Development of a Field Manual for the Garden Implementation at Elementary Schools

A graduate project submitted in partial fulfillment of the requirements for the degree of Master of Science in Family and Consumer Sciences

by

Kelley May Gold

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The graduate project of Kelley May Gold is approved:

Ritamarie C. Little  

Date

Dr. Joyce Gilbert, Ph.D.  

Date

Dr. Claudia Fajardo-Lira, Ph.D., Chair  

Date

California State University, Northridge
DEDICATION

This graduate project is dedicated to:

My amazing family who has encouraged and rooted for me throughout my college career.

Thank you for believing in me when I didn’t, the completion of this project is for you.

Ashley Stix who has been my consistent support, my comic relief and my best friend.

My project team members Ava and Eva. From the conception of this project to the completion, you ladies have been my foundation and my support.
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CHAPTER I
INTRODUCTION

Background and Justification

The presence of school gardens is increasing in schools throughout the United States. In California alone, school gardens were found in 13% of schools in 1996 and 24% of schools in 2005 (819 and 2381, respectively) (Graham, Lane Beall, Lussier, McLaughlin & Zidenberg-Cherr, 2005). The ever increasing connection between school gardens and science, nutrition, math and biology lessons have institutionalized school gardens as a useful tool for instruction (Graham, Lane Beall, Lussier, McLaughlin & Zidenberg-Cherr, 2005).

According to the National Gardening Association (NGA), 35% U.S. households surveyed believe that school gardens should be implemented whenever possible (NGA, 2009). The research brief, Use of School Gardens in Academic Instruction (2005), indicates that barriers faced by schools that want to build a school garden include lack of time, lack of gardening knowledge of the teachers, and lack of gardening supplies. A manual that addresses such barriers could be helpful to schools to help direct them into a successful gardening experience.

The creation of a school garden logistics manual will enable schools, garden coordinators, parent associations, and students to implement a garden that is individualized for their campus. The manual will give clear information on different types of gardens, garden safety considerations, how to build and maintain a school garden.
Statement of Problem

The purpose of the manual is to provide a guide for school personnel to build and maintain a successful school garden.

Objective

The objective of the manual is as follows:

1. To develop a manual that can be used as a resource for schools to build and maintain a school garden. The manual that will include: types of gardens, safety considerations, how to build a school garden and how to maintain the garden. The manual will also have an appendix with useful resources.

Assumptions

1. The schools involved in the grant have a strong interest in building and maintaining a garden.
2. Sufficient funds will be available for the gardens maintenance: soil, seeds and various supplies.
3. A support staff will be available to help maintain the garden through building, watering, and various other maintenance tasks.

Limitations

The limitations of the manual are as follows:

1. People surveyed to gather information about school gardens are from Ventura County and Los Angeles County Unified School Districts. Their concerns may differ from those in different parts of the country and this may limit the ability to generalize the results.
2. While the manual will include a great many considerations for school gardens there may be particular scenarios (school sites or situations) that cannot be covered in the manual.

3. Not all supplies discussed in the manual may be readily available to some schools.
CHAPTER II
REVIEW OF LITERATURE

I. The History of School Gardens

What is a school garden? According to the *California School Garden Network* (2006), a school garden “is an innovative teaching tool and strategy that lets educators incorporate hands-on activities in a diversity of interdisciplinary, standards-based lessons.” School gardens have been used for over a century in the United States as an educational tool for children (Kohlstedt, 2008).

School gardens have been used for centuries all over the world. Friedrich Froebel and Johann Heinrich Pestalozzi believed that outdoor learning created a balance between “hands, heart, and head” (Desmond, Grieshop & Subramanian, 2004). Other philosophers such as Johann Comenius and Jean Jacques Rousseau recommended gardens in school to further enhance the learning experience of the child (Kohlstedt, 2008). School gardens were considered to have a two-fold benefit for children in early education. The first benefit was seen as a way to give real meaning to young pupils “hand work” which would lead to a deeper appreciation of poetry, pictures and music. The second benefit was for the older pupils who worked in the garden; they learned technical skills, food production and nature study (Forrest & Ingram, 2003). The first school gardens were very influential in the spread of gardens as an educational tool.

Peter Akerblom (2004) states that in the early nineteenth century the Swedish made a motion to implement gardens in every school. The gardens would be attached to the teacher’s place of residence for two reasons. The garden would supplement the teacher’s
income by providing food for the teachers as well as be a source of instruction for the children. Following the success and usefulness of the school garden, the Swedish government decreed that gardens should be on the actual school grounds and that all teachers must provide gardening education (Akerblom, 2004). The Irish had a similar method of implementing school gardens. Mary Forrest and Valerie Ingram (2003) depict children tilling the fields and reaping the benefits of the gardens in Ireland. The benefits of school gardens in countries such as these boosted the implementation of gardens in the United States.

Sally Kohlstedt (2008) states that school gardens were flourishing in the United States during the early 1890’s as evidenced by newspapers, national magazines and school reports. School gardens were used to stimulate excitement and enthusiasm in children to learn “natural” study material which eventually led to the introduction of science curriculum in public schools (Kohlstedt, 2008).

School gardens were even used as tool to help fight World War I. In the early months of 1917 the National War Garden Committee was developed. Times were tough, men were called to fight, food was scarce, and the United States needed a solution to the starvation epidemic spreading across the world. The National War Garden Committee urged people, including those from the city, as well as children to do their part to garden their own goods. This would save the mass produced goods for the soldiers and other countries such as Europe that so desperately needed them (Pack, 1919). At the start of World War I there were notably less people working on farms, as people moved to the city to find jobs. This meant that teachers and students were not efficient in running a fully functional garden as they were two decades before. The Committee developed a book
called “War Vegetable Gardening” that provided instructions for teachers to develop and maintain a successful school garden. Pack (1919) noted that there were 30 to 50 million children that could contribute to the food produced in the United States. School gardens were not considered large producers of fruits and vegetables for this cause, but rather as a way to swell food production in general. Children would take the crops home and save the mass produced foods for the soldiers. The National War Garden Committee also noted that school gardens were teaching the children “thrift, industry, service, patriotism and responsibility” (Pack, 1919). The large explosion of school gardens produced many crops and many “garden soldiers,” but it can’t be denied that an expansion such as the War Vegetable Gardening program would also cause a lapse of participants once the need had been met.

After the war, Charles Pack of the National War Garden Committee continued to encourage victory gardens throughout America with a lack of response in return. According to Kahlstedt (2008) children were returning to normal life and parents and teachers were anxious to return to a regular curriculum. With the increase of immigration and emigration to and throughout the United States, the urban environment was quickly becoming crowded. Many school gardens were losing precedence to the overcrowded classrooms, resulting in a lack of funds to support the school gardens.

