstood can be demonstrated in the garden.
 - c. Interactions in nature have many benefits, including emotional wellbeing.
 - d. Connections between students and the food they consume are demonstrated and reinforced in the garden.
 - e. The garden can be used for other subjects such as art, nutrition, math, writing, etc.
2. What contributes to a school gardening program being successful?
 - a. The most important factor is a dedicated garden teacher, who can oversee the garden, plan lessons that meet grade level standards, maintain and grow the garden itself, apply for funding, oversee projects and heavy work, and communicate with the classroom teachers.
 - b. Having enough space that students can meet together with the teacher, plenty of beds, and other infrastructure is a must. This includes water, electricity, composting, seating area, storage, kid sized tools and gloves, etc.
 - c. Ongoing funding for staffing and materials.

3. Why do you think school garden programs tend to fail?

School gardens fail for several reasons:

a. The garden was started by one person who was passionate about the project, but is not at the school anymore, and no one wanted to take on the garden. Lack of staffing.

b. The garden was funded initially, usually with a grant, but not funded after that first year. Budget constraints

c. The school administration/staff do not value the garden program, so it is not supported. Lack of will

d. Garden staff poorly trained and/or unwilling to work with classroom teachers. Lack of training

e. The garden program is the first thing to get cut when money is tight. Once the garden is not tended, it is difficult to get it back into shape. Lack of respect for the program

4. Are you aware of additional funding or local groups that would be willing to participate in these school gardening programs?

yes, I have been involved with several groups throughout my teaching career.

Good luck, Alyssa, on your capstone project. Come on down to visit our garden!

Teacher Y Interview Questions/Answers: April, 25, 2022

Hi Alyssa,

We unfortunately did not get our school garden going till the end of this year. It started in the past, but then Covid hit etc. and nothing was done.

Students love gardening and the excitement of seeing their plants grow. I think it is very therapeutic and calming, and it combines science with meeting social/emotional needs. I teach first grade and we planted in cups for now and it has been very fun for them.

For a garden to be successful, you need participation and resources. We have gotten resources from PTA and our superintendent said he would donate river rocks and mulch. We have had poor participation. Another issue is not knowing exactly what to plant, who can plant, when and where to plant etc. I think this answered 2 questions.

The Blue Zones Project has been working with our school and district. Two people came out for our last garden day. You can check it out online. I think they might help with some resources.

I hope this helps.

Teacher X Interview Questions/Answers: May 1, 2022

1. What benefits do you see in your own students who participate in school gardening programs?

A: Students have something to take care of and many begin to notice other issues, like litter, around the campus.

2. What contributes to a school gardening program being successful?

A: Eco Ambassador program and dedicated staff that continue to push for this type of opportunity for our kids.

3. Why do you think school garden programs tend to fail?

A: For me, part of it is the chilly weather in Marina. We have also had a terrible time with squirrels and gophers eating our vegetables.

4. Are you aware of additional funding or local groups that would be willing to participate in these school gardening programs?

A: Not at this time.

Teacher W Interview Questions/Answers: May 1, 2022

1. Students seem to be more excited about learning in the school garden. It also encourages creativity and gives them something tactile to do.

2. The management of it by a teacher and students. At Carmel unified we are lucky enough to have a gardening teacher and it helps our garden be successful because she has the time to dedicate to that.

3. I think asking other classroom teachers to maintain it is silly. Teachers have so many other things on their plate that adding a garden to it is too much. They need to designate one person to just do gardening.

4. No

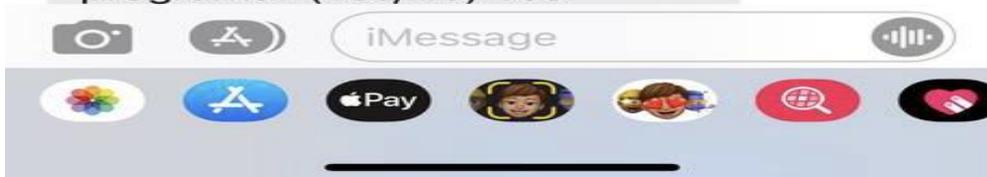
Teacher V Interview Questions/Answers: May 2, 2022

1. What benefits do you see in your own students who participate in school gardening programs? you can bring a sense of independence. working towards something and caring for something that takes time.

