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# Student-Led Farmers Market: Engaging, Real-World Experience And Nutrition Education That Prepares Students For A Successful Professional Life After High School

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# STUDENT-LED FARMERS MARKET: ENGAGING, REAL-WORLD EXPERIENCE AND NUTRITION EDUCATION THAT PREPARES STUDENTS FOR A SUCCESSFUL PROFESSIONAL LIFE AFTER HIGH SCHOOL

by

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To those who have a passion for helping others, fostering a collaborative community, and delicious food.

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"Teaching kids how to feed themselves and how to
live in the community responsibly is the center of an education."
- Alice Waters

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# CHAPTER ONE

## Introduction

### Background

School gardens are an increasingly popular tool for experiential learning, particularly at the elementary level. Resources for school garden education, professional development, and financial grants are plentiful for elementary schools. For example, the University of Minnesota Extension offers a website with links to school garden curriculum, and 11 out of the 16 resources are designed for students between preschool and fifth grade (University of Minnesota Extension, 2016). It is more difficult to find resources at the high school level that go beyond covering state science standards to provide students a learning experience with real-world applications that prepares them for life after high school. This frustration with the lack of meaningful curriculum resources led me to question whether I could create curriculum that offers students job experience and nutrition education through a student-led farmers market program.

One reason school gardens have become a popular tool for experiential learning is that food brings people together. I have come to realize that there are too many students in urban high schools whose families struggle to bring healthy and delicious food to the table, either because of the cost of fresh ingredients, lack of meal-planning and cooking skills, or both. At River's Edge Academy, a charter high school in St. Paul, teaching students to garden and inspiring them to share the knowledge and harvest gained from that garden makes our community stronger. Ours is a community that both learns from

and teaches each other, benefits from and provides for one another, and improves upon failures and celebrates successes together.

When I observe my students learning in the school garden, I see how easily curiosity comes to them and how small details of what I once taught stay with them. In science class, students have been able to recall what they learned about the impacts of sugar on the human body two years after they took a nutrition class that focused on healthy snacks made from garden produce. I am also increasingly surprised by the non-academic skills my students learn from the garden, such as empathy and perseverance. Last year, a student who struggles in showing empathy to his peers came to school early and stayed late every day for weeks to hand feed and clean up after a sick chicken. Students in a gardening elective class last spring saw a failed attempt at keeping out a rabbit as a challenge rather than an excuse to give up on the garden when the rabbit ate their beloved tomato plants.

One might think that learning to grow a vegetable garden as an adult would not bring the same life-changing experience that might occur for high school students. This is not the case for me. Like most rookies, I grew much more food my first summer than I could possibly have eaten on my own, so I proudly shared my harvest with neighbors, family, and friends. Suddenly I was one of those people who knew the names of my neighbors, and I was bonding with friends and family over shared recipes and canning or freezing tips. Through the process of teaching myself to garden, I realized how much more I'd grown than the food my garden produced. I was eating healthier, reducing my

environmental footprint by growing and buying food locally, and I felt more connected to the environment and my community than ever.

It is my passion for urban farm education and community building, combined with my frustration with the lack of resources for garden and nutrition education at the high school level, that has motivated me to create a curriculum for my capstone that will culminate in a student-led farmers market program that sells products grown and made by students.

**Rationale**

Curriculum for a student-led farmers market fills a much-needed void in garden and nutrition education at the high school level. The student-led farmers market curriculum will provide hands-on, experiential learning opportunities in an outdoor setting. Operating a farmers market at school allows students to practice professionalism in fields such as sales, marketing, social justice, and business management to an authentic audience that is not a part of their immediate community. For River's Edge Academy in particular, a student-led farmers market will provide access to fresh produce for not only students and families, but also an entire neighborhood that has limited access to fresh and healthy foods.

While maintaining the school garden at River's Edge Academy, I have looked for information on how to incorporate the school garden into classroom curriculum, best practices for using the garden for nutrition education, and grant opportunities specifically for the school garden, only to find that it is extremely difficult to find resources specifically for high school students. Even professional development opportunities, such

as the Schoolyard Garden Conference hosted by the Schoolyard Garden Coalition at the Minnesota Landscape Arboretum, provide case studies and experts that focus primarily on garden curriculum and resources at elementary schools.

Experiential learning allows the student to learn in a hands-on format. In a garden, there is ample opportunity for students to directly experience the skills and information they learn in the classroom. For example, while cutting back raspberry plants one spring, students at River's Edge Academy realized they had accidentally cut down a bird nest housing helpless babies, still without all of their feathers. Unprompted, these students quickly started researching how common birds in our area take care of their young, what to do if an abandoned nest is found, and how to contact the local wild animal rescue center. I watched students apply the research and problem-solving skills they learned in their math, science, English, and humanities classes without thinking twice or complaining once. After some debate and more research, the students agreed on a plan. They moved the nest to a section of the raspberry plants that wasn't getting cut down, kept their distance while watching for the adult birds to return, and planned to call for help if they did not see adult birds by the end of the week. The next day, the entire student body, regardless of whether or not they were in the class, breathed a sigh of relief at the announcement that the female adult had returned to the nest.

One of the most successful uses of our school garden program has been integrating our summer internship program with our current farmers market program. Our summer student interns care for the school's garden and chickens, prepare food and products to sell at the local West Side Farmers Market, and work as vendors at the same

farmers market on Saturdays. Working as vendors at the West Side Farmers Market provides students with real life work experience. Student interns are responsible for choosing a product to sell and determining the cost of the product based on the cost and time used to make it, designing labels, selling products at the market, and tracking sales throughout the season.

The success of our current farmers market program led me to approach Growing West Side, a grassroots organization on the west side of St. Paul and creators of the West Side Farmers Market, to sponsor a student-led farmers market. This opportunity will give students more in-depth professional experience, a stronger connection to their community, and the opportunity to create work for an authentic audience. I decided to create curriculum for involving students in the startup of the market for my capstone because if we are fortunate enough to move forward with our dream of a student-led farmers market, having the curriculum planned out in advance will set us up for success from the beginning. Since we plan to invite other schools with gardens to sell as vendors at our market, we could provide the same opportunities to students at other high schools in our area, giving purpose to school gardens in the metro area and increasing the school garden and nutrition education curriculum resources available for the high school level.

**Capstone Overview**

Chapter two of my capstone will discuss the research that has been done on experiential learning, the benefits of school gardens, and the impact of nutrition on academic achievement. The evidence presented in chapter two is the driving force behind my goal of running a student-led farmers market and will guide my focus as I develop

curriculum for starting a farmers market that involves students from the beginning stages. Chapter three will explain the structure of the student-led farmers market program and how that affects the structure of the farmers market curriculum. I will present my curriculum for a student-led farmers market in chapter four. In chapter five, I will reflect on whether the outcome of my curriculum achieves the goals I had in mind before development and discuss potential opportunities for expansion of the student-led farmers market program.

# CHAPTER TWO

## Literature Review

### Chapter Overview

This capstone provides curriculum for a student-led farmers market that provides students with engaging, real-world experiences and nutrition education that will prepare students for a successful professional life after high school. This chapter will provide an overview of research as evidence to support the effectiveness of a student-led farmers market curriculum. Categories of research covered include experiential learning, teaching entrepreneurship, environmental education and school gardens, and links between nutrition and academic success. This chapter will then restate the guiding question for this capstone, linking the research back to the concept of student-led farmers market curriculum, and conclude with a summary of what to expect in chapter three.

### Experiential Learning

There are a variety of models of experiential learning theory available in the fields of education and psychology. After analyzing the experiential learning models of Lewin, Dewey, and Piaget, Kolb (1984) agreed that learning is a process based on experience and reflection. As seen in Figure 1 (below), Kolb's popular theory of experiential learning is a cyclical process that begins with a concrete experience and reflecting upon that experience, then forming new ideas or conceptualizations, and finally, testing those new ideas and concepts. Experiential learning theory has many benefits to the student, including increased engagement, reduced student dropout rates, exposure to real-world problem-solving, and job experience and preparation for a professional life after school.

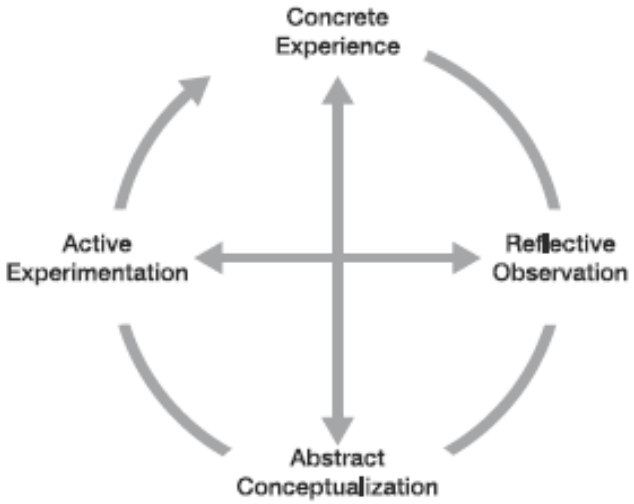


*Figure 1.* Kolb's experiential learning theory.

More institutions are encouraging educators to offer experiential learning opportunities, including the National Institute of Education, a top-ranking institution in Singapore. According to Evans (as cited by Kendall et al., 1986), the National Institute of Education encourages educators to increase their use of experiential learning, stating that "active models of teaching requires students to be inquirers - creators, as well as receivers, of knowledge… students are more apt to learn content if they are engaged with it" (p.2). Experiential learning is effective because it encourages students to problem-solve in real-world situations, feedback comes naturally and immediately, and students are invested in the outcome of their work more than the grade they receive.

Experiential learning engages students in their learning through real-world experience, which leads to better success in academics and in life. In a study conducted by Bridgeland et al. on why high school students drop out, "Eighty-one percent of survey respondents said that if schools provided opportunities for real-world learning

(internships, service learning projects, and other opportunities), it would have improved the students' chances of graduating from high school" (2006, p. 20). By offering opportunities such as internships and service learning projects, students are given the opportunity to have an element of choice in their learning, which will lead to students taking ownership over their success and more engagement in their academics.

In addition to more engagement in their learning, students who learn through internships and other opportunities gain job experience while completing academic requirements. The professional world is competitive in almost any field, and "experiential learning facilitates the transition to adulthood and develops skills for responsible citizenship" (reprinted by Kendall et al., 1986, p. 11). Such experience sets students up for a successful professional life after high school.

**Environmental Education and School Gardens**

School gardens are a popular tool for environmental education. Blair (2008) points out that school gardens have been making appearances in southern American schools for decades, and gaining in popularity in northern states in the last decade in particular. Similar to the lack of resources for garden education curriculum at the high school level, Williams and Dixon note that when it comes to research, "The least studied grades were preschool and Grades 10-12" (2013, p. 218-219). Therefore a majority of the research presented in this section of the capstone relate to students of a similar, but not exact age. When discussing the benefits of environmental education on students, it is important for the purpose of this capstone to keep in mind that school gardens are an example of environmental education. Lieberman and Hoody acknowledge the variety of

settings that qualify as environmental education, and appreciate the need for a flexible definition:

> Since the ecosystems surrounding schools and their communities vary as dramatically as the nation's landscape, the term "environment" may mean different things at every school; it may be a river, a forest, a city park, or a garden carved out of an asphalt playground. (1998, p. 1)

Programs that use environmental education, and specifically school gardens, as an educational tool boast an increase in school attendance and behavior, academic performance, environmental awareness, and nutritional health.