After many dormant decades, the school garden made a comeback. With an increase in measures to decrease obesity prevalence and to increase health awareness, school gardens are on the forefront of preventative actions for children. Amy Cutter-Mackenzie (2009) states that there are numerous benefits of a school garden including positive influences on a student’s health and well being, improved academic performance, and increased physical
activity. There are many state initiatives that encourage the development of gardens in schools. California has such an initiative. The report *Best Practices Models for Implementing, Sustaining, and Using Instructional School Gardens in California* (2011) suggests that gardens demonstrate an increased in taste preference and an improved consumption of fruits and vegetables in children with a school garden on campus. The education provided through a school garden extends from technical skills to health and wellness education. A history such as that of the school garden is viewed as an extensive attempt to connect the child to the garden. With a task such as this, there are undoubtedly going to be some issues that will arise during the process.

**II. Practical Considerations**

Although there are many benefits to gardens implemented on school campuses, there are bound to be issues that schools have to overcome. Emily J. Ozer (2007) names five legitimate issues that can occur with a school garden: (1) time commitment of the teacher; (2) support from volunteers and administrators; (3) gardening experience; (4) space for the garden on campus; (5) funding.

Time commitment is a large part of a school gardens’ lack of success. Ozer (2007) reports that teachers often felt restricted for time when trying to incorporate the maintenance of the garden into their daily curriculum. The second and the third issues found in Ozer’s (2007) review was that there was a lack of support from volunteers and administrators and there was also a lack of gardening experience. Kohlstedt (2008) found similar issues in the first school gardens in the United States. The teachers needed the support of manuals in order to teach the material required by the government. Both the historical and current school gardens lack the support of volunteers and administrators to
help operate and maintain the gardens. The support from people in the community would greatly improve the success of these projects. The garden programs outlined in the Cutter-Mackenzie (2009) article “Multicultural School Gardens: Creating Engaging Garden Spaces in Learning About Language, Culture and Environment” utilized the involvement of the community, including parents, teachers, grandparents and siblings. The involvement of many different parties was related to a better success rate of school gardens within the study. The community can be involved in more than just the implementation and maintenance of the garden; they can also provide essential finances for the garden. Community members can do fundraisers, grant writing and private funding of the gardens.

Funding for any project is likely to be difficult. Many schools would appreciate the school gardens but may not have the funds to sustain them. Kohlstedt (2008) examines the historic gardens that had government financial support as well as community donated financial support. The article states that there were many organizations that donated money for the cause of “natural study” programs. The groups varied across national geographies. There was the Woman’s Auxiliary of the American Park and the Outdoor Association in Boston, the Home Gardening Association in Cleveland, and many more organizations throughout America which financially provided for the school gardens in their community (Kohlstedt, 2008). Today, there are many grants available for those schools and teachers in need of financial support for their gardens. In 2006, California set aside $15 million for school gardens, with individual grants up to $5000. Of the schools that applied for the grants, 39% received the funds. There are funds available throughout many states for financial support of gardens but they are scarce and often hard to find (Hazzard, Moreno, Beall & Zidenberg-Cherr, 2011). With issues such as time, support,
and funds addressed, school garden implementation can begin.

**III. Types of School Gardens**

When thinking about the implementation of a garden it is important to consider garden location and type of garden that would be best for the campus. There are three things that each garden needs to succeed: sun, shade, and soil. Sun is important for the garden so the vegetables can grow, but too much sun can lead to death of the plants. Bartholomew (1981) states that the best time for gardens to receive sun is in the mid-morning and mid-afternoon, and the garden should be shaded at the height of the sun during the afternoon. Observing the cycle of the shade is important because it is essential to know when the garden will be protected from the sun. The last component to consider before designing the garden is soil. The better the soil, the better the yield of the garden. Good soil is not over-used, dried, or diseased by bacteria. Healthy soil relates to a large production of strong vegetables that can withstand insects and harsh weather conditions (Bartholomew, 1981).

These considerations can be applied to all types of gardens: in ground, above ground, and container gardens. The traditional, or in-ground, garden has many benefits to its design. The garden is using a plot of land that may be available on the campus already. The in-ground garden also needs less creativity than other versions since many people are familiar with the design. The handbook, *Growing the Outdoor Classroom: A Handbook on Gardening in Albuquerque Public Schools* (2010) signifies the benefits of an in-ground garden as being able to retain moisture, helping improve quality of surrounding soil and keeping the soil cool during the summer heat.

An alternative that many schools resort to on their campuses is the above ground
garden. Above ground gardens have many benefits that range from being easy to install to being a functional piece of decoration in any campus setting. Many above ground gardens are no more than 10-24” above ground and range from 4’x 8’ in size (Growing Gardens Team, 2010). The small nature of the box is useful for small children to reach over the entire box, as well as easy placement on campus. The above ground garden also adds the benefit of protection from playful children’s feet, since it has its own barrier surrounding it. That National Gardening Association (NGA) (2010) states that although the above ground garden requires more initial work to set it up, there is less long term work to maintain it. For extra appeal, the gardens can be decorated with bricks, stones or the children’s paintings. For schools that desire a garden but are too limited in space for an in-ground or above ground garden, the alternative is the container garden.

Container gardening is a micro model of farming. The container garden does not take up much space, it does not require as much time and it is able to grow a majority of the same vegetables traditional gardens grow. There are many different types of container gardens that schools can work with; including the new vertical pocket gardens (such as Woolly Pockets) as well as pots, window sills and on roof top gardens. The Woolly Pocket garden is a new method of growing vegetables where the “pockets” are able to hang on virtually any surface: dry wall, brick wall, chain link fence, class railings and metal walls. The pockets are made with reinforced material made from recycled bottles which allow the plants to grow in a safe, strong environment (What is a Woollypocket, 2011). The main benefit of the WoollyPocket garden is that it takes up little to no space on a small or crowded campus which makes them very useful in urban environments. The garden also has the added benefit of being able to hang close to, or actually on the
classroom. This would benefit the children’s ever present awareness of their crops and their duty to maintain the garden. The garden also has the benefit of being transferable, since the garden can move from class to class throughout the years of its employment on the campus. The downside of the WoollyPocket garden is that it is limited in the size of plants it can grow in the pocket. Although it can hold large crops, items such as corn or sunflowers are discouraged (What is a WoollyPocket, 2011). If the school doesn’t have even enough space for a hanging wall garden, then other types of container such as pots or window sill gardens can be considered.