2 What contributes to a school gardening program being successful? Funds involvement time and a place to actually have garden. Water supply

3 Why do you think school garden programs tend to fail? They dont have the space and funds. Not enough time in the Schedule.

4 Are you aware of additional funding or local groups that would be willing to participate in these school gardening programs? (Yes/No) Yes



Teacher U Interview Questions/Answers: May 2, 2022

Hello Alyssa,

Good luck with your Capstone project. I remember doing mine many years ago and it is A LOT of work but all of it has been beneficial to me, so I hope yours is too! Here are my answers to your questions.

1. School Gardening programs have had many benefits for our students. From an SEL perspective, I notice that students are more calm and there are less negative behaviors from students when we are taking part in gardening activities. Students' level of science inquiry and engagement is higher when we are doing activities in the garden. Students more naturally ask questions when they are learning in the garden than when we are learning in the classroom. As far as engagement, it is rare to have a student who is not on task when we are working in the garden; participation is usually 100%. Another benefit I have noticed in my students is that they have a better overall understanding of life science when they can see it and interact with it for themselves.
2. To make a school garden program successful the following things are key: a regular weekly watering schedule and people/class who is responsible and a backup plan for when school is out of session, a dedicated classroom/grade level who will complete maintenance (weeding, straightening up, replanting etc), help from Return of the Natives Eco Ambassador programs has been vital in getting our school garden set up and running (supplies and teaching how to sow and grow seeds).
3. I believe school garden programs tend to fail due to not being maintained on a consistent basis. It is essential that a group of students (we do it by grade level) is

responsible for weekly/bi weekly upkeep and that there is a plan and schedule for who and when will take care of the watering and upkeep year round.

4. Return of the Natives Eco-Ambassador program is an amazing advocate and help for local school gardens. In addition, many of our local gardening supply places (Griggs, Valley Hills Nursery, Seaside Garden Center etc) and some of the corporations like Home Depot will donate supplies. The mayor of Marina, Bruce Delgado, is a local botanist and he is an advocate for school gardens and is a wealth of knowledge and sources to help with school gardens.

Please feel free to reach out and ask any clarifying questions or if you'd like more information about our school garden at Marina Vista. Thank you for your research in this area!!

Teacher T Interview Questions/Answers: May 2, 2022

Hello,

My name is Alyssa Conte and I am a Liberal studies major who will soon be working on my teaching credential. I'm doing research for a Capstone that has to do with school gardening programs, and I'm trying to see what general teachers have observed in their students. I would be honored if you could participate in this 4 question survey on the benefits of successful school gardening programs. One question is a simple yes or no, and the other 3 are short responses that should be less than two sentences long. Thank you so much for your time!

1. What benefits do you see in your own students who participate in school gardening programs?

The ability to let their creativity and imaginations soar. It is also a good quiet place for students to go and decompress when they need a break. At my school site we have a garden with a garden teacher, the students learn about plants, animals, and they also get to do hands-on activities along with a lesson. For example: we made pizza in the garden with veggies and fruits the students found in the garden and she made a lesson about what culture pizza originated from and how to properly tell if something is ready to be picked or not based on color and texture.

2. What contributes to a school gardening program being successful? A lot of funds!

Also an amazing garden teacher

3. Why do you think school garden programs tend to fail?

because there isn't enough money in most school districts able to have a garden

4. Are you aware of additional funding or local groups that would be willing to participate in these school gardening programs? (Yes/No)

No

Responding by email is more than fine, or if you'd like to give me more information you can call my cell at. If you respond by email, all that I ask is that you respond to these questions in a numbered format, i.e;

1. Your answer.
2. Your answer
3. Your answer
4. Your answer.

I really appreciate you taking time out of your day for this!

