

HORTICULTURE FOR LIFE SKILLS DEVELOPMENT IN CHILDREN

AGED 5 TO 11

A Thesis submitted to the faculty at Stanbridge University in partial fulfillment of the requirements for the degree of Master of Science in Occupational Therapy

by

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Certification of Approval

I certify that I have read Horticulture for Life Skills Development in Children Aged 5 to 11 by Claudia Bui, Melissa Gathura, Nicole Perrin, and Kirsten Schoedl, and in my opinion, this work meets the criteria for approving a thesis submitted in partial fulfillment of the requirements for the degree of Master of Science in Occupational Therapy at Stanbridge University.

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Abstract

Gardening helps a child learn fundamental concepts that promote the development of basic life skills. Life skills are imperative for managing the challenges of life in a healthy and effective manner, and the impressionable years of childhood are an ideal time to teach these skills. The purpose of this project-based thesis was to create a gardening curriculum to teach life skills to children ages 5 to 11. A four-week curriculum was developed in which participants meet two times per week for fifty minutes under the supervision of an occupational therapist. Each week focuses on a specific life skill: socialization, responsibility, healthy eating, and self-esteem. This evidence-based curriculum was formed after visiting various community gardens and interviewing gardening staff, as well as conducting a thorough review of the relevant evidence. Once the curriculum was developed, it went through a validation process via a qualitative survey sent out to professionals within the field of occupational therapy. This survey consisted of open-ended questions that displayed the curriculum and asked for perceived effectiveness and recommended changes. After careful consideration of the feedback received, alterations were made to the curriculum. Further research should be conducted following implementation of the curriculum in order to determine its effectiveness in teaching life skills to children.

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Horticulture for Life Skills Development

Horticultural activities can be an effective and meaningful strategy for promoting positive life skill development in children. Life skill development is essential during childhood years because it establishes a foundation for healthy coping strategies and decision-making as children progress into adolescence and adulthood (Prajapati, Sharma, & Sharma, 2016).

The origins of horticulture are deeply rooted in agricultural practices that date back to 2000 BC in Mesopotamia (Detweiler et al., 2012). Horticulture is defined as the “branch of agriculture concerned with growing plants that are used by people for food, medicinal purposes, and aesthetic gratification” (United States Department of Agriculture [USDA], n.d.-b, p. 1). The integration of horticulture for therapeutic purposes can be attributed to Dr. Benjamin Rush, known as the “Father of American Psychiatry,” and his work with individuals with mental health issues (American Horticultural Therapy Association, 2019). According to Detweiler et al. (2012), Dr. Rush facilitated the integration of horticulture through his advocacy efforts and his field-defining work, *Medical Inquiries and Observations Upon Diseases of the Mind*, which was published in 1812. Following this publication was the wider acceptance of horticulture for individuals with mental illness. War veterans from World War I facilitated the idea of horticulture for therapeutic purposes even further (Detweiler et al., 2012). This helped facilitate the incorporation of garden-based interventions for populations and diagnoses beyond mental illness, such as children with autism (American Horticultural Therapy Association, 2019; Hickey, 2016). As the years have progressed, the credibility of garden-based environments and horticultural practices have increased and a wide range of populations

have benefited from it. Horticultural therapy has established itself as a vital field, as combining horticultural practices and occupational therapy principles can promote development and generate positive outcomes in children.

Due to the effectiveness of utilizing nature-based practices for therapeutic purposes, a curriculum focusing on garden-based activities for children may be exceptionally beneficial in the promotion of life skill development. Prajapati et al. (2016) have defined life skill development across three categories: cognitive skills, social skills, and emotional coping skills. However, rather than distinct, separate categories, these skills are complementary to one another. For instance, when working as a group in a garden, cooperation and communication are social skills used to relay feelings or ideas to members about a particular task or issue (Mangrulkar, Whitman, & Posner, 2001). Cognitive skills, like problem solving and critical thinking, are necessary for analyzing various ways of handling social situations when alternative solutions to a problem may be needed (Mangrulkar et al., 2001). Finally, emotional coping skills, such as stress management or emotional regulation, are crucial in managing reactions to challenges amidst working together to complete a garden-related activity (Mangrulkar et al., 2001). Altogether, these skills work in conjunction with one another to provide the necessary tools for a child to optimally participate in society.

Incorporating life skills lessons in children at a young age will not only help them to be successful in the future, but also enable successful engagement in their meaningful occupations throughout their life. Life skills are versatile, and include problem solving, communication, coping mechanisms, decision making, and other significant skills that allow one to be prosperous (Prajapati et al., 2016). Horticultural practices such as

planting seeds, transporting plants, monitoring plant growth, watering crops, and other garden-related activities can help enhance these advantageous skills. In nurturing the growth of life skills like self-efficacy, sociability, responsibility, and leadership, adaptive behaviors in areas such as peer relations, academics, and family interactions are strengthened.

Statement of the Problem

Occupational therapy seeks to improve the ability of clients to engage in their meaningful activities. Teaching life skills will allow children to transition into successful members of society and engage in meaningful occupations throughout their life. Our proposed curriculum seeks to create an occupation-based focus that encompasses transformative learning that meets the curricular threads presented by Stanbridge University.

Although research (Kim, Park, & Son, 2014; Bell et al., 2018; McLennan, 2010; Coholic & Eys, 2016) has shown that horticulture-based activities can positively influence various healthy life skill development in children, a curriculum that addresses sociability, self-efficacy, responsibility, and healthy eating for children aged 5 to 11 has yet to be developed. Among the obstacles in implementing such a program, Burt, Luesse, Rakoff, Ventura, and Burgermaster (2018) indicate that a lack of generalized funding and knowledge on the part of parents, teachers, and professionals to establish and maintain programs limit the opportunities for gardening programs to exist and succeed. Moreover, many horticulture-based programs have been met with challenges such as space constraints, inadequate staff or support for gardening activities and upkeep, and a lack of availability of gardening tools and materials (Burt et al., 2018). To address these

challenges, the curriculum presented in this research project will be coupled with a portable garden inclusive of the tools, equipment, and instructions necessary to implement the gardening curriculum for life skills development.

Literature Review

According to Gerber (2018), gardening benefits include improved concentration, heightened sociability, stress reduction, and skill development. In addition to this, therapeutic engagement with gardens can strengthen muscles, encourage endurance, promote executive functions such as problem solving, and improve cognitive abilities (American Horticultural Therapy Association, 2019). Furthermore, promotion of better physical health through exercise, advancement in skills for employment, and encouragement of the sense of self are perceived as benefits of this practice. Although horticultural therapy is its own distinct field, horticultural practices can be utilized by occupational therapists (OTs) and occupational therapy assistants (OTAs) to improve the lives of clients and ensure their optimal engagement in their meaningful occupations.

Because horticulture holds different benefits across various populations, focusing efforts on one population enhances its therapeutic benefits. In children, horticulture can be utilized to promote a range of skills and aid in the development of new skills. According to the Center for Nutrition in Schools (2018), garden-enhanced learning aids in improving academic performance, increasing knowledge of nutrition, enhancing self-esteem, life skills, social skills, and reducing maladaptive behaviors. Garden-based activities can facilitate improved fine motor skills, leadership skills, emotional well-being, and more. Moreover, gardens and gardening can be incorporated into a multi-disciplinary curriculum to enhance the skills of children to develop a lifelong interest in

horticulture and gardening (Center for Nutrition in Schools, 2018). According to Hanscom and Schoen (2014), the benefits of gardening can move beyond the individual and be “felt at a broader community level” (p. 71). It is important for youth populations to not only develop learning and literacy skills within a school system, but to also learn vital life skills necessary to function holistically, in order to be able to cope with the challenging situations that life presents.

Garden-based learning does not have to occur within a school system; however, barriers exist across all institutions that limit the potential ability to implement a garden curriculum. While interest in therapeutic gardens has increased recently (American Horticultural Therapy Association, 2019), factors such as a lack of funding, lack of resources, and a lack of instructors have impeded the development of such gardens. Despite the several benefits of garden-enhanced learning within school systems, barriers such as a lack of time, knowledge, and training were identified (Murakami, Pharr, & Bungum, 2016). The current practices of principals and teachers were studied by Murakami et al. (2016) to identify the perceived barriers and benefits, as well as the resources necessary to operate school gardens. They found that a lack of time was the number one barrier reported among more than half of the participants surveyed. Although barriers exist, teachers perceive school gardens as beneficial in areas such as nutrition knowledge, social skills, community engagement, academic performance, environmental awareness, health management, and behavior (Murakami et al., 2016). Evidence suggests that engagement in garden-based environments can promote fundamental skill development in children. Developing a garden-based curriculum can address barriers preventing the inclusion of gardens within institutions for children. Creating a garden-

based curriculum for children aged 5 to 11 will further garden-enhanced learning and encourage a learning environment that nourishes all aspects of children's overall well-being.

Academic Performance

Similar to Murakami et al. (2016) focus on the perceptions of teachers regarding the benefits of garden-based learning, an earlier study by Maller (2009) used a qualitative analysis approach to understand how teachers perceived school gardens. In his analysis, Maller (2009) found students' academic performance improved when garden interventions were incorporated into their schools. According to Maller (2009), gardening activities allowed children to experience a different way of learning that is outside the classroom. While Maller (2009) employed a qualitative approach, Durlak, Weissberg, and Pachan (2010) conducted a quantitative meta-analysis to determine the effectiveness of after-school programs (ASPs) dedicated to improving social and personal skills. In this analysis, improved school performance following an after-school program emphasizing specific skills was deemed to be significant (Durlak et al., 2010). Because the implementation of a garden curriculum is not required during school hours, these findings are noteworthy. School performance in areas such as test scores, grades, and school attendance significantly improved. Lee, Wook, Ja Soon, and Lee (2018) found a significant reduction in school-related stress in 20 maladjusted school children after participating in horticulture-related activities. Lee et al. (2018) also found horticulture-based activities to improve focus and concentration within a school environment, as well as a reduction in stress levels. Hanscom and Schoen (2014) also found that children

engaging in garden-based activities improved in their ability to pay attention, a life skill that lends particularly well to improving academic performance.

Leadership Skills

In addition to the improvement of academics, garden-based learning can foster leadership skills in children, as well as a sense of responsibility. Maller (2009) found that gardens give children the opportunity to partake in leadership roles and establish a sense of pride in their own crop. Durlak et al. (2010) reported on the significance of after-school programs incorporating elements that support responsibility and leadership, and found that children assuming responsibility within their garden reduced their maladaptive behavior. Maller (2009) also found that when children experience the concept of responsibility, they feel a sense of empowerment. Fulford and Thompson (2013) reported on the importance of encouraging responsibility within programs that are tailored to young people. Similarly, McLennan (2010) outlined the significance of children gaining responsibility skills following their engagement in garden-based activities.