Pots are an exceptional alternative to traditional gardens. Multiple vegetables can be grown in one large pot, and the pot can be inside or outside of the classroom due to their smaller size also requiring less maintenance time. The best types of pots are fiberglass or plastic since they do not absorb moisture the way wood or terracotta pots do (Hold Their Water, 2007). If the pots are still too large for the classroom the alternative could be the windowsill garden. Windowsill gardens are a great resource for schools that want to garden but might not have enough space or don’t want the responsibility of a big garden. Windowsill gardens are sturdy enough to be used throughout the year for educational and decorative purposes. One might be hesitant to use a windowsill garden due to its small size but according to Mchoy & Evelegh (2009), salad crops such as tomatoes and lettuces thrive in environments such as the small windowsill garden. The windowsill garden is also a great location for herbs which can grow even during the winter. The benefit for the windowsill garden is the prime location of being in the students view. The fact that it can grow vegetables year round, and the minimal amount of space needed for the garden makes it ideal for many schools. Although in-ground, above ground and container gardens
are ideal, there are schools that still do not have space for a garden, even a windowsill garden. An option for these schools is the rooftop garden.

The rooftop garden is a great tool to bring gardening to cities. Many large cities do not have space to grow a garden, so they utilize the building by creating a rooftop garden. Rooftop gardens have a limited scope for radical garden planning due to the structural and load-bearing specificities of each site, meaning the size of the garden should be in proportion to the roofs load-bearing capacity (Mchoy & Evelegh, 2009). A benefit of the rooftop garden is that it does provide a place where the children can garden essentially protected from dangers such as heavy traffic. Bartholomew (1981) suggests that the garden builder consider what type of roof top the garden will be built on. Many rooftops are painted white or black. The white rooftops can reflect light back to the plants, causing them to dry out; while black rooftops may collect heat making the temperatures unbearable for the plants. Another consideration for the rooftop garden is watering sources and shade, both being important for the survival of the rooftop garden. When building a rooftop, or any garden for that matter, safety is a large concern for the benefit of the garden as well as for the gardeners.

IV. Safety in the School Garden

When building a school garden, safety issues such as the placement of the garden, soil sanitation, pesticide uses and safety measures should be addressed. The placement of a school garden should be in a location that receives equal parts sunlight and shade. The article, “Food Safety in the School Garden” (2010) suggests building a garden away from wells, septic systems, in ground tanks and dumpsters. The article also says to avoid areas where water collects and cannot drain properly, this might cause harm to the vegetables
and to those that consume the vegetables.

Many articles, such as “Food Safety in the School Garden” (2010), specify that soil safety is the key to overall garden safety. The soil feeds the plants which eventually will feed the children and others. If the garden is going to be an in-ground garden, the soil should be tested through a private company. The soil will be tested in a laboratory that will check for hazardous materials such as lead, arsenic, chromium, sewage sludge and mercury (Center for Environmental Policy and Management [CEPM], n.d.). When using above ground or container gardens, store bought soil is most likely going to be used. When shopping for soil it is important not to use unsterilized soil because there may be potentially hazardous materials in the soil when it was packaged (California Department of Education, 2011). Similar to soil, pesticides used in the garden to protect plants can pose as a harmful substance to both the garden and the gardeners. It is important to avoid synthetic herbicides, fungicides or insecticides on the garden or within 25 feet (Food Safety in the School Garden, 2010). Bremmer and Pusey (1990) say that there are alternatives to pesticides and they all start with proper care of the garden. They state that healthy plants are less susceptible to damage from pests and they can tolerate some damage from insects. A healthy plant is able to bear more fruit and thus it can withstand minor losses. Bremmer and Pusey also indicate that weeds in a garden attract insects, and that it is best to remove all weeds and dead plants from the gardens to protect the living plants from pests.

While building a school garden it is essential to consider the safety of the child while they are gardening. Some safety practices while gardening include washing of the hands after being in the garden area, using a tool shed to safely store tools, and teaching the
children about the dangers that could arise from playing in the garden (Food Safety in the School Garden, 2010). The University of Maryland College of Agriculture & Natural Resources (2010) suggests that students wear closed toed shoes, should not eat anything while in the garden, and should be aware of the garden structure (posts, barriers, ties, etc) while in the garden to avoid harming themselves.

V. Conclusion

School gardens are instrumental in bringing the child to the garden. There is a strong history of children exploring gardening and natural sciences through gardens. Starting in the nineteenth century until today, school gardens have been valued for their benefits, ranging from basic science to health education and wellness. Gardens come in many different sizes and shapes, and present with their own set of issues to overcome, but overall, they are an ideal learning space.
A garden logistics manual would greatly benefit any school interested in building and maintaining a successful garden on campus. The following sections detail the steps taken to create such a manual.

Needs Assessment

From our research, it was determined that there was a lack of manuals that could possibly assist schools in building and sustaining a garden. In Spring 2011, the CSUN Marilyn Magaram Center, together with the students from the CSUN course FCS 690B Sustainability in Food Science, had built a total of two Woolly Pocket Gardens on university and elementary school grounds using funds awarded by a Housing and Urban Development (HUD) grant. The grant allocated funds to be allocated for schools in an urban setting, three schools in Van Nuys, California were chosen to be a part of the project due to the higher rate of obesity present on their campuses. The gardens were built using the Woolly Pocket Gardens manual, but there was a need for more information while building the garden. This experience lead the team to believe that a garden logistics manual would greatly benefit the Marilyn Magaram Centers’ garden project and possibly other schools interested in building a school garden.

Development of the Garden Logistics Manual

The first step to building the manual was connecting with the garden coordinators at Calvert Elementary School in Woodland Hills, California and Ventura Unified School District that already had gardens. These specific garden coordinators were chosen because
they had successfully installed gardens on their school campuses and we wanted to collect as much information as we could about their experiences. Information on successful and failed gardens was gathered and compiled into a list of research topics. After talking with school personnel, urban garden experts, and an urban garden development company (Woolly Pocket Gardens) we compiled reasons for success, failures and possible complications of school gardens.

The second step in building a school garden logistics manual was researching literature on gardens. The research included topics ranging from the history of school gardens to school garden planning. The insight gained from the research was important in creating and organizing the manual. By reviewing literature on school gardens, four topics were deemed necessary to address in a garden logistics manual: types of school gardens, safety considerations of a garden, how to build and maintain the garden.

The third and final step to the logistic manual development was surveying the teachers, office administration and CSUN volunteers involved in the school gardens at Cohasset and Anatola Elementary Schools in Van Nuys, California, in addition to Ventura Unified School District school personnel. The surveys were used as a tool to gather information about concerns the teachers, staff and volunteers had about the garden throughout the project. For convenience reasons the surveys were done online using SurveyMonkey.com. At Cohasset Elementary School, teachers (n=4) and office administrators (n=8) were surveyed. Ventura Unified School District teachers (n=12) and CSUN volunteers (n=5) were surveyed to further gather input on the school gardens. The surveys for Office Administration included the following open ended questions:

1. What concerns do you have about having a school garden on your campus?
2. Would you want to become involved with the garden project (maintaining the garden, providing gardening education, etc)?
   
a. How would you like to help?