School gardens create beautiful spaces for students and staff to learn and teach in each day. This improvement of aesthetics leads to greater ownership of the school and a stronger commitment from all participants to keep the school environment looking beautiful. For example, when Alice Waters first started working with the Martin Luther King Jr Middle School, there were so many repairs needed and so much graffiti on the building that it looked as though it were abandoned, in spite of the nearly 1,000 6-8$^{th}$ grade students who attended (2008). By adding beautiful spaces such as garden beds, herb gardens, orchards, and hand-built storage sheds and nurseries, the staff and neighboring community began to take ownership over the school and volunteered their time, skills, supplies, and money to maintain the gardens, continue the expansion of the gardens, and teach students the skills needed to care for the gardens themselves.

The concept of a student taking ownership for their learning environment is a contributing factor to higher academic achievement and better attendance and behavior.

Hawkins et al. (as cited by Ozer, 2006) suggests that school garden programs may indirectly improve academic achievement because students who feel a sense of ownership and commitment to their school are more likely to attend their classes and do their homework. Lieberman and Hoody (1998) conducted a study that reviewed the impacts of successful environmental education programs in 40 schools from 12 different states. Of the 14 schools that analyzed academic achievement, 92% of the students involved in environmental programs academically outperformed students in a more traditional setting in the subjects of language arts, math, science, and social studies, as assessed by standardized tests and GPAs, whereas 100% of the five participating schools that analyzed student discipline showed improvement on behavior and attendance when compared to their peers in traditional programs. Williams and Dixon (2013) attributed school gardens with direct academic performance outcomes, as measured by standardized and other tests, of which 82% in math and 72% in language arts were positive. The authors go even further to state that, "Positive outcomes were often attributed to direct, hands-on experiences that made classroom learning relevant" (p. 219). Each of these studies shows that school gardens have a positive effect, either directly or indirectly, on student achievement, attendance, and behavior.

Understanding the complexities of nature helps students grow as human beings. Thorpe and Townsend (as cited by Blair, 2008) argue that gaining confidence in the process of nature is necessary to human development, which, according to Blair, can be achieved when students are involved in the planning of a garden. In a world where students are busy from morning to night with homework, sports, jobs, internships, or any

number of extra curricular or family responsibilities, opportunities for exploration of the natural world are limited. School gardens assist in nature exploration and thus, natural growth, within the existing structure of school. Being directly exposed to an environment such as a school garden, where life cycles, animal instincts, human impact on nature, and many other relevant topics occur naturally, forces a student to acknowledge the natural world of which they are a part. According to Richard Louv in his book, *Last Child in the Woods*, "Immersion in the natural environment cuts to the chase, exposes the young directly and immediately to the very elements from which humans evolved: earth, water, air, and other living kin, large and small" (2005, p. 98). In the school garden, a student has opportunities to not only learn about the natural world, but also the positive and negative impact human activity can have on nature.

It doesn't take a dramatic situation to experience the natural world in a memorable way. It can be seen in daily routines, by simple actions such as composting food waste. Waters (2008) gives an inspiring example of students at Martin Luther King Jr Middle School experiencing the full life cycle of a seed:

> By the time a young girl has finished a delicious meal and returned her table scraps to the garden soil, and gone back to planting and harvesting with her science class, she is well on her way to understanding the cycle of life, from seed to table and back again - absorbing almost by osmosis the relationship between the health of our bodies, our communities, and the natural world. (p. 10)

The students at this school have the opportunity to experience the entire lifecycle of the seeds they plant from germination to harvest, from cooking to eating, and from composting to planting new seeds in that same compost.

By planting and caring for fruits and vegetables in a school garden, students are exposed to a variety of healthy foods, with the opportunity to learn about foods they have never before seen. For schools in Minnesota, such exposure to new foods might occur by default. Blair points out that, “Gardening in America's northern regions during the school year requires elongating the growing seasons in both spring and fall, thus stretching children's knowledge and taste for cool-season vegetables, particularly for dark leafy greens” (2008, p. 18). On other occasions, teachers can be intentional about exposing students to new foods by planting fruits and vegetables more commonly used in other cultures or those typically not found in grocery stores.

Ogden et al. reports (as cited by the CDC) that as of 2012, nearly 21% of American adolescents were considered obese (Centers for Disease Control and Prevention, 2015). Currently the childhood and adolescent obesity epidemic continues to climb and Blair argues that, “to decrease the threat of the obesity epidemic, children need to broaden their perspective on what foods are edible and to repersonalize food” (2008, p. 18). We owe it to our students to teach them to not only appreciate healthier foods, but also how to acquire them and what to do with them once they have them. Gardening is a powerful tool to arm students with knowledge on each of these factors. School gardens provide exposure to healthy foods, and gardening curriculum can be designed to include

sampling of fruits and vegetables grown in the garden and opportunities to cook with foods found in a garden.

When given the opportunity to observe or facilitate the growth of fruits and vegetables from seed to harvest, students develop a stronger sense of excitement and pride for the fruits and vegetables grown. Ratcliffe et. al. (2009) found that when comparing students involved in a garden program with those who weren't, students in the garden program were more likely to taste vegetables whether grown in their garden or not, their preference for vegetables increased, and they showed a higher variety of vegetables consumed. A study done by Lineberger and Zajicek (2000) showed that students reported liking vegetables more after participating in gardening. In addition, Lineberger's and Zajicek's study showed that children who had previously reported very little appreciation for vegetables had grown in appreciation more so than those who already had a liking for vegetables. In other words, "nutritional programs, including gardening... have a positive effect on students, especially those with the most need for improvement" (p. 595). Exposure to fruits and vegetables, as well as gaining a sense of pride for the foods a student grows in a garden, will lead to a greater appreciation of fruits and vegetables as well as an increase in the variety of fruits and vegetables eaten.

School gardens can provide exercise and movement opportunities in addition to nutrition education. According to the Youth Risk Behavior Surveillance published by the CDC, only 27% of adolescents in 2013 get the recommended amount of exercise (Kann et al., 2014). The CDC suggests that schools encourage physical activity through classroom-based physical activities, such as working in a school garden (Centers for

Disease Control and Prevention, 2015). Ozer agrees, stating that, “garden classes require some additional anaerobic exercise during the school day” (2006, p.8). Though the exercise achieved while working in a school garden may not equal the recommended amount for youth and adolescents, it does offer additional opportunities for exercise built within the student’s daily schedule.

**Nutrition and Academic Success**

Food security, or not having consistent access to healthy foods, is a concern for many students across the country. Wright et al. state that 21% of U.S. households with children in 2008 struggled with food insecurity (2010). This social issue is a growing concern in Minnesota as well. According to data from the Minnesota Department of Health (2016), 30% of schools in Minnesota in the 2015-2016 school year were considered high poverty schools. High poverty schools are schools where 50% or more of the students in the school are eligible for free and reduced lunch. Food insecurity continues to be a concern today, and studies show that there is a connection between a student’s diet or access to healthy food and their academic performance.

Without consistent access to healthy foods, a student lacks essential nutrients related to healthy development. A number of research studies, conducted by scientists such as Schoenthaler et. al. (2000), Benton and Roberts (1988), Carlton et. al. (2000) and cited by Taras (2005) show that providing students with mineral supplements such as zinc, magnesium, and a variety of vitamins improves grades, IQ scores, and prevents grade repetition in school. Furthermore, some of the studies examined by Taras show that ending the mineral therapy after as little as two months resulted in a loss of the academic

effects provided by the minerals. Wright et. al. mention that iron intake in particular can influence a student's strength, energy levels, and memory, which may impact school attendance and test scores (2010). By lacking these essential vitamins and minerals, food insecurity directly impacts a student's energy and cognition, thus playing an indirect role in academic achievement.

Consuming more fruits and vegetables can contribute to greater academic success in school. A study conducted by Neumark-Sztainer et. al. found that, "46% of adolescents reporting average grades of C or below reported less than daily consumption of vegetables, compared with 32% of those reporting A or B grades. This association remained strong after adjusting for sociodemographic characteristics" (1998). Florence et al. surveyed 4,589 fifth grade students and found that, "Variety and adequacy rather than moderation and balance were the... components most significantly associated with academic performance" (2008, p. 212). While a well-balanced diet is important, when looking at academic success it is especially important to include variety, which would require experimentation and exposure to new healthy foods.

The extensive research connecting nutrition to academic achievement leads many schools to initiate programs that promote healthy eating habits. Though it is unrealistic for schools to take sole responsibility for improving student diet, Basch points out that, "with more than 50 million students spending a significant portion of their daily lives in school, this social context is surely one of the most powerful social institutions shaping the next generation of youth" (2011, p. 594). Students are served two out of three meals

in school everyday, and ignoring opportunities to promote and teach healthy eating habits is a disservice to the youth that schools serve.

**Connecting Research to a Student-Led Farmers Market**

The research provided in this chapter is meant to provide focus while creating curriculum for a student-led farmers market that provides students with engaging, real-world experiences and nutrition education which will prepare students for a successful professional life after high school. Experiential learning is an effective way for students to engage in the subject, as well as provide real-world job experience. School gardens provide a hands-on, experiential tool for students to learn about any subject currently being taught in school. Garden education also provides education and access to a variety of healthy fruits and vegetables, increasing student's nutrition and leading to improved academic success.

A student-led farmers market provides all of these opportunities to students, but takes the school garden curriculum a step further by turning the garden into a business and placing students in leadership roles within the business. By teaching business management and entrepreneurial skills, students involved in the farmers market are not only given opportunities for hands-on business experience, they are also taught life skills and character traits essential for a successive life in business or any field. In addition to experiencing science, math, humanities or other subjects while working in the garden, students will conduct research on the wants and needs of the neighboring communities and plan to sell products based on those needs. Not only will students' diets improve as a result of being exposed to the healthy foods they grow, students will lead demonstrations

that educate the community on how to use the healthy foods being grown and sold through the market program. This program will not only impact the students of one school as the managers of the market, it will also impact the students of the many schools who participate as vendors, as well as the community members of the neighborhood in which the school is located and to whom healthy food is being sold.

Chapter three will provide an overview of the structure of both the program and curriculum for the student-led farmers market. The chapter will focus on the key components of running a farmers market, and how those components can be considered in the structure of the student-led farmers market curriculum.

# CHAPTER THREE

## Methodology

### Chapter Overview

Chapter two provides literary evidence that structures the focus of the goals of the student-led farmers market curriculum. The evidence supports the argument that a student-led farmers market program will provide hands-on, experiential learning in nutrition and garden education that prepares high school-aged students for life after high school. Chapter three will discuss the structure and organization of the student-led farmers market, and how that structure affects the organization of the curriculum for the student-led farmers market program, as well as how the curriculum is developed.

### Structure of the Student-Led Farmers Market Program

The student-led farmers market program is intended for a school that plans to create a farmers market business that is incorporated into all structures within the school. The student-led farmers market is a fully operating farmers market that is organized and run by students, in which students from the hosting school and nearby schools sell products as vendors that are grown or created by students. In a student-led farmers market, all aspects of the farmers market are decided upon by students. For the purpose of this capstone, each of the aspects are organized into four key components, which are market management, marketing, community/school partnerships, and vendors. These components are key to ensuring that essential operations are covered in order for any student-led farmers market to be successful.

The students at the hosting school will be working in four teams that correspond with the four components. The first three of these teams are responsible for the logistics and operations of the student-led farmers market. The market management team oversees the licensing and permits necessary to legally operate the student-led farmers market. The marketing team promotes the student-led farmers market through various media outlets. The community/school partnerships team will develop two different types of relationships; community experts and organizations will provide leadership and expertise to students as they operate the student-led farmers market, and partners from other schools will provide staff and students to run tables at the student-led farmers market as vendors, selling products and produce made and grown by students from their school. The final team, the vendors, are responsible for determining which products are sold on behalf of the school, as well as the pricing and display of the products.