Emotional Well-being

There are a variety of benefits to gardening. Home gardening has been found to have a positive impact on emotional well-being in children. In a survey given to students in New Zealand, van Lier et al. (2016) found that children with home gardens experienced lower levels of depressive symptoms and improved emotional well-being than those without one. Chu et al. (2013) noted that home meal preparation after gardening increased self-efficacy in children. Davis, Spaniol, and Somerset (2015) also found that a gardening program resulted in increased self-efficacy around the ability to prepare and cook healthy food options. In their meta-analysis, Durlak et al. (2010) found

after-school programs with a focus on socialization led to significant improvements in social well-being. Gardening and outdoor activities have also been found to be highly effective in promoting emotional well-being in schools. Soon and Lee (2018) noted that indoor gardening activities resulted in decreased school related stress. Parents and teachers found that outdoor activities improved children's self-confidence and children reported feeling increased happiness, motivation, and self-awareness (Acton & Carter, 2016). Fulford and Thompson (2013) found that their gardening program improved self-esteem. Maller (2009) found that in addition to improving self-esteem in adolescents, nature-based activities increased empowerment and self-confidence. Furthermore, McLennan (2010) found that the communal act of gardening led to the feeling of accomplishment in one's work. Together, these studies show that a gardening curriculum would have many benefits for the well-being of the children who participated.

Sociability

In addition to emotional well-being, horticultural therapy and nature-based activities have been found to positively impact the way children communicate and interact with others. In a study that examined the effects of horticultural therapy on children with intellectual disabilities, Kim, Park, Song, and Son (2012) found significant improvements in sociability. Specifically, researchers identified a notable increase in self-assertion, self-control, and cooperative social skills that resulted from horticultural group activities like gardening, delivering ingredients to someone else, and cleaning up (Kim et al., 2012). Group activities in horticulture and team games allow children an opportunity to work with their peers and increase social participation, as cited by Acton and Carter's (2016) study on the impact of outdoor activities. Lee et al. (2018) also showed supporting

evidence that horticulture-related activities helped the children learn how to relate with one another, thereby improving the children's communication skills and interpersonal relationships. These nature-based activities allowed children a chance to nurture and support each other as well as their community. For example, McLennan (2010) describes children offering one another seedlings from their own pots after noticing a fellow student's seed had not germinated. This illustrates one of the cooperative behaviors elicited from working together in a garden setting, which has been found in various studies (Kim et al., 2012; Fulford & Thompson, 2013).

Maller's (2009) qualitative study of adults' perceptions of the benefits of children's hands-on contact with nature further supports the hypothesis that peer relations are improved through horticulture, as the results of this study described connectedness to other people as a major outcome. Participation in garden-based activities has been found to help participants develop self-esteem and a sense of belonging (Fulford & Thompson, 2013). This increased sense of confidence and comradery in children was encouraged through dialogue, engagement of the children in planning sessions, and celebrating achievements (Fulford & Thompson, 2013). Garden or nature-based activities can be implemented at any time during a child's day, and because after-school programs have been shown to positively impact the sociability of children (Durlak et al., 2010), an after-school horticulture program may serve as a valuable means in fostering community and well-being amongst school-aged children.

Vegetable Preference and Consumption

Another theme of the literature is the healthy habits that emerge due to a gardening program. Specifically, an abundance of studies (Leuven, Rutenfrans, Dolfing,

& Leuven, 2018; Carney et al., 2012; van Lier et al., 2016; Spears-Lanoix et al., 2015) found that horticultural practices and garden-based learning led to children having an increased preference for vegetables, leading to improved vegetable consumption and healthier lives. In a study involving school children and their attitudes toward healthy foods after participating in a gardening program, Leuven et al. (2018) found significant increases in the students' self-reported preference for vegetables. In comparison, the control group lacked an increase in their self-reported ratings for vegetables. Leuven et al. (2018) also noted that increased involvement with the gardening intervention as well as with vegetables at home elevated the students' exposure, therefore expanding their visual and taste preferences. Specifically, regarding consumption, Carney et al. (2012) studied the impact of a community gardening program on vegetable intake among children, and found that children saw a threefold increase in vegetable consumption, from 24% to 64% of daily intake. Overall, 94% of the participants in the community gardening program reported that the garden helped the health of the family by increasing their preference for healthier food options (Carney et al., 2012).

Additionally, van Lier et al. (2016) determined that participants who gardened at home were positively associated with having healthier eating habits due to increased food options. Similarly, Spears-Lanoix et al. (2015) studied the effectiveness of an intervention relating to gardening and nutrition on students' knowledge of healthy eating and led to increased consumption of vegetables. By building a class garden, growing vegetables, and tasting the vegetables grown, the students showed significant positive changes in knowledge of healthy food choices (Spears-Lanoix et al., 2015). Chu et al. (2013) examined the association between the frequency of assisting with home meal

preparation with vegetable preference and found that a higher frequency of helping prepare food at home was associated with higher vegetable preference and selecting healthier foods. van Lier et al. (2016), Spears-Lanoix et al. (2015), and Chu et al. (2013) all showed that knowledge of and exposure to different vegetables enabled participants to have healthier eating habits due to their expanded options.

A systematic review of school garden programs by Davis, Spaniol, and Somerset (2015) found that such interventions had a positive impact on areas of vegetable intake, positive attitudes towards healthy foods, and increased knowledge of healthy foods. Specifically, Wright and Rowell (2010) found that brief, in-school gardening lessons can improve dietary choices. Lineberger and Zajicek (2000) found that interventions across schools can improve attitudes for vegetables and increase preference. Gibbs et al. (2013) concluded that in-class garden interventions combined with kitchen lessons can support the ability to try new foods, an important basis for increasing consumption or preference. Lastly, Parmer et al. (2009) found that gardening and nutrition education together can improve preferences and consumption.

Overall, the existing literature shows that horticultural interventions can lead to improved life skills. Children that engaged in gardening performed better academically and showed improved responsibility and leadership. They showed increased well-being, including self-esteem and self-efficacy. Sociability was improved through increased communication, self-assertion, self-control, and cooperation. Through exposure to gardening and cooking, children are given the opportunity to learn about the multitude of healthy food options, likely increasing their desire to try new foods and expand their preferences for them.

Statement of Purpose

The purpose of the research was to develop a horticulture-based curriculum for children aged 5 to 11 to promote healthy and productive life skill development. Our objective was to create eight horticulture-based lesson plans that addressed four specific life skills: self-esteem, social engagement, healthy eating habits, and responsibility. Research (Kim et al., 2014; Bell et al., 2018; McLennan, 2010; Coholic & Eys, 2016) has shown the positive effects of horticulture-based activities on the life skills addressed in this project; however, there is no curriculum in place that addresses them collectively. The curriculum that we developed aimed to instill life skills in children that are otherwise left untaught, such as self-esteem, sociability, and responsibility, in order to maximize children's ability to participate in their meaningful occupations.

Theoretical Framework

This project is formulated, developed, and implemented upon the Person, Environment, Occupation (PEO) theoretical framework. The PEO model views a person as a holistic mixture of mind, body, and spirit (Brown, 2014). The model looks at the individual across their entire life span and views person, environment, and occupation as a transactional relationship (Cole & Tufano, 2008). Because of the interconnectedness of this model, each construct directly affects the other. When each of the three constructs align with one another, facilitation of meaningful participation in occupation occurs (Wong & Leland, 2018). However, occupational engagement or performance can be negatively impacted if one or more of the constructs do not fit together (Wong & Leland, 2018). By considering how the person participates in an occupation while in each environment, a curriculum was developed that increases the child's level of satisfaction

and functioning (Wong & Leland, 2018).

The Person

Each person is said to have values, interests, abilities, skills, and life experiences that are meaningful, and greatly influence them as a person (Brown, 2014). These factors include physiological, cognitive, psychological, and spiritual components (Cole & Tufano, 2008). These factors play a significant role in the outcome of a person's occupational performance. People are driven to explore and master their environment and they achieve competence when they can use the resources within their environment (Cole & Tufano, 2008). In order to succeed in their environment, people need to achieve adequate emotional maturity and must be able to resolve problems within their environment throughout the entirety of their life (Cole & Tufano, 2008).

The Environment

The environment is a vital element in this model. According to Brown (2014), the environment is where an occupation occurs and includes physical, social, and cultural aspects. For example, two children growing up in differing physical and social environments will have nuances in their occupational choices. One environment may offer an abundance of safe community spaces like parks and playgrounds while another may hinder a child's occupational choices. Thus, a particular environment can have varying impacts on the person's occupational participation, leading to either function or dysfunction in the person (Cole & Tufano, 2008).

The Occupation

The PEO model views occupations as goal-directed and essential to performing life's roles (Cole & Tufano, 2008). This model views a person's ability to function in

their environment as the ability to master their occupations with competence (Cole & Tufano, 2008). Activities of daily living are essential to everybody regardless of age, and include activities such as bathing, eating, and dressing. For children, the occupations of play and leisure are important and aid in their ability to function in the environment. For example, children playing at school with the other students begin to learn and master their ability to socialize.

This Program

This program is designed to meet the needs of the person. The environment varies to meet the client's needs. The curriculum is designed to be brought into any facility and create the optimal environment in any area with a water source. Plants being used will be determined by the amount of light and the season. This client-centered adaptation will help the person to master their environment and succeed in the occupation of gardening. Additionally, the activities are designed to enhance the person's cognitive, spiritual, and psychological and emotional well-being through life skills training. The skills learned through this curriculum will allow the children involved to master their environment within the garden as well as throughout their lifetime in the many different environments that they will encounter.

Methodology

Agency Description

The agency that will be responsible for the distribution of our curriculum is known as Life's Toolbox. Life's Toolbox (2019) is a non-profit organization dedicated to developing and improving life skills in children, teens, adults, seniors, and veterans through engagement in meaningful occupations. To lead the curriculum, the agency will

provide a trained instructor, while funding for the curriculum and its implementation will be determined independently by the agency.

Project Design

The purpose of this program was to develop an evidence-based curriculum that promotes the development of specific life skills to children aged 5 to 11 using gardening. The curriculum is comprised of 4 main life-skills themes—sociability, responsibility, healthy eating, and self-esteem—which are separated into two 50-minute sessions per week, totaling 4 weeks. Each week has been allocated a specific theme which will be accompanied by garden-based activities adjusted to meet the group’s developmental abilities. The curriculum is designed to provide the instructor with all the instructions and information needed for successful implementation in various environments. Also, it provides a list of all supplies needed for each day and each activity. The curriculum has been designed to support a portable garden set-up in which all materials and supplies are brought in and removed by the agency and designated instructor. Though versatile and able to fit in a wide array of both indoor and outdoor settings, a nearby water source is required for program implementation.

Population

This curriculum attempts to engage children within Southern California between the ages of 5 to 11. The curriculum was not designed specifically for children with physical or intellectual disabilities; however, appropriate modifications can be made to adapt to the context. The curriculum is designed to be downgraded or made more difficult to fit whichever population hires Life’s Toolbox to provide the curriculum and instructor.

Curriculum Development

This curriculum was developed following a review of the relevant literature and garden visitations. The gardens visited were Bonita Canyon elementary school, Woodbridge community garden, Fullerton Arboretum, LA Arboretum, South 40 Community Garden, Centennial Farms, Oakmont of Huntington Beach, CSULB- Earl Burns Miller Japanese Garden, Long Beach Community Garden, McGaugh Elementary, Sunrise Senior Living, and LePort Montessori. The space for each of the programs was observed and representatives of each garden were interviewed (see appendix C). The gardens visited were diverse in their size, population, and funding. There were many things that each gardening program felt went well. For example, one school reported that they received a lot of teacher participation. Another program noted that their program is open to the public which allows for cultural and educational programs that benefit every person. Another program credits hardy plants for their success. Some difficulties experienced by the gardens are absent helpers, lack of staffing, quarreling participants, lack of knowledge, and limited resources. In addition, through attendance at the Thirteenth Annual Gathering of Community Gardens information regarding current gardening programs was received and analyzed for curriculum development. Contacts from this gathering were also approached to evaluate the program after it was created.

