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Community Gardening: Benefits Focused Strategies

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Community Gardening: Benefits Focused Strategies

by

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Part One

Introduction

Throughout history humans have had varying degrees of interaction with nature and natural environments. This interaction has shaped our species in almost every way possible from our physical traits to our behaviors and places we have chosen to occupy. Currently, humans have developed such overwhelming mastery of the planet that it is easy for many humans to feel disconnected from nature. This separation could have detrimental effects on various aspects of human well-being including physical and mental health. To understand these effects, it is important to evaluate the benefits that humans receive from exposure to nature and interaction with natural environments. One of the most effective ways to realize these benefits is through horticulture, which provides opportunities for interaction with nature on multiple levels.

These benefits can be realized by large numbers of people in different settings. Rural populations are likely to have more opportunities for interaction with nature than urban populations. Rural dwellers have greater access to natural environments, agriculture, and opportunities for the development of gardens within the home. Urban dwellers often have less access to natural environments and fewer opportunities to engage in horticulture. Community gardening can make these benefits accessible to large populations in rural or urban areas.

Purpose

The purpose of this paper is to develop a plan for implementing a community garden based on realizing potential benefits to humans.

Objectives

This paper will outline relevant studies regarding the benefits of human/nature interaction, specifically horticulture/gardening at the community level. The paper will then focus on best practices for the development of a community garden and outline strategies that readers can use to develop their own community gardens.

Justifications

The concepts outlined in this paper will generate useful information for a wide variety of people. Community gardens can provide therapeutic recreation and an opportunity for healthcare professionals to better serve patients. Gardens create opportunities for children to develop many skills, perspectives, and behaviors that schools, daycares and parents should be aware of. As a recreational setting, gardens facilitate experiences that leisure service professionals can utilize in order to enhance programs. Gardens can also benefit community members through beautification of neighborhoods, reduction of crime rates, and enhanced community pride. The benefits of community gardening for specific populations will be described in following pages.

Constraints

This paper is constrained by the interpretations and methodologies used in the referenced works. While there are a great many different methods used in the studies described, most of the findings represent a correlational relationship. For example, multiple studies have suggested that interaction with nature is correlated with the alleviation of certain symptoms of Attention Deficit/Hyperactivity Disorder (ADHD). This correlation suggests that nature has a positive effect on those with ADHD. However, more research is needed to determine how exactly the symptoms are being alleviated. It is possible that exposure to nature corresponds to another variable that is actually alleviating the symptoms. The research, to date, is insufficient to create a causal relationship.

Part Two

Introduction

In 1844 Ralph Waldo Emerson published *Nature*, in which he passionately described his adoration of the outdoors. He painted a vivid yet abstract image of the way he, and other humans should have, revered the natural environment, likening nature to a dear friend and brother (Emerson, 1844). His manuscript elegantly illustrated his opinions, but did little to solidify the theories behind his rhetoric and was easily dismissed by those who did not share his perspectives. Still, within the text of *Nature*, Emerson managed to provide a glimpse into the future of the subject by stating that “[nature’s] enchantments are medicinal, they sober and heal us” (Emerson, 1844, para. 2). In recent decades, the discussion of human contact with nature has taken a more scientific approach. Improved methods of gathering information and recording behaviors have allowed social scientists, healthcare professionals and recreational service providers to determine relationships between nature and specific elements of human well-being. An increased global interest in the subject has led to rapid advances in the understanding of how humans are affected by the natural environment.

In E.O. Wilson’s *Biophilia* (1984), he describes the love of nature as “an essential part of the human condition,” yet in recent decades we have seen an increasing separation between humans and nature-based activities (as cited in Sacks, 2009). In the United States a great deal of this separation has occurred since the Industrial Revolution as humans have moved into cities and discontinued contact with gardens and animals. This trend has not been limited to the United States as urbanization has brought about similar changes in the rest of the industrialized world (Katcher & Beck, 1987). This urbanization creates dissociation between humans and the benefits of contact with nature, of which there are many (Lederbogen et al., 2011).

Benefits of Contact with Nature

The relationship between humans and nature is very complex but many researchers have identified specific relationships between contact with nature and various aspects of human health. One of the most directly observable correlations is the positive relationship between contact with nature and physical health. Many forms of outdoor recreation often include physical activity but the effect of the outdoors can be greater than the benefit of the physical activity alone (Pretty et al., 2007). Interaction with nature has also been shown to have a positive effect on various aspects of mental health with specific applications to certain disorders. Contact with nature has been found to have positive effects on early literacy, motor abilities, self-discipline, self-esteem, autonomy, creativity, cognitive function, and behavior at various stages of childhood (Berman, Jonides, & Kaplan, 2008; Burdette & Whitaker, 2005; Fjortoft, 2004; Hine, Pretty, & Barton, 2009; Kellert, 2005; Lester & Maudsley, 2006; Maller, Townsend, Pryor, Brown, & St Leger, 2006; Maller, et al., 2008; Rahman, Cushing, & Jackson, 2011; Taylor, Kuo, & Sullivan, 2002; Casher et al., 2011; Wells, 2000; Hine, Wood, Barton & Pretty, 2011).

