WILD LEAVES AND NARROW STEMS:

CASE STUDY OF A SCHOOL GARDEN IN TRANSITION

A Dissertation

presented to

the Faculty of the Office of Graduate Studies

at the University of Missouri

In Partial Fulfillment

of the Requirements for the Degree

Doctor of Philosophy

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by

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MAY 2018

The undersigned, appointed by the Associate Vice Chancellor for Graduate Studies,

have examined the dissertation entitled

WILD LEAVES AND NARROW STEMS:
CASE STUDY OF A SCHOOL GARDEN IN TRANSITION

Presented by SARAH ELIZABETH CRAMER

A candidate for the degree of

DOCTOR OF PHILOSOPHY IN AGRICULTURAL EDUCATION

And hereby certify that, in their opinion, it is worthy of acceptance.

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DEDICATION

To my parents, Keith and Betty, two people who would always rather be outdoors than in, and who led my sister, Rebecca, and me in garden-based learning throughout our childhoods without even knowing that what they were doing had a name. This dissertation exists because you let me bring home snapping turtles I found in the creek, eat unwashed bell peppers straight from the garden, catch butterflies, get really muddy, read books that teachers thought I was "too young for," and because we ate dinner together as a family every single night. You have shown me that being book smart and having dirt under your fingernails are not mutually exclusive, and for that I am endlessly grateful.

ACKNOWLEDGEMENTS

I have written many lengthy drafts of these acknowledgements over the past months, but I will work to keep them short here. To my committee, you have operated as a smoothly functioning team throughout this experience, and it has been an absolute pleasure to work with you all. I have felt nothing but supported throughout the comprehensive exam and dissertation processes, and I leave our meetings buoyed by your feedback and firmly confident in my own abilities. Anna Ball, words fail me (and words never fail me…) but you are just the best. It is an honor to know you, and I thank you for your wisdom, mentorship, and friendship. You have ignited in me a passion for qualitative research, and you have helped me find my voice as a writer. I will spend the rest of my academic career asking myself, "What would Dr. Ball do in this situation?" and acting accordingly. Tracy Kitchel, I am graduating from Mizzou because you let me in the program doors! You took a chance on me—a garden teacher with no formal training in education—and made me feel like I belonged in your department. Since then, through intra-campus and inter-campus moves, you have been a source of professional and methodological wisdom, and your questions about my research challenge me and encourage me to grow in new directions. Mary Hendrickson, professionally, you have connected me to your vast networks of colleagues within food and agriculture, and supported my development as a researcher and practitioner. Personally, I count you as a good friend, and I will miss Tuesday night trivia with you and the rest of the crew. You have modeled for me a co-existing love of rural, agrarian America, and a scholarly commitment to critiquing its flaws, and I am forever thankful. Jon Simonsen, thank you for your steady leadership during times of change in the department, for your endlessly

positive outlook, and for your quick and clear answers to my many questions. I have had the mental space and energy to focus on this research because of the stability you have contributed to my time in graduate school.

Leslie, it has been a joy to experience graduate school alongside you. Thank you for reading drafts of everything I write, for being my audience during every one of my presentation practice sessions, for feeding me, for teaching with me, for researching with me, and for being my biggest cheerleader. We make a darn good team.

Rebecca, your empathy for your own students, and the kindness and compassion you share with everyone you encounter inspire me to be a better, more inclusive, teacher and person. Thank you for your sense of humor and your support throughout this process. Of all the people I will miss when we leave Columbia this summer, I will miss you the very most.

Hope, Katie, Lexi, and Jenny, I am eternally indebted to the four of you for your enthusiasm about this research, for your willingness to share your days and lessons with me, and for your insight into the subtleties of your own experiences with garden-based learning. You are the stars of this project. I hope I have done your work justice.

I am a proud product of public education, and I want to thank and acknowledge the many outstanding teachers I have had between kindergarten and now who fostered in me a deep, lifelong love of learning. I want to thank the graduate students with whom I commiserated and celebrated these past years. I want to thank my friends, my family, and all of the people who have made Columbia such a wonderful place to live, learn, garden, and eat for most of my life.

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ABSTRACT

Elementary school gardens have grown popular and abundant in recent years, and are established with goals ranging from addressing childhood obesity to improving test scores. With this garden-based learning movement come questions of school garden efficacy in achieving stated goals, as well as school garden sustainability and longevity in an ever more standardized public education environment. The purpose of this qualitative case study was to examine how the transition of control of a garden-based educational program from independent non-profit to school district affects various elements of the school garden, including participant perceptions and motivations, organizational mission, and teaching methods and philosophies. Through extensive observational data collection, participant interviews, focus groups, and artifact analysis, themes emerged and descriptions of the case before, during, and after the transition of control were developed. The story of the school garden transition was one of negotiations and trade offs. Garden educators perceived a legitimation of their place in the school as a result of the transition, but also perceived constraints placed upon their curricular and pedagogical freedom by the school district. While before the transition the garden program was seen as a challenger of restrictive school policies and educational paradigms, after the transition it adopted more of the qualities and procedures of the school district. Garden-based learning researchers and practitioners are challenged to consider the nuance and implications of these trade offs in program development and strategic planning.