Project Implementation

The curriculum was created from information learned through community garden visits and through online research of gardening activities. Each week is dedicated to one life skill. The curriculum started with socialization, as the group of children will start off getting to know each other. The second week was designed to promote responsibility.

Healthy eating was the targeted life skill of week three, and week four centered around increasing self-esteem. Each activity was assigned a specific time slot and each session ended in a reflection. Once a draft of the curriculum was created, it was emailed for evaluation.

After evaluations were received, they were reviewed. Evaluations identified areas of confusion and additional needs within the curriculum. The curriculum was adapted based on professional opinions in order to optimize effectiveness.

Recruitment Procedures

Surveys were sent to community gardens, former Life's Toolbox interns, Stanbridge occupational therapy staff, and posted on AOTA's CommunOT forum to measure the perceived effectiveness of the curriculum on the development of life skills. In addition, the Los Angeles Community Gardens Council sent the curriculum around to the staff involved in the forty-two gardens that they manage.

Storage and Analysis Methods

A survey was compiled on SurveyMonkey (see appendix B). The link to the survey was posted on the CommunOT forum, emailed to Stanbridge faculty, sent to professionals who work in horticulture in the community, and it was also forwarded to prior/current OT/OTA interns from Life's Toolbox. Survey questions include items such as "does the activity correlate with the life skill being presented?" and "is twice per week for 50 minutes appropriate for children in this age range?" The survey was administered virtually and could occur anywhere the participant had Internet access. Equipment required for the administration of these surveys included a phone or computer to access SurveyMonkey. Upon opening the link to the survey, the participant was given an

informed consent form. The responses were stored on SurveyMonkey. Surveys via expert opinions were the method of evaluation when assessing the effectiveness of the horticulture-based curriculum. We reviewed the survey answers from the OT/OTA interns, and then coded and themed this qualitative data from professionals who were sent the curriculum. We then made adjustments to the program as needed.

Project Evaluations and Finalization

Once survey results were analyzed, recommendations were considered and implemented, if applicable and fitting with the group goals. Pictures were added to provide clarity towards the instructors and modification options were provided. The finalized curriculum can be found in appendix D.

Ethical and Legal Considerations

Consent Forms

Electronic consent for the surveys was given at the beginning of the SurveyMonkey. The participants had until the end of the study to look over them before completing the survey (see Appendix A).

Risks

The risks of this study to the participants are minimal. They include straining of the eyes due to time spent on the computer and potential overuse injuries to the hand if they plan to provide extensive feedback. However, the survey distributed should not have required elongated time for completion and participants were unlikely to experience any of these identified injuries as a result of the study.

Minimization of Risks

The American Academy of Ophthalmology (2016) recommends taking screen breaks every twenty minutes. The surveys were made to take approximately fifteen minutes, participants were not timed, and the informed consent forms encouraged taking breaks as needed.

Cost

The sole cost to participants is their time required to fill out the surveys distributed to them.

Biases

The biases of this study were that it only reached people who read the online occupational therapy forum, and the professors located at the research site who may know the researchers. Furthermore, the OTs and OTAs that previously worked at Life's Toolbox's know Dr. Hatala personally, which could have resulted in increased bias. To diminish these biases, anonymous surveys were distributed.

Anonymity

In order to ensure anonymity, data will be kept anonymous by not asking for names in the surveys distributed. SurveyMonkey will be the means of keeping data protected, as well as ensuring the source is password protected.

Results

Following the completion of the rough draft of the curriculum, surveys were delivered to individuals with experience in horticulture, gardening, and occupational therapy. Thirteen people answered the survey. Respondents' experience working with children ranged from 0 years to more than 30 years with a mean of greater than 13.4

years of working with children. Experience with gardening ranged from 0 to 50 years, and had a mean of 17.2 years. 6 of the 13 respondents had used gardening in their treatment of children. Of the 13 respondents, 10 believed that our curriculum was an appropriate length, 1 felt that it depended on setting, 1 thought that 2 more weeks of the curriculum could be beneficial, and 1 was confused by the question. A total of 11 of the people surveyed stated that 50-minute classes twice a week were appropriate for this age range, while 1 of them felt that as long as we kept the children engaged it would be appropriate. Of the respondents, 1 stated that 50 minutes may be a bit long for children who were under the age of 6. Our results indicated that 92.3% of those surveyed felt that the activities met the life skill they were intended to address. Two of the respondents wanted to see additional life skills included in the curriculum, and one respondent felt that life skill goals could be written more clearly. Survey results indicated minimal changes needed to occur; however, some changes were necessary. Individuals responded with feedback for the curriculum stating that increased movement prior to the start of gardening activities may help improve the children's focus. In addition to this, the healthy eating curriculum needed to be adapted to a food plate rather than food pyramid. Goals and purposes were assigned to each week's curriculum to provide clarity. Additionally, resources were attached to assist the instructor in finding the evidence behind the curricular activities.

Gardening Curriculum

Following the completion of research and community garden visitations, a curriculum was developed and curated for children aged 5-11 years. Each of the four weeks within the curriculum focuses on a life skill drawn from the literature review. The

selected activity choices for each session are to promote the development of sociability, responsibility, healthy eating, and self-esteem.

Week One: Sociability

The first day of the curriculum provides the children with a brief introduction to the program and activities, as well as setting rules and expectations. The life skill focus in Week One is sociability, in which social interaction with peers and adults is promoted using various garden activities. Due to developmental differences between age groups, some activities are adjusted for age.

Day one. After giving a brief introduction to the curriculum, an introductory activity and icebreaker for the group is a socialization scavenger hunt. Younger children receive a visual checklist with pictures and simple requests, while older children receive a written checklist with more age-appropriate, complex directions.

The main activity, a mini-greenhouse assessment, is a non-standardized assessment where the child performs a sequence of steps: write their name on a sticker label, place the sticker on the back of their hand, transplant a plant seedling into a small cup, seal it in a plastic bag, and place the label on the sealed bag (Life's Toolbox, 2019). The assessment allows the instructor to evaluate various areas of the child's skills, such as following verbal directions, initiation, decision-making, and upper extremity functioning (Life's Toolbox, 2019). These assessments are intended to be done in addition to sociability, responsibility, and self-esteem life skills. After planting, the children continue to the next activity of decorating their pots, which, like the earlier task, is adjusted for age. Children aged five to seven will each be in charge of distributing one art supply item (i.e. markers, stickers, paint, etc.) when asked by a peer. The older

participants will be instructed to request any desired art supplies from each other. Both scenarios include following directions, working together, and communicating to accomplish tasks, which increase sociality (Kim et al., 2014).

To end day one, a closing activity consisting of a follow-up discussion will be implemented to further promote social engagement. Each child will be encouraged to share their answers with the group when asked questions about the main activity which will facilitate active communication within the group. The reflection journal will then be introduced and created in which the children's picture is to be taken by the instructor and brought back on day two, while a petal cutout is given for children to glue on the cover of their journal. The journal prompt for the day has them reflect on socializing with others.

Day two. Upon return, the children will begin the day with a brief review of the previous session and retrieval of their potted plant. The retrieval process encourages sociability as the children must verbally interact with the instructor to obtain their potted plant. The introductory activity consists of the children passing out supplies needed for the main activity. During the activity, the children will practice communication and cooperation as part of increasing their sociability skills when asking their peers whether they want the item they are offering, and having the peers reply accordingly.

During the main activity, the children create their own fairy, gnome, dinosaur, etc. garden using the supplies they received. Here, they are to be encouraged by the instructor to talk amongst each other about their creative ideas while making their gardens, help each other, and to compliment one another's creations to promote positive peer relations (Kim et al., 2014). This activity provides an opportunity for the children to practice prosocial behaviors and to develop a cooperative attitude amongst one another through

helping, sharing, cooperation, and kindness (Park et al., 2016).

Following the main activity, each child will share with the group about their unique garden by telling a short story about it which promotes imagination and provides a space for them to use humor and silliness, if desired. The session will conclude with the reflection journal activity of having the child glue their own photo (from day one) to the center of the flower and adding a petal to it. The journal prompt asks the children to consider who they will tell their garden story to and what they will say about it.

Week Two: Responsibility

The purpose for the first day of day three is to increase knowledge of gardening protocols and encourage responsibility, as well as facilitate decision-making. The goal is to promote appropriate decision making and responsibility by increasing knowledge of gardening protocols through hands-on activities. McLennan (2010) has discussed how engagement in garden-based activities supports and increases responsibility skills. The purpose of day four is to provide children the opportunity to make their own decisions and encourage responsibility as it relates to agricultural and horticultural practices. The goal is to instill and strengthen decision-making abilities in children by providing opportunities to govern their own garden plan and layout.

Day three. Day three of the curriculum begins with a water guessing game that consists of three to five questions related to how much water various crops require per week. To accomplish this activity, the instructor will fill three clear cups with water, providing three options of different levels, with one being the correct answer. Following this activity, the instructor will conduct an oatmeal watering activity which requires each participant of the program to have three bowls filled with dry oatmeal that they will be

instructed to fill with water from cups or a watering pitcher. With this activity, the instructor should provide verbal instructions to children to pour a small amount of water in one bowl, an adequate amount in the next, and finally too much water in the third bowl. To grade this activity down, instructors can provide assistance to avoid spillage and ensure accuracy. The instructor should then facilitate a discussion with the children about the levels of each bowl and the appropriate amount of water to utilize for various crops.

The main activity for day three that will encourage responsibility among participants is a watering calendar that they will create in order to care for their crops. According to Bridgeo, Caruso, and Zatta (2016), plant care builds responsibility skills, as well as planning and problem-solving skills. Instructors should distribute a calendar template to children and provide information related to the frequency of watering required for a variety of crops. Children may add stickers of plants to their calendar or to grade this activity up, children can draw and color crops on their own based on how often they should be watering the plants. A brief discussion should follow this activity. The curriculum guidelines indicate closing day three by replaying the water guessing game to assess what knowledge the children have gained, and to also facilitate a discussion about what they have learned. In addition to the petal children will add to the cover of their journal, the topic of the day will be to either illustrate or write what their favorite vegetable, fruit, or other crop that they would like to water in the future.

Day four. Day four of the curriculum begins with an interactive “pizza garden” art activity in order to promote a significant life skill such as decision-making. This activity requires orange construction paper, colored felt pieces and/or stickers, scissors, glue, and crayons/markers. The instructor’s role during this activity is to pre-cut the

construction paper into circles so that each child may decorate it to their choosing, and instruct the children to add different vegetables they would like on their pizza. The instructor may choose to use felt pieces and instruct students to cut and glue their felt vegetables onto their pizza. To grade this activity down, the instructor may choose to use stickers of vegetables and instruct students to place stickers where they would like. If time is warranted, sharing with a peer can help to increase the interaction among children.