3. What issues, if any, with the garden you would like bring attention to the garden coordinator?

The surveys for the teachers included the following open ended questions:

1. What benefits did the WoollyPocket garden provide to the students learning environment?

2. What negative aspects, if any, do you feel the gardens added to your day (watering, lessons, time, etc)?

3. What is something that you appreciated about working with the WoollyPocket garden and CSUN representatives?

4. What suggestions might you have for future teachers who are using the gardens?

The surveys for Ventura Unified School District teachers included the following questions:

1. What benefits did the school garden provide to the students learning environment?
   Please explain.

2. What negative aspects, if any, do you feel the gardens added to your day (watering, lessons, time, etc)?

3. What is something that you appreciated about working with the school garden?

4. What suggestions might you have for future teachers who are using school gardens?

5. Comments or questions?

The surveys for CSUN student volunteers included the following questions:
1. On a scale of 1 to 5, how equipped do you feel equipped to work with the gardens?

2. What issues, if any, would you like to bring up to the Garden Coordinator?

3. Were there any negative aspects of working with the WoollyPocket garden?

The results from the surveys were useful in determining what the content of the manual should be.

In summary, the garden logistics manual content and structure was based on communicating with other school garden coordinators, conducting a literature review and surveying the staff and volunteers involved with the garden.

The final version of the garden logistics manual is composed of five sections:

1. Types of Gardens
2. Safety Considerations
3. Building the Garden
4. Maintenance of the Garden
5. Appendix

Results from the literature review, surveys, and verbal communication with other schools garden coordinators were all taken into account for the development of the manual.
CHAPTER IV

RESULTS

The purpose of this project was to create a garden logistics manual that would clearly describe how to build and maintain a school garden. The manual was created through different stages: meeting with garden coordinators, reviewing literature, surveying parties involved with the gardens and the actual development and of the garden logistics manual.

Meeting with garden coordinators was a method used to gather information on the causes of the success and failure of school gardens. The coordinators guided us through their past mistakes and hindrances which helped us to avoid similar mistakes in our gardens. The discussions from our meetings helped shape the information searched for during the review of literature stage.

The review of literature was used to gather peer reviewed information on school gardens. The literature review produced information on the history of school gardens, practical considerations, types of gardens, and safety in the school garden. This helped shape the organization of the manual as it became clear that the topics in the literature review could easily translate into the chapters of the garden logistics manual.

Surveys were administered to school office administrators and teachers at Cohasset Elementary and Ventura Unified School District and to CSUN garden volunteers. The surveys that were collected helped assess perceptions of the use of the gardens on a school campus.
Surveys for Office Administration

The school office administration (n= 8) was surveyed after the garden had been on campus for one semester at Cohasset Elementary. We wanted to survey the implications that the garden could have had on the office staff. There was a thirteen percent (n=1) return rate for the administration survey. The respondent did not feel that the garden was a burden on the campus or the office staff. They also indicated that they would like to become more involved in the garden by watering, building or maintaining it.

Surveys for Teachers

The teachers involved in the garden at Cohasset Elementary (n= 4) were surveyed to gather information related to the effect of the garden on improving their classroom environment. There was a twenty-five percent (n=1) return rate on the survey. The results indicated that the teachers appreciated how the gardens tied into their classroom lessons and how the children were able to have new experiences in the garden. The main reported negative aspect of the garden was that it was disruptive to the student’s normal class time. In addition, the teachers stated that it was difficult to calm the students down after working in the garden. No suggestions were made on behalf of the teachers on how to correct this issue.

Surveys for Ventura Unified School District Teachers

The Ventura Unified School District teachers (n=12) were surveyed because of their large success with school gardens. There was a fifty percent (n=6) return rate of surveys from the teachers that revealed, in great detail, how much they enjoyed working with the gardens. They made suggestions on how to use the gardens as teaching tools,
how to incorporate volunteers and maintenance suggestions that were able to be incorporated into the garden logistics manual.

**Surveys for CSUN Student Volunteers**

The CSUN volunteers (n=5) involved in the school garden project at Cohasset and Anatola Elementary schools were surveyed to gather information on the garden from the volunteers perspective. There was a one hundred percent (n=5) return on the surveys. The results revealed that the volunteers enjoyed the project and felt prepared to work with the gardens throughout the semester.

The survey results shaped the final development of the manual by addressing the concerns schools might have about building and maintaining a school garden.

**Content Development**

The content of the manual was developed by compiling the information from the review of literature, the surveys, and the practical experience gathered from working on the Cohasset and Anatola Elementary school campuses for one year. The outline of the garden logistics manual was conceived with Professor Ritamarie Little and Dr. Claudia Fajardo-Lira after the literature review. The outline was set to incorporate the major issues encountered when building and maintaining a school garden. The final version of the garden logistics manual is composed of four sections: types of gardens, safety consideration, building the garden and maintenance of the garden. An appendix section to the garden logistics manual was also created. It contains useful surveys, handouts, signs, and additional resources that were used while the garden manual was being created.

The garden logistics manual was developed in hopes that elementary schools can use the manual to build and maintain school gardens. The logistics manual is an easy step-
by-step reference manual that provides instructions for the school personnel to incorporate a school garden on their campus.
CHAPTER V
SUMMARY AND CONCLUSION

The purpose of this project was to develop a manual to help guide school personnel, volunteers, and teachers to build and maintain a successful school garden. The garden logistics manual was developed after meeting with garden coordinators, reviewing literature and after working with school gardens for one year. The manual was structured to be easy to read, informative and motivational.

The manual was created in hopes of being used on school campuses throughout the country to help build and maintain school gardens for the benefit of children. The outcome of the project was a manual that can be distributed to many different schools and to be used in different settings. The manual has not yet been distributed for evaluation but there are garden coordinators eagerly anticipating the manuals. Although the manual’s success cannot be tested at this time, we believe that the manual will be useful to garden coordinators. The manual has incorporated many different issues that could arise while building and maintaining a school garden and that could contribute to its success.
REFERENCES


Rome, Italy.


How to Build Your School Garden: A Garden Logistics Manual

Kelley Gold

A comprehensive guide to the building and maintaining of a garden on your school campus.
Congratulations! You’ve decided you want to build a garden on your school’s campus! Now you’re probably asking yourself four questions:

1. What type of garden do I want?
2. What are the safety considerations?
3. How do I build a school garden?
4. How do I maintain a school garden?