Mental Health

The urbanization of the industrialized world has been accompanied by an observable decline in worldwide mental health (Desjarlais, Eisenberg, Good, and Kleinman, 1995). The direct cause of this decrease in mental health has not been fully explained but researchers have suggested a relationship to the dissociation between humans and nature (Taylor, Kuo, & Sullivan, 2002). This dissociation has deprived humans of the benefits of experiencing nature. From the early stages of childhood, nature can help to develop a sense of independence (Lester & Maudsley, 2006). In middle childhood, play in nature appears to foster intellectual and emotional development (Kellert, 2005). Playing in outdoor environments also teaches children

decision making, problem solving and creative thinking (Burdette & Whitaker, 2005). These concepts are discussed in greater detail below.

Attention. In recent decades a child's ability to pay attention has become an increasingly popular subject. Attention involves impulse control and inhibition and allows learning to take place (Burdette and Whitaker, 2005). As demands on attention increase fatigue may inhibit the ability to focus attention and attentional restoration may be required (Tennessen & Cimprich, 1995; Townsend & Weerasuriya, 2010). Tennessen & Cimprich (1995) found that even looking at nature can constitute an attention-restoring experience. Their study examined various views from dormitory windows, categorized them based on the amount of nature visible from the rooms, and found natural views to be associated with increased performance on attentional measures (Tennessen & Cimprich, 1995).

In addition to improvements in the ability to direct attention, contact with nature has also been found to alleviate some symptoms of ADD and ADHD in the short term and the long term (Faber Taylor, & Kuo, 2011; Faber Taylor, Kuo, & Sullivan, 2001; Faber Taylor & Kuo, 2009). Faber Taylor and Kuo (2011) conducted an internet survey of 421 minors with ADHD. The survey asked parents about the severity of the child's symptoms and the characteristics of the child's regular play areas (Faber Taylor & Kuo, 2011). Five categories were used to describe the various play areas including big trees and grass, open grass, built outdoors, indoors, and other. Although results were correlational, not causal, the study found that children who played in areas with open grass or big trees and grass exhibited less-severe symptoms.

Similarly, a study conducted by Van Den Berg (2010) observed children with ADHD participating in group activities either in town or in a wooded area. The study consisted of two groups of children who both visited the woods and the town. Both groups were observed and

questioned to determine their reactions to the different settings. The children reported more generally positive feelings in the woods than in the town. Children in Group 1 reported liking the woods better than the town while children in Group 2 liked the two settings equally. Group 1 displayed more positive feelings in the woods than in town and Group 2 displayed positive behaviors in both settings, but displayed more non-social, aggressive, inattentive, impulsive and hyperactive behaviors in town than in the woods. The children were also found to perform better on a concentration evaluation in the woods than in town (Van Den Berg & Van Den Berg, 2010).

Stress. Contact with nature has been found to help individuals reduce stress levels (Kuo, 2010; Townsend & Weerasuriya, 2010; Hine, Pretty, & Barton, 2009; Burdette & Whitaker, 2005; Lederbogen et al., 2011). In fact, more than one hundred studies had reported stress reduction as a perceived benefit of wilderness recreation as of 2004 (Davis, 2004). Nature has also been repeatedly found to decrease anxiety and alleviate depression (Burdette & Whitaker, 2005; Cooper, Marcus, & Barnes, 1999; Hine, Pretty, & Barton, 2009; McCurdy, Winterbottom, Mehta, & Roberts, 2010; Townsend & Weerasuriya, 2010). In 1991, a study by Ulrich et al. described the effect of outdoor environments on recovery from stress. They found that recuperation was faster when patients were exposed to natural settings as opposed to urban environments (Ulrich et al., 1991).

Basic Needs. Basic Needs Theory (BNT) is a component of Self Determination Theory (SDT) that suggests the needs for autonomy, competence, and relatedness is shared among all humans (Weiss, 2008). Participants in one study reported that their experiences in a wilderness-based program resulted in greater feelings of autonomy (Kellert, 1998). Further substantiating the notion that a connection to nature can satisfy elements of BNT, one research project reported

enhanced connectedness (relatedness) to nature and improved skills acquisition (competence) among participants as a result of contact with natural landscapes (Hine, Pretty, & Barton, 2009).

Physical Health

Contact with nature has also been shown to have profound effects on physical health. These effects are achieved through a wide variety of interactions with nature. Contact with nature is also believed to encourage children to be more active, watch less television, play video games less frequently, and participate in sports (Carson, Kuhle, Spence, & Veugelers, 2010; Dymont, Bell, & Lucas, 2009; Kimbro, Brooks-Gunn, & McLanahan, 2011; Veitch et al., 2011; Wheeler, Cooper, Page, & Jago, 2010). Contact with nature can also have positive effects on newborn health, physical recovery in hospital patients, and the development of motor skills in children (Donovan, Michael, Butry, Sullivan, & Chase, 2010; Little & Wyver, 2008; Ulrich, 1984).