Following this activity, instructors should present an informative poster board to teach kids about various plants and emphasize the resources they have available. Examples include providing information about the length of time it takes crops to grow or discussing the impact of various crops in children's daily lives. This will help to increase children's knowledge about crops and will encourage engagement in the main activity—a garden plan. Durlak et al. (2010) discusses the significance of assuming responsibility for a garden to not only improve responsibility skills, but to also reduce maladaptive behaviors. This activity requires soil, popsicle sticks, stickers of crops, and deep cardboard paper trays. The instructor will fill the cardboard paper trays evenly with soil and instruct children to place stickers on popsicle sticks of which crops they would like in their garden. Following the placement of stickers on the popsicle sticks, the children will place their popsicle sticks accordingly in their garden. To grade this activity up, children can select different types of gardens: for example, full sun, partial sun, and full shade gardens. Based on which type of garden they would like, children will place their plants in their garden (refer to curriculum for examples of crops for each type of garden).

In order to close day four effectively, a discussion should be facilitated about children's garden plan, placement of crops, and necessary changes (if any). In addition to

the petal children will add to the cover of their journal, the topic of the day will be to either illustrate or write how they plan to teach someone at home about what they have learned as it relates to their garden plan.

Week Three: Healthy Eating

The third week's purpose is to reinforce knowledge of healthy eating and encourage expansion of healthier food options. Research shows that self-reported preferences for vegetables increase after participating in gardening programs and that gardening lessons can improve dietary choices (Leven et al., 2018; Wright and Rowell, 2010). Additionally, Spears-Lanoix et al. (2015) found that after growing and tasting vegetables, students showed positive changes in food choices and vegetable preference. The goal by the end of week three is to promote healthier eating habits by increasing vegetable preference and consumption after involvement in gardening.

Day five. Week three begins with a short introduction into what is healthy eating. The instructor will lead a discussion to ask what the children ate the previous week and what they think healthy eating is. Healthy eating and its importance, as defined by the U.S. Department of Agriculture (2018), should be explained and reiterated with examples of what is included in categories like vegetables, fruits, and grains. The discussion will segue into the introductory activity, in which the children will be given a blank worksheet depicting MyPlate. Colored utensils will be distributed, and children should be instructed to color in the categories as well as provide examples of different food groups. For younger children, food stickers should be given so they can adhere the stickers on each category. For older children, instructions should be given to either write or draw foods into categories.

The main activity of day five is planting seeds and plugs, or small seedlings. The type of seed or plug to be planted will be dependent on what resources are available as well as the season and weather. Children will be instructed to use their hands or a gardening tool to move soil into their pots and begin the process of planting a seed. As the activity continues, the instructor should explain some common foods that are grown in a garden, such as basil, tomatoes, and lettuce. Day five will end with a closing discussion, in which the children will write or draw in their general garden journal a response to what food they would like to grow.

Day six. An introductory discussion will start off day six by asking the children what they have eaten in the past week. Younger children should be given options to raise their hands to, while older children can raise their hands and answer open-endedly. The introductory activity will be a garden observation. Children will observe the plants they potted from day five, as well as observe already-grown plants that have been brought in by the instructor. The children can actively participate in a taste or smell test of the plants brought in but grown elsewhere. Some examples of plants to bring in are basil, mint leaves, or tomatoes on a vine.

The main activity for day six will be a cooking day to make a salad. A variety of options should be introduced, such as different salad bases, toppings, and dressings, and the instructor should reinforce the idea that most things can be grown in a garden. For younger children, a bowl with a base salad already in it as well as a bowl of toppings will be given. An empty bowl will be given to the older children, who will be instructed to go to a set salad station and create their own. The closing discussion should review the simplicity of healthy foods, and how vegetables can be grown, washed, and then eaten.

For the older children, the instructor can touch upon the high nutritional value of home-grown gardens, or the differences between fresh, frozen, and canned foods. Day six ends with a general garden journal prompt of what the child would like to garden or cook with their parents.

Week Four: Self Esteem

The purpose of week four of the curriculum is to promote the development of self-esteem. Self-esteem is formed through interactions with other people and experiences. Self-comparisons to others also form self-esteem. The goal of week four of this curriculum was to provide activities that foster an appreciation of oneself and resulted in increased self-esteem.

Day seven. Day seven of the curriculum begins with a discussion of self-esteem and its meaning to introduce the children to our topic of the week. The instructor reads the story *Stand Tall, Molly Lou Lemon* by Patty Lovel. This story is about a little girl named Molly Lou Melon whose grandma taught her to accept the features that made her different from other children. Molly Lou Melon moves to another school where she is made fun of by another child, but she accepts all those features and makes friends by being herself. The moral of the story is that one should embrace who they are and accept themselves.

After the story, the children are asked what they thought of the story and what they like about themselves. The introductory activity is composting. Composting is the process of creating a beneficial environment for plants using yard and food wastes. Composting reduces one's environmental impact and promotes plant growth (Quigley, 2011). Research indicates that environmentally friendly behavior can boost self-esteem

(Venhoeven, Bolderdijk, & Steg, 2016). Additionally, according to Case-Smith (2015b), self-esteem is composed of one's belief of value to society. By engaging in sustainable activities, like composting, the child can boost their beliefs about their value to society. Additionally, this skill can teach children how to compost in their own homes and participation in household tasks is linked to higher self-esteem (Case-Smith, 2015b). This activity can be downgraded by using fewer ingredients and using a measuring cup. This activity can be made more difficult by increasing ingredients and having the children sort the ingredients into what is a nitrogen-based ingredient and what is a carbon-based ingredient.

The children will use the compost they made in their main activity of creating seed bombs. Seed bombs are balls of wildflower seeds, compost, and clay, and are a fun way to garden. Once each of these elements are placed together, they are left out too dry. After the seed bombs dry, they can be thrown anywhere there is dirt, and with water, they will bloom. The seed bomb contains all the nutrients it needs from the compost and clay. Self-esteem is often improved by the achievement of a task and skill (Case-Smith, 2015a). The seed bombs are a simple and new achievement for children. Additionally, they use the compost that they have successfully created to form the seed bombs. This activity can be downgraded by using only one or two types of seeds. It can be made more difficult by giving more opportunities for seed choice selection or by having children verbalize what type of seeds they would like to use.

The day ends with a discussion about the activities and journal reflection. The topic of the journal is to consider what at home can be composted. Children ages five to seven will be asked to draw a picture of what they have at home that they can compost.

Eight to eleven years old will be asked to write what they have at home that they can compost. Children will also add a cutout petal to the cover of their journal.

Day eight. The introductory activity for the final day of the curriculum is an exercise program in the garden. Children will be given formal exercise instructions while surrounded by plants. Being able to master physical skills has been shown to increase self-esteem (Case-Smith, 2015b). Reed et al. (2013) found that exercising in a green environment had greater effects on self-esteem than urban or indoor exercise. Exercises include sky reaches, arm circles, tree pose, chair sits, toe touch, downward dog, plank cow-cat, child's pose, and corpse pose. The instructor performs the exercise for ten minutes and completes what exercises can be completed in that time. Frequency and intensity are up to the instructor's discretion, but basic timelines are given in the curriculum.

Following the green exercise, children will create nature faces on wood slices. Children glue nature materials such as leaves, acorns, flower petals, pinecones, and stones onto a wood slice to create their self-portraits. The self-portrait allows the child to take a moment to see how they look at themselves. Mak and Fancourt (2019) found that engagement in art activities can improve self-esteem in children. At the completion of this activity, children are asked to share their self-portraits with their neighbors and to tell their neighbors one thing they liked about their garden portrait.

Next, the class will discuss how they felt the gardening program went and what activity was their favorite. They will have the opportunity to talk about the plant that they brought home and what it looks like currently. The children will discuss what they thought was the most challenging aspect of the gardening program. The program will end

with one last journal entry. Children ages five to seven will draw what they want their home garden to look like. Ages eight to eleven will write one goal for their home garden. Children will also add a cutout petal to the cover of their journal.

Discussion

The implementation of a garden-based curriculum to teach and instill necessary life-skills in children aged 5 to 11 would be immensely beneficial to the field of occupational therapy. The curriculum provides children the opportunity to connect with nature, which has been shown to alleviate stress and anxiety, thereby positively affecting their social interactions, self-esteem, and decision-making abilities. For developing children, engagement in garden-based activities can be motivating, as they learn about and interact with nature. Thus, a garden setting (either indoors or outdoors) can be an effective environment in which to implement occupational therapy interventions. For example, as exemplified by the mini greenhouse assessment (Life's Toolbox, 2019) in the first main activity of the curriculum, a wide array of a child's skills can be assessed. For this reason, occupational therapists across settings may find benefit in implementing garden-based interventions.

Additionally, the curriculum provides participants opportunities for socialization with others and first-hand experience with planting their own food. This allows for increased interest and awareness in food selection as well as interaction with peers during meal preparation and feeding activities. The experiences and lessons learned from the curriculum can be generalized into the home setting as the children develop an eagerness to share their experiences and learned ideas with families and friends. In this way, life skill development continues even after the curriculum has ended, as sociability, self-

esteem, healthy-eating choices, and responsibility is practiced at home in the kitchen, at the dining table, in the cafeteria, or the grocery store.

The curriculum's focus on four life skills aims to increase overall occupational functioning in children. By homing in on the development of socialization, responsibility, healthy choices, and self-esteem, children can build a repertoire of useful, functional life skills that will assist them in their current and future occupations. Jacobi-Vessels (2013) noted that time outdoors teaches children to learn to respect nature more and encourages curiosity. Additionally, it has social-emotional benefits including collaboration within the garden (Jacobi-Vessels, 2013). For example, when teaching social skills to children, the fairy garden activity was a way to encourage children to ask questions and seek solutions while using their imagination so that they could begin to trust their own ideas (Jacobi-Vessels, 2013). Additionally, countless research suggests that participation in learning about gardening and growing food increases one's preference for and consumption of healthier food choices. Enabling children at a young age to be more conscious of their food choices and to actively pick healthier options will have countless health benefits in the long run.

This curriculum was developed after thorough research and interviews with community gardens. Once the curriculum was developed it was given to professionals in occupational therapy and horticulture for review. Surveys indicated that most professionals believed that the gardening curriculum was an appropriate length and addressed the life skills that it aimed to address. Minor alterations were recommended, such as adapting the healthy eating curriculum from the food pyramid to the My Plate food model. Additional comments noted that the curriculum would benefit from

increased implementation of physical activity at the beginning of each session.

The next step to this curriculum would be testing its effectiveness. The four-week curriculum should be tested on a large population of children between the ages of 5 and 11. A rigorous examination into the effectiveness of this curriculum could indicate the reliability of the curriculum within each of the life skill categories. This could additionally be used to find ways to improve the curriculum. The curriculum should also be tested to determine how engaging it is and if it needs any modifications for the population that it is intended.

Though steps were taken to gain insight and suggestions on the proposed curriculum, it was determined that performing garden visits did not prove to have as significant an impact on the project design as was initially believed. Perhaps, in future undertakings of data collection for developing a sound curriculum, contacting a horticultural therapist would prove to be useful in gaining insight and resources for relevant content. Not only would this have provided novel ideas which could have changed the content of the curriculum, but it may have served to reinforce the confidence in the ability of certain activities to achieve the intended outcome of promoting life skills to the child recipients.

Limitations of this study include a lack of survey responses in conjunction with a lack of randomized selection procedures. Despite our efforts to email various professionals from different contexts, the lack of sufficient responses to the survey was evident.