Each component team will be led by students, called team leads, who are responsible for guiding the focus and direction of the team they represent. Students will apply for a team lead position for the component team they are most interested in being involved with. Interested students will be asked to turn in a cover letter and resume and will go through an interview process. Selecting the student team leads for each component team will be the first step in creating a student-led farmers market. School staff should allow plenty of time to meet with the student team leads, and together, plan the development of the market before introducing other students to the teams.

**Structure of the Student-Led Farmers Market Curriculum**

The curriculum for the student-led farmers market program is intended for high school students, grades 9-12, who are attending a school that plans to host a student-led farmers market. The structure of the student-led farmers market curriculum will follow the same structure as the student-led farmers market itself, focusing its lessons on the four key components of the student-led farmers market program. By following a similar structure as the farmers market program, the curriculum focuses on matching the content of the lessons to the responsibilities of each component, rather than a creating curriculum that focuses on fitting within the specific structures of a school. This allows the student-led farmers market curriculum to be more easily adapted and replicated for any school.

The student-led farmers market curriculum will include four two-hour lessons, each one pertaining to one of the four farmers market team. The activities in the lessons may provide background information, or they might lead to students completing a task that is essential to the start-up of the student-led farmers market. These lessons are meant to be an introduction to the components of the market. Students will learn about each of the components more in-depth by practicing them through running the market. The lessons can be taught over one longer class period, consecutively over several weeks or broken apart throughout the school year. Included at the end of each lesson are additional activities and suggestions for extending the lesson, if desired. Table 1 (below) describes the responsibilities and corresponding lesson topics for each component team in more detail. Each of the four lessons are aligned with appropriate state standards in high school

science, social science, or language arts. A rubric will be provided to assess student learning at the end of the year, when the school hosts a single student-led farmers market event. The rubric will also be helpful in establishing goals for market day and roles for the component teams.

| Component Team | Responsibilities | Curriculum Topics |
|---|---|---|
| Market Management | Ensure the market follows all rules and regulations. Oversee logistics of the daily operations of running a market, including scheduling entertainment and demonstrations. | ● Agriculture and the Environment<br>● Agriculture and Human Health<br>● Food Safety |
| Marketing and Promotion | Increase market awareness through social media, local news, and school outreach. Promote the benefits of buying local and eating fresh, healthy foods. | ● Food Marketing to Children<br>● Health Benefits of Fruits and Vegetables<br>● Healthy Food Marketing |
| Community and School Partnerships | Build partnerships with community organizations and schools involved with the market program, and serve as primary contact. Community partners will provide education/expertise, volunteers, or financial support. School partners are interested in selling products as vendors at the market. | ● Identity and Community<br>● Food Rules and Traditions<br>● Food-Related Health Issues in Our Community |
| Vendors | Decide on the products the hosting school will sell at their own table, pricing, presentation/sales, and creating/harvesting products to be sold. Oversee garden maintenance and care, based on needs for market products. | ● Record Keeping in the Garden<br>● Maintaining Healthy Soil<br>● Planting Schedules |

*Table 1*. Student-Led Farmers Market Key Component Teams

**Understanding By Design**

This capstone project will be developed using the Understanding by Design approach to curriculum planning. Understanding by Design addresses the need for educators to have a model that, "acknowledges the centrality of standards but that also demonstrates how meaning and understanding can both emanate from and frame content standards so that young people develop powers of mind as well as accumulate an information base" (Tomlinson and McTighe, 2006). The technique structures one's thinking into three stages; Desired Results, Assessment Evidence, and Learning Plan. Understanding by Design encourages a backwards planning technique, starting with desired results and assessments before planning the learning activities.

**Active Learning Strategies**

Active learning strategies engage students in readings, discussions, and problem solving that encourages critical thinking of classroom content. Walker (2003) notes that in critical thinking, "Not only is this person evaluating, analyzing, and interpreting the information, he or she is also analyzing inferences and assumptions made regarding that information," (p. 263). By analyzing the information being taught in the student-led farmers market curriculum using different learning strategies, students are using their judgement and reflection skills to gain a deeper understanding of the content, which will then be solidified as they experience what they learn while running the student-led farmers market program. The following  are examples of active learning strategies that are used in the student-led farmers market curriculum.

Step to the Line

- Students stand in a line across the classroom.
- As the quotes are read, students take one step forward if they agree with the quote, or stay put if they disagree.
    - This activity is meant to be gut reactions to the quotes. Movement from one quote to the next should be fairly quick. Allow students to look up and see how others responded, but there should not be time for discussion in between quotes.

Four Corners

- Hang a sign in each corner of the room that says AGREE, STRONGLY AGREE, DISAGREE, STRONGLY DISAGREE
- As you read quotes, students should move to the corner of the room that they associate with the most.
    - Give students 2 minutes to discuss the quote in their small groups. When students are done discussing, ask a spokesperson from each group to share a summary of their discussion.
    - After each group has shared, allow time for discussion to take place between the groups, as a class. Give students the opportunity to move to a different corner if they feel the discussion has changed their mind, but they must share why they chose to move.

Jigsaw

- Divide an article into sections, or have different readings, enough sections or readings. Divide your class into the same number of groups.
    - Each group reads their reading, presumably text coding and filling out a worksheet or note catcher with it.
    - Next the class is divided into new groups, ensuring that one representative from each of the first groups is present in each of the new groups. Students should then take turns teaching what they've learned from their reading to the members of their new group.

Chalk Talk

- Place chart paper containing prompts or questions.
    - Allow time for students to visit each prompt and write down a reaction on the paper.
    - This activity is meant to give each student a voice in the discussion, in a less public platform than speaking in front of everyone. Students can write comments and questions to other's responses on the chart paper, but they should not be allowed to talk to each other during this activity.

The purpose of using EL protocols in the classroom is to engage students in active learning. Students aren't just reading material, they are teaching the material to their peers, and learning from their peers as well. Rather than only a few speaking during a discussion, all students are moving around the room and given opportunities to have a voice and respond to each other's perspective. These active learning strategies are parallel

to the hands-on learning students will experience when running the student-led farmers market program.

This chapter describes the structure of the student-led farmers market program and curriculum, and explains the process and considerations taken to create the curriculum. In chapter four, the student-led farmers market curriculum will be presented in the form of four lessons, aligning with the four components of the student-led farmers market program.

# CHAPTER FOUR

## Student Led Farmers Market Curriculum

### Chapter Overview

This chapter contains the the student-led farmers market curriculum. The curriculum is designed to support a fully functioning farmers market that is operated by students, where students sell goods and produce made by students. The curriculum includes lesson plans, suggestions for extending the curriculum, and a rubric to determine student learning during the open student-led farmers market at the end of the school year. Corresponding worksheets, website links, and a rubric for assessment can be found in the resources section of each lesson. There are four lessons total, one lesson to cover material for each of the key components to running a successful student-led farmers market: market management, marketing, community and school partnerships, and vendors. Each lesson is two hours in length, though they can be adapted to be longer or broken apart and taught over a period of weeks or even months. Ideas for extending the lesson further are included at the end of each lesson. Assessment for student learning will take place at the end of the school year, when the school hosts a single student-led farmers market.

### Education Standards

The following are standards taken from the Common Core State Standards Initiative (2010) and the Next Generation Science Standards (2013). There are many standards that are covered in this curriculum, but for the purpose of this capstone, only the standards from the content areas of science, social studies and language arts are included.

Market Management:

SL.9-10.2 Integrate multiple sources of information presented in diverse media or formats (e.g., visually, quantitatively, orally) evaluating the credibility and accuracy of each source.

HS-LS2-7 Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.

Marketing:

WHST.9-10.6 Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.

RI.9-10.8 Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is valid and the evidence is relevant and sufficient; identify false statement and fallacious reasoning.

Community and School Partnerships:

WHST.9-10.7/WHST.11-12.7 Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.

SL.9-10.1.B Work with peers to set rules for collegial discussions and decision-making (e.g., informal consensus, taking votes on key issues, presentation of alternate views), clear goals and deadlines, and individual roles as needed.

Vendors:

CCRA.W.9 Draw evidence from literary or informational texts to support analysis, reflection, and research.

HS-LS2-3 Construct and revise an explanation based on evidence for the cycling of matter and flow of energy in aerobic and anaerobic conditions.

**Lesson One**

**Market Management**

Lesson Length: 2 hours

Learning Target: I can explain the impact of industrialized agriculture on human health and the environment.

Vocabulary:

- Environmental Footprint: A measurement of the impact human activity has on the planet
- Contamination: Being made impure caused by contact with an impure object
- Foodborne illness: Illness caused by ingesting spoiled or contaminated food
- Manual: A book of instructions
- Campaign: Organized work toward a particular goal
- Protest: A statement or action stating disapproval of a person, policy, or action.

Guiding Questions:

- What impact does agriculture have on the health of the environment?
- What impact does agriculture have on human health?
- How can we prevent food contamination at our student-led farmers market?
- What changes must we make as consumers to see positive change in our food system?

Materials:

- Student Journals
- Environmental Footprint of a Loaf of Bread Radio Story

- Food Wastage Footprint Video
- Water Footprint of Crop and Animal Products Article
- Foodborne Germs and Illnesses
- Food Production Chain - How Food Gets Contaminated Article
- Handling Practices To Reduce On-Farm Food-Borne Illness
- Minnesota Cottage Foods Law Fact Sheet
    - Find a similar article for your state if not in Minnesota
- Safe Food Sampling Tips For Farmers Market Vendors
- Wendell Berry, The Pleasure of Eating Slides (APPENDIX A)
- Printable: 7 Steps to Eat Responsibly sheet (APPENDIX B)
- Examples of protest art, preferably boasting food-related issues
    - Needs to be prepared in advance
- Tagboard or Poster Board
- Markers, Paint, and other art supplies

**Warm Up:**

Journal: Have students go to the Footprint Calculator website (link in resources), either on computers or their mobile devices. Once everyone is on the site, read through the small introduction and instructions as a class. Allow students minutes to calculate their own environmental footprint, explore scenarios for reducing their footprint (offered at the end of quiz), and write the results in their journal.

- Students will get a more accurate estimation of their footprint if they answer the “Detailed Information” on the bottom half of the quiz.

- Students should record the following in their journal:
    - Definition of “environmental footprint”
    - Number of planet Earths needed to provide enough resources for your lifestyle.
    - Breakdown of ecological footprint (shown at the end of the quiz in a pie chart)
    - Two scenarios for reducing their footprint the student thinks they can commit to, and the impact making that change would have.

**Impacts of Industrial Agriculture:**

Emissions

- Listen: Environmental Footprint of a Loaf of Bread story (link in resources).
- Write or project the following questions for the students to see. Students don’t need to take notes, they should just listen and try to catch the answers to the questions as they listen. When the story is over, discuss the questions as a class.
    - How many ounces of greenhouse gasses are released in atmosphere during the process of making a loaf of bread?
    - What do they compare this weight to?
    - How many tons of greenhouse gasses total from bread consumed in the UK?
    - What point of production chain was biggest problem?
    - What percentage of overall emissions was contributed to by farming?
    - What created 40% of emissions?

    - What is their suggestion of how to cut back on emissions?
    - Reflection: What do you think is the likelihood that people will look for foods that are “climate smart?”