Recovery from surgery. In 1984, Ulrich conducted a study in which he reviewed hospital records from 23 cholecystectomy patients in a Pennsylvania hospital. The rooms in which patients were kept after surgery either overlooked a small stand of trees or a brown brick wall. The study reported that the patients who had views of the trees received fewer negative comments in nurses' reports, required fewer strong doses of analgesics, and required shorter stays in the hospital after surgery (Ulrich, 1984).

Newborn birth weight. Another study examined the relationship between birth outcomes and the presence of trees (Donovan, Michael, Butry, Sullivan, & Chase, 2010). This study included approximately 5,700 women who gave birth in 2006 and 2007 and lived in single family homes. The study also examined how many trees were found near each woman's home. The results of the study indicated a correlation between the presence of trees within 50 meters of

the home and size of newborns. The research indicated that a 10% increase in tree cover near the home corresponded to a reduction in the likelihood of a small newborn by 1.42 in 1,000 (Donovan et al., 2010). These results do not explain the cause of the correlation, but authors speculate that the cause may be related to reduced stress levels, increased physical activity, and a possible increase in social behavior. More research is needed to fully understand the cause of this correlation.

Physical activity. It has been shown that children who spend time outdoors are more physically active (Nilsson, et al., 2009). This increased activity has many positive affects including lower Body Mass Indices (BMI's)(Kimbrow, Brooks-Gunn, & McLanahan, 2011). There are also secondary effects of spending time outdoors including decreased amount of time watching television, which positively effects retinal microvascular structure (Kimbrow, Brooks-Gunn, & McLanahan, 2011; Gopinath et al., 2011).

Motor skills. Participation in outdoor activities has also been shown to facilitate the development of motor skills in children (Little & Wyver, 2008). The outdoors create settings in which children can learn important skills such as running and jumping, and participate in social behaviors. These skills are essential elements in the development of an enjoyment in physical activity.

Other Benefits

Some benefits of contact with nature do not apply specifically to physical or mental health, but have positive effects on other aspects of human development and disposition. The development of risk management skills and a positive effect on observed generosity are two such effects.

Risk management. Another important contribution of interaction with outdoors is the ability for children to experience risk (Little & Wyver, 2008). By taking risks, children learn to evaluate dangers and take appropriate actions to avoid injury. While parents may prefer that children avoid risk-taking behaviors, they are essential elements of natural child development (Little & Wyver, 2008).

Generosity. Studies have examined the effects of contact with nature on generosity. A study conducted by Weinstein, Przybylski and Ryan (2009) examined the effects of viewing natural landscapes on the reported generosity and altruism of college students. The study separated college and graduate students into groups which were assigned to view different images. One group viewed images of natural settings, while the other viewed cityscapes. After viewing the images participants were asked to choose how to allocate five dollars. The students who had viewed natural settings were less likely to keep the money while the students who viewed cityscapes were more likely to keep the money for themselves (Weinstein, Przybylski, & Ryan, 2009). Furthermore, “after immersion in nature scenes, students resonated more with altruistic aspirations such as having deep, enduring relationships and betterment of society. Students immersed in cityscapes reported more selfish aspirations such as being financially successful or being admired (Kuo, 2010).

Community Gardens

While it is clear that contact with nature can produce positive health outcomes it is still difficult to determine which forms of contact with nature can produce the described benefits. One model suggests that there are three levels of contact with nature (Pretty, Peacock, Sellens, & Griffin, 2004). The most basic level of contact is viewing nature, which does not require actual proximity to nature, and can be achieved by looking at a photograph of a natural setting, seeing

nature scenes on television, or looking through a window. The second level of contact involves being nearby nature, and can be achieved by walking through a park or reading a book in a garden. The third and highest level of contact with nature requires active participation. Examples include camping, farming, and gardening (Pretty et al., 2004).

According to this model gardening is an activity that has the potential to encompass all three levels of nature and many of the same effects. The benefits of viewing natural settings, being nearby nature, and interacting with nature are all achieved by gardening, despite the fact that the garden itself might be almost entirely man-made. This suggests it may be possible for gardeners to realize many or all of the same benefits as other forms of contact with nature.

One of the most practical and effective ways of providing the aforementioned benefits is through the development of community gardens. Community gardens are defined simply as any piece of land gardened by a group of people (Baldwin, 2009). Community gardening creates opportunities for educational experiences, food growth, and community development while satisfying needs such as nutrition and recreation. The benefits of community gardening will be described in this section.

Benefits of Community Gardening

Expanding the understanding of the benefits associated with community gardening, Draper and Freedman (2010) conducted a meta-analysis pertaining to the benefits of community gardening in the United States. The study evaluated 55 peer-reviewed articles in attempt to identify common findings. The study identified eleven benefit themes of community gardening (Draper and Freedman, 2010). These themes and additional benefits of community gardening are described below.

Health benefits. The most prevalent theme in the articles reviewed was the ability of community gardens to provide health benefits. These benefits include physical activity, improved diet and mental health. Community gardens were identified as a way for governments to promote sustainability, encourage walking through the use of open, outdoor spaces, and provide settings for rehabilitation for individuals with mental illnesses or learning disabilities. Health benefits were included in nearly half the articles reviewed.