CHAPTER 1: INTRODUCTION

Background

The United States is currently experiencing a veritable school garden boom, with newly established gardens dotting thousands of schoolyards across the country (Hirschi, 2015; United States Department of Agriculture, 2015). While the school garden movement may appear to be a product of the twenty-first century, the notion of gardening at school dates back more than a century. Building upon the work of Maria Montessori in Europe and the nature studies movement domestically, the first school garden in the United States was established in Massachusetts in 1891 (Subramaniam, 2002). During World War I, school gardens were established as an extension of the Victory Garden movement, and were symbols of patriotism and persistence, in addition to sources of food. In 1916, over one million students contributed to the war effort through the production of food under the banner of the "U.S. School Garden Army," a trend that persisted through World War II (Hayden-Smith, 2006).

The school garden and corresponding garden-based learning movements feel novel, perhaps, because gardens all but disappeared from American schoolyards throughout much of the twentieth century (Sealy, 2001). This decline can be attributed to multiple factors, ranging from the rise of competitive sports and the need for athletic fields on school grounds, to greater standardization of educational curriculum and an increasing emphasis on technology. A small resurgence in school gardens occurred in the 1970s as an offshoot of the environmental movement, but it has been argued that the educational conservatism of the 1980s constrained any further expansion of garden-based

learning at that time (Yamamoto, 2000). In 1993, The American Horticultural Society hosted its first youth gardening symposium, entitled "Children, Plants, and Gardens: Educational Opportunities" (Sealy, 2001). The symposium is often cited as the event that catalyzed the garden-based learning movement of the late twentieth and early twenty-first centuries, and inspired the establishment of new gardens in schoolyards across the country.

School gardens engage a wide variety of audiences, and appeal to a sense of nostalgia for an agrarian American past. They are relatively easy and inexpensive to construct and maintain, and are lauded as the remedy to issues ranging from childhood obesity and environmental degradation, to attention deficit disorder and poor academic performance (Berezowitz, Bontrager Yoder, & Schoeller, 2015; Blair, 2009; Graham, Beall, Lussier, McLaughlin, & Zidenberg-Cherr, 2005; Subramaniam, 2002). The 2015 United States Department of Agriculture Farm-to-School Census recorded 7,101 school gardens in school districts across the United States, up from 2,401 recorded in 2013, the first year the census was conducted (United States Department of Agriculture, 2015).

In response to the revival and expansion of the school garden and garden-based learning trends in the United States, corresponding trends in scholarly research have followed. Though a handful of school garden studies have emerged from the field of agricultural education, most recent scholarship can be grouped within one of the following categories: research on the effect of school gardens on fruit and vegetable consumption, research on the effect of school gardens on academic outcomes (usually in science, specifically), or school gardens as sites for environmental education (Blair, 2009). The works of scholarship contained in each of these groupings reflect the

trappings of their respective disciplines. For example, health and nutrition research generally focuses on quantitative measures of attitude change or change in consumption of fruits and vegetables. Similarly, science education research addresses quantitative indicators of science achievement or knowledge acquisition. While the body of school garden scholarship paints an overall positive picture of the efficacy of garden-based learning in achieving the aforementioned goals, in her evaluative review of the literature, Blair (2009), cautions against uncritically accepting all research findings on school gardens. Of quantitative work, she cites frequent methodological issues leading to trends of falsely positive results, including systemic biases in data collection, lack of control for teacher training/variability, and short-term involvement at the research site. Of qualitative work, she also notes tendencies to report overly positive findings, and to extrapolate conclusions beyond the bounds of the qualitative study. As a relatively new area of research, both quantitative and qualitative investigations into garden-based learning must be held to high standards of rigor if they are to be accepted by and incorporated into the dominant education, nutrition, or agricultural research paradigms. Blair asserts that there is a multi-layered burden upon researchers of garden-based learning, because their findings establish the credibility, or lack thereof, of school garden programs, and subsequently influence educational policy and funding decisions.

Statement of the Problem

School gardens and garden-based learning have a long history in the United States, and in recent years the school gardening movement has experienced great momentum and expansion (Hirschi, 2015). Research continues to indicate that the incorporation of gardening into primary and elementary education has positive,

measurable impacts on academic performance, fruit and vegetable consumption, physical activity, and environmental awareness (Berezowitz, Bontrager Yoder, & Schoeller, 2015; Blair, 2009; Graham, Beall, Lussier, McLaughlin, & Zidenberg-Cherr, 2005; Lautenschlager & Smith, 2007; Passy, 2014). Sociologists of food and agriculture cite school garden programs as examples of potentially transformative agents for change in the food system (Goodman & DuPuis, 2002; Pudup, 2008). Additionally, the public school system in the United States is vast, and both shapes the development of American society and reflects its values back to the citizens (Center on Education Policy, 2007). It follows that a nationwide network of garden-based education programs, working with or for the public school system successfully could mean widespread, positive societal change. However, research must be done to examine how these two philosophically disparate entities—the school garden and the public school—interact and cooperate. Though critical scholarship examines both the school garden as a transformative space and the influential power of the public school, research has not been conducted at the intersection.