Waste

- Watch: Food Wastage Footprint (link in resources).
- Before the video: Project the video for the students to see. Based on the title of the video and the paused image they can see, have the students make a prediction of what the video is about.
- During the video: Students should write down at least 5 facts. They should include any information or ideas they think are important.
- After the video: Discuss as a class some ideas they wrote down from the video. Write all ideas on the board, or type them and project as you type.
    - As a class, decide how to turn those ideas into a concept map. Which idea is the main idea, and should go in the middle? How are the other ideas connected to the main idea?
    - Make the concept map on the board for all students to see. Students should make their own copy on paper.

Water

- Read: Water Footprint of Crop and Animal Products article (link listed in resources).
- Pass out copies of the article, and project the article on a white board for all students to see. Ask volunteers to read aloud. Students should highlight or

underline the main idea for each paragraph. Every few paragraphs, ask students to share what they highlighted. Agree on a sentence as a class and underline it on the projected copy for all students to see.

Contamination

- Create: Food Safety Manual
- Divide the class into 4 groups. Each group will use information from their article to write a rough draft of a section of the food safety training manual. Have students read the article(s) that corresponds to their group. Article links are listed in resources. While reading, students should write down on notebook paper any information they think is important or may need to go in a student-led farmers market food safety manual.
    - Food Safety Introduction
        - Foodborne Germs and Illnesses
        - Food Production Chain - How Food Gets Contaminated
    - Contamination during Production
        - Handling Practices To Reduce On-Farm Food-Born Illness Labeling/Signage
    - Cottage Foods Law
        - Minnesota Cottage Foods Law Fact Sheet
    - Samples/Demos
        - Safe Food Sampling Tips For Farmers Market Vendors

- The team leads for the market management team will revise the rough drafts and complete the manual.

**Responsible Eating:**

Project the quotes from the Wendell Berry, The Pleasures of Eating slides.

- Step to the Line
    - Students stand in a line across the classroom.
    - As the quotes are read, students take one step forward if they agree with the quote, or stay put if they disagree.
        - This activity is meant to be gut reactions to the quotes. Movement from one quote to the next should be fairly quick. Allow students to look up and see how others responded, but there should not be time for discussion in between quotes.
- Four Corners
    - Hang a sign in each corner of the room that says AGREE, STRONGLY AGREE, DISAGREE, STRONGLY DISAGREE.
    - As you read the same quotes from the slides again, students should move to the corner of the room that they associate with the most.
        - Give students 2 minutes to discuss the quote in their small groups. When students are done discussing, ask a spokesperson from each group to share a summary of their discussion.
        - After each group has shared, allow time for discussion to take place between the groups, as a class. Give students the opportunity

to move to a different corner if they feel the discussion has changed their mind, but they must share why they chose to move.

Hang the Printable: 7 Steps To Eat Responsibly sheet up so students can review the full version of Berry's seven steps to eat responsibly. Project the shortened version from the Wendell Berry, The Pleasures of Eating slides.

- Eating Responsibly Campaign Posters
    - Students should choose one of the seven steps they would like to create a poster about. Make sure there is a somewhat even number for each step.
    - Depending on how many students you have, students can create posters in groups of one or two, or the whole group can create one poster together.
    - Posters should be created in the form of a protest sign.
        - Show examples of protest art for students to gain inspiration.
    - Have students write up an artist's statement, explaining briefly why they chose this step and what it means to them, as well as the impact following this step could have on the environment and human health.
    - Posters and artist statements should be hung around the school.

**Conclusion:**

Journal: Ask students to reflect on the radio story, video, and article used in the first part of the lesson. Where did this information come from? Is it reliable? How do you know? Why is it important to question the source from which you receive information?

**Resources:**

- Footprint Calculator Website:

- http://www.footprintnetwork.org/resources/footprint-calculator/

- Environmental Footprint of a Loaf of Bread:
  - http://www.npr.org/sections/thesalt/2017/02/27/517531611/whats-the-environmental-footprint-of-a-loaf-of-bread-now-we-know
- Food Wastage Footprint Video:
  - https://youtu.be/IoCVrkcaH6Q?list=PLfEhPhIKJSBvgBxQ_tTb51YoTMh_2p87G
- Water Footprint of Plants and Animals Article:
  - http://waterfootprint.org/en/water-footprint/product-water-footprint/water-footprint-crop-and-animal-products/
- Foodborne Germs and Illnesses Article:
  - https://www.cdc.gov/foodsafety/foodborne-germs.html
- Food Production Chain: How Food Gets Contaminated Article:
  - https://www.cdc.gov/foodsafety/outbreaks/investigating-outbreaks/production-chain.html#chain
- Handling Practices to Reduce On-Farm Food-Borne Illnesses:
  - http://smallfarms.oregonstate.edu/sfn/spg08handling
- Minnesota Cottage Food Law Fact Sheet:
  - http://www.extension.umn.edu/rsdp/statewide/local-foods-college/docs/5-Cottage-Food-Law.pdf
- Safe Food Sampling Tips for Farmers Market Vendors

    - http://www.extension.umn.edu/food/food-safety/food-entrepreneurs/sampling-tips-fm-vendors/index.html
- Full Essay: Wendell Berry, The Pleasures of Eating
    - https://www.ecoliteracy.org/article/wendell-berry-pleasures-eating

**Lesson One Extension Ideas:**

- Students could spend more time exploring the Footprint Calculator website.
    - Students could also do an energy audit on the school and determine the school's impact on the environment.
- The class could spend one day each discussing emissions, waste, and water.
- Distribution Map Activity
    - Crop Distribution Map:
        - http://www.radicalcartography.net/crops2007_big.png
    - Animal Distribution Map:
        - http://www.radicalcartography.net/animals2007_big.png
    - Split the class into two groups. Give one group the animal distribution map, and the other group the crop distribution map, along with colored pencils that correspond with the colors on the map and a blank map of the U.S. for each color.
    - Groups should color the distribution of each crop or animal on a blank map.
    - Discuss the following questions as a class:
        - Which of these crops and meat do you eat most often?

        - How far does your preferred crop or meat travel to get to your grocery store?
        - What relationship can you infer between climate change and how far your crops/meat have to travel?
        - What crops are most heavily grown in your area? Animals? Why do you think that is? How does that compare to what you mostly eat?
        - On the crops map, what can you infer about the bare spot in the western region of the US, compared to the heavy distribution along the Mississippi River to the east?
        - What impact might growing crops along bodies of water, such as the Mississippi River, have on the water quality?
        - What relationship can you infer between climate change and the distribution of cows?
        - What impact might raising farm animals along bodies of water, such as the Mississippi River, have on the water quality?
        - What surprises you most about these maps?
- The Food Safety Manual Extensions:
    - The class could spend a full class period per category of the food safety manual, discussing and writing one per class period.
    - Revise drafts and complete the manual in class

    - Students on the market management team could train students on the vendor team on food safety.

- Food Safety Quiz
    - Create a food safety quiz on an interactive trivia site (such as Kahoot or Plicker), or have students take the Food Safety Quiz on the document provided.
        - www.plickers.com
        - https://getkahoot.com/
    - Before the quiz, allow 5 minutes for students to write in their journal, making predictions about the quiz. What kind of questions will be asked? How do you think you'll do?
    - After the quiz, allow another 5 minutes for students to reflect on the experience in their journal. How did you do, compared to how you thought you would do? Which question surprised you the most?
    - Set up a food sample stand in the room. If possible, use produce from the school garden in the sample. Make sure there are 3-4 food safety errors in the way the sample is set up. Students must find and correct the errors before they are able to try the food.
    - A food demonstration stand could be set up as well.
- Students could create food demonstrations to be performed at the student-led farmers market.

- Spend more time discussing the full version of Berry's steps to eating responsibly. The class could spend a full class period per step or break the full essay apart and read it in a jigsaw.
- Learn about industrialized agriculture in more detail
    - Industrialization of Agriculture: An article that discusses trends that led to industrialized agriculture.
        - http://www.foodsystemprimer.org/food-production/industrialization-of-agriculture/
    - How Pig Parts Make the World Turn: A Ted Talk that shows examples of the many products that a single pig can be made into.
        - http://www.ted.com/talks/christien_meindertsma_on_pig_05049#t-514957
- Students can write a creative story, from the perspective of a plant or animal, as it goes through the food system, from seed or birth to a person's plate (or other product).
- Discuss the importance of tracking data on behalf of the student-led farmers market.
    - Bring a market manager from a local farmers market to the class and have them discuss what sort of information they keep track of.
    - Have students set up a system for tracking data and using that data to improve the operations of the student-led farmers market.

- Discuss the licensing and insurance requirements for all parties involved in the student-led farmers market.
    - Have students create a system for ensuring the school is properly licensed and insured for hosting a market, and the vendors are properly licensed and insured for selling at a market.
- Community experts to visit or bring to school:
    - Professional farmer (visit or invite to school)
    - Visit an existing farmers market
    - Food Safety Inspector from your state's Department of Agriculture
    - Neighborhood organizations that promote sustainable farming or eating responsibly
    - Market manager or vendors from an existing farmers market

**Lesson Two**

**Marketing**

Lesson Length: 2 hours

Learning Target: I can use marketing strategies to create an advertising campaign for fruits and vegetables.

Vocabulary:

- Marketing: Promoting or selling a product or service.
- Functional Foods: Foods that may have a positive effect on a person's health, beyond traditional nutrition.
- Advertisement: A public announcement promoting a product or service.

Guiding Questions:

- How does marketing influence the way we eat?
- What are the natural health benefits of fruits and vegetables?
- How can we use the marketing techniques used by companies to promote healthy food and the student-led farmers market?

Materials:

- Student Journals
- Marketing Food to Children Ted Talk by Anna Lappe
- Pictures of food boxes that advertise a nutritional claim
    - Example: A cereal box that claims to boost immunity
    - Needs to be collected in advance. Students can bring in an image or an actual food box.

- Foods With Health Benefits, or So They Say Article
- Functional Foods Note Catcher (Appendix C)
- Benefits of Eating the Rainbow Video
- Chart Paper
- Printer Paper
- Markers, paint, and other art supplies

**Warm Up:**

Show the Marketing Food to Children video.

- Students should record in their journals what strategies companies use to get their products in front of children, and answer these questions:
    - How do you think this impacts the way that children eat? Can this also be true for adults?
    - In the video she talks about the impacts the Department of Health could make if they had the resources and information that the fast food industries have, but she didn't give examples. What examples can you come up with?
    - What suggestion does Anna Lappe (the speaker) give to fight against marketing to small children?

**Functional Foods:**

- Show the images of food boxes, etc., from the Functional Foods Slides. Discuss as a class what claims the manufacturers are making about food? Do you think

those claims are true? If not, why aren't the manufacturers getting in trouble for false advertising, or do you think they are?

- Article Jigsaw: Divide the Food With Benefits, or So They Say article into four sections. Article link is listed in resources. Split the class into four groups and assign each group a section of the article.
    - Allow time for students to read and textcode their portion of the article on their own.
        - Highlight or underline the main idea.
        - Circle new vocabulary and write a definition in the margin.
    - After they are done, they should get in their groups and compare the information/vocabulary they text coded to what their group members did.
    - After discussing, students should fill out the note catcher for their section of the article.
    - Once all students have filled out the note catcher out for their section of the article, divide the students into new groups, so that every group has a person to represent each section of the article.
        - Students should teach their section to the others in the group, and fill out the remainder of the note catcher.

Natural Functions of Fruits and Vegetables

- Show the Benefits of Eating the Rainbow video. Link is in the resources. After the video, project the Food Color Wheel image (from the Functional Foods Slides) for students to see.