This manual is here to help! The Garden Logistics Manual guides you through the process of choosing a type of garden and forewarns you of safety issues that might arise with a garden on your campus. This manual also helps you build and maintain your school garden.
There are many different types of gardens that work on school campuses. The in-ground, above ground, and container gardens offer a variety of ways to grow produce, herbs and flowers on a school campus.

**In-Ground**

The traditional, or in-ground, garden has many benefits to its design. The garden uses a plot of land that may be available on the campus already. The in-ground garden also needs less creativity than other types of gardens since many people are already familiar with the design. One of the benefits of an in-ground garden as being readily able to retain moisture, help improve the quality of surrounding soil and the soil stays cool during the summer heat. These qualities are useful in dry or hot areas since it can prevent the drying out of the vegetables and decreases water needs.

**Above Ground**

Above ground gardens have many benefits that range from being easy to install to being functional pieces of decoration in any campus setting. The garden is built above ground, in a four-walled box; many above ground gardens are no more than 10-24” above ground and range from 4’x 8’ in length. The box can be made of plywood, bricks, or cement. The small nature of the garden is useful for small children to reach over the entire box as well as easy placement on campus. The above ground garden also adds the benefit of protection from playful children’s feet since it has its own barrier surrounding it. That National Gardening Association (NGA) (2010) states that although the above ground garden requires more initial work to set it up, there is less long-term work to maintain the garden. For extra appeal, the gardens can be decorated with bricks, stones or the children’s paintings.

**Container**

For schools that desire a garden but are limited on space for an in-ground or
above ground garden, the alternative is the container garden. Container gardening is a micro model of farming that reaps many benefits. The container garden does not take up much space, it does not require as much maintenance time and it is able to grow a majority of the same vegetables traditional gardens grow. There are many different types of container gardens that schools can use. Some examples would be a hanging vertical gardens (such as the WoollyPocket School Gardens), potted plants, or windowsill gardens. Each container garden provides a unique way to grow a garden in a confined space.

**Hanging Vertical Gardens (WoollyPocket Gardens)**

The hanging vertical gardens are an option for schools that have limited space to build and grow a garden on campus. The WoollyPocket garden has the ability to grow plants in rows of pockets that can attach vertically to fencing, railings, and brick walls. The WoollySchool Garden system are particularly useful as a “low maintenance” container garden because they are easy to move, relatively easy to maintain, and are built to be used with a drip irrigation system. A negative aspect of using the WoollyPocket Garden is that it does not reserve water as well as the traditional gardens or potted container gardens. This would be a concern for schools in dry or hot environments.

**Potted Gardens**

Pots are an exceptional alternative to traditional gardens. Multiple vegetables can be grown in one large pot; the pot can be inside or outside of the classroom and because of their small size (in comparison to the traditional garden) and they require less maintenance time. The best type of pot would be fiberglass or plastic pot since they don’t absorb moisture and thus better moisture content of the soil for the plants.

**Windowsill Garden**

The windowsill garden is a great resource for schools that want to garden but might not have enough space or don’t want the responsibility of a large garden. The windowsill gardens are sturdy enough to be used throughout the year for educational and decorative purposes. One might be hesitant to use a windowsill garden due to its small size but salad crops such as tomatoes and lettuces thrive in environments such as the small windowsill garden. The windowsill garden is also a great location for herbs which can grow even during the winter. The main benefits of the windowsill garden are the prime in-class location which affords students the opportunity to watch the plants grow; the ability to grow vegetables year round and the minimal amount of space needed for the garden. All of this makes it a perfect fit for many schools.
Safety Considerations

When building a school garden, safety issues such as the placement of the garden, soil sanitation, and pesticide use should be addressed.

Location

When building a school garden it is important to look at the location of the garden. The location is important for the success of the crop as well as the safety of the children working in the garden. It is important to look at several factors when placing the garden:

1. Is the garden near a play area?
2. Is the garden in a high-traffic area?
3. What possible hazards surround the garden?

Since the garden is on a school campus it is undoubtedly going to be in contact with children, the garden should not be a hazard to the children. If the garden is built in a common play area, such as a playground, it should have protective borders surrounding it. The borders are useful in deflecting balls and toys from being thrown into the garden. The borders also prevent running children from entering the garden and possibly hurting themselves or the plants.

If the garden is going to be built in a high-traffic area there are several safety considerations to be aware of: The first being, after watering the garden, is there a pool of water? If the garden is in a high-traffic area and there is water on the ground after watering, it could possibly be a slip hazard. Also, when the garden is in a high-traffic area, the children tend to touch the garden and the vegetables which could be damaging to the plants if the children pull them out of the ground. If the garden is going to be in a high traffic area, then one way to address these issues is to install a barrier around the garden, such as a fence, or signs that warn children not to enter the garden.

The third safety consideration of the garden is the hazards that surround the garden physically. When choosing a garden location, be aware of the land that you are planting on or land nearby. It is suggested that you talk the school district to know what was once on the ground where you are building. It is best if the garden is built away from
old wells, sewage drains or dumpsters to avoid contamination of the soil or crops. Contamination from dirty water sources, such as those previously listed can easily infiltrate the gardens water source and thus alter the integrity of the water for the plants.

**Soil**

The garden soil is a very important safety consideration as the soil feeds the plants, which eventually feeds the children. If the garden is going to be an in-ground garden the soil should be tested through an outside company. The results will be tested in a laboratory that will check for hazardous materials such as lead, arsenic, chromium, sewage sludge and mercury. When using above ground or container gardens, store bought soil is most likely going to be used. When shopping for soil it is important not to use unsterilized soil because there may be potential hazardous materials in the soil when it was packaged which could harm the plants and the children.

**Pesticides & Herbicides**

Similar to soil, pesticides pose as a harmful substance to the garden. It is important to avoid synthetic herbicides, fungicides or insecticides on the garden or within 25 feet of the garden. When using pesticides in close proximity there is a potential for the garden to become contaminated with the pesticides. If the pesticides are especially dangerous, and the children consume the vegetables there could be detrimental consequences to the children. There are alternatives to pesticides and they all start with proper care of the garden. Healthy plants are less susceptible to pest damage and they can tolerate a little damage from insects. The sign of a healthy plant is that it is bearing fruit, but a sign that a plant is weak is that it is being consumed by pests and they are wilting. It can also be noted that weeds are like calling cards that attract insects to the garden. It is best to remove all weeds and dead plants from the gardens quickly to protect the living plants from pests that want to feed on the dead plants and weeds. The prevention of pests and weeds can be done without the use of harmful chemicals. Lady bugs, for example, feed on small pests that harm vegetables and thus they can be used as an alternative to pesticides. Also, weekly maintenance of the garden decreases weeds from ravaging the garden. For more information, please refer to the Maintenance chapter.
Building the Garden

Building the school garden is an enjoyable process but it needs planning. After choosing the type of garden desired for the campus it is critical to choose the location, proper soil type and begin recruiting volunteers to help with planting and maintenance of the garden.