Sincerely,
Alyssa Conte

(805) 444-7038

aconte@csumb.edu

Teacher S Interview Questions/Answers: May 2, 2022

Hi,

Were you a Chartwell student? I never taught gardening, but I can speak to the benefits I observed while it was being taught.

1. What benefits do you see in your own students who participate in school gardening programs? The gardening program did an excellent job of teaching math, vocabulary development, and communication skills in hands-on ways that cannot be replicated in the classroom. Gardening programs give students opportunities to be outside and learn about the importance of nature, how nature depends on each other and the importance of farm work, farm workers, field workers, etc.
2. What contributes to a school gardening program being successful? A skilled person who can teach it, planning a schedule that allows time for it, at least once a week, per class.
3. Why do you think school garden programs tend to fail? I think a gardening program works best when there is a skilled individual that can teach the class. The gardening program in my opinion works best when it is taught by someone other than the classroom teacher, who has expertise in gardening.
4. Are you aware of additional funding or local groups that would be willing to participate in these school gardening programs? (Yes/No). I am not aware of any.

Take Care, Good Luck,

Teacher R Interview Questions/Answers: May 2, 2022

Hello Alyssa,

1. The school I currently work at does not have a gardening program so I cannot comment on any benefits to my students. However, I do think a school garden program would be beneficial for SEL and science lessons.

2. I think having administration and fellow teachers who want to be involved and are passionate about a school gardening program is necessary for it to be successful.

3. I think school gardening programs tend to fail because it requires extra time from teachers. It requires teachers to take time out of their lessons to take their class to the garden and it requires teachers to volunteer their own time to care for the garden.

4. No

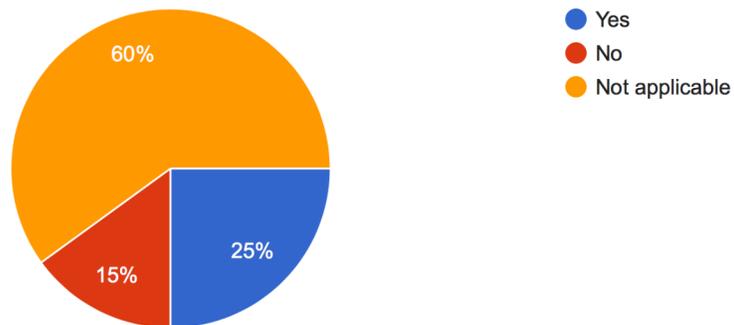
Best regards,

Appendix B

Question/Answers to Csumb Student Surveys: April 30, 2022

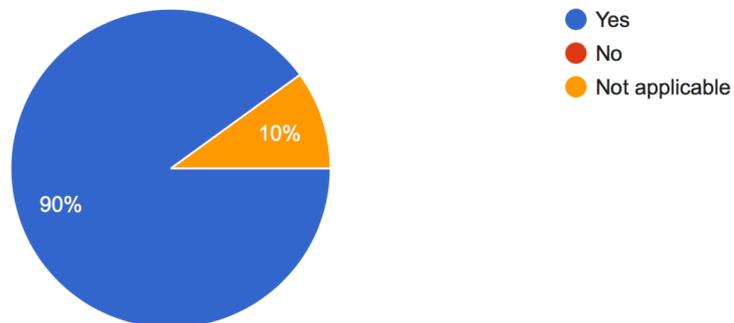
Did you feel as if you benefited from participating in school gardens in any way?

20 responses



Would you recommend that school gardening programs become larger/more accessible for students?

20 responses



Appendix C

List of grant opportunities for school gardening funding

- Whole Food Market ,
- Chef Ann's Foundation,
- Salad Bars to Schools,
- The Bee Cause Project,
- Kids Gardenin,
- American Heart Association Teaching Gardens Network,
- Big Green Real Food Grow Here,
- National Geographic,
- Bonnie Plants 3rd Grade Kids Cabbage Program,
- California Fertilizer Foundation