- Chalk Talk
    - Hang 6 pieces of large blank chart paper, each with one of the colors from the Food Color Wheel image, around the room.
    - Students are going to silently move around the room and write on the chart paper in several 5-minute rounds. Students will be given a new prompt for each round. Students can respectfully respond to each others' comments on the poster paper in writing only. There should be no talking for this activity.
        - Round 1: Write 1-2 facts about each color of fruit and vegetable that they learned from the video, or that they can see from the image projected in the room. Try not to repeat what is already written.
        - Round 2: Write your own thoughts on how you do with eating each color of fruits and vegetables.
        - Round 3: Write your thoughts on how the school supports you in eating a healthy variety of each color of fruits and vegetables.
        - Round 4: Write your thoughts on ways this class can promote eating more of each color of fruit or vegetable around the school.
    - Ask students to stay at the chart paper they are at when time is up at the end of round 4. As a group, students should group the comments on their chart paper into categories. Students should make as many categories as they feel they need.

- Ask students from each group to share the common themes they found on their poster, as well as any thoughts or ideas that stood out to the group or seemed overwhelmingly popular or unpopular.
    - As a class, use these categories and ideas to make a concept map on a new piece of chart paper. Hang concept map in up in the classroom.

**Healthy Food Advertising:**

- Students should mimic the examples of advertisements they've seen and use the marketing strategies discussed earlier to make advertisements for the produce your school will sell at the student-led farmers market.
    - Ads could be stickers, pamphlets, signs to hang in the school cafeteria or outside in the garden, etc. Encourage students to be creative in how they get their message out!
- Post the advertisements around the school and on the school's or student-led farmers market's social media pages.
    - Have students write 2-5 sentences to post with their advertisement that describes the natural health benefits of the produce they are promoting.

**Conclusion:**

Journal: How have your decisions about food been influenced by marketing? Do you think you might put more thought into the food you buy in the future? In what other ways can we apply what we discussed today to promoting the student-led farmers market?

**Resources:**

- Marketing Food to Children: A Ted Talk by Anna Lappe
    - http://ed.ted.com/on/dmrC1NrU
- Foods with Benefits, or So They Say Article:
    - http://www.nytimes.com/2011/05/15/business/15food.html
- Benefits of Eating a Rainbow Video:
    - https://youtu.be/R0ONJbqHtGw

**Lesson Two Extension Ideas:**

- Show a positive perspective on functional foods. Have a discussion with the class about the trade offs of functional foods.
    - Creating Functional Food Video: https://youtu.be/Y6sMZ49RHu4
- Discuss marketing strategies in more depth, and use examples from the food industry.
- Visit a grocery store and do a scavenger hunt or BINGO game so that students look for marketing strategies at the store.
    - If possible, do the same for a farmers market. Students could determine if the farmers market is advertising enough, or what they could do to advertise more.
- Spend more time on the advertisements for the produce being sold by the student-led farmers market.
    - Students could make digital posters rather than paper.

- Develop a website dedicated specifically to the student-led farmers market. Start social media pages and gain followers as well.
    - Discuss online literacy and safety with students. What are appropriate online behaviors and security measures? What does a professional online presence look like?
- Research the gardens in the community and determine what people are already growing, and so won't need to be sold at the student-led farmers market.
    - Connect students with gardeners in the community and have students write their garden story. Stories could be posted on the school/market website or published in the local newspaper.
        - Interviewing and storytelling lessons could be incorporated into this activity for even further extension.
    - Use data collected from interviewing local gardeners to create graphs showing the most popular produce grown in your school's community.
        - Use this data to determine what should be grown at school and sold by the vendors team at the student-led farmers market.
- Community Experts to visit or bring to the school:
    - Professional in the marketing field, or visit a marketing firm
    - A market manager from a local farmers market to discuss how they advertise and promote their farmers market
    - A local lawyer who has defended against erroneous marketing claims
    - A local activist who has stood up against marketing to children

**Lesson Three**

**Community and School Partnerships**

Lesson Length: 2 hours

Learning Target: I can use my identity to better understand my community, and improve food security in my community.

Vocabulary:

- Norms: A standard social behavior that is typical or expected of a group.
- Contract: A written or spoken agreement.
- Identity: Who or what a person is.
- Food Insecurity: Lack of reliable access to affordable, nutritious food.

Guiding Questions:

- What is my relationship to food, and how do my family's traditions play a part in that relationship?
- What are common food-related issues in my community?
- How can the student-led farmers market lead to positive social changes in our community?

Materials:

- Student Journals
- Chart Paper
- Markers
- My Identity Worksheet (APPENDIX D)
- Rules to Eat By Essay by Michael Pollan

**Warm Up:**

Journal: In this lesson, we will be talking about ourselves, and our identity. What are some rules and expectations (or norms) we should have as a class in order to create a space where all are comfortable sharing about themselves?

- Allow 5 minutes for students to write down at least 3 norms and why they feel these are important.
- Ask students to get in groups of 2-3 and share the norms they came up with. Allow another 5 minutes for discussion.
- Ask one person from each group to share the norms their group came up with. Create one list of all norms on chart paper, and have students sign it as a contract that they will follow these norms during discussions.

**Food and Me:**

Identity: What do we know about you? What do you know about yourself?

- Start with the person next to you and tell them the story of your full name. What does it mean? How did you parents decide on that name? Do you like it? Do you prefer a nickname? Where/how did you get that nickname?
- For this next part of the activity, we are going to explore our identity more deeply. Either divide the students up in pairs, or have them chose a partner that they don't know very well or that they'd like to get to know more.
    - First, students should individually reflect on their own identity. Discuss as a class what each of the components listed on the My Identity Worksheet might mean. Have them fill out the rest of the worksheet.

    - With a partner, each student should spend 10 minutes talking about themselves. Their partner only needs to listen, and should not respond. Students can go in as much or as little detail regarding what they wrote on their worksheet, but they must keep talking for the entire 10 minutes.
    - After all students have had a turn sharing about themselves for 10 minutes, reflect as a class on this activity.
        - Did students make it the whole 10 minutes?
        - Which was harder, listening or talking? Why?
        - Did this activity help you consider your own identity more? Why or why not?
        - Did you find any categories or components to your identity that were missing from the worksheet?
- Part of creating your own identity is living by certain rules. Maybe they are created by society or maybe they are created by you. Michael Pollan discovered that many people also have certain rules about food.
    - Pass out copies of Michael Pollan's article, Rules to Eat By (linked in resources). Project the article for all to see and read aloud as a class.
    - After reading, view the slides on the link provided at the bottom of the article as a class (also in resources).
        - Ask students to share any food rules they can think of in their family. How does this relate to identity? How does understanding your own identity help you to better understand your community?

- The final step to this activity is for students to write a short story or a poem that incorporates their own identity and food. It could be a true story of a family food tradition, or a poem about a rule their family eats by.

**Food and Community:**

Journal: What does your perfect food world look like? For yourself? Your community? The world?

- Allow students time to reflect on this question in their journal. Ask if any students are interested in sharing, or at least ask them if any food issues were present when they imagined their perfect food world.
    - What sort of food issues do they see in our current world? List some examples as a class. What do students know about these issues? How are they affected, or how is the school affected by these issues? Some examples of food issues:
        - Childhood obesity
        - Type 2 diabetes
        - Food deserts
        - Genetically Modified Organisms (GMO) in food
        - Organic vs. Inorganic
        - Meat vs. Vegetarian diet
- Students can work alone or with a partner to research a food issue and give a brief presentation to the class. If possible, try not to allow students to repeat a food issue.

- Allow 20 minutes for research time.
- These are informal presentations and should only last 5-8 minutes. Students can make a poster, a slide presentation, or just stand up and talk to the class.

**Conclusion:**

Journal: Did you learn about any food issues today that you see in your community, or the school's community? How can the student-led farmers market reduce the impact of these issues in our community? What other positive changes can the student-led farmers market lead to? How do we ensure this happens?

**Resources:**

- Michael Pollan, Rules to Eat By
  - Article: http://michaelpollan.com/articles-archive/rules-to-eat-by/
  - Slides: http://www.nytimes.com/interactive/2009/10/11/magazine/20091011-foodrules.html?_r=0

**Lesson Three Extension Ideas:**

- Students could use Snapchat (a popular mobile phone app) to share their identity stories with each other on social media.
- Students could poll the school and collect Food Rules to Eat By, then write them down on notecards or postcards in creative ways and create a book, similar to the slides shown in the activity or a PostSecret book by Frank Warren.

- Ask students to interview their family members to learn about their food rules and traditions.
    - Students could collect a family recipe for a class potluck, or create a cookbook.
- Allow more time to make more formal presentations. Create note catchers and a presentation template for students, and require them to cite their sources.
    - Lessons about finding credible sources and citing evidence/plagiarism could be incorporated here for further extension.
- Discuss which cultures popular foods originate from.
    - Students could choose a food item or popular dish and write its story, like a food biography.
- Plan a community event - create a food tradition at your school!
    - Create a budget and timeline for planning the event and work accordingly.
    - Plan food to serve and practice cooking.
        - Incorporate cooking skills lesson and invite a local chef to speak to your class.
    - Reach out to community members to help with donations, entertainment, etc.
- Have students research community experts in anything that relates to a farmers market and contact them seeking to build a relationship and asking how they'd like to be involved in the student-led farmers market.

    - Work with students in developing these relationships and creating an organized system for reaching out to these experts when needed.
- Help students reach out to schools, seeking teachers and students interested in participating in the student-led farmers market as vendors.
    - Work with the market management team to create contracts for the vendors from other schools, including deciding upon a vendor fee, ensuring the proper insurance and licensing are in place, etc.
- Community Experts to visit or bring to school:
    - Attend a neighborhood community event as a class.
    - Invite a doctor, nurse, or nutritionist to speak to the class about food-related health issues.
    - Volunteer at a place like Feed My Starving Children, and as a class, prepare food to be shipped to children around the world who have limited access to food.
        - www.fmsc.org

**Lesson Four**

**Vendors**

Lesson Length: 2 hours

Learning Target: I can use my knowledge of soil management, and plant hardiness zones to create a record keeping system for the school garden.

Vocabulary:

- Soil: The upper layer of Earth in which plants grow.
- Hardiness Zone: A specific area of land in which certain types of plant are capable of growing better than others.
- Records: Specific evidence about the past.

Guiding Questions:

- Why is healthy soil so important for plants to grow?
- Why is it important to know what hardiness zone my garden is in?
- How can a garden records book help keep my garden successful?

Materials:

- Student Journals
- How to Grow a lot of Food in a Small Garden Video
- Introduction to Soil Management Article
- Completed Soil Test Results
    - Samples must be taken days or weeks in advance, depending on the type of test used. This could be done as a class activity.
- 3-Ringed Binder

- Plant Hardiness Zone Worksheet (APPENDIX E)

**Warm Up:**

Show the How to Grow a lot of Food in a Small Garden video (linked in resources).

- Journal: What are the 9 tricks the video suggests for growing more food? Choose two of these tricks you think are helpful for our school garden, and the student-led farmers market. Why did you choose these two?
    - Allow 3-5 minutes after the video for students to finish the writing prompt in their journals. Ask 2-3 students to share their thoughts with the class.

**Garden Record Keeping:**

Soil

- Pass out the Introduction to Soil Management article (linked in resources).
- Read the Introduction and Soil Manager sections aloud as a class. After going through the box that says "Your Farm #1: How do I Keep Soil Records" with your students, explain that we will be creating a rough draft of a soil management plan and setting up a soil record keeping system along the way.
- Divide the class into 5 groups.
    - Group 1: Read and text code the Soil Scientist portion of article, including the box labeled "Your Farm #2: Making a Base Map." Then with your group, go out into the garden and make a base map according to the instructions in the box.
        - Teachers can either provide students with a basic outline or map of the school garden or students can create their own.