Food Security. Approximately one fourth of the studies reviewed included a discussion of food security as a motivation for participation in community gardening. According to the United States Department of Agriculture (USDA), food security for a household means that all members “have dependable access to adequate food for active, healthy living” (US Department of Agriculture, 2009, p. iii). More than eleven percent of US households were found to be food insecure at some point in 2007 and more than fourteen were food insecure at some point during 2008. Community gardening provides an opportunity for households to supplement their food source in a very affordable way.

Economic development. Participation in community gardens has proven to be very cost efficient, and even profitable. It was estimated that an investment of five to ten dollars in plants within a garden plot in New York City could yield between five hundred and seven hundred dollars worth of fruits and vegetables (Salvidar-Tanaka and Karsny, 2004). This very high rate of return demonstrates that households can save significant amount of money on food by participating in community gardening. Economic benefits were mentioned in more than 20% of the articles reviewed by Draper and Freedman (2010).

Youth education, development, and employment. More than half of the studies described community gardens as opportunities for youth development. Some offered

employment opportunities for youth, while others focused on nutrition and education.

Participation was found to provide job-skill development and enhance interpersonal skills. Other benefits of youth participation included improvements in teamwork, respectfulness, and commitment (Draper and Freedman, 2010).

Preservation of open space. Approximately twenty percent of reviewed articles included the preservation or use of open space as an important part of community gardening. In some cases preservation was a motivating factor in the development of the community garden, while in other cases the use or preservation was described as a benefits of community gardening. Community gardens provide a safe place for individual visits or community gatherings.

Crime prevention. Another specific benefit of community gardens is the apparent decrease in local crime rate. No studies were available to directly measure the decrease in the frequency of crimes as a direct result of the development of a community garden, but many reports illustrate a noticeable difference in crime following the implementation of a garden project. Nearly twenty percent of the articles reviewed mentioned crime rate as either a benefit of the presence of the community garden, or a driving force behind the development in the first place.

Neighborhood beautification. Sixteen percent of articles reviewed mentioned the beautification of neighborhoods as a result or a motivation of the development of community gardens. The presence of a garden can drastically improve the aesthetics of a neighborhood which can improve property value, increase happiness of residents, and decrease crime rates. For this reason, community gardens can have a profound effect in distressed neighborhoods that are in need of revitalization.

Leisure and outdoor recreation. Community gardens can serve simply as venues for outdoor recreation and leisure pursuits. In the studies reviewed, fifteen percent stated enjoyment or relaxation as reasons for visiting and participating in community gardens. These garden settings can serve as a retreat or escape for individuals who live in densely populated areas such as apartments or anywhere that prevents contact with nature.

Cultural preservation and expression. Similar to public parks, community gardens can also provide a setting for gatherings and expression of culture and tradition. Latino community gardens in New York City demonstrated the use of casitas, which were originally developed in Puerto Rico (Salvidar-Tanaka and Krasny, 2004). Gardens in Kansas preserved Native American culture by planting a traditional “three sisters” garden consisting of corn, beans, and squash. Community gardens can also provide opportunities to express cultural traditions through musical performances, dance, and cuisine.

Cultivation of relationships. Community gardens have been found to have great potential for bringing people together and building and enhancing relationships. Visitors to the garden usually abide by a set of rules that is common to all visitors. They often share tools, and are forced to be respectful of others’ space. Gardening facilitates conversation and is dependent upon the spread of knowledge in order to successfully choose, cultivate, and harvest crops. In addition to the interaction between gardeners, the development of a community garden can create community bonds between organizations such as schools and Universities, churches, community members, and even sponsors and financial contributors such as banks and other businesses. Approximately two thirds of studies supported the idea that community gardens cultivate relationships.

Community empowerment. Nearly twenty five percent of reviewed studies reported community organization as a result of community gardening. Some studies describe the resistance by garden advocates to threats of eliminating gardens. Other studies described the development of a supermarket by community garden participants. Some community gardeners have engaged in local politics for the first time and addressed additional community needs.

Effect on environment. In addition to the benefits described by Draper and Freedman (2010), gardening has the potential to satisfy some very basic human needs. CMT suggests that humans possess a need to have an effect on their environment (Weiss, 2008). Community gardens create opportunities for people to directly influence their environments. This can be done by participating in the programs offered by the garden and tending a garden plot. This can also be done to a greater extent by having a role in the development of the garden itself.

Conclusion

These benefits clearly indicate that community gardening can have a profound effect on the lives of individuals and the well-being of communities. Community gardening satisfies many human needs including the basic need for food and a reliable source of nutrition. Community gardens also present opportunities for youth education and employment, as well as the reduction of expenses by providing a more affordable food source. Additionally, community gardens can make neighborhoods safer by reducing crime rates and enhancing community connectedness. These gardens can empower communities and provide venues for recreation while preserving open space. Strategies for effective achievement of these benefits will be discussed in Part Three.