While the dramatic increases in school garden numbers, proponents, and funds in recent years are worth acknowledging, it is important to reflect upon the historical roots of the school garden movement, and take note of what may change or be lost when attempting to conform garden-based learning to modern educational structures and standards. The earliest forms of garden-based learning and school gardening, those influenced by Maria Montessori and the nature studies movement, were inherently constructivist endeavors (Desmond, Grieshop, & Subramaniam, 2004). As garden-based learning researchers and practitioners enjoy the fruits of their efforts to revive school

gardening, they must also consider how the behaviorist, standards-based structure of modern education may shape the very nature of the school garden learning experience. Of course, American elementary education in general looks very little like it did in the nineteenth century, and a nostalgic call for "the good old days" of education is certainly not the request. Rather, as non-profit or volunteer-led school garden initiatives and public school systems across the country consider the possibility and ramifications of merging or developing more formal structures and relationships, it is critical to consider the implications for both entities. There are strengths and challenges to all types of school garden and garden-based learning organizational structures. The goal of research in this vein is to simply examine and understand those strengths and challenges so that future decisions about funding, structure, and control may be well informed.

Purpose and Research Questions

The purpose of this case study was to examine how the transition of control of a garden-based educational program from independent non-profit to school district affects various elements of the school garden, including participant perceptions and motivations, organizational mission, and teaching methods and philosophies. The central issue question that guided the study was: How does a change of control of a school garden, from volunteer or independent non-profit to public school district, shape the nature of the garden program and the learning experiences therein? Within this broader issue question, a set of sub-questions guided data collection. Because the research focused on a time of transition, answers to the sub-questions were sought from both the organization before the transition, and the organization after. These questions were:

- What are the motivators that drive teachers, administrators, parents, and students to engage with the school garden program?
- What are the barriers that hinder teacher, administrator, parent, and student engagement with the school garden program?
- What are the goals of the school garden program, and the actors within?
- What does learning in the school garden program look like?
    - Where does learning happen?
    - When does learning happen (in terms of schedule)?
    - With whom does learning happen (volunteers, parents, certified teachers)?
    - How does learning happen (teaching methods, content)?
    - How is learning assessed?

Establishing the Case

The Midwest Garden Education Project (MGEP), pseudonym, is a garden-based educational organization in the Midwestern United States. Located in a rapidly growing but rural town of roughly 5,000 people, the MGEP worked in partnership with the local school district to provide outdoor opportunities for experiential education in the one-acre, on-site learning garden. Parent volunteers founded the MGEP in 2007 in response to the epidemic of childhood obesity facing the community. During the first year of the program, volunteers tended a few raised beds behind the elementary school and led a small after school garden club that served 13 elementary students.

In 2012, the organization received a $500,000 grant from a statewide public health foundation, and the MGEP became an officially recognized non-profit with an executive director, board of directors, team of contract employees, and AmeriCorps

service members. For nearly five years, the MGEP worked in cooperation with the local school district to teach garden classes, lead after school garden and cooking clubs, and facilitate farm-to-school initiatives in the schools' cafeterias. All pre-kindergarten through sixth grade students received at least six garden lessons per school year, and the after school garden club grew to serve up to 90 elementary students per year. The one-acre learning garden space resided on the grounds of the primary school and contained raised vegetable beds, hoop houses, an orchard, compost bins, and a native prairie (organization website, 2017).

The public health foundation grant that funded the operations of the MGEP for five years ended in December of 2017. After years as a volunteer project and then non-profit organization, the MGEP transitioned to school district control during the 2017-2018 school year (Wallace, 2017). A certified elementary teacher was hired in 2017 to serve as the district's first ever district-funded garden teacher, and over the course of the school year she transitioned to taking over all of the teaching, outreach, and maintenance responsibilities previously handled by the work team, volunteers, and board of directors. During the 2017-2018 school year, at least, the garden program retained the two AmeriCorps service members who had worked for the non-profit organization the previous year. They assisted with the transition of the program, and continued to do a large portion of the garden instruction.

Need for Study

Scholars from the sociology of food and agriculture speak about alternative food networks, a category into which school gardens fall, as agents of transformation in the food system (Goodman & Goodman, 2009). Agricultural reskilling, and the reconnection

of producer and consumer, are critical components of this discussion. Additionally, educational scholars and philosophers recognize the formative effect of education on both individual development, and on the development of an engaged, democratic society (Dewey, 1915; Koch, 2016; Sobel, 2004). An extension of these two arguments, then, is that agricultural reskilling initiatives such as garden-based learning, carried out in conjunction with the far-reaching and influential public school system, possess potential for widespread food system and educational transformation.