Location

Choosing the appropriate location is crucial to the sustainability of the garden. The garden should be located in an area on campus that receives ample sunlight, is close to a water source and, as mentioned previously, is in a safe location for the children to be around.

Sunlight is important for the garden so the vegetables can grow properly, but too much sun will lead to death of the plants. The best time for gardens to receive sun is in the midmorning and midafternoon; ideally the garden should be shaded at the height of the sun during the afternoon. Observing the cycle of the sun is important when building a garden because it is important to see how much sun will be on the garden throughout the day. The main concern with over exposure of the garden to sun is the drying out and possible death of the plants. A well located garden, with a good balance of sun and shade will be more likely to succeed.

When thinking about the location of a school garden, proximity to a water source is a large convenience consideration. For the benefit of all the parties involved in the maintenance of the garden, the closer the garden is to a water source, the easier it is to water the garden with a hose, watering can or drip system.

As mentioned in the Safety Considerations chapter, it is important to think about the safety of the children and the garden when considering where to build the garden. The garden should be away from high-traffic areas where children can run into the garden and possibly hurt themselves or the vegetables.

Soil

The sustainability of a garden and crops are dependent on soil; the better the
soil, the better the results of the garden. Healthy soil relates to a large production of vegetables as well as strong vegetables that can withstand insects and harsh weather conditions. When building a garden, it should be noted that the soil is important and may need researching to find the best soil type for your garden. Please see the Maintenance of the Garden chapter for more information on supplementing the soil throughout the life of the garden.

Volunteers

One resource that is absolutely invaluable to a school garden is a group of committed volunteers. Volunteers can range from teachers in the school, community members, classroom parents and to the local university students. When searching for volunteers there is no limit to the places you can find them; there are many people who are interested in gardens and would be happy to help build and maintain a school garden. Volunteers are useful for many reasons; they can help build the garden, water the garden, provide garden education to the students, and they can even help raise money for the garden.

Planting

Once you’ve finally built your garden it is time for planting! Since the garden is ideally an education tool it would be beneficial for the children to plant with adult supervision. Volunteers are helpful in providing additional support during the process. Planting is simple, fun, and dirty!

Before planting begins it should be decided if you would like to use seeds, starters or a combination of both. Starters are a wonderful tool to speed up the process of growing full grown vegetables. Using seeds versus starters depends on how much time you have to grow the plants into starters. Starters can be grown before building the garden or they can be purchased at a gardening store. They tend to be sturdier than new seedlings and can survive many different environments compared to seedlings.

The first step to planting is digging the hole in which the seeds or starters will be planted. The children can do this with their hands or little shovels. The holes should be about two to three inches deep and just wide enough to plant the seeds or starters. Once the seeds or starters are in the holes instruct the children and volunteers to gently cover the holes and pat the surrounding area.

The second step to planting is feeding the newly planted vegetables. Watering the seeds and starters after planting encourages growth in their new environment. It is also suggested to use a compost tea over the newly planted garden to further encourage growth. For further information on compost tea please see the Maintenance chapter.
Maintenance of the Garden

After the school garden is built maintenance is required. Maintaining the school garden necessitates a watering schedule, occasional soil supplements and general tasks to ensure the sustainability of the garden.

Watering Schedule

Watering a school garden is a task that needs special attention. Often, a set watering schedule for the classroom and volunteers is useful in planning continuous maintenance. When the summer heat begins to dry the soil faster, it is crucial to water the garden every day. The garden watering schedule can be made in a variety of ways: excel spreadsheets, online calendar, poster boards, etc. Please refer to the appendix to see an example of a watering schedule. When setting up a watering schedule be mindful of how long it takes to water the gardens and that may help to stay on track with watering.

Soil Supplements

As with a large farm crop, soil vitality is crucial to the crop. Many farmers transition between land plots every few years, they turn the soil, and they also fertilize the soil. Since the school garden is a micro-farm it could also be deduced that the soil should be nursed in a similar fashion. Many of the soil supplements can be bought online or in the neighborhood gardening store.

Live worms are useful in aerating the garden soil, bringing oxygen to the plants roots as well defecating in the soil to bring further benefits to the garden. If you do not have live worms in your school garden, you might benefit from bagged worm castings. Worm castings, essential worm manure, are a great way to supplement the soil throughout the lifespan of the garden if the garden lacks live worm activity. The castings come in a bag form for easy disposal over the garden to help revive the gardens soil. The way you use the castings will depend on the type and size of garden you have. Follow the package directions for use.

An alternative or supplement to worm castings is compost tea. The compost tea, the beneficial nutrients and microorganisms from compost, is an inexpensive garden
supplement that helps provide extra nutrients to the garden. The “tea bags” are generally steeped overnight in large water buckets and then poured over the garden the next day, the amount of water and buckets depends on the brand of compost tea, please follow the products directions for use.

**General Garden Maintenance**

The main maintenance of the garden is watering and soil maintenance. The easiest way to do garden maintenance during a busy school day schedule is to incorporate it into the watering schedule. A suggestion would be to have half of the class water the garden while the other half of the class maintain the garden by making sure the plants are not pulled from the garden and if the garden is area is clean. Other maintenance issues include checking the garden (above-ground and container) for breaks in the foundation or walls. If the garden maintenance, besides the daily watering, is performed at least once a week, it will not become overwhelming to do it later on.
Appendix

Surveys

Surveys are a great way to gather information from the people working on the garden: students, teachers, office administration and volunteers. The surveys can be mailed, verbal or online. Surveys can be used as a method to ask the same question to multiple people and receive responses back in an organized fashion. The surveys help the garden coordinator to see a general picture of how the gardens are perceived through different people’s perspective. Please see the following examples of how to collect information through a survey setting.

Survey for Teachers Who Worked on the Garden in the Past

5. What benefits did the garden provide to the students learning environment?
6. What negative aspects, if any, do you feel the gardens added to your day (watering, lessons, time, etc)?
7. What is something that you appreciated about working with the garden?
8. What suggestions might you have for future teachers who are using the gardens?