Conclusion

By developing this curriculum, we hope to provide children with the necessary tools and instill within them the vital life skills needed to successfully engage in meaningful occupations. Due to the lack of knowledge about the significance of teaching life skills, a lack of generalized funding, and a lack of support, there are limited opportunities for garden programs to succeed and thrive. With the creation of this curriculum, we hope to combat these challenges and provide children with the opportunity to learn and grow through nature-based practices.

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Appendix A

STANBRIDGE UNIVERSITY RESEARCH CONSENT FORM

Description: You are invited to participate in a research study on the effectiveness of a garden-based life skills curriculum. You will be asked to answer questions regarding your perception of the curriculum. Your identity will remain anonymous and your answers will be recorded and used to adapt the curriculum as necessary.

Your Time Involvement: Your participation will take approximately fifteen minutes

Risks and Benefits: There are no known risks to this study. The questions for this study will be done online. Risks associated with computer usage include strained vision, overuse injuries of the hand, and posture related injuries. This survey is not timed and you are encouraged to take breaks as needed. The American Academy of Ophthalmology (2016) recommends taking screen breaks every twenty minutes by looking twenty feet away from your screen for twenty seconds. The benefit of the study is the good feeling of helping others and knowing that your input can help many kids learn life skills that will positively affect them.

Payment: There will be no payment for participation in this study.

Participant Rights: If you have read this form and continue onto the next page for the survey, you are consenting to participate in this study. Participation in this study is

voluntary, and you have the right to withdraw at any point without penalty. Your alternative is to not participate in this study. You have the right to refuse to answer specific questions. Your identity will not be disclosed at any time. The results of this study may be disseminated at professional meetings or published in scientific journals.

Contact Information: If you have any questions about this research you may contact the Faculty Advisor: Dr. Annette Hatala, OTD; (714)321-8915; annette@lifestoolbox.net

Independent Contact: If you are in some way dissatisfied with this research and how it is conducted, you may contact the Stanbridge University Vice President of Instruction at VP.instruction@stanbridge.edu or 949-794-9090.

Please keep a copy of this consent form for yourself by pushing print now.

Appendix B

Stanbridge University

SURVEY FOR PROFESSIONALS

1. How many years of experience do you have working with kids?
2. How many years of experience do you have with gardening?
3. Have you ever used gardening in your treatment of children?
4. Is the length of the curriculum appropriate?
5. Is twice/week for 50 minutes appropriate for children in this age range?
6. Does the activity correlate with the life skill being presented?
7. Do you see any general changes you would like to see in the curriculum?
8. Do you have any additional comments?

Appendix C

Community Garden Interview Questions

1. Where do they store supplies and equipment?
2. What kind of watering system do they use?
3. What went well?
4. What did not go well?
5. Are there existing programs for children?
6. Where do you get funding streams?
7. Does any single person take care of the garden exclusively?
8. How long have they been in this position (running the garden)?
9. Is it a high turnover position?
10. Do they have any educational programs?
11. What population do they work with?
12. What do they offer?
13. How are they staffed?
14. Where do they get resources?
15. Where do they get funds?

Appendix D

Curriculum

Gardening Curriculum

- *If modifications are necessary due to physical/intellectual disabilities or other concerns, please contact:*

Dr. Annette Hatala, OTD

Life's Toolbox



Claudia Bui, Melissa Gathura, Nicole Perrin, Kirsten Schoedl

Day 1

Sociability

Supplies Checklist

- **(Print) Scavenger hunt checklist**
 - **Picture version for ages 5-7**
 - **Word version for ages 8-11**
- **(Print) Parent take-home letter/permission letter for reflective journal**
- **Camera**
- **Journals with stem cover (1 per child)**
- **Petal shaped paper for journal petals**
- **Glue**
- **Pencils/Pens**
- **Paint**
- **Markers**
- **Glitter sticks**
- **Stickers/Jewels/Other decorative supplies**
- **Googly eyes**
- **Pot, at least 7" diameter**
- **Planting soil**
- **Plant plugs (dependent on instructor)**

Day 1 (Week 1, 50 minutes)

***Life Skill:** Sociability

***Purpose:** To introduce children to the curriculum and encourage social interaction with peers and adults using garden activities

Introduction: Curriculum Overview (5 minutes)

Supplies: N/A

Instructions:

- General overview of curriculum and what it will consist of

Introductory activity: Scavenger hunt (7-10 minutes)

Supplies needed: Scavenger hunt print out, crayons, markers, or colored pencils

Instructions:

- *5-7 year old* scavenger hunt
 - Each child gets a chart with 6 pictures on it, with each one illustrating a different social interaction (use #1 print out on page 49)
 - Give someone a hug
 - Tell someone your favorite cartoon show
 - Make someone laugh
 - Give someone a high five
 - Say something nice
 - Tell someone your favorite fruit or vegetable
- *8-11 years old* scavenger hunt:
 - Each child gets a checklist format to complete within the group (use #2 print out on page 50):
 - Find someone who has a pet, ask what it is, and its name
 - Tell someone what you like about them
 - Ask someone about their favorite fruit or vegetable
 - Tell someone what you like to do for fun
 - Find someone who likes the same movies as you
 - Give someone a high five while telling them something nice.

Main activity: Mini greenhouse assessment and pot decoration (20-25 minutes)

Supplies needed: Plant plugs, plastic zip bag, labels, colored markers, pot (at least 7" diameter, paint markers, glitter sticks, stickers/jewels, googly eyes, etc

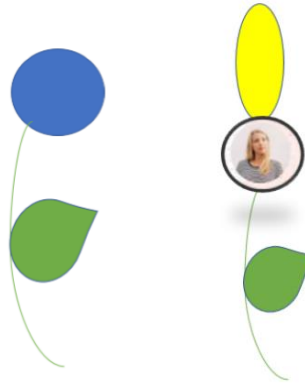
Instructions:

- ***Mini greenhouse assessment (8-10 minutes)***
 - Each child will be presented with an assortment of plant plugs (flowers or vegetables) and instructed to ask for whatever one they would like.
 - Write names on labels to stick on the back of their hands
 - Age 5-7:
 - Instructor writes the children's names on labels
 - Age 8-11:
 - Children write their own name
 - Student uses spoon to fill small cup with soil.
 - Once cup is filled with soil, student uses index finger to create a small hole in the middle of the soil.
 - Student places plant plug in to hole created in the soil
 - Demonstrate how to place cup with plant inside plastic bag, seals, and folds top of bag
 - Child removes sticker from the back of their hand and places it on the plastic bag.
 - The child must add soil to a small pot.
 - Demonstrate (help as needed) how to successfully transfer the plug to pot (break up roots, completely cover the roots with fresh soil, pack soil evenly).
 - Demonstrate how to water plant appropriately (explain how a watering calendar will be made during Week 2)
- ***Decorate their pot (10-15 minutes)***
 - Age 5-7
 - Each child has a specific art item that they are in charge of distributing when asked by a peer (i.e. one child has the markers and will pass to anyone who asks them for it, another child has stickers they are in charge of distributing when asked, etc.)
 - Age 8-11
 - The supplies will be distributed around the center of the table.
 - Children will be instructed to ask peers to pass any items that are out of reach. Reaching across the table is not permitted so instruct children ahead of time of expectations.
 - Life skill addressed: Must use social skills to ask fellow gardener's to pass certain art items they may want for their pot; sharing.

Closing activity: Discuss and share (5 minutes)

- Social engagement with each other about:
 - Why they chose their plant?
 - What they like about it?

- How they decorated their pot?
- Reflection Journal (introduce and create it): (5 minutes - complete entry at home if needed)
 - The reflection journal cover will be a circle attached to stem
 - Pictures will be taken Day 1 and each child's picture will be attached to the circle on the tip of the stem on Day 2.
 - Instructor take pictures
 - Each day, students will add 1 petal to their picture until they have a complete flower (totaling 8 petals). See example below:



- Children will complete journal topic relating to Day 1 (sociability):
 - **Topic #1:** What will you tell someone about what you did on your first day? (ages 5-7 will draw their response, and ages 8-11 have the choice to illustrate and/or write their response).

Purpose: To introduce the children to the curriculum and encourage social interaction with peers and adults using garden activities.

Goal: To increase sociability







***NOTE: Instructor(s) will keep the plants/pots for use in Day 2 activity

***NOTE: If children finish their journal, instructor(s) will keep journals for Day 2 otherwise children will be instructed to finish their journals at home and bring it back for Day 2.

***NOTE: Instructor(s) should send the children home with a note for caregivers (Note should be signed and returned for Day 2)

Socialization Scavenger Hunt #1

Put a check mark in the box when each is complete.

 <input data-bbox="786 506 821 548" type="checkbox"/> <p data-bbox="496 793 699 825">Give a high five</p>	 <input data-bbox="1308 506 1344 548" type="checkbox"/> <p data-bbox="907 793 1305 825">Make someone laugh or smile</p>
 <input data-bbox="786 921 821 963" type="checkbox"/> <p data-bbox="526 1188 673 1220">Give a hug</p>	 <input data-bbox="1308 921 1344 963" type="checkbox"/> <p data-bbox="875 1188 1338 1220">Tell your favorite fruit or vegetable</p>
 <input data-bbox="786 1310 821 1352" type="checkbox"/> <p data-bbox="420 1593 776 1625">Ask about a favorite movie</p>	 <input data-bbox="1308 1310 1344 1352" type="checkbox"/> <p data-bbox="980 1583 1235 1614">Say something nice</p>

Socialization Scavenger Hunt Checklist #2

Put a check mark in the box when each is complete.

<input type="checkbox"/> Find someone who has a pet, ask what it is, and its name.	<input type="checkbox"/> Tell someone what you like about them.
<input type="checkbox"/> Ask someone about their favorite fruit or vegetable.	<input type="checkbox"/> Tell someone what you like to do for fun.
<input type="checkbox"/> Find someone who likes the same movies as you.	<input type="checkbox"/> Give someone a high five while telling them something nice.

Greetings,

Thank you for allowing your child to participate in the gardening for life skills curriculum brought to you by Life's Toolbox. We are proud to bring you this evidence-based curriculum developed by four occupational therapy students that will help to promote 4 specific life skills over the next 4 weeks: sociability, responsibility, healthy eating, and self-esteem. At the end of every day, your child will be asked to write or illustrate a response to the question of the day. In the instance that your child is unable to complete their reflective journal, we ask that you take the time to assist them in completing it. This could be as simple as restating the question and asking for their thoughts. You are a significant resource with unparalleled influence on your child's life, your involvement in this curriculum will help to promote your child's success in learning each of the life skills.

Please take a moment to sign below that you have read this letter and that you agree to assist your child as needed in the completion of their reflective journal. Thank you.

(Parent or guardian signature)

Day 2

Socialization

Supplies Checklist

- **Journals with stem cover (1 per child)**
- **Petal shaped paper for journal petals**
- **Pictures of children (taken in first class)**
- **Glue**
- **Pencils/Pens**
- **Potted plant from Day 1**
- **Assorted colored pebbles or beans**
- **Rocks**
- **Moss**
- **Buttons**
- **Fluffy balls**
- **Pipecleaner**
- **Fairies, gnomes, or dinosaurs**
- **Optional decorations: Small houses, bridges, fences, animals, etc.**
- **Flyer - *Caring for my plant at home***

Day 2 (Week 1, 50 minutes)

Introduction: (5 minutes)

- Recap previous session
- Have children retrieve their mini greenhouse by telling instructor their name and identifying the correct item with their name on it.