School garden programs, which frequently emerge as grassroots, volunteer, or non-profit let initiatives (Ozer, 2007), often encounter resistance from traditional classroom teachers and school district administrators (O'Callaghan, 2005; Yu, 2012). In some ways, these interpersonal tensions are representative of the larger tensions between the philosophies of garden- and place-based education, and the structure of public schooling. The roots of garden-based learning lie in a more organic and constructivist realm of education (Desmond, Grieshop, & Subramaniam, 2004), while the public schools of today reflect conflicting emphases of standardization and efficiency (Darling-Hammond & Wise, 1985). If school gardens truly are effective sites for transformation of the food system, and of public education, then there is a need to critically examine the effects of these administrative and structural influences.

Blair (2009) lays a foundation for research such as this study, as well as a call for future research to which the study responds. In her review of literature, she evaluated seven qualitative studies. Of those, four studies were assessments of garden programs in which the researchers were or had been directly involved, establishing a precedent for this case study, which has grown out of the researcher's involvement with the MGEP.

While Blair warns that such research projects may be at risk of producing "overly enthusiastic reporting and biased analysis," she also states that such heavily involved authors are in the "best position to unravel the garden-child interactions," (Blair, 2009, p. 31). Finally, Blair presents a multifaceted call for future research. Primarily, she calls for "more qualitative studies of smoothly functioning school gardens that examine how success is managed and maintained" (p. 36). The case chosen for this study as well as the qualitative methods and research questions are direct responses to this scholarly invitation. Additionally, though the case study was not designed to specifically address Blair's calls for research into reasons for garden failure or creative approaches to maintaining gardens long-term, responses to these supplemental prompts can be mined from the study as well. Blair's review presents a clear literature gap into which this case study is situated.

Definition of Terms

AmeriCorps: A national network of service programs, funded in part by the U.S. federal government, dedicated to improving lives, facilitating civic engagement, and supporting communities. AmeriCorps members engage in up to one year of voluntary service with a designated AmeriCorps partner organization (Corporation for National & Community Service, 2018).

Common Core State Standards: An educational initiative that outlines the language arts and mathematical skills K-12 students should possess at the end of each grade.

Experiential learning: A process in which knowledge is created through interaction between the learner and environment, engagement in concrete experiences, and reflection upon those concrete experiences (Kolb, 1984).

Farm-to-School Program: A national program through which U.S. schools purchase locally grown/produced food to serve in their cafeterias; formally implemented following the Healthy Hunger-Free Kids Act of 2010 in the form of USDA Food and Nutrition Service grants (United States Department of Agriculture, 2015).

Garden-based learning: An instructional method that utilizes the garden as a teaching tool or learning site to facilitate active learning through real world experiences. Garden-based learning spans all disciplines and can be applied as an educational strategy to supplement instruction in most standard content areas (Desmond, Grieshop, & Subramaniam, 2004).

Next Generation Science Standards: Educational content standards for K-12 science.

Non-profit organization: A tax-exempt business that uses surplus revenue to further its mission, rather than distributing it to shareholders as profit; often dedicated to advocating for a particular social cause (Smith, Stebbins, & Dover, 2006).

Place-based education: An educational philosophy and practice that emphasizes connections between students, schools, the community, and the local environment as a foundation for meaningful learning in all content areas (Sobel, 2004).

Public school system: A network of schools that are maintained at public expense for the free education of children in the community or district.

School gardens: Cultivated areas on school grounds or near school buildings, tended at least in part by students. Size, crops, and purposes vary, but most exist to encourage healthy eating, development of life skills, and opportunities for experiential learning. (Food and Agriculture Organization of the United Nations, 2010).

Assumptions

1. Experiential learning occurs in the school garden.

2. The control and structure of the school garden program has an effect on the teaching, learning, and/or purpose of the program.
3. A change in the control/structure of the school garden program will cause a change in the teaching, learning, and/or purpose of the program.
4. Participants in this study were able to articulate their perspectives on garden-based learning and the school garden program.
5. Participants in the study were able to reflect on and discuss the structural changes that were occurring in the school garden program.
6. Educators in the study were able to identify when learning had occurred in the school garden.
7. The participants were thoughtful and honest in their responses to interview questions.
8. Observations in the school garden accurately reflected the teaching and learning that normally occurs there.

Limitations

1. This case study focused on a specific school garden program during a specific period of time. The findings of the study may not be representative of other school garden programs in different locations, with different organizational structures, or different sizes. The findings are not meant to be generalized beyond the bounds of this particular case.
2. The presence of the researcher may have affected the way participants, particularly young students, behaved during field observations. The researcher

attempted to mitigate this effect by visiting the garden and observing repeatedly, so as to desensitize students to her presence.

3. The influence of the researcher may have affected participants' responses to interview questions, depending upon their familiarity with her personal experiences, philosophies, and attitudes about garden-based learning. A strong statement of researcher subjectivity and positionality in Chapter 3, as well as extensive reflexive journaling on the part of the researcher, aimed to account for this unintended influence.
4. Participants' opinions about the structural changes within the school garden program may have affected their ability to respond to interview questions about teaching and learning in the school garden objectively. Field observations, intended to round out a complete picture of the teaching and learning activities in the garden space, supplemented interview data.
5. Given the research questions and purpose of the study, it was not deemed necessary to interview youth participants. Youth involvement in the study was limited to field observations in the school garden. However, the lack of youth voices in the data may mean that their experiences were not appropriately represented in the findings. Diligent note taking during field observations, focusing specifically on student comments, was used to capture the essence of student learning experiences.