Survey for Future Teachers

1. What are some concerns that you have with working with the garden (time, curriculum, etc)?
2. On a scale of 1 to 5, how equipped do you feel equipped to work with the gardens?
   Do you feel that you know enough about gardening? Do you understand your role in the project?
3. How much time would you be able to dedicate to the garden project per week?
   (Please also consider class time for garden education vs. time for maintenance such as watering)
Survey for Current Teachers

1. Do you feel that the in-class and hands-on lessons are appropriate to your current curriculum?
   a. Strongly Agree
   b. Agree
   c. Disagree
   d. Strongly Disagree

2. How much time would you be able to dedicate to the garden project per week? (Please also consider class time for garden education vs. time for maintenance such as watering)
   a. 20 Minutes per week
   b. 30 minutes per week
   c. 45 minutes per week
   d. 60 minutes per week

3. Do you feel that you receiving the support you feel that you need to complete this project?
   a. Strongly Agree
   b. Agree
   c. Disagree
   d. Strongly Disagree

4. Are you interested in continuing the gardening project if volunteers leave?
   a. Strongly Agree
   b. Agree
   c. Disagree
   d. Strongly Disagree

5. Do you have any suggestions or comments pertaining to the garden project?

Survey for Office Administration

1. What concerns do you have about having a school garden on your campus?

2. Would you want to become involved with the garden project (maintaining the garden, providing gardening education, etc)?
   a. How would you like to help?

3. What issues, if any, with the garden you would like bring attention to the garden coordinator?

Survey for Parents Involved

1. Would you be able to help water the gardens once a week?
2. Would you be able to help with the garden as long as you are involved at the garden center
3. Would you help to take charge of the garden if need be?
4. What vegetables would you like to see planted in the garden?
5. Comments/ Suggestions

Signs

Watch Mrs. Smith’s Class Garden Grow...
Please Don’t Touch
Garden Label Example

<table>
<thead>
<tr>
<th>Insert Student Name</th>
<th>Insert Student Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arugula &amp; Beans</td>
<td>Chysanthemums</td>
</tr>
<tr>
<td>Spinach &amp; Beans</td>
<td>Green Onions &amp; Beans</td>
</tr>
</tbody>
</table>

40
Flyers
Survey Notice Flyer

Teachers, we want to know what you think about the gardens!
Please take our short survey to provide some feedback.
The surveys are anonymous, so please feel comfortable responding honestly.
Please type in the link into your browser to begin the survey:

Watering Schedule

<table>
<thead>
<tr>
<th>Mon</th>
<th>Tues</th>
<th>Wed</th>
<th>Thurs</th>
<th>Fri</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jane</td>
<td>Joe</td>
<td>Class</td>
<td>Smith</td>
<td>Katie</td>
</tr>
</tbody>
</table>
What Makes a Garden Grow?
Sun, Water, & VOLUNTEERS!

Wooly Pocket Gardens have now been installed on your campus. If you are interested in being a part of the gardening project please let us know! We’d love to have people to water the gardens, check on the plants, and much more.

If you are interested please contact:
Garden Watering Guide Flyer (WoollyPocket Garden Example)

**Wooly Pocket Watering Guide**

- Each pocket row needs about 3 gallons of water at least every other day
  - Each kit should have two 2-gallon watering cans and one 1-gallon watering can
  - Suggestion: use one 2-gallon watering can + one 1-gallon watering can OR 3 1-gallon watering can per Wooly Pocket Row
- You will know when the pockets are fully done being watered when the soil is moist, not soggy
- Please try not to pour the water directly over the plants, pour onto the dirt to avoid damaging the plants
- Note: Your class is watering the gardens on Wednesdays; CSUN students and volunteers will water on Mondays and Fridays. If you notice that the gardens look dry please feel free to water outside of your schedule days.

**Useful Resources**
**WoollyPocket Gardens**
Wollypockets.org

**Compost Tea**
Malibucocompost.com
EB Stone Worm Casting
Ebstone.org

Websites

Books
**APPENDIX B**

*The Survey for Office Administration*

### WoollyPocket Garden: Administration Survey

**What concerns did you have about having a school garden on your campus? Do you still have concerns about the garden on campus?**

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>answered question</td>
<td>1</td>
</tr>
<tr>
<td>skipped question</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number</th>
<th>Response Text</th>
</tr>
</thead>
</table>
| 1      | No

**WoollyPocket Garden: Administration Survey**

**Would you want to become involved with the garden project (maintaining the garden, providing gardening education, etc)?**

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
<td>0.0%</td>
<td>0</td>
</tr>
<tr>
<td>Disagree</td>
<td>0.0%</td>
<td>0</td>
</tr>
<tr>
<td>Agree</td>
<td>0.0%</td>
<td>0</td>
</tr>
</tbody>
</table>
Strongly Agree | 100.0% | 1
---|---|---
If you agree or strongly agree, how would you like to be involved? | | 0
 answered question | 1
 skipped question | 0

Would you want to become involved with the garden project (maintaining the garden, providing gardening education, etc)?

WoollyPocket Garden: Administration Survey

What issues, if any, with the garden you would like to bring attention to the garden coordinator?

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Count</th>
</tr>
</thead>
</table>
| | 0
 answered question | 0
 skipped question | 1
The Survey for CSUN Garden Volunteers

<table>
<thead>
<tr>
<th>Garden Volunteers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Were there any negative aspects of working with the WoollyPocket garden? If so, can you please explain?</td>
</tr>
<tr>
<td>Answer Options</td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>responded question</td>
</tr>
<tr>
<td>skipped question</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number</th>
<th>Response Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The only negative part were some of the teachers. They seemed uncooperative.</td>
</tr>
<tr>
<td>2</td>
<td>N/A</td>
</tr>
<tr>
<td>3</td>
<td>No</td>
</tr>
<tr>
<td>4</td>
<td>None that I can think of right now.</td>
</tr>
<tr>
<td>5</td>
<td>n/a</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Garden Volunteers</th>
</tr>
</thead>
<tbody>
<tr>
<td>How prepared did you feel to work with the gardens? (education, time, expectations, etc)</td>
</tr>
<tr>
<td>Answer Options</td>
</tr>
<tr>
<td>----------------</td>
</tr>
</tbody>
</table>

Very unprepared | 0.0% | 0
Unprepared | 0.0% | 0
Neither unprepared nor prepared | 0.0% | 0
Prepared | 60.0% | 3
Very prepared | 40.0% | 2
Comments | | 0

answered question | 5
skipped question | 0

How prepared did you feel to work with the gardens? (education, time, expectations, etc)

Garden Volunteers

What issues, if any, would you like to bring up to the Garden Coordinator?