Part Three

Introduction

Community gardening has become increasingly more popular and many new resources have become available for potential participants and developers. University Extension Services provide useful information pertaining to soil quality, growing seasons, and other aspects of horticulture. There are also many case studies that can be examined in order to learn from mistakes and successes of predecessors. Gardeners can share design features, growing strategies, and programming information to assist new garden developers. These resources, as well as various financial, organizational, and promotional considerations have led to the development of the model described below. This model has been designed to assist any individual or entity that may be interested in the development of a community garden.

There are many considerations required to successfully develop and maintain a community garden. These considerations are applicable to a wide variety of settings including school gardens, university gardens, and urban gardens, which are all considered community gardens. These considerations include but are not limited to the development of garden personnel, goals, budgets, equipment, sponsors, and programs. This section discusses the organization, operation, and structure of a community garden. Drawing from a variety of sources, it suggests best practices in the development of a community garden.

Form a Committee

One of the first and most important steps to developing a successful community garden is the establishment of a garden committee. Depending on the setting of the garden, the committee may take various forms. For community garden projects in residential settings it is recommended that the committee include community leaders and well-known community members. If the

community is overseen by a Home Owners' Association (HOA), at least one HOA representative should be included on the committee. This will help make sure the garden project is compatible with HOA regulations. For school settings, the garden committee should include a minimum of two teachers and at least one administrator. If the garden is being developed in an elementary school, it may be appropriate to include parents who are interested in the project. In a university setting, it may be necessary to include students on the committee. Student involvement is a great way to develop support for the project and generate awareness by word of mouth. Regardless of the setting, the committee should include someone with gardening experience, such as a certified Master Gardener or an individual who has been involved with the development of similar projects. The key to any gardening project is to include representative members of the target population who will be actively engaged in gardening.

All committee members should have clearly defined roles and responsibilities. A written constitution can help define the roles and processes of the committee. The constitution should begin with the name of the organization, and a statement of the organization's purpose. Next, each position on the committee should be identified and described, including the specific responsibilities of each position. The constitution should go on to explain how individuals obtain each position, the term of elected positions, how they are to be removed from the position if necessary, and how to proceed when positions become vacant. Following the descriptions of each position, the constitution should describe the schedule of committee meetings, voting procedures, and any rules or fees that apply to members. The constitution is designed to guide the organization and adapt as conditions change. Therefore, it is also recommended that constitutions include a detailed description of the process by which the constitution itself could be amended. For a sample constitution, please see Appendix A.

Establish Goals

Goals of the garden project will need to be identified very early in the planning process. To ensure that responsibility is taken for each goal, these goals should be developed before or during the formation of the committee and positions within the garden committee should be designed to facilitate successful completion of the committee's goals. Goals must be specific and realistic, and should be measurable in order to evaluate success. The evolution of goals must be evident within the organization's constitution.

Community garden projects can have a wide variety of goals. Some common goals for community gardens are:

- To provide food to those who do not have access to fresh produce
- To educate children and adults about nutrition
- To educate children and adults about sustainability
- To educate those who wish to grow their own food
- To provide recycling of food waste as compost
- To create space for social gatherings
- To enhance relationships within community

Budgeting

While there are many similar financial considerations for community garden projects, each budget will reflect a unique set of circumstances under which the garden will be developed. Some gardens may allocate a significant portion of their budget to the purchase or rental of land, while others will receive land as a donation. Some gardens will be required to designate significant portions of their budgets to attainment of water, while others will have access to wells or other very inexpensive forms of water such as springs or streams. Some gardens will need to spend significant amounts of money to prepare soil for planting or even purchase alternative soil. Others will have nutrient rich soil on site and will not need to spend significant financial resources on soil. Some figures will be easily obtained, such as an asking price for a piece of

land, while other will be more ambiguous, such as the expenses associated with the purchase of unknown amounts of water or electricity. In some cases, similar projects or properties can be used to assist with financial forecasting. Effective budgeting will require the determination of specific expenses for the individual site. This section will describe the most significant and common budgeting considerations for community gardens.

1. Land – Large amounts of money will be required to either purchase or rent the land needed to build a community garden. Successful garden projects will need an accurate forecast of how much money will be needed to secure this land and how to obtain necessary funding. The procurement of land will be discussed in subsequent sections.
2. Water – Any garden project will require access to water. If water is not available, there are many different ways in which obtaining water will cost money. Drilling of a well, re-routing of plumbing to the site, or delivery of water to the garden will require significant monetary considerations. If water is available on site, it is likely that electricity will be required to pump water to desired locations. Maintenance of irrigation systems and regular quality testing should be accounted for within the budget. Water will be discussed in subsequent sections.
3. Energy – Although many community gardens seek to achieve independence from exterior energy sources, it is likely that the acquisition of energy will require financial expenditure in one form or another. If the garden purchases electricity, it will be important to determine the price of the energy and predict the amount of energy that will be used as accurately as possible. If alternative energy sources are to be used, (such as solar, geothermal, or wind power) are to be utilized, the cost of such systems and their installation must be considered within the garden's budget.