Introductory activity: Supply Distribution (7-10 minutes)

- Supplies needed: small containers to hold the garden decorations, assortment of colored pebbles or beans, rocks, moss, buttons, fluffy balls, pipecleaner, fairy/gnome/dinosaur, etc.
- Instructions:
 - Children take turns passing out supplies:
 - One at a time around the table → each child passes around items from decorative supplies (container
 - Ask, “Would you like one?”
 - Cue children ahead of time to respond politely with “No, thank you”, or “Yes, please”.

Main activity: Fairy/Dinosaur Garden (20-25 minutes)

- The child must add soil to a small pot.
- Demonstrate (help as needed) how to successfully transfer the plug to pot (break up roots, completely cover the roots with fresh soil, pack soil evenly).
- Demonstrate how to water plant appropriately (explain how a watering calendar will be made during Week 2)
- Create a fairy, gnome, or dinosaur garden using their pot to create it in (see examples below).
- Encourage children to obtain ideas from each other and to talk about what they are doing with the person sitting next to them.
- Instructor should set rules on being kind in words and actions, and validate all ideas in creating their garden.



Closing activity: 5-10 minutes

- Have children make up a story about their garden (who, what, why) and share it with the group in a round robin (for younger children, instructor may prompt with questions to facilitate discussion).
- General garden journal
 - Reflect on activities track results (ages 5-7 will draw, and ages 8-11 have the choice to illustrate and/or write)
 - **Topic #2:** Who would you like to share your garden story with? Tell them about it!
 - Children add petal to cover of their journal



Purpose: To improve children’s social skills while using garden-based activities to facilitate socialization.

Goal: Increase healthy and positive socialization in children.

Caring for my plant at home

My plant is called _____.

My plant likes (sun/shade)

My plant needs to be watered
_____ times per week.

Day 3

Responsibility

Supplies Checklist

- **Journals with stem cover (1 per child)**
- **Petal shaped paper for journal petals**
- **Glue**
- **Pencils/Pens**
- **Clear cups**
- **Water**
- **Bowls**
- **Oatmeal packets**
- **Watering pitchers or cups**
- **Crayons**
- **Markers**
- **Stickers of crops**
- **Calendar templates (weekly or monthly)**

Day 3 (Week 2, 50 minutes)

*Life Skill: Responsibility & Decision Making

Purpose: To increase knowledge of gardening protocols and encourage responsibility, as well as facilitate decision-making.

Goal: Promote appropriate decision making and responsibility by increasing knowledge of gardening protocols through hands-on activities.

Introduction: Water Guessing Game (5 minutes)

- **Supplies needed:**
 - Clear cups, water
- **Instructions:**
 - Conduct a guessing game that consists of 3-5 questions
 - Using clear cups filled with water, provide 3 options for children to choose from with one being the correct option
 - For children ages 5-7, children can point to the cup they believe is correct
 - For children ages 8-11, children can raise their hand and take turns guessing
 - *Ex: "How much water do tomato plants need?"*
 - *1 to 1 1/2 inches of **water** each week.*
 - *Ex: "How much water do broccoli plants need?"*
 - *1 to 1 1/2 inches of **water** each week.*
 - *Ex: "How much water do eggplants need?"*
 - *1 inch of **water** each week.*
 - *Ex: "How much water do watermelon plants need?"*
 - *1 to 2 inches of **water** each week.*
 - *Ex: "How much water do carrots need?"*
 - *1 inch of **water** each week.*

Introductory activity: Oatmeal Water Activity (15 minutes)

- **Supplies needed:**
 - Bowls (3 per child), oatmeal packets, watering pitcher or cups
- **Instructions:**
 - Pour dry oatmeal into bowls and after providing instruction to children and giving a demonstration (*see below*), allow children to pour water into the bowls
 - 3 different levels: 1. Too little water 2. Just the right amount 3. Too much water
 - Allow children to pour the water from the watering pitcher or cup into the bowl





- *Provide assistance for children ages 5 to 7 to avoid spillage*
- Facilitate discussion with children about the levels in each bowl & appropriate amount of water to utilize for plants and crops



Main activity: Watering Calendar (20 minutes)

- Supplies needed:
 - Pens, pencils, crayons, markers, stickers of crops
 - Calendar templates (weekly or monthly)
- Instructions:
 - Have children make a watering calendar to determine when they will water each plant
 - Provide instruction to children on frequency dependent upon the crop
 - Children may add stickers of plants and/or draw and color crops based on how often they will water the plants
 - For children ages 5 to 7, provide a limited amount of materials
 - Facilitate a discussion with children about their calendar

Example →

January 2020						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1	2	3	4
5	6	7 	8	9 	10	11
12	13	14 	15	16 	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	Notes:

- See appendix below for blank calendar template.
- See link below for pdf version:
 - <http://files.havefunteaching.com/fun-activities/arts-and-crafts/calendar.pdf>

Closing activity: Discussion & Guessing Game Assessment (10 minutes)

- **Supplies needed:**
 - N/A
- **Instructions:**
 - Close by replaying guessing game to assess children's gained knowledge
 - Facilitate a discussion about how much they have learned
 - General garden journal (5-7 = draw, 8-11 = illustrate or write)
 - Topic: "What is your favorite vegetable, fruit, or other crop that you would like to water in the future"
 - Children add petal to cover

Resources -

Happy Strong Home. (2019). *Proper plant watering learning activity for kids*. Retrieved from <https://happystronghome.com/proper-plant-watering-learning-activity/>

Bonnie Plants. (2019). *Growing broccoli*. Retrieved from <https://bonnieplants.com/how-to-grow/growing-broccoli/>

Downey, L. (2018). *How much water does a tomato plant need a day?* Retrieved from <http://homeguides.sfgate.com/much-water-tomato-plant-need-day-55659.html>

Everyday Health. (2019). *7 tips to growing carrots*. Retrieved from <https://www.everydayhealth.com/healthy-living/healthy-home/7-tips-growing-carrots/>

Rose, L. (n.d.). *When to water eggplants*. Retrieved from <http://homeguides.sfgate.com/water-eggplants-62253.html>

The Old Farmer's Almanac. (2019). *Growing watermelons*. Retrieved from <https://www.almanac.com/plant/watermelons>

My Watering Calendar

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday

Day 4

Responsibility

Supplies Checklist

- **Journals with stem cover (1 per child)**
- **Petal shaped paper for journal petals**
- **Glue**
- **Pencils/Pens**
- **Colored felt pieces**
- **Stickers with crops**
- **Orange construction paper**
- **Scissors**
- **Glue**
- **Crayons**
- **Markers**
- **Colored pencils**
- **Informative Watering Poster**
- **Deep cardboard paper trays**
- **Soil**
- **Popsicle sticks**
- **Stickers of various crops to attach to sticks**

Day 4 (Week 2, 50 minutes)

***Life Skill:** Responsibility & Decision Making

Purpose: To provide children the opportunity to make their own decisions and encourage responsibility as it relates to agricultural and horticultural practices.

Goal: Instill and strengthen decision-making abilities in children by providing opportunities to govern own garden plan and layout.

Introduction: “Pizza Garden” Art Activity (10 minutes)

- **Supplies needed:**
 - Colored felt pieces
 - Stickers with crops
 - Orange construction paper
 - Scissors
 - Glue
 - Crayons, markers, colored pencils
- **Instructions:**
 - Set up art activity for pizza using orange construction paper (*pre-cut into circles*)
 - Instruct kids to add different veggies stickers or pre-cut felt pieces (*tomatoes, mushrooms, etc*) that they would like to put on their pizza
 - For children ages 5 to 7, provide stickers and fewer materials initially
 - For children ages 8 to 11, provide options (*stickers/pre-cut felt pieces*)
 - Share w/ a peer or *class*
 - *If time is warranted*



Introductory activity: Poster Board (10 minutes)

- Supplies needed:
 - Informative poster board
- Instructions:
 - Teach kids about various plants & emphasize resources available
 - *i.e. if planting tomatoes, thoroughly discuss the significance of tomatoes and their impact in our daily life.*
 - *“Tomatoes are required for the marinara sauce in the pizzas you all just made”*
 - *i.e. give information to children about the length of time it takes for the veggies to grow*
 - *Ex: it takes approximately 40 to 50 days for a tomato plant to fully grow into a tomato*

- *Ex: it takes approximately 70 to 100 days for a broccoli plant to fully grow*
- *Ex: it takes approximately 100 to 120 days for an eggplant to fully grow*
- *Ex: it takes approximately 65 to 90 days for a watermelon plant to fully grow*
- *Ex: it takes approximately 70 to 80 days for carrots to fully grow*

Main activity: Garden Plan (20 minutes)

- Supplies needed:
 - Deep cardboard paper trays
 - Soil
 - Popsicle sticks
 - Stickers of various crops to attach to sticks
- Instructions:
 - Use a deep cardboard tray and fill it with soil evenly
 - For children ages 5 to 7, modify activity and reduce square footage of tray by utilizing a smaller cardboard one (i.e. a square tray vs. rectangular)
 - Instruct children to place stickers on popsicle sticks of what crops they would want in their garden
 - Inform children ages 8 to 11 that they have the option to pick a “full sun”, “partial sun”, and a “full shade” garden & decide which crops they would like from there
 - *Please refer to examples provided below:*
 - Full Sun Garden
 - *Cucumbers*
 - *Squash*
 - *Watermelon*
 - *Cantaloupe*
 - *Eggplant*
 - *Tomatoes*
 - *Peppers*
 - *Corn*
 - Partial Sun Garden
 - *Beans*
 - *Peas*
 - *Beets*
 - *Broccoli*
 - *Cabbage*
 - *Onions*
 - *Leek*
 - *Radish*

- *Rutabaga*
- *Turnips*
- Full Shade Garden
 - *Kale*
 - *Arugula*
 - *Endive*
 - *Lettuce*
 - *Spinach*
 - *Mustard greens*
 - *Swiss Chard*
 - *Brussels Sprouts*
- Based on what crops they would like their garden to have and the resources available, children will consider which plants should go where
 - *i.e. considering plants that need more sun or thrive better in partial shade, etc.*
- Provide help to children when necessary
- Facilitate a discussion on the placement of crops within their garden

Supplies Needed →



Closing activity: Discussion & Sharing

- **Supplies needed:**
 - N/A
- **Instructions:**
 - Reflect on plan & share with the class
 - Decide if any changes should be made
 - General garden journal (5-7 = draw, 8-11 = illustrate or write)
 - “How can you teach someone at home about what you learned today?”
 - Children add petal to cover of journal

References:

Albert, S. (2019). *How to grow broccoli*. Retrieved from https://harvesttotable.com/how_to_grow_broccoli/

Hesson, A. (2018). *I have marble size watermelons: How long before they grow?* Retrieved from <https://homeguides.sfgate.com/marble-size-watermelons-long-before-mature-91695.html>

Rose, L. (n.d.). *When to water eggplants*. Retrieved from <http://homeguides.sfgate.com/water-eggplants-62253.html>

Walls-Thumma, D. (2019). *How long does it take to grow eggplants?* Retrieved from <https://www.hunker.com/13427492/how-long-does-it-take-to-grow-eggplants>