CHAPTER 2: REVIEW OF LITERATURE

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

A review of literature was conducted to situate the study within an interlocking network of multidisciplinary scholarship. Garden-based learning, by definition, engages with all academic subjects and garden-based learning scholarship is no different. The purpose of this study was to examine how the transition of control of a garden-based educational program from independent non-profit to school district affects various elements of the school garden, including participant perceptions and motivations, organizational mission, and teaching methods and philosophies. To gain the necessary background, relevant literature was reviewed through several broad lenses: school gardens as transformational spaces, teaching and learning in a school garden, and structural challenges/advantages pertaining to school garden administration.

Introduction

Though not a new concept in American education, school gardens and garden-based education have gained great popularity and attention in recent years (Hirschi, 2015). Falling under broader categories of both alternative food networks (Goodman & DuPuis, 2002) and place-based education (Sobel, 2004), school gardens may take many forms and represent myriad goals. The pedagogical potential of garden-based education to improve academic outcomes is well documented (Graham, Beall, Lussier, McLaughlin, & Zidenberg-Cherr, 2005; Passy, 2014), as are the positive, measurable impacts of school gardens on fruit and vegetable consumption and student activity levels

(Berezowitz, Bontrager Yoder, & Schoeller, 2015; Blair, 2009; Lautenschlager & Smith, 2007; Meinen, Friese, Wright, & Carrel, 2012). From both the production and consumption angles, school gardens represent sites of prospective resistance to deskilling in the food system (Burns & Miller, 2012; Carlsson & Williams, 2008; Howes, Graham, & Friedman, 2009; Stone, 2016). One could argue that, given the enormous reach of public education and its massive influence on society, a widespread network of school gardens and garden-based education may be well positioned to serve as an agent of transformation in the food system (Rojas, Valley, Mansfield, Orrego, Chapman, & Harlap, 2011). Despite overall positive attitudes towards school garden programs, they have not escaped many of the same criticisms leveled at other alternative food networks. Critics argue that school gardens are "white" spaces that advance a neoliberal agenda (Allen & Guthman, 2006; Guthman, 2008). This review of literature will summarize key scholarship from the following genres: deskilling in food and agriculture, gardens and alternative food networks, Deweyan pragmatism, experiential learning theory, practices and philosophies in garden-based education, garden-based learning in extension and agricultural education, gender and gardening/education, and critiques of school gardens.

Deskilling in Food and Agriculture

Deskilling, generally, refers to the process through which skilled labor within an industry, economy, or home is replaced by technology, or otherwise devalued and lost (Atwell, 1987). For centuries, social scientists have observed the mechanization of labor and the speed-up of production (Form, 1987). In the never-ending, capitalist quest for efficiency and productivity, these processes of "progress" have contributed to vast individual skill-loss (Atwell, 1987). Marxists, and others, have argued that the

mechanisms of deskilling in the workforce aim to turn workers into appendages of machines and limit individual autonomy and knowledge. Some idealistic scholars have posited that human potential cannot be fulfilled without engagement in challenging, meaningful work that requires both mental and physical skill, and that anything less "damages the human spirit" (Form, 1987).

Early literature on workforce deskilling focused on urban, industrial contexts such as factories. After all, these were the epicenter of working class struggle and the home of the proletariat in the Industrial Revolution (Marx, Engels, Moore, & McLellan, 1992). With the rapid industrialization of agriculture and the food system in the late twentieth century, however, scholars began to examine these same processes of deskilling in a new context. Though producer and consumer are inextricably linked in the food system, and deskilling of one directly influences the other, theorists often focus on production-centered and consumption-centered deskilling separately. Production-centered theorists, drawing from Marx's arguments about production and capital, insist that political power is located exclusively within the sphere of production (Goodman & DuPuis, 2002). In their framing, consumers are passive participants in a political landscape shaped by production, and the only potential for societal transformation within the food system resides with workers. In contrast, consumption-centered theorists have attempted to unveil the shadowy presence of consumers in the food system in a number of ways. Some focus on the level of political awareness and consciousness of consumers in food provisioning (Hinrichs, 2003; Marsden & Wrigley, 1995), others attempt to determine what constitutes "quality" food to consumers and how that influences purchasing decisions (Asp, 1999; DuPuis & Goodman, 2005), and others still endeavor to manipulate

these findings in order to bridge the gaps between producer and consumer (Barkema, 1993). It may be argued that by reifying the act of consumption, as Barkema and other economists do, some consumption-oriented scholars are perpetuating entrenched capitalistic issues within the food system.