    - Group 2: Read and text code the How Does Soil Work section of the article, including the box labeled “Your Farm #3: Where are my Soil Structure Problems?” Then with your group, go out into the garden and assess the soil structure according to the instructions in the box.
        - Students can make a list on a separate sheet of paper, rather than directly on the base map as suggested in the article.
    - Group 3: Read and text code the Nutrient Cycles section of the article, including the box labeled “Your Farm #4: Where are my Fertility Problems?” Then with your group, look at the results from the completed soil test and assess soil fertility according to the instructions in the box.
    - Group 4: Read and text code the Water Cycle section of the article, including the box labeled “Your Farm #5: Where are my Water Problems?” Then as a group, make a list of where your garden has water problems, according to the instructions in the box.
    - Group 5: Read and text code the Life Cycles of Soil Organisms section of the article, including the box labeled “Your Farm #6: Where are my Biology Problem Areas?” Then as a group, note the locations of undesired and desired plants and animals according to the instructions in the box.
- When all groups have finished, ask one member of the group to share what they learned from the reading, and from their analysis of the school garden.
- Skip the Soil Life section of the article
    - This could be taken out before passing it out to students.

    - If your garden is located in Minnesota, it might be helpful to include a hard copy of the table from this section in with your garden's soil record keeping system.
- As a class, go through the Making a Soil Management Plan steps and put your soil management plan together in the process. Use the 3-ringed binder to keep your soil management plan safe, and add to it each year you work on your garden.

**Plant Zones:**

- Project the USDA Plant Hardiness Zone Map About Section for all students to see. (Link is listed in resources).
    - Read the About-Maps and Gardening aloud as a class.
    - After reading the About section, go to the zip code zone finder map (linked in resources), and find the zone for your zip code.
        - Once students know the hardiness zone for your school garden, allow 15-20 minutes for students to research online and complete the Plant Hardiness Zone Worksheet.
- Once the worksheets are completed, have students share what they learned with the class. While students are sharing, invite a student to come up and turn the information they learned about how and when plants grow in your zone into a planting schedule, similar to what can be found online (for an example of this, see the link in resources), except this will only have the plants you plan to grow in your school garden.
    - A blank template for the schedule is available in resources.

- Put this planting schedule in the garden records binder that was created in the last activity.

**Conclusion:**

Journal: Why is record keeping so important for a successful garden? What other records could we keep in our new garden records book?

**Resources:**

- How to Grow a lot of Food in a Small Garden Video
  - https://youtu.be/Bc4ecvD_rMM
- Introduction to Soil Management article:
  - http://www.extension.umn.edu/agriculture/soils/soil-properties/soil-management-series/introduction-to-soil-management/#soil-life
- USDA Plant Hardiness Zone Map
  - About- Maps and Gardening Link: http://planthardiness.ars.usda.gov/PHZMWeb/About.aspx
  - Zip Code Zone Finder Map Link: http://planthardiness.ars.usda.gov/PHZMWeb/Default.aspx
- Zone 4 Planting Schedule
  - http://imavex.vo.llnwd.net/o18/clients/urbanfarm/images/Garden_Guide/Planting-Zone-4.jpg

**Lesson Four Extension Ideas:**

- Extending the growing season
  - Conduct projects, in groups or as a class, on the following practices:

        - Fall: Cold frames and/or seed saving
        - Winter: Start a hydroponics or aquaponics system
        - Spring: Start seeds indoors
- Labs
    - Grow store-bought seeds and seeds saved from the garden, and compare.
    - Test different strategies of growing the same crop.
    - Set up an earthworm farm system and study how the earthworms bury and mix soil.
- Soil Extensions:
    - Test garden soil as a class before the activity of creating a soil management plan, then use soil test results for the activity for Group 3.
    - If a composting system does not yet exist at your school, start one and have students write up a manual for how to use it properly.
- Plant Hardiness Zones Extensions:
    - If it is the right time of year, start seeds indoors and record dates, growth rate, water/light amount, etc.
        - Add this data to the garden records binder created in this lesson.
    - If it is the right time of year, harvest seeds from your garden and save them for next year.
        - Organize seeds in a system that works for your school (or the vendor team), or even start a seed library to share seeds with the community.

    - If it is harvest season, start a record keeping system for harvesting garden produce and include it into the garden records binder created in this lesson.
        - Once the student-led farmers market is operational, records of sales at the market could also go into this binder.
- The University of Minnesota Extension has follow-up articles to the introduction article used in the soil portion of this lesson.
    - Teachers could use those articles to do a more in-depth lesson on soil. Each of these articles include “Your Farm” boxes to help incorporate the reading directly to your school garden.
    - Link to the website with access to the entire soil management series: http://www.extension.umn.edu/agriculture/soils/soil-properties/soil-management-series/
- If a garden does not yet exist, design the new garden as a class, or add a new type of garden (herb, orchard, pollinator, etc) and design as a class.
    - How will this new garden benefit the student-led farmers market?
- Create weather-resistant art and signs to hang in the garden.
- Incorporate economics lessons into the process of determining what to price the products sold at the school’s table at the student-led farmers market.
- Develop more protocol for harvesting and caring for the garden. Include it in the records binder created in this lesson.
- Community experts to visit or bring to school

- Visit well-designed gardens in your community. If possible, talk to the people who designed and/or work in the gardens you visit.
- Invite a professional permaculturist or garden designer to speak to your class.
- If in Minnesota, visit the Minnesota Landscape Arboretum.
    - Classes are available for purchase, for even further extension.
- Invite a market manager from a local farmers market to discuss popular produce at markets, vendor techniques and tricks, etc.

# CHAPTER FIVE

## Conclusion

### Overview

My interest in urban farming began while taking a class called Environment and Society as part of my graduate degree at Hamline University. My passion for urban farm education grew when I realized how the impact of so many environmental and social issues could be reduced if more people just grew their own food, or at least purchased as much local food as possible. Teaching gardening empowers people to be in more control of what they eat. By cooking food that has been grown locally, we are not only using more fresh ingredients and eating more healthy, we are influencing the way farming is done around the world. We cast our vote for how the world should combat issues like climate change, food insecurity, and human health simply by choosing to buy local or grow our own food. The farmers market program and curriculum are my response to the world's need for stronger communities, sustainable farming, and garden and nutrition education, particularly at the high school level.

In chapter two we learned that experiential learning uses hand-on learning to give students the opportunity learn from real-world experiences. Experiential learning gives students a sense of ownership for their own learning and prepares them for a professional life after high school. School gardens and other forms of environmental education are tools for learning that fit well into the experiential learning model, resulting in an increase in school attendance and behavior, academic performance, environmental awareness, and nutritional health. Nutrition education leads to students with healthier

diets, which also positively impacts a student's ability to succeed in school. The student-led farmers market curriculum is experiential learning with school gardens and nutrition education at the heart of the program.

By participating in the student-led farmers market program, students will gain hands-on experience in a variety of professional fields including sales and marketing, and develop life skills such as growing and cooking with healthy foods and buying, selling and trading goods. Pairing the student-led farmers market program with the student-led farmers market curriculum provides students with the background knowledge needed to understand the environmental and social impacts that a student-led farmers market can have on a community. At the end of participating in this program, students should have gained real-world experience in the field of business management, marketing, community organization, or sales. Students should have an understanding of their connection to America's food system, the impact marketing has on their choices about food, the role food plays in a community, or garden care and maintenance basics. In the process of gaining this background knowledge, students will have built the foundations of running a successful student-led farmers market program.

**A Cross-Curricular Curriculum**

The primary goal of the student-led farmers market curriculum is to support a cross-curricular student-led farmers market program. This curriculum will be most successful if content teachers, administration, and all school staff will play a crucial role in ensuring the interdisciplinary aspect of the farmers market program. The easiest way to ensure that the program is cross-curricular is to incorporate the student-led farmers

market curriculum into structures and curriculum that already exist at the school. School-wide participation ensures the most success. By creating the student-led farmers market curriculum so that it follows the same structure as the student-led farmers market program, the lessons provided in the curriculum are extremely adaptable. They can be condensed to fill a shorter amount of time, extended to work for elective courses or extracurricular programs, or perhaps made to fit a different structure that is exclusive to their community. Though the student-led farmers market curriculum may not be fully incorporated into every subject, other classes would ideally include the farmers market in minor ways, such as creating a product to be sold at the market or planning a demonstration to present to market visitors. For example, a Family and Consumer Science class may not use the student-led farmers market curriculum, but a project for the class could be to sew and embroider towels to sell at the farmers market.

In addition to assuming this curriculum will be implemented across all aspects of the school, other assumptions are made to ensure the success of the student-led farmers market curriculum. Although most of the curriculum can be carried out with limited access to the internet, some of the activities do assume that internet access is available to groups of students, if not individuals. Although the curriculum can be used in any school, the ability to connect with community experts and nearby schools is easier for schools in an urban setting. It is also assumed that a budget has been set aside for this program, particularly in the startup year. That budget could come from the school, grant opportunities, fundraising, or any other opportunity that works for the school. Ideally, the student-led farmers market would grow into a financially stable program through vendor

fees and profits from the hosting school's vendor table. The biggest difficulty in ensuring the success of the student-led farmers market program will likely be coordinating a time that works for all schools to host the student-led farmers market. The flexibility of the program and curriculum allows for schools to decide when and how often they would like to open the farmers market for business. Perhaps the student-led farmers market is part of a summer program, or it could be a winter market that is part of an after school program, or possibly even open during school hours. It might take imagination and flexibility, but it is possible for a student-led farmers market of some type to take place at any school.

**Curriculum Implementation**

The vision for the student-led farmers market curriculum is that the lessons are taught during the start-up year of the student-led farmers market. The market itself would not yet be open or operational, and the activities and ideas for extension provided in this curriculum are meant to help students complete the tasks that must be done in order to prepare for the student-led farmers market to be operational the following school year. At this point, every school's student-led farmers market may have different needs based on how it is incorporated in the structures of their own school, and so the new curriculum should be written based on the needs of the student-led farmers market at that time.

When planning to involve students in a farmers market, consider starting with a partnership with an existing local farmers market and have your school operate as vendors at the local market to gain an understanding of the logistics of running a farmers market. This will also generate some interest among students before incorporating a student-led farmers market into the school. The partnership of River's Edge Academy

and the neighborhood organization Growing West Side has been essential to the success of the school's current farmers market program. The knowledge and experience gained from this partnership has helped lead to the idea of a student-led farmers market. This experience working closely with Growing West Side at the West Side Farmers Market has also contributed to the four-component structure of the student-led farmers market program and curriculum. Starting with this small step sets the foundation that the student-led farmers market program will continue to grow in stages, which is highly recommended.

After gaining experience as a vendor at a farmers market and a better understanding of how farmers markets operate, it may be time to initiate the first steps of starting a student-led farmers market, which would be hiring the student team leads and preparing the student-led farmers market curriculum. After the student-led farmers market has run successfully for some time, perhaps the school can consider ways to expand the program even further.

**Curriculum Extensions and Variations**

When starting a student-led farmers market, it is essential to remember that the market itself is a business as well as a teaching opportunity for environmental education. For the purpose of this capstone, the curriculum focuses on aligning garden and nutrition-specific lessons to the student-led farmers market program. Including business lesson topics such as entrepreneurship, business management, supply and demand, and marketing, in addition to the lessons provided by this capstone, would ensure the most well-rounded curriculum and greater success for the student-led farmers market program,

in addition to providing further opportunities for students to gain experience that prepares them for life after high school.