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5</td>
</tr>
</tbody>
</table>
### Garden Volunteers

**What issues, if any, would you like to bring up to the Garden Coordinator?**

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>answered question</strong></td>
<td>5</td>
</tr>
<tr>
<td><strong>skipped question</strong></td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number</th>
<th>Response Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>No issues</td>
</tr>
<tr>
<td>2</td>
<td>N/A</td>
</tr>
<tr>
<td>3</td>
<td>I would make sure the teachers are aware of the schedule so they do not seem surprised when we enter their classrooms. I would also make sure that the teachers that are participating are enthusiastic about the project.</td>
</tr>
<tr>
<td>4</td>
<td>No issues that I can think of right now.</td>
</tr>
<tr>
<td>5</td>
<td>thus far, none (new to program)</td>
</tr>
</tbody>
</table>

---

**Comments/ Suggestions**
### Answer Options

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>answered question</td>
<td>3</td>
</tr>
<tr>
<td>skipped question</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number</th>
<th>Response Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The project is very rewarding and not intimidating at all. Everyone was very helpful.</td>
</tr>
<tr>
<td>2</td>
<td>N/A</td>
</tr>
<tr>
<td>3</td>
<td>Enjoying it so far! Great program.</td>
</tr>
</tbody>
</table>

---

**The Survey for Teachers**

### WoollyPocket Garden Reflection

**Comments or Questions?**

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>answered question</td>
<td>1</td>
</tr>
<tr>
<td>skipped question</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number</th>
<th>Response Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Thank you so much for all your hard work! We really had a great time.</td>
</tr>
</tbody>
</table>
### WoollyPocket Garden Reflection

**What negative aspects, if any, do you feel the gardens added to your day (watering, lessons, time, etc)?**

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2</td>
</tr>
</tbody>
</table>

- *answered question*: 2
- *skipped question*: 0

<table>
<thead>
<tr>
<th>Number</th>
<th>Response Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sometimes it was disruptive. It was very exciting for them, and it was hard to get them to quiet down afterward.</td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

### WoollyPocket Garden Reflection

**What is something that you appreciated about working with the WoollyPocket garden and CSUN representatives?**

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2</td>
</tr>
</tbody>
</table>

- *answered question*: 2
- *skipped question*: 0
### WoollyPocket Garden Reflection

#### What suggestions might you have for future teachers who are using the gardens?

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>answered question</td>
<td>2</td>
</tr>
<tr>
<td>skipped question</td>
<td>0</td>
</tr>
</tbody>
</table>

#### Comments or Questions?

<table>
<thead>
<tr>
<th>Number</th>
<th>Response Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Before going out to the pockets, go over what you will be doing first, in the classroom. May cut down on some the of over-excitement.</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
</tr>
</tbody>
</table>

| 2 |

| 0 |

| 4 |
The Survey for Ventura Unified School District Teachers

School Garden Reflection: Ventura USD Teachers

What benefits did the school garden provide to the students learning environment? Please explain.

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>answered question</td>
<td>6</td>
</tr>
<tr>
<td>skipped question</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number</th>
<th>Response Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Thank you so much for all your hard work! We really had a great time.</td>
</tr>
<tr>
<td>2</td>
<td>Getting kids outside, showing them that planting is easy and a very inexpensive way to grow your own food.</td>
</tr>
<tr>
<td>2</td>
<td>My fifth grade students learned that having a garden will help provide them with fresh vegetables.</td>
</tr>
</tbody>
</table>
The kindergarten garden filled a need to help students learn in a natural environment. Taking the students outside to extend their learning in science, math, language arts and art has been very beneficial. Every student is always on task when it involves garden work. Through the years my students have worked on science projects, nature related writings and of course, art that is nature related. The focus, excitement and energy that the students produced has been immeasurable. We host the annual Earth Day celebration in our K garden, inviting the whole school K-5 grades to tour the garden and listen to community quests (rock and mineral society, Patagonia, environmental city coordinator).

Fresh veggies to use in classroom cooking.

Introducing the kids to gardening.

It gets them outside and into the fresh air and sunshine. They have realia to see, feel, smell, and taste which impacts learning especially for younger children. Changing the context in which lessons are taught expands brain pathways. Children need more experiences with nature, someday they will be asked to save this planet and I believe they will do a better job if they are connected.

Provides an outdoor learning environment rather than being stuck within the four walls of a classroom.

School Garden Reflection: Ventura USD Teachers

What negative aspects, if any, do you feel the gardens added to your day (watering, lessons, time, etc)?

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<thead>
<tr>
<th>Answer Options</th>
<th>Response Count</th>
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</table>

54
### School Garden Reflection: Ventura USD Teachers

**What is something that you appreciated about working with the school garden?**

<table>
<thead>
<tr>
<th>Number</th>
<th>Response Text</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Not enough time to really incorporate meaningful lessons to all students....32 kids is tough.</td>
</tr>
<tr>
<td>2</td>
<td>The space we have is too small for an upper grade class, so it is difficult to go on a regular basis.</td>
</tr>
<tr>
<td>3</td>
<td>To have a garden at school is a big commitment for one teacher. I have to squeeze in planting, watering and academic sessions throughout the year. It is very fast paced. I have learned that not all people are comfortable with dirt. Time is another element that may deter other people from helping you.</td>
</tr>
<tr>
<td>4</td>
<td>Saturdays were too difficult to come and work in the garden for me and the kids, unless they were here for Saturday school.</td>
</tr>
<tr>
<td>5</td>
<td>There is a lot of time in watering and weeding. Maintenance departments desperately need professional development in what they plant and how they care for it. It is very frustrating trying to work with them.</td>
</tr>
<tr>
<td>6</td>
<td>None- gardens are a great asset to the school</td>
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</tbody>
</table>
**School Garden Reflection: Ventura USD Teachers**

What suggestions might you have for future teachers who are using school gardens?

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<tr>
<td>Number</td>
<td>Response Text</td>
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<tr>
<td>--------</td>
<td>---------------</td>
</tr>
<tr>
<td>1</td>
<td>Plant foods you will use!</td>
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<tr>
<td>2</td>
<td>Having a parent volunteer to help monitor students while they work would make the process less stressful for the teacher.</td>
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<tr>
<td>3</td>
<td>Depending on your school population.......be prepared for various forms of help. Promote your garden project through out the school and community.</td>
</tr>
<tr>
<td>4</td>
<td>HAVING A VOLUNTEER TO HELP WITH A FEW KIDS AT AT A TIME ON A REGULAR BASIS.</td>
</tr>
<tr>
<td>5</td>
<td>Not all children are into digging in the dirt or finding insects. Make sure you have writing and drawing materials for children who are not captivated by exploration. Having activities for all interests keeps them busy and out of trouble.</td>
</tr>
<tr>
<td>6</td>
<td>Be open minded and try it before thinking that it is a waste of time</td>
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**School Garden Reflection: Ventura USD Teachers**

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<thead>
<tr>
<th>Comments or Questions?</th>
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<tbody>
<tr>
<td>Answer Options</td>
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<tr>
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