Deskilling, on the production side of food and agriculture, may take several overarching forms. When conceptualizing the transformation and industrialization of the food system, of course, one may start on the farm. Deskilling on the farm emerges from agricultural decisions and practices that reduce individual autonomy, knowledge, and skill, with the end goal of better serving the capitalist market (Fitzgerald, 1993). Examples of production-centered agricultural deskilling are the replacement of skilled human labor with skilled machines (Reinhardt & Bartlett, 1989), the dependence on chemical inputs to solve pest and weed problems (Vandeman, 1995), and the purchase and use of patented, genetically engineered seed (Fitzgerald, 1993; Stone, 2007). Each of these cases represents a reduction in farmer agency, knowledge, and critical decision-making capacity, in that these forms of power and control have been essentially transferred from an individual to a corporation. Scholars may debate whether or not the above examples *contribute* to the shrinking number of farmers, or emerge in *response* to farm and farmer loss, but regardless, they clearly illustrate the phenomenon of deskilling in food and agriculture "within the farm gate."

Parallel deskilling in the food system may be seen further down the line in food preparation, provisioning, and consumption. In *The Industrial Diet* (2014), Anthony Winson argues, in part, that the industrialization and mechanization of food preparation in factories and fast-food restaurants has not only harmed human health, but has

contributed to deskilling both upstream (agricultural production) and downstream (individual consumer). For example, McDonald's and its demand for uniform potatoes for French fries, led to the Russet Burbank potato becoming the most widely grown potato in North America. It is the standard against which all other potatoes are judged. This displacement of biodiversity in favor of uniformity and mass-production is again indicative of deskilling in food production. In turn, by assuming the responsibility for preparing, say, potato French fries, and removing the task from the individual eater, agents of industrial food preparation have led to mass consumer deskilling (Jaffe & Gertler, 2005). Though different in enactment, deskilling on the consumer side of the food chain possesses the same overarching characteristics as that on the production side. "Deskilled" consumers not only lack the ability to prepare food for themselves, but they also lack the knowledge to discern quality food and trustworthy producers (Engler-Stringer, 2010; Ternier, 2010).

School gardens and garden-based education are well positioned to bridge producer and consumer among younger generations, as participants of garden education programs are often simultaneously growing and preparing food themselves (The Edible Schoolyard Project, 2017; Hirschi, 2015; Life Lab Science Program, 2017). In the context of discussions about deskilling in the food system, these meaningful reconnections may be conceptualized as "reskilling." In the setting of the school garden, the production/consumption disconnect is neatly erased, simply by virtue of the site itself and the actors within it. Though garden educators, proponents, and practitioners engage in this form of reskilling constantly, school gardens as sites of reskilling are absent from the

literature. Support for their use to advance agricultural reskilling may be found in tangentially related scholarship (below).

One way to conceptualize the march of progress and deskilling in society is through "McDonaldization," a process first described by George Ritzer (1993). Taking its name from the aforementioned fast food corporation defined by standardization, predictability, and efficiency, forces of McDonaldization may be seen in many areas of modern life. Howes, Graham, and Friedman (2009) argue that gardening pedagogy may serve as an antidote to the McDonaldization of education, and that it represents the antithesis of all that a McDonaldized or deskilled system embodies. In a school garden, control lies not with the curriculum or the teachers, but with Mother Nature. Though potential opportunities for deep, meaningful learning abound in the garden, the learning process takes longer, meanders more, and is in no way "efficient." Howes, Graham, and Friedman do not talk about school gardens as sites of reskilling, but their discussion of gardening pedagogy as a form of resistance to McDonaldization rounds out one part of the argument.

Taylor and Lovell (2014) again avoid the use of the term "reskilling" in their comprehensive review of literature on food gardens in the Global North. However, support for the agricultural reskilling argument may be found in their discussions of food gardens as sites of empowerment and resistance. The authors state that food gardens serve as centers of resistance to the dominant food system, foster embedded, place-based understandings of the environment, and fuel individual activism. They note that community food gardens also serve as agents of cultural reproduction and centers of social environmental knowledge construction. In a connection to producer/consumer

reskilling, the authors also state that gardening programs foster the development of self-disciplining consumers through their intimate contact with food production. As a review of literature, though, Taylor and Lovell recognize that much remains unsaid in the food gardening scholarship, and they present a number of lingering research questions and a call for future investigation.

Finally, White (2012) levels blame for agricultural deskilling directly at the structure and curriculum of the current public education system. He views this systematic downgrading of farming as an occupation as part of a larger assault on rural life. He cautions against the continued development of a society in which youth are unable to work with their hands, and against the discursive marginalization of agricultural work as a livelihood. White sees the need for vibrant and diverse smallholder farms across the landscape in order to both employ and feed the members of the global community, and he advocates for multifaceted agricultural education and promotion among youth to achieve this goal.

Gardens and Alternative Food Networks

Alternative food networks (AFNs) are systems of food production and provisioning that possess characteristics different from or intentionally counter to the mainstream approaches of developed countries, which are typically characterized by industrialization and capital concentration (Tregear, 2011). A key feature of many alternative food networks is a commitment to reconnecting producer and consumer in ways that are meaningful and mutually beneficial (Goodman & DuPuis, 2002; Miele, 2006; Parkins & Craig, 2009). School gardens, along with community gardens and home food gardens, are examples of AFNs. School gardens and garden-based education, in

particular, are inherently place-based, reflect social embeddedness, contribute to (future) consumer education, and foster development of social activism. Though goals of garden-based education are often stated at the individual level, such as increased fruit and vegetable consumption among students, school gardens serve as sites that catalyze larger, long term goals of environmental sustainability and social justice (Koch, 2016). Each of these features of the school garden movement aligns directly with those of the alternative food movement (Goodman & Goodman, 2009).