There are further opportunities for extending the student-led farmers market program and curriculum, in addition to the extension ideas included at the end of each lesson. A school's only limitation is their imagination. One example of extending the farmers market program would be to offer different packages to schools when they sign their vendor contract. The basic package would simply be the vendor fee, allowing the school to participate as vendors. The medium package, offered at a higher price, would include the vendor fee and curriculum that would support teachers as they incorporate the student-led farmers market into their own school's classrooms as well. The full package would include the vendor fee, curriculum, and a student/staff team to visit the partnering school and lead activities with students that promote the student-led farmers market.

Alternatively, schools can choose not to invite other schools to sell as vendors at their market at all, and host a market in which their school alone are the vendors. Schools can choose to incorporate entertainment and demonstrations, or not. They can choose to open the farmers market during school hours or after school, during school months or in summer months, etc. The lessons for the student-led farmers market curriculum were designed so that they are relevant to all schools, no matter how it is incorporated, or what type of student-led farmers market the school chooses to operate.

**Reflection**

An integral aspect of experiential learning is the concept that reflection is crucial to the learning process. As I reflect on the process of completing this capstone, the last

requirement of my graduate degree, I can't help but think of my journey through graduate school as well. It took me longer than most to finish the Master of Arts in Education: Natural Science and Environmental Education program. Just before starting my capstone, I took some time off from school and struggled to return and finish my degree. After a few years of feeling stuck and wondering if I would ever finish, I feel more pride in reaching this point than I might have if I had not gone through that struggle. I have always referred to myself as more of a dreamer than a doer, and so assumed that if I ever wanted to see my dream of the student-led farmers market become a reality, I would need a partner who is more of a doer to push me to get it done. Now I have not only created a program that my school can use, as I have dreamed, but I've also created a program that any school can use and incorporate into their school structures. Graduate school has taught me just as much about myself as it has taught me about the best practices for teaching natural science and environmental education. I've learned that I am resilient, passionate, and that I can be a doer.

My experience as an educator has always been in a non-traditional setting. I never earned a teaching license, and so was never taught how to write curriculum, but I found myself teaching and developing lessons for aquariums and nature centers nonetheless. Through the capstone process I had to learn different methods and techniques for writing curriculum before I could develop curriculum of my own. With this knowledge, I am more organized in my curriculum-writing process, and my lessons are more holistic. I also now have some context for key terms that I have heard from working in the education field over the years, but was never officially taught. For example, I have

always understood the positive impacts of expeditionary learning, but in doing research for this capstone, I learned more about the reason why expeditionary learning is an effective model of teaching.

After working at a high school for over five years, I have learned that garden and nutrition education are difficult to work into the curriculum, unless they are offered as their own elective. School lunches are a natural opportunity to incorporate garden and nutrition activities, which is why the farm to school program is so successful. I know that farm to school programs are plentiful in public schools around the country, but I believe it is more difficult to incorporate such a program into a charter school, where resources may be more limited. The student-led farmers market is a creative spin on the farm to school program for schools that may not have a commercial kitchen, or growing space, or other resources that allow a farm to school program to thrive. Whether it is a farm to school program or the student-led farmers market program, I hope to one day be supporting students as they take control of their food choices and get excited about growing and eating fresh, healthy ingredients.

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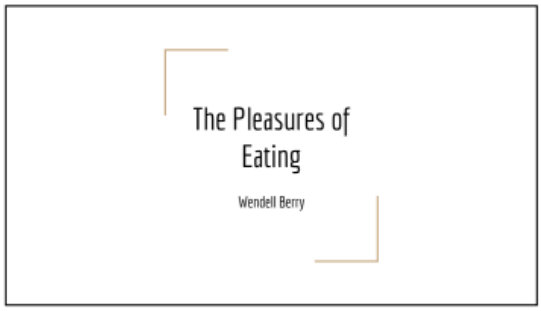
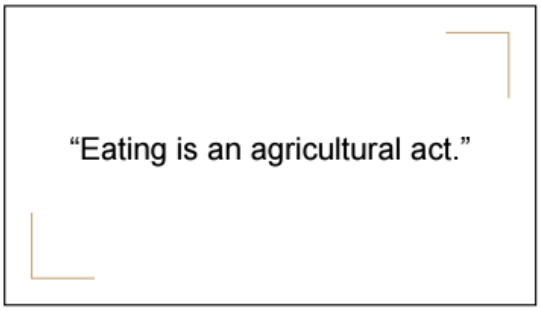
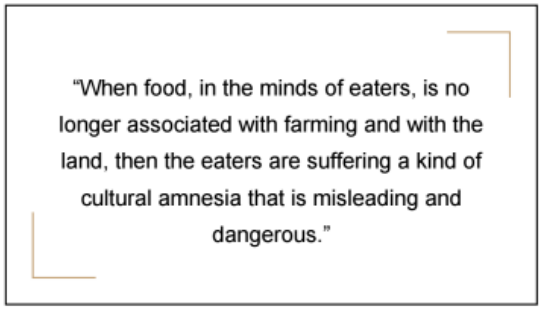
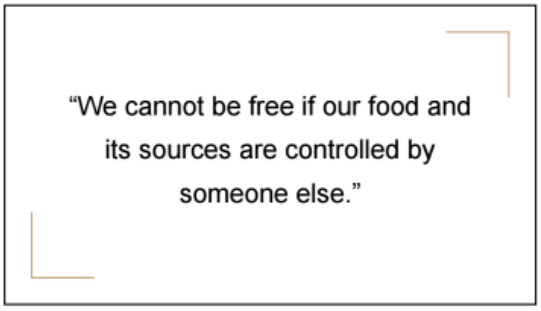
http://www.nytimes.com/interactive/2009/10/11/magazine/20091011-foodrules.html

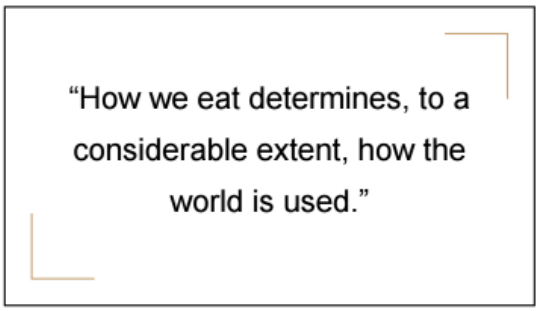
## APPENDIX A: Wendell Berry, The Pleasures of Eating Slides

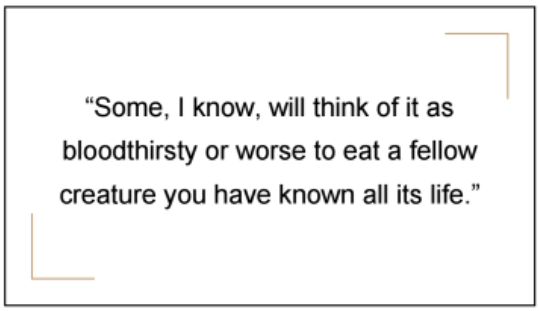


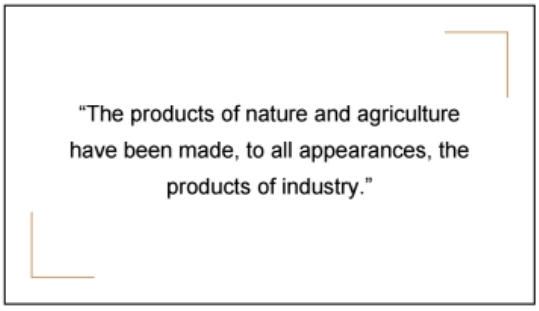




1. Participate in food production to the extent that you can. ... You will be fully responsible for any food that you grow for yourself, and you will know all about it.

2. Prepare your own food. … You will have some reliable knowledge of what has been added to the food you eat.

3. Learn the origins of the food you buy, and buy the food that is produced closest to your home.

4. Whenever possible, deal directly with a local farmer, gardener, or orchardist.

5. Learn, in self-defense, as much as you can of the economy and technology of industrial food production. What is added to the food that is not food, and what do you pay for those additions?

6. Learn what is involved in the best farming and gardening.

7. Learn as much as you can, by direct observation and experience if possible, of the life histories of the food species.

**APPENDIX B: Printable: 7 Steps to Eat Responsibly**

# Wendell Berry's 7 Steps to Eat Responsibly

1. Participate in food production to the extent that you can. If you have a yard or even just a porch box or a pot in a sunny window, grow something to eat in it. Make a little compost of your kitchen scraps and use it for fertilizer. Only by growing some food for yourself can you become acquainted with the beautiful energy cycle that revolves from soil to seed to flower to fruit to food to offal to decay, and around again. You will be fully responsible for any food that you grow for yourself, and you will know all about it. You will appreciate it fully, having known it all its life.
2. Prepare your own food. This means reviving in your own mind and life the arts of kitchen and household. This should enable you to eat more cheaply, and it will give you a measure of "quality control": you will have some reliable knowledge of what has been added to the food you eat.
3. Learn the origins of the food you buy, and buy the food that is produced closest to your home. The idea that every locality should be, as much as possible, the source of its own food makes several kinds of sense. The locally produced food supply is the most secure, freshest, and the easiest for local consumers to know about and to influence.
4. Whenever possible, deal directly with a local farmer, gardener, or orchardist. All the reasons listed for the previous suggestion apply here. In addition, by such dealing you eliminate the whole pack of merchants, transporters, processors, packagers, and advertisers who thrive at the expense of both producers and consumers.
5. Learn, in self-defense, as much as you can of the economy and technology of industrial food production. What is added to the food that is not food, and what do you pay for those additions?
6. Learn what is involved in the best farming and gardening.
7. Learn as much as you can, by direct observation and experience if possible, of the life histories of the food species.

## APPENDIX C: Functional Foods Note Catcher

Name: _____

# Functional Foods Note Catcher

From the New York Times article:
Foods With Health Benefits, or So They Say

Section 1:

| | |
|---|---|
| **Main Idea**: What was the main idea of your section? | |
| **Evidence:** What quotes can you find from your section that support the main idea? | |
| **Analysis:** What does this information mean to you? How does it connect to the SLFM? | |

Section 2:

| | |
|---|---|
| **Main Idea**: What was the main idea of your section? | |
| **Evidence:** What quotes can you find from your section that support the main idea? | |
| **Analysis:** What does this information mean to you? How does it connect to the SLFM? | |

Section 3:

| | |
|---|---|
| **Main Idea**: What was the main idea of your section? | |
| **Evidence:** What quotes can you find from your section that support the main idea? | |
| **Analysis:** What does this information mean to you? How does it connect to the SLFM? | |

Section 4:

| | |
|---|---|
| **Main Idea**: What was the main idea of your section? | |
| **Evidence:** What quotes can you find from your section that support the main idea? | |
| **Analysis:** What does this information mean to you? How does it connect to the SLFM? | |