The Editors of Organic Life. (2017). *Everything you need to know to grow beautiful carrots*. Retrieved from <https://www.goodhousekeeping.com/home/gardening/a20705702/how-to-grow-carrots/>

Woldford, D. (2019). *Planning your garden: The best vegetables for full sun, partial sun and shade*. Retrieved from <https://www.weedemandreap.com/planning-your-garden-vegetables/>

Day 5

Healthy Eating

Supplies Checklist

- **Journals with stem cover (1 per child)**
- **Petal shaped paper for journal petals**
- **Glue**
- **Pencils/Pens**
- **Crayons, color pencils, or markers**
- **Food stickers**
- **MyPlate handouts**
- **Pots**
 - **Ex: Seed Starter Pots from Amazon**
- **Soil**
- **Gardening tools**
- **Measuring cups, serving spoons, gloves**
- **Edible seeds or plugs**
 - **Ex: Green onion bulbs that can regrow**

Day 5 (Week 3, 50 minutes)

***Life Skill:** Healthy Eating

Purpose: To reinforce knowledge of healthy eating and encourage expansion of healthier food options

Goal: To promote healthier eating habits by increasing vegetable preference and consumption, leading to healthier lives, by providing involvement in gardening

Introduction: instructor-led discussion (5 minutes)

- **Supplies needed:**
 - N/A
- **Instructions:**
 - ASK: What is healthy eating?
 - ASK: What were some things you ate last week?
 - 5-7-year-olds: give options and have children raise hands
 - ex: Who ate carrots? Who ate broccoli? Etc.
 - 8-11-year-olds: open-ended question
 - EXPLAIN: the importance of healthy eating
 - According to the U.S. Department of Agriculture, building a healthier eating style can help people to avoid becoming overweight, obesity, and reduce the risk of diseases, like heart disease and diabetes.
 - EXPLAIN: what is included in healthy eating
 - Vegetables: broccoli, spinach, carrots
 - Fruits: bananas, oranges
 - Grains: oatmeal, brown rice
 - Protein: beef, eggs, nuts
 - Dairy: milk, yogurt, cheese

Introductory activity: MyPlate activity (10 minutes)

- **Supplies needed:**
 - Crayons, colored pencils, or markers
 - Food stickers
 - Ex: [Horiechaly Stickers for Kids, Amazon](#)



- MyPlate handouts
 - Available on ChooseMyPlate.gov, by the U.S. Department of Agriculture
- **Instructions:**
 - Pass out worksheets, stickers, and coloring utensils
 - Explain ChooseMyPlate, reiterating examples of each category
 - ChooseMyPlate provides a graphic with different food groups as a reminder of what -- and how much -- we should put on our plates to stay healthy.
 - What are some types of fruit?
 - What are some vegetables?
 - What are dairy products?
 - Have children color in the worksheet
 - 5-7-year-olds: sort food stickers into categories
 - 8-11-year-olds: write or draw food into categories
 - Send worksheet and other additional resources home to parents
 - [Dietary Guidelines for Americans, USDA](#)
 - [What's MyPlate All About?](#)

Main activity: Planting seeds/plugs (25 minutes)

- **Supplies needed:**
 - Pots
 - Ex: [Seed Starter Pots from Amazon](#)
 - Soil
 - Gardening tools
 - Measuring cups or spoons
 - Gloves if using hands to scoop
 - Edible seeds or plugs (may be dependent on availability, season, etc.)
 - Ex: Green onion roots that can regrow



- Ex:



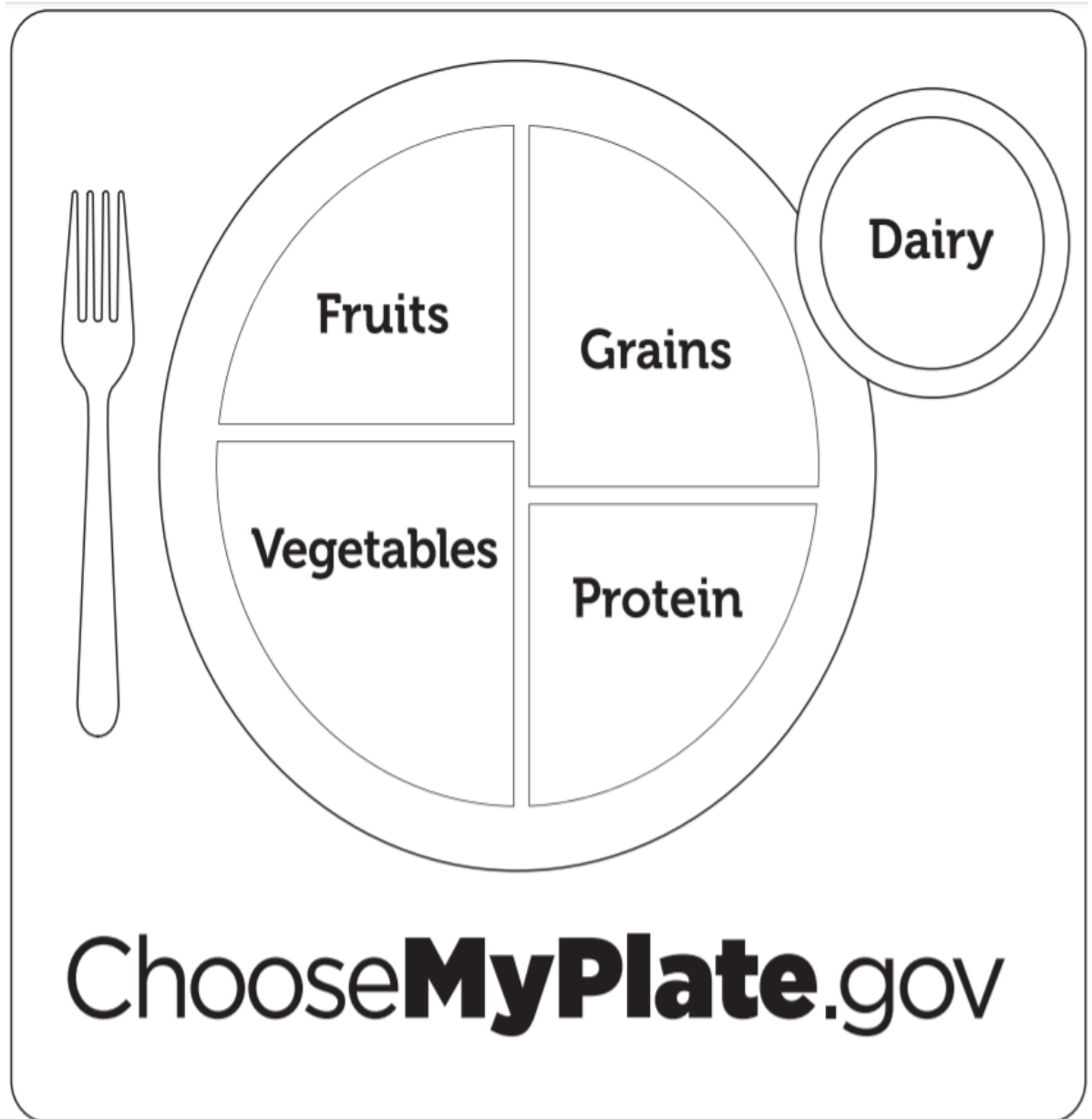
- Instructions:
 - Use supplies to plant seeds/plugs in pots
 - Use gloves if children are scooping soil with hands
 - Use cups or spoons if students are scooping soil with “tools”
 - Explain common foods that are grown in a garden
 - Ex: basil or tomatoes on a pizza
 - Ex: kale and lettuce in a salad

Closing activity: Discussion (5 minutes)

- Supplies needed:
 - Pencil
 - Coloring tools

- Instructions:
 - General garden journal (5-7-year-olds = draw, 8-11-year-olds= illustrate or write)
 - What foods would you like to grow in your own garden?
 - Children add petal to cover of journal

My Plate



Day 6

Healthy Eating

Supplies Checklist

- **Journals with stem cover (1 per child)**
- **Petal shaped paper for journal petals**
- **Glue**
- **Pencils/Pens**
- **Bowls**
- **Forks**
- **Salad base (ex. Kale, lettuce)**
- **Toppings (ex. Cherry tomatoes, green onions, avocados, sunflower seeds, pumpkin seeds)**
- **Dressing (ex. Ranch, cilantro dressing)**
- **Already grown plants to show, ex: tomatoes, kale, basil**
 - **Plants at different stages of growth**

Day 6 (Week 3, 50 minutes)

Purpose: To reinforce knowledge of healthy eating and encourage expansion of healthier food options

Goal: To promote healthier eating habits by increasing vegetable preference and consumption, leading to healthier lives, by providing involvement in gardening

Introduction: Discussion (5 minutes)

- Supplies needed:
 - N/A
- Instructions:
 - ASK: what vegetables/fruits have you eaten this week?
 - 5-7-year-olds: give options; “raise your hand if you ate...”
 - 8-11-year-olds: open-ended

Introductory activity: Garden observation (10 minutes)

- Supplies needed:
 - Already grown plants to show, ex: tomatoes, kale, basil
- Instructions:
 - Walk out into the garden to observe the planted seeds
 - Did the green onion roots grow at all? Did the other seeds grow?
 - Taste/smell test: fruits and vegetables that have already been grown elsewhere
 - *note: already grown plants are brought in due to short time-table for children’s plants to grow; ability to show children the different stages of growth that they may not see during their 4-week curriculum
 - Ex: A basil plant
 - Ex: Mint leaves
 - Ex: Tomatoes on a vine

Main activity: Cooking day -- Make your own salad (25 minutes)

- Supplies needed:
 - Bowls
 - Forks
 - Salad base
 - Ex: Kale, lettuce
 - Toppings
 - Ex: Cherry tomatoes, green onions, avocados, sunflower seeds, pumpkin seeds)
 - Dressing
 - Ex: Cilantro dressing, Olive Oil
- Instructions:

- Introduce variety of options and reinforce the idea that everything is grown in a garden
- Create a spread/station for the salad bar
 - Have one or two items that they can pick straight off the plant
 - Ex: tomatoes on a vine; basil leaves off the plant
- Have students line up and create their own plate
 - 5-7-year-olds: give a plate with a base salad already + bowl of toppings and have them make their salad
 - 8-11-year-olds: give an empty plate and have them go to a salad station to choose/create their own
- Enjoy!