4. Soil – An effective budget will also consider provision and maintenance of soils. Adequate soils will provide necessary nutrients to plants while allowing for drainage. Some garden projects will need to purchase soils or soil additives to create fertile growing areas. If a site already has fertile soil, the soil will still need to be tested and supplemented as time passes and plants deplete soil nutrients. These expenses should be carefully evaluated and forecasted.
5. Building Materials – Community garden projects can spend significant amounts of money on building materials if not careful. Raised beds, walkways, plumbing, and shade structures are all potentially expensive, but present opportunities for sponsorships and recycled materials to be used.
6. Construction – The construction of the garden itself can be very costly, depending upon the design of the garden. Some garden projects include a building that can be used for administrative functions or classroom instruction. These buildings cost large amounts of money to construct and create another opportunity to find a sponsor who will assist with expenses. Sponsorships will be discussed in further detail in subsequent sections.
7. Tools – All gardens will require tools and there are many different ways of providing these tools for a community garden. Shovels, rakes, hoes, pitchforks, and wheelbarrows are common within a garden setting, but the arsenal of tools required will depend upon the activities taking place. For example, a garden with an integrated irrigation system will not need to provide many watering buckets. A garden that is more spread out may require more carts and wheelbarrows to transport material. Tools can be acquired as part of a sponsorship agreement, or through donations from businesses or individuals.

8. Equipment – The equipment required will depend on many factors ranging from the size and layout of the garden to the programs offered. Budgeting for equipment should focus on the essential elements required for basic function of the garden. Any additional equipment that may be required for a program or specific activity should be accounted for within the budget of each program or activity.
9. Labor – Although garden plots might be maintained by lessees, there will also be a substantial amount of labor required to maintain the garden itself. In University settings, some of this labor can be performed by students or administrators. Garden planners should also investigate the possibility of granting work-study opportunities or community service hours for labor performed at the garden.

Land Procurement

One of the most important and potentially most difficult tasks will be finding and procuring the land needed for the garden project. Some community garden projects have established non-profit organizations and receive grants and donations to finance development. These contributions can assist with a wide variety of the garden's development and operations, including land procurement. Other projects take advantage of sponsorships to obtain the land needed for the garden. Sponsorships can take many different forms and will be discussed in further detail in the subsequent sponsorships section.

There are many different factors that must be considered when choosing a site. First, the site should be easily accessible to a large population of potential gardeners. This will mean finding a site that is centrally located with access to parking, yet plenty of space to develop the garden itself. The site will also need a minimum of eight hours of sunlight during the growing season. This requirement may prevent the development of a site that is near tall buildings or

other obstructions that could limit the amount of sunlight received. It is also very important to consider any contaminants that may have been present during prior usages of the land.

According to the Environmental Protection Agency (EPA), the term brownfield is defined as “real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant” (“Basic Information,” 2011). Some grants are available to assist with the identification and cleanup of brownfield sites (“Grants and Funding,” 2012). Finally, the site should have access to water and good drainage. According to the Maine Extension, good drainage is more important than fertility of the soil. This is due to the fact that nutrients can be easily added to the soil while addressing drainage issues can be much more time consuming and costly (Murphy, 2011).

Water

All garden projects will need to carefully consider available water sources throughout the year. In addition to making sure water is available, water will need to be chemically tested to assure the absence of harmful substances. In some climates, water availability will vary during different seasons and contingency plans may be required for the continuous availability of water.

Rules

Since a public garden in unfamiliar setting for some visitors, a clearly explained set of rules should be established and posted in a visible area. This will make sure all visitors are informed as to how they can be respectful of each other’s space, and maintain safety while spending time at the garden. Rules should be established by the garden committee and understood by all visitors. Some examples of common garden rules include:

- Which varieties of plants are acceptable
- Which fertilizers and/or pesticides are permitted
- How tools will be used and shared
- What fees are required for various forms of involvement in the garden

- How plots are assigned
- Whether or not pets will be allowed
- What happens when a plot is not maintained

Sponsorships

Community garden developers should investigate the possibility of having their garden sponsored. There are many different kinds of sponsors, and many different benefits that sponsors can provide. Sponsors can be individuals, organizations such as churches or schools, or businesses and can support the garden in many different ways such as providing land, tools, equipment, seeds, or even construction. In exchange for their support the sponsors benefit in various ways from being associated with the garden. Some sponsors will seek recognition and favorable publicity for their association with the garden project while others will simply value the relationship or the development of the garden itself.

The sponsors who seek recognition will likely seek association with more noticeable and permanent elements of the garden. Some examples of permanent elements of the garden include the name of the garden itself, a building or fixture within the garden such as a bench or path, or even a section of the garden itself. Some examples of noticeable elements of the garden that may attract sponsors include tools, dirt, or even a specific event.

Nonprofit Status

There are many benefits and few disadvantages to becoming a nonprofit organization. Organizations that qualify as public charities are exempt from federal income tax under Internal Revenue Code 501(c)(3), and are usually exempt from state and local income tax as well. Many government agencies and foundations only award funding to nonprofits. Nonprofit status makes organizations eligible for public and private grants and allows the organization to solicit donations from the public. Another benefit of nonprofit status is the limitation of the

organization's liability. Individuals affiliated with the nonprofit organization are not accountable for debts of the organization as long as they are performing their jobs in the best interest of the nonprofit. Establishment of a formal nonprofit organization requires a specific mission. This will help to guide the organization and prioritize the mission of the organization over that of individuals.