Though she takes issue with much of the good food dogma of entities like Alice Water's Edible Schoolyard Project, Pudup (2008) identifies key elements of this, and similar school garden programs, that position them as alternative agrifood systems. Engaging in the previously stated reconnection of producer and consumer, the Edible Schoolyard Project promotes a mission of "seed to table" education, where learning takes place both in the garden and in the kitchen. The schoolyard garden is both seamlessly integrated into the curriculum of the middle school where it is located, and a centerpiece of community organization and involvement in the area. While Pudup argues that Waters' local, seasonal, organic vision of good food education is loaded with privilege and narrow in scope, there is no question that the Edible Schoolyard Project is reproducing an image of an alternative to the dominant food system.

What Waters, and others, represent within the network of alternative food systems is the critical component of education. If transformation of the dominant agrifood system is to be achieved, practitioners and scholars alike recognize the need for place-based, food-centered citizen education (Wilkins, 2005). Just as there cannot be producer

deskilling without consumer deskilling, there cannot be positive food system-level transformation without individual citizen-level education.

Deweyan Pragmatism

A discussion of John Dewey, and Deweyan pragmatism, is a necessary part of any review of experiential education philosophies and practices. However, in the vein of agricultural reskilling, the timeless writings of Dewey carry additional weight, and become particularly poignant. Seeing the inherent educational value of school gardens, he stated:

> Gardening need not be taught either for the sake of preparing future gardeners, or as an agreeable way of passing time. It affords an avenue of approach to the knowledge of the place farming and horticulture have had in the history of the human race and which they occupy in present social organization. Carried on in an environment educationally controlled, they are means for making a study of facts of growth, the chemistry of soil, the role of light, air, moisture, injurious and helpful animal life, etc. It is pertinent to note that in the history of man, the sciences grew gradually out of useful social occupations. (Dewey, 1915, p. 220)

To John Dewey, and contemporaries such as Liberty Hyde Bailey, the school garden was an extension of the nature studies movement of the time. As the quote above illustrates, the garden was a site for enrichment and education across disciplines, not simply a tool for *gardening* education. Dewey, an original pragmatist, advanced a philosophy of education that focused on practical consequences, and the development of concrete skills. The desire to impart upon students a spirit of civic engagement was evident in the philosophies of the U.S. School Garden Army of both world wars as well

(Hayden-Smith, 2006). It was said that "America could use the garden, not for the sake of the garden itself, but that it may lead the children into the life of the state" (p. 5). In his wake, scholars have extended the pragmatic vision he once applied to the garden to numerous additional facets of the food system.

The recurring theme of gardens as sites for political activism emerges regularly in modern Deweyan scholarship. Though separated by nearly a century, the early writings of Dewey are strikingly reminiscent of contemporary works on AFNs as sites of activism and resistance. It has been argued that democracy and civic engagement in the food system may provide the best hope for a sustainable food future (Hassanein, 2003).

Hanagan (2015) advances the Deweyan argument even further. She argues that beyond simply promoting experiential education, as in teaching students about food and agriculture by involving them in food and agriculture, an education formed around Deweyan democracy is best positioned to confront the problems of the modern industrial food system. She places Deweyan democracy in contrast to the Jeffersonian agrarianism promoted by Wendell Berry and others, and asserts that the cooperative, public, and community-based nature of a food democracy is more powerful than the individualist notions of traditional agrarianism. Jeffersonian agrarianism, she argues, is based upon self-sufficiency and nostalgia for rural life, and modern alternative food networks of an agrarian bent exclude individuals for whom an agricultural past holds little nostalgia (i.e. African-Americans). Conversely, AFNs influenced by democratic Deweyan ideals reflect the interdependence of individuals in a democratic society, and possess values that are co-developed by all participants. Dewey believed that a "democratic public" emerges when formerly disconnected individuals come together to collectively solve a problem

facing their community. Hanagan maintains that truly transformative garden education programs do not simply retrain students to appreciate and consume new foods, but challenge them to work together to address challenges in their own food systems. The vision that school gardens endeavor to advance is one of public engagement and public good, not reskilling in agrarian isolation. In this way, John Dewey's messages about education, gardens, and democracy are remarkably universal.

Garden-based educational reskilling, Deweyan experiential education, and Deweyan pragmatism form an interlocking network of concepts well suited to advance food system transformation. If sustainable alternatives to the current food system lie with widespread food democracy, which as a concept requires a skilled and educated populace, and the public education system is responsible for the formation of that populace, school gardens serve as ideal sites for future food system transformation.