Closing activity: Discussion (5 minutes)

- Supplies needed:
 - N/A
- Instructions:
 - Discussion on simplicity of healthy foods
 - grow → wash → eat
 - Explain higher nutritional value of home-grown gardens
 - Fresh versus frozen versus canned
 - General garden journal (5-7 = draw, 8-11 = illustrate or write)
 - What would I like to garden/cook with mom and dad?
 - Children add petal to journal cover

Day 7

Self-Esteem

Supplies Checklist

- Journals with stem cover (1 per child)
- Petal shaped paper for journal petals
- Glue
- Pencils/Pens
- Stand Tall, Molly Lou Melon book by Patty Lovel
- 3 Labeled Buckets per group (Labels: carbon-based, nitrogen-based, compost)
- 1 cup measuring cup per group (for ages 5-7 or any children with tactile sensitivity)
- Carbon-based supplies- You only need about 3 of the supplies from this list for ages 5-7 and at least 5 of these supplies for ages 8-12)
 - ***All supplies should be cut to ¼ inch before being packed for the class as the children will be using their compost for an activity immediately after making it***
 - Branches
 - Stems
 - dried leaves
 - Peels
 - bits of wood, bark, dust, or sawdust pellets
 - shredded brown paper bags
 - corn stalks
 - coffee filters
 - eggshells
- Nitrogen based supplies: You need all 3 of these supplies
 - ***All supplies should be cut to ¼ inch before being packed for the class as the children will be using their compost for an activity immediately after making it***
 - food scraps
 - green lawn clippings
 - green leaves
- Composting flyer (for children ages 8-12)
- Flower seeds
- Potter's clay powder, from any craft shop
- Peat-free compost or compost from previous activity
- Water
- A bowl for every child
- Foil

Day 7 (Week 4, 50 minutes)

***Life Skill:** Self-Esteem

Purpose: To promote self-esteem through gardening activities and engagement with peers

Goal: Increase self-esteem

Introduction:

- Ask: What is self-esteem?
 - Self-esteem is having confidence in one's abilities.
- Read story Stand Tall, Molly Lou Melon- By Patty Lovel (5 minutes)
 - Reflect on story
 - What do you think of this story?
 - What do you like about yourself?

Introductory activity: Composting

- Ask what is composting and why do we do it?
 - Answer to what is composting: Composting uses yard and food waste to create an environment that is beneficial to a plant's growth
 - Answer to why do we compost: Composting reduces one's environmental impact and promotes plant growth
- **Supplies needed:**
 - 3 Labeled Buckets per group (Labels: carbon-based, nitrogen-based, compost)
 - 1 cup measuring cup per group (for ages 5-7 or any children with tactile sensitivity)
 - Carbon-based supplies- You only need about 3 of the supplies from this list for ages 5-7 and at least 5 of these supplies for ages 8-12)
 - ***All supplies should be cut to ¼ inch before being packed for the class as the children will be using their compost for an activity immediately after making it***
 - Branches
 - Stems
 - dried leaves
 - Peels
 - bits of wood, bark, dust, or sawdust pellets
 - shredded brown paper bags
 - corn stalks
 - coffee filters
 - eggshells
 - Nitrogen-based supplies: You only need all 3 of these supplies

All supplies should be cut to ¼ inch before being packed for the class as the children will be using their compost for an activity immediately after making it

- food scraps
- green lawn clippings
- green leaves
- Instructions for ages 5-7:
 - In the bucket labeled “carbon-based” throw in all of the carbon-based supplies
 - Ask the children to mix the carbon-based supplies (this can be with a wooden spoon or a big stick)
 - In the bucket labeled “nitrogen-based” throw in all of the nitrogen-based supplies
 - Ask the children to mix the nitrogen-based supplies (this can be with a wooden spoon or a big stick)
 - In the bucket marked “Compost,” have each child scoop three cups of nitrogen-based supplies and six cups of carbon-based supplies.
 - Encourage the children to count aloud
 - Ask the children to mix the compost (this can be with a wooden spoon or a big stick)
- Instructions for ages 8-11:
 - Give the children the flyer that displays carbon-based supplies and nitrogen-based supplies
 - Ask the children to place all carbon-based items In the bucket labeled “carbon-based”
 - Once the bucket is filled ask children to mix the ingredients (this can be with a wooden spoon or a big stick)
 - Ask the children to place all nitrogen-based items In the bucket labeled “nitrogen-based”
 - Once the bucket is filled ask children to mix the ingredients (this can be with a wooden spoon or a big stick)
 - Have each child grab three handfuls of nitrogen-based supplies and six handfuls of carbon-based supplies and place them in the bucket labeled “Compost”
 - Once the bucket is filled ask children to mix the ingredients (this can be with a wooden spoon or a big stick)

Composting

What is composting and why do we do it?

Composting uses yard and food waste to create an environment that is beneficial to a plant's growth. Composting reduces one's environmental impact and promotes plant growth

What are your ingredients?

Nitrogen-based Ingredients	Carbon-based ingredients
food scraps green lawn clippings green leaves	Branches Stems dried leaves Peels bits of wood, bark, dust, or sawdust pellets shredded brown paper bags corn stalks coffee filters eggshells

How much of each do you include?

Grab three handfuls of nitrogen-based supplies and six handfuls of carbon-based supplies and place them in a bucket and mix

Main activity: Garden Seed Bombs

- **Supplies needed:**
 - Flower seeds
 - Potter's clay powder, from any craft shop
 - Peat-free compost or compost from previous activity
 - Water
 - A bowl for every child
 - Foil
- **Instructions**
 - Mix one handful of the seed with three handfuls of clay, and five handfuls of compost (from the introductory activity) together in a bowl.
 - Carefully add water slowly and gradually (you don't want it too gloopy), mixing it all together until you get a consistency that you can form into one-inch balls.
 - The instructor will show what one-inch balls look like
 - Lay them out to bake dry on a piece of foil.
 - Tell children to bring home their seed bombs with written instructions to place them on a sunny windowsill for at least three hours.

Closing activity: Discussion

- Why do we compost?
- How do you feel about composting?
- What can you do with your garden seed bombs?
- General garden journal
 - Reflect on activities (5-7 = draw, 8-11 = illustrate or write)
 - What do you have at home that you could put in your compost?
 - Children add petal to journal cover

References:

- Case-Smith, J. (2015a). An overview of occupational therapy for children. In J. Case-Smith, & J. Clifford O'Brien (Eds). Occupational Therapy for Children and Adolescents (7th ed., pp. 2-26). St. Louis, MS: Elsevier Mosby.
- Case-Smith, J. (2015b). Development of childhood occupations. In J. Case-Smith, & J. Clifford O'Brien (Eds). Occupational Therapy for Children and Adolescents (7th ed., pp. 65-101). St. Louis, MS: Elsevier Mosby.

- Schutte N. S., Bhullar N. (2017). Approaching environmental sustainability: Perceptions of self-efficacy and changeability. *Journal of Psychology 151*(3), 321-333. doi: 10.1080/00223980.2017.1289144
- Venhoeven, L. A., Willem Bolderdijk, J., Steg, L. (2016) Why acting environmentally-friendly feels good: Exploring the role of self-image. *Frontiers in Psychology 7*. doi: 10.3389/fpsyg.2016.01846

Day 8

Self-Esteem

Supplies Checklist

- **Journals with stem cover (1 per child)**
- **Petal shaped paper for journal petals**
- **Glue**
- **Pencils/Pens**
- **Yoga mat or towels (1 per child) (optional)**
- **6-inch. Natural Wood Slices**
- **Leaves**
- **Acorns**
- **Sharpies**
- **Flower petals**
- **Pinecones**
- **Stones**

Day 8 (Week 4, 50 minutes)

Introduction: Welcome children to the final day of the gardening curriculum and have them spread out for the garden exercise. Plants should be imported so the entire exercise area is surrounded with different types of plants.

Introductory activity:Garden Exercise (10 minutes)

- Supplies
 - Yoga mat, towels, or nothing
- The instructor can pick what exercises to give from this list.
 - If time does not permit all of the exercises then it is up to the instructor's discretion to skip or shorten exercises.
 - Frequency or length of the exercises should be based on the performance of the group.

The last 1-2 minutes of this introductory activity must be spent in either child's pose or corpse pose

- **Sky reaches**
 - Child brings arms up to the sky then stands on tip toes and then plants their feet back to the ground
 - Repeat three times



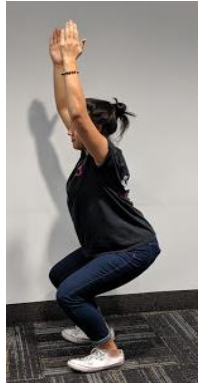
- **Arm circles** (have children count out loud 1-10)
 - 10 little circles forward
 - 10 little circles backward
 - 10 big circles forward
 - 10 big circles backward



- Tree Pose
 - Hands come together above the head and one foot rests on the opposite leg.
 - Tree pose will last for 5-10 seconds depending on if the children look like they are having difficulty holding the position
 - **What kind of tree are you?**



- Chair sits
 - Cue them to sit in an imaginary chair (hold and count to ten- this time can be changed if the children look like it is too difficult or too easy)



- Toe Touch in a standing position
 - Reach down toward toes and hold for 10 seconds (have children count out loud 1-10)
 - Bend knees for 5 seconds then extend legs and hold for another 10 seconds (**counting out loud**)
 - **Pretend you are putting your socks on when you touch your toes**



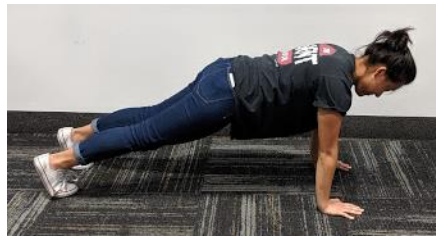
- Downward dog

- Hold for at least 10 seconds depending on if the children look like they are having any difficulty holding the position - May encourage them pretend to wag tail or bark like a dog to encourage play



- **Plank**

- Cue children to count out loud 1-10 while holding
- After the 10 counts, children may drop on to knees to rest
- Repeat once more



- **Cow-Cat**

- Cue children to “Moo” like a cow during Cow Pose as they arch their back (left example)
- Then cue children to “Meow” like a cat during Cat Pose as they round their back (right example)



- **Child’s Pose**

- Cue children to rest their bodies and minds
- Direct simple breathing techniques (“Let’s take 3 big breaths- big breath in, [brief pause], and big breath out”. Repeat 3x)



- **Corpse Pose**

- Have children lay on their back with their arms out

- Cue children to rest their bodies and minds
- Direct simple breathing techniques (“Let’s take 3 big breaths- big breath in, [brief pause], and big breath out”. Repeat 3x)



Main activity: Nature portraits (25 minutes)



- **Supplies**
 - 6inch. Natural Wood Slices
 - Leaves
 - Acorns
 - Sharpies
 - Flower petals
 - Pinecones
 - Stones
 - Glue
- Children will make a self-portrait by gluing the nature materials (leaves, acorns, flower petals, pinecones, stones) to the wood slice
- Center of table vs. passed out

Closing activity:

- Share your nature portrait (8 minutes)
 - What is your favorite part of it?
 - What do you like about your neighbor’s nature portrait
- Put the final petal on your flower picture
- Discussion (2 minutes)
 - What did you think of the gardening program you just completed?
 - What was your favorite activity?
 - How is the plant that you took home doing?

- What was challenging?
- Do you think you can garden at home?
- General garden journal (4 minutes)
 - Reflect on activities
 - 5-7
 - Illustrate what you want your home garden to look like
 - 8-11-year-olds
 - Name one goal you have for your home garden
 - How will you achieve your garden goal?

References:

- Mak, H. W., Fancourt, D. (2019). Arts engagement and self-esteem in children: Results from a propensity score matching analysis. *Annals of the New York Academy of Sciences* 1449(1). doi: 10.1111/nyas.14056
- Reed, K., Wood, C., Barton, J., Pretty, J. N., Cohen, D., Sandercock, G. R. H. (2013). A repeated measures experiment of green exercise to improve self-esteem in UK school children. *PLOS One*, 8(7), 1-6. doi: 10.1371/journal.pone.0069176

Instructors will deliver verbal instruction to children, demonstrate, and ensure competency by asking children to provide a return demonstration.