There are also several detriments associated with establishing nonprofit status which are important to note. Applications for federal tax exemption require fees that vary depending upon the financial situation of the organization. A fee of \$400.00 will be charged for applications from organizations whose receipts total less than \$10,000.00 per year for a four year period. A fee of \$850.00 is charged to organizations whose receipts total more than \$10,000.00 per year for a four year period (Department of the Treasury, 2011). Additionally, application for and maintenance of nonprofit status will require significant amounts of paperwork. Organizations are required to keep detailed records and submit annual filings to both state and IRS before specific deadlines. Nonprofit organizations are also release all financial information to the public, creating the potential for additional scrutiny ("Advantages/disadvantages," n.d.). These conditions could necessitate additional labor expenses for the organization, but are not likely to outweigh the benefits associated with becoming a nonprofit organization.

Liability

Gardens contain many potentially hazardous elements. Dangerous tools are used to prepare land, move dirt, and harvest crops. Gardens can also contain uneven walking areas, and rough or sharp surfaces that create potential for bodily harm. To mitigate liability, community gardens should always be protected by some form of liability insurance. Insurance might even be required before the garden is allowed to welcome visitors. Insurance requirements will vary

depending upon the structure and offerings of the garden. For independent community gardens, it is likely that insurance coverage will be more expensive for an individual garden than it would be for a larger organization. This is a potential benefit of sponsorship, as the sponsoring organization may have access to more affordable liability coverage that could be used to protect the garden. It is also important to note that liability insurance will cover the organization itself, without providing direct coverage for workers, volunteers, and employees. School or University gardens will likely have access to coverage under the parent institution's insurance policy.

In addition to insurance policies, it is also a good idea to utilize liability waivers. Liability waivers can assist with relieving individual liability for those associated with the garden (Hale, n.d.). It is important to note that minors cannot enter into legally binding contracts such as waivers, and parents and guardians cannot release the right of their children to sue for damages. Partnerships with organizations such as schools whose students visit the garden can help to minimize the liability of the garden. For an example of a liability waiver, please see Appendix B.

Design Features

In order to provide gardeners with the previously discussed benefits of nature and horticulture, there are many design features that community gardens should include. Some design features will facilitate activities or events that will allow gardeners to obtain certain benefits, while other design features will create the benefits directly. It may not be possible for every community garden to incorporate each of these design features, so garden developers may need to choose between the benefits that are most applicable to their site and goals for their particular garden.

Garden plots. The most crucial elements of a community garden are the garden plots. These plots are where gardeners will grow their own crops and reap the nutritional and financial

rewards of gardening. These plots will also facilitate the satisfaction of Competence Motivation Theory and Basic Needs Theory by providing opportunities to directly impact the environment and develop horticultural competencies.

Play area for kids. In order to attract children to the garden, it may be necessary to designate a space for children to play. This space will help young people to have fun and develop an enjoyment for visiting the garden. In terms of benefits, a play space for children will allow for creativity, development of motor abilities, and an opportunity for children to have a direct effect on their environment. Consider building sandboxes and making child-sized tools available for young gardeners.

Open space. It is important to set aside part of the community garden to be used for relaxation. Some of the most observable benefits of nature and horticulture are related to stress reduction, alleviation of depression, and therapeutic recreation (Cooper Marcus & Barnes, 1999). An open area within the garden can help establish the garden as a peaceful, restorative environment in which visitors can escape from overstimulation. The space should focus on accommodating groups of people who may be experiencing or recovering from physical ailments or injury. The space should also be designed to periodically accommodate groups of visitors with mental illnesses. In order to welcome these populations, garden developers should make sure the spaces are easily accessible, utilizing wheel-chair ramps and other amenities wherever possible. These features will also ensure compliance with government regulations regarding access to individuals with disabilities.

Meeting space. In addition to the garden plots, play area for children, and the open spaces, a community garden should also have some sort of meeting space. Many of the benefits of community gardening pertain to the social interactions and organized group functions held

within the garden. An area in which gardeners can meet and participate in discussions and various group activities is essential to realizing these benefits. Improved knowledge of nutrition and cooking will be most easily achieved through group classes and seminars. Health and wellness goals will also be complemented by the presence of a meeting space, which will facilitate yoga, meditation, and appropriate physical education classes.

Programs

While many other considerations of the garden project can be viewed as constraints or limitations, the programs offered by the garden have almost unlimited potential. Many of the goals for the garden are likely to be accomplished through the programs offered. Gardening can benefit a wide range of demographics, so it is important to develop a variety of programs that are tailored to different audiences in order to recruit a diverse group of supporters and participants. Some community gardens focus specifically on elementary education and host field trips, events and classes for children. Other gardens focus more on secondary education, creating opportunities to enhance existing courses and develop new courses at the university level.