**APPENDIX D: My Identity Worksheet**

Name: _____

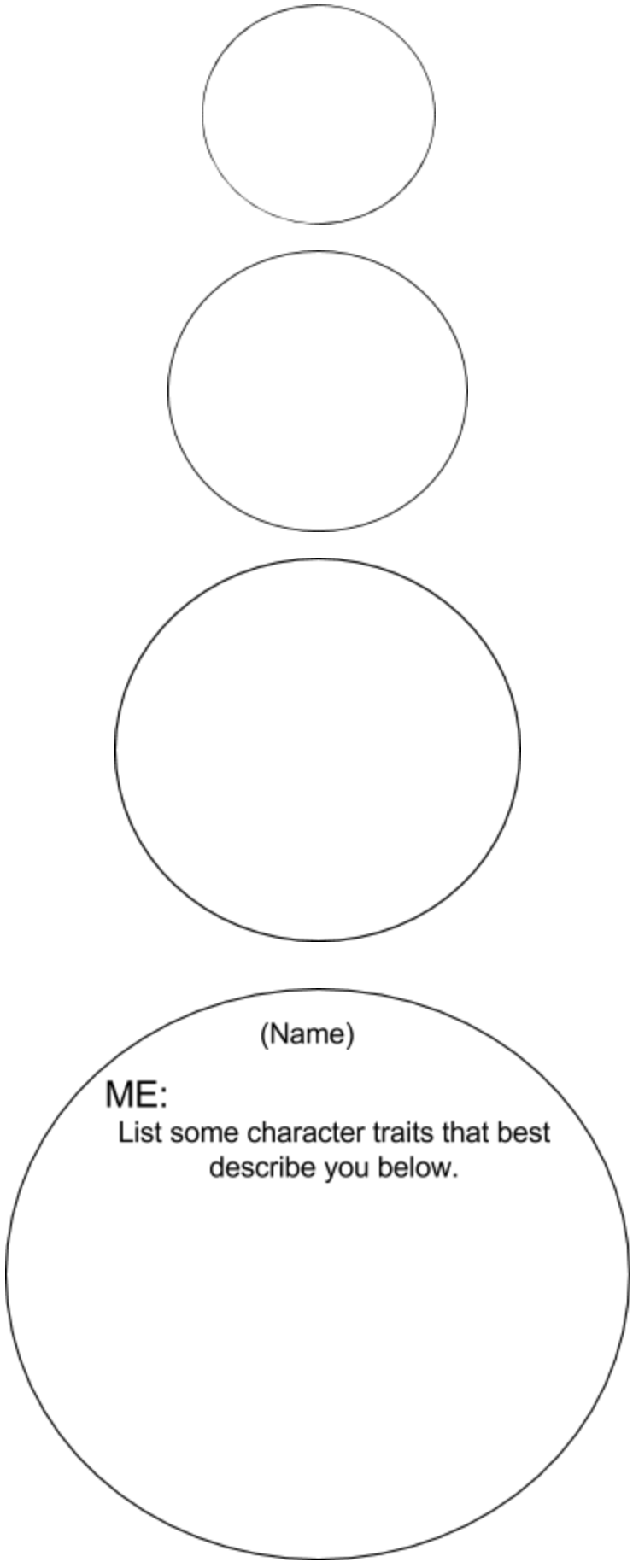
# My Identity

STEP 1: What makes up a person's identity?
There are many components that make up who we are. Write a few thoughts about your relationship to some of the most popular identity components below. Thoughts could include sights, smells, sounds, frequently heard quotes from yourself or friends/family members, etc.

| | |
|---|---|
| Social Class | |
| Ethnic Background | |
| Gender | |
| Sexual Orientation | |
| Religion | |
| Size | |
| Ability | |
| Family | |

STEP 2: What makes up MY identity?
Now in the circles on the next page, group these components of your identity, and any others you think of, into three categories. Put the category that you feel least influences your identity in the smallest circle, and so on, showing how these components make up you as a person. Lastly, fill in the "ME" circle about yourself.

STEP 3: Sharing my identity
With a partner, you each will spend 10 minutes talking about yourself without interruptions. Your partner is allowed to listen only, not speak. Use this worksheet to reference when you run out of things to say. You can choose to talk about these components as much or as little as you like, but you must keep talking for 10 minutes.


(Name)
ME:
List some character traits that best describe you below.

**APPENDIX E: Plant Hardiness Zone Worksheet**

Name: _____

## Plant Hardiness Zone

1. What is the plant hardiness zone for our school garden? _____
2. What is the average annual extreme minimum temperature? _____°F
3. Search for an image of a planting schedule for your zone. Write down the month you should start seeds indoors, plant or transplant outside, or harvest for each crop you plan to grow for the student-led farmers market.

Plant: How will this plant be sold at the student-led farmers market?
Start Seeds Indoors: Plant/Transplant Outside:
Harvest:

Plant: How will this plant be sold at the student-led farmers market?
Start Seeds Indoors: Plant/Transplant Outside:
Harvest:

Plant: How will this plant be sold at the student-led farmers market?
Start Seeds Indoors: Plant/Transplant Outside:
Harvest:

Plant: How will this plant be sold at the student-led farmers market?
Start Seeds Indoors: Plant/Transplant Outside:
Harvest:

Plant: How will this plant be sold at the student-led farmers market?
Start Seeds Indoors: Plant/Transplant Outside:
Harvest:

# ZONE PLANTING SCHEDULE

START SEEDS INDOORS | PLANT/TRANSPLANT OUTDOORS | HARVEST

| JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |

## APPENDIX F: Student-Led Farmers Market Rubric: Market Management

| **Market Management** | A | B | C | D | F |
|---|---|---|---|---|---|
| Problem Solving | There were no problems to solve, or they were solved so quickly that they went unnoticed. | There were minor issues, but the market wasn't affected in a big way. | There were some important issues that could have been resolved more quickly. | There were many problems, and the market was affected. | Most major issues that occurred during the market were ignored, or poorly handled. |
| Entertainment | At least 3 types of entertainment were planned, with a variety of presenters and topics. | 2 types of entertainment, OR there wasn't a variety of presenters or topics. | 2 types of entertainment, AND there wasn't a variety of presenters or topics. | Only 1 type of entertainment was planned. | There was no entertainment planned. |
| Market Set Up | All vendors and workers had important information needed before arrival, and everything was ready before the start of the market. | There was a little confusion among the vendors and workers at the start, but it was worked out quickly, and the market started on time. | There was some confusion among the vendors and workers, and the market started a little behind schedule. | There was a lot of confusion among the vendors and workers, and the market was still being set up when guests started to arrive. | There was little communication with market vendors and workers, and setup of the market was disorganized. |
| Attendance Tracking | Attendance data was tracked, organized, and used to make improvements for next year. | Attendance data was tracked, but either it was not well organized or it wasn't used for future planning. | Attendance data was inconsistently tracked and somewhat organized, but not used again. | Attendance data was tracked or poorly tracked, but nothing was done with the information. | Attendance data was not tracked. |

## APPENDIX G: Student-Led Farmers Market Rubric: Marketing

| **Marketing** | A | B | C | D | F |
|---|---|---|---|---|---|
| Social Media Presence | The market has an account on at least 2 different social media outlets, and at least 25 posts were made advertising the market on each. | The market has at least 2 accounts on social media, and at least 15 posts were made advertising the market on each. | The market has one social media account, and at least 10 posts were made advertising the market. | The market has one social media account, and at least 5 posts were made advertising the market. | There was no social media presence for the student-led farmers market. |
| Flyers | Flyers were passed out to all neighbors and businesses, and mailed to families and partners. | Flyers were on display at the school and mailed to families and partners, but not distributed to nearby neighbors or businesses. | Flyers were mailed to families only. | Flyers were on display at school only. | No flyers were made to advertise the student-led farmers market. |
| E-mail | At least 5 advertisements for the student-led farmers market were e-mailed to the school's community. | At least 4 advertisements for the student-led farmers market were e-mailed to the school's community. | At least 3 advertisements for the student-led farmers market were e-mailed to the school's community. | At least 2 advertisements for the student-led farmers market were e-mailed to the school's community. | No advertisements for the student-led farmers market were e-mailed to the school community. |
| Photos and Reporting During Market | At least 5 people were taking photos, and at least 10 social media posts were made during the market. | At least 4 people were taking photos, and at least 7 social media posts were made during the market. | At least 3 people were taking photos, and at least 5 social media posts were made during the market. | At least 2 people were taking photos, and at least 2 social media post was made during the market. | No photos were taken and no posts were made to social media. |

## APPENDIX H: Student-Led Farmers Market Rubric: Community and School Partnerships

| **Community/ School Partnerships** | A | B | C | D | F |
|---|---|---|---|---|---|
| Schools Contacted | At least 10 schools were contacted and asked to be vendors, with several follow-up conversations for planning. | At least 5 schools were contacted and asked to be vendors, with several follow-up conversations. | At least 5 schools were contacted, but there were few follow-up conversations. | At least 2 schools were contacted, but there were few follow-up conversations. | No schools were contacted, or schools were contacted but contacts fell through due to lack of follow-up. |
| Community Members Contacted | At least 10 community organizations were contacted and asked to participate, with several follow-up conversations for planning. | At least 10 community organizations were contacted and asked to be vendors, with several follow-up conversations. | At least 5 community organizations were contacted, but there were few follow-up conversations. | At least 2 community organizations were contacted, but there were few follow-up conversations. | No community organizations were contacted, or organizations were contacted but contacts fell through due to lack of follow-up. |
| Communication with Vendors and Partners During the Market | Vendors and partners were checked in with at the beginning, middle, and end of the market, and knew who to find if needed. | Vendors and partners were checked in with at the beginning and end of the market, and knew who to find if needed. | Vendors and partners were checked in with at the beginning of the market, and knew who to find if needed. | Vendors and partners were checked in with once at some point during the market, and may not have known who to find if needed. | Vendors and partners were never approached, and had to seek someone from the market out if needed. |
| Vendors and Partners Interviewed | At least 75% of vendors and partners were interviewed leading up to the market, and their stories written to be shared by marketing. | At least 50% of vendors and partners were interviewed leading up to the market, and their stories written to be shared by marketing. | At least 35% of vendors and partners were interviewed leading up to the market, and their stories written to be shared by marketing. | Vendors and partners were interviewed, but their stories were never written. | No interviews were conducted. |

## APPENDIX I: Student-Led Farmers Market Rubric: Vendors

| **Vendors** | A | B | C | D | F |
|---|---|---|---|---|---|
| Produce Harvesting and Product Making | Produce was harvested from the garden following the food safety protocols, and products were made with time to label and process for the market. | 1-2 infractions were made when produce was harvested, and products were made with time to label and process for the market. | 3-4 infractions were made when produce was harvested OR products were not made with time to label and process for the market. | 3-4 infractions were made when produce was harvested AND products were not made with time to label and process for the market. | Food safety protocols were disregarded when produce was harvested, and produce could not be used, or products were not completed or processed in time for the market. |
| Table Setup | Vendors table is set up before the market starts, and products are displayed in a decorative and interesting way. | Vendors table is set up after the market starts but before many guests arrive, and products are displayed in a decorative and interesting way. | Vendors table is set up after guests start arriving, OR products are displayed with some decoration or interest. | Vendors table is set up after guests start arriving, AND products are displayed with some decoration or interest. | Table is not set up, or products are placed on the table with little organization or care. |
| Product Labeling | Label designs are professional, eye catching, and all required information is displayed, and all products are labeled before market day. | Label designs are professional and eye catching, OR all required information is displayed, and all products are labeled by market day. | Labels have all required information, and are still being applied to products the day of or during the market. | Labels are missing required information and still being applied to products the day of or during the market. | Labels were not completed in time for the market. |
| Record Keeping | 5 of 5: Vendors present, product prices, number of each product sold, number of guests visiting the vendors table, and total profits were recorded. | 4 of 5: Vendors present, product prices, number of each product sold, number of guests visiting the vendors table, or total profits were recorded. | 3 of 5: Vendors present, product prices, number of each product sold, number of guests visiting the vendors table, or total profits were recorded. | 2 of 5: Vendors present, product prices, number of each product sold, number of guests visiting the vendors table, or total profits were recorded. | No records were kept at the vendors table during the market. |