Master Gardener program. One such program is the Master Gardener program. This program was developed by Cooperative Extension in the State of Washington in 1972 to meet the growing requests from home gardeners who sought horticultural information. The Master Gardener program has since spread throughout the United States and Canada (“Master Gardeners,” n.d.). Instruction is delivered by Cooperative Extension staff, state extension specialists and local gardening professionals. Volunteering opportunities are determined by the Cooperative Extension with the goals of utilizing participants’ skills while satisfying the needs of the community. The Master Gardener program appeals to a large population and should be the foundation of program offerings for any community garden.

Introductory courses. In addition to the Master Gardener program, a community garden should engage the community by offering introductory courses for those who have little or no gardening experience. These courses will attract a wide population and break down social barriers to those who might be intimidated by others who have more experience or knowledge of gardening. Introductory classes should focus on the basic benefits of gardening and how to have an enjoyable experience in the garden.

Children's classes. Many of the benefits of gardening and interaction with nature can specifically influence children. Children are likely to have different goals than adults for their involvement in the garden, and these goals should be facilitated and nurtured when possible. The presence of a play structure or a small garden that is scaled for children is likely to attract children to the garden and create opportunities for them to learn (Murphy, 2011).

Many gardens also facilitate visits from schools in the form of field trips and classes. All community gardens should be able to accommodate groups of students comfortably in order to create learning opportunities for young people. Similar to the introductory classes, these learning opportunities should establish the garden as a fun place while also emphasizing safety. Community gardens also have significant potential to shape the dietary preferences of young people (Somerset, Ball, Flett, & Geissman, 2005). These dietary preferences are the vehicle by which many of the physical benefits of gardening can positively influence children's health. In order to direct and reinforce these preferences, children's nutrition and cooking classes should be offered when possible.

Community education. One of the main goals of community gardens is usually to educate gardeners. Education topics include gardening, composting, sustainability, nutrition, cooking, and many others. With the presence of adequate meeting space, community gardens

create opportunities for a full schedule of classes and events. It may be beneficial to identify a certain group for some classes, such as a class for seniors or a specific time during which women can share the garden together.

Physical education. Community gardens make a great place to hold exercise and other physical education classes. These classes can enhance the community garden's contributions to visitors by provide additional opportunities to realize the physical benefits of being outdoors. In a university setting, community garden developers should investigate physical education class offerings to identify classes that may be appropriate for a garden setting. These classes may include, but are not limited to, yoga, meditation, aerobics, cycling, and even weight training.

Conclusion

Community gardens are a very effective way to provide many of the benefits of contact with nature. These benefits pertain to physical and mental health, as well as a wide variety of other areas including community development, environmental stewardship, and cultural expression/preservation. For children, contact with nature can enhance development of cognitive function, decision making strategies, and creativity. This contact with nature also promotes healthy lifestyles by shaping diet and exercise preferences. Community gardens can achieve these benefits by focusing on the specific design features and programs described above. Through the development of a community garden and the emphasis of these benefits focused strategies, community gardens can dramatically improve the health and happiness of gardeners, visitors, and the community as a whole.

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Appendix A

Sample Constitution

Article I – Name of Organization.

This section will simply state the organization’s name for identification purposes.

Article II – Purpose of Organization

This section will identify the purpose of the organization and briefly describe the organization’s goals and functions.

Article III – Officers

This section will list all officer positions and describe the responsibilities and length of term for each position.

Article IV – Membership

Section 1: In this section, describe the details of membership including the benefits of membership, dues, and eligibility for membership if appropriate. It may be important to include a discrimination clause, for example: this organization will not discriminate on the basis of age, color, gender, gender identity, disability status, height, marital status, national origin, political persuasion, race, religion, sexual orientation, veteran status, or weight.

Section 2: Describe the organization’s good standing policy for members and explain how to maintain good standing and what happens when good standing is lost. This may include a probationary period or loss of certain privileges.

Article V – Operating Procedures

Section 1: This section will identify the time, location, and frequency of meetings.

Section 2: This section will describe the rules and procedures for meetings including voting procedures and quorum.

Section 3: This section will describe all committees by name and function.

Article VI – Amendments

Section 1: This section addresses who can propose amendments and how proposals are to be made.

Section 2: This section explains how amendments are approved.

Appendix B

Sample Liability Waiver

I, _____ have reviewed, understand, and agree to abide by the policies relative to the use of the Community Garden and understand that use of the Community Garden may be denied if policies or rules are not followed. I understand that gardening is a potentially hazardous activity and hereby agree to expressly assume and accept all risks associated with gardening and the use of the Community Garden including, but not limited to, those caused by terrain, facilities, soil conditions, temperature, physical exertion, insect/rodent exposure, chemical exposure and actions of other people.

I understand that my use of the Community Garden is voluntary and I do so at my own risk. In consideration of being allowed to use the Community Garden, I hereby agree on behalf of myself and my executor's, etc. to waive, release, and forever discharge (insert organization name here), each of its officers, agents, employees, representatives, the Garden Manager, and all others from any and all responsibilities or liability for injuries (including death), damages or loss including claims or causes of action, including those caused by the negligent acts or omissions of any of those mentioned, resulting from my use of the Community Garden or in any activities connected with the Community Garden.

_____ Signature	_____ Date
_____ Signature	_____ Date

(If two people share a plot, both should sign.)