Experiential Learning Theory

In addition to developing and describing the tenets of civic engagement and pragmatism mentioned earlier in this review, John Dewey was instrumental in laying the foundations of modern-day experiential learning scholarship (Dewey, 1938). Among other reflections on and critiques of the educational system at large, Dewey argued that there was a need for a Theory of Experience in education, and that educators should intentionally construct quality opportunities for experiential learning. He also articulated constructivist philosophies about education and encouraged educators to attend to the diverse backgrounds and prior experiences that students bring to the learning environment. He believed that contextualized educational experiences that built upon students' prior knowledge developed the greatest sense of "purpose" in students.

While Dewey is responsible for much of the abstract underpinnings of modern philosophies of experiential learning, it was Kolb (1984) who refined them into a grand theory. At the core of the theory of experiential learning is an understanding that abstract academic content is only made meaningful through the incorporation of real-world, hands-on experiences. Kolb elaborates further, and presents six postulates of experiential learning theory, synthesized from common themes of previous scholars of experiential learning:

1. Learning is best conceptualized as a process, not a product. This process must include feedback and adjustments to instruction made accordingly.
2. All learning is re-learning. Effective experiential learning must draw out students' beliefs and previously held notions in order to examine and refine them.
3. Learning requires the reconciliation of conflicts and disagreements between differing perspectives and opinions.
4. Learning is holistic. It cannot be distilled down to cognition alone, but instead must involve the total thinking, feeling, perceiving person.
5. Learning occurs through interactions between an individual and the learning environment.
6. Learning is constructivist and knowledge is created. Knowledge is not passively received by the learner, but is created and re-created.

Building upon those propositions, Kolb describes a cyclical process of experiential learning characterized by concrete experiences, reflective observation, abstract conceptualization (hypothesizing), and active experimentation (testing in new situations). Students may enter this cycle at any point, but in order to maximally absorb,

digest, and transform knowledge they must flow through all four steps. Well-designed experiential lessons and activities have been shown to increase student efficacy at any age or grade level (Kuh, 1993). Kolb (1984) and others have asserted that learning is a major determinant of human development, shaping the people, and members of society, that young learners grow up to become.

Given the six assumptions about learning listed above, it follows that educators and advocates of garden-based learning frequently cite opportunities for experiential learning as motivators to engage in school gardening (Klemmer, Waliczek, & Zajicek, 2005; Parmer, Salisbury-Glennon, Shannon, & Struempler, 2009; Williams & Brown, 2013). The fifth postulate, that learning is the result of interactions between the learner and their environment (Kolb, 1984), speaks to the relevance of experiential learning theory within garden-based learning directly. The learning that occurs in the school garden is inextricably linked with the season, crops, and activity occurring in the garden space at that particular moment in time. It constitutes learning that simply could not be replicated within the classroom. While successful garden-based learning experiences still require thought and careful scaffolding on the part of the educator, they have been shown to contribute to the effective creation of meaningful and lasting knowledge across disciplines (Graham, Beall, Lussier, McLaughlin, & Zidenberg-Cherr, 2005; Passy, 2014).

Experiential learning theory provides a natural frame for this study. It is the lens through which all of the research questions are viewed. At a superficial level, the researcher can determine whether or not learning experiences are experiential in the school garden setting. In the context of this study, research can illuminate whether or not

the frequency or quality of experiential learning events change over the transition from non-profit to school district control. At a deeper level, research can investigate how educators position themselves within the experiential learning paradigm. Do they identify as facilitators of experiential learning? Do they prioritize hands-on learning, even if occurs at the expense of other outcomes and objectives? Do they plan lessons according to the lessons' ability to meet Kolb's postulates of experiential learning?

Practices and Philosophies in Garden-Based Learning

> Today's young people are, as we've seen, growing up in America's third frontier. This frontier has yet to completely form, but we do know the general characteristics. Among them: detachment from the source of food, the virtual disappearance of the farm family, the end of biological absolutes, an ambivalent new relationship between humans and other animals, new suburbs shrinking open space, and so on. In this time of quickening change, could we enable another frontier to be born—ahead of schedule? (Louv, 2008, p. 234)

Educators and thinkers such as Richard Louv have been loudly sounding the alarm about "nature-deficit disorder" for some time now. Frightful images of a future in which children do not go outside, do not get dirty, and spend the endless hours of their youth in front of screens and technology have served to catalyze the outdoor and garden-based education movements. A parallel and overlapping educational movement, championed by David Sobel, is that of place-based education (2004). Like the educational innovators, such as Dewey, who came before him, Sobel's vision for education is one that is enriching, supportive, and ideal for the development of the individual student, as well as better for the health of the community and society overall.

Sobel advocates for the re-centering of place, community, and environment in all areas of education. Place-based education as a philosophy provides yet another source of resistance to the McDonaldization of education and the deskilling of students.

Scholarship from a variety of disciplines makes a strong case for the academic benefits of school gardens and garden-based education. For elementary science education, the school garden serves as a natural option for a living laboratory. Hands-on garden education has not only been found to improve science achievement scores among young students, but it has also been shown to perpetuate wonder and interest in science and the natural world into later years of childhood (Klemmer, Waliczek, & Zajicek, 2005; Williams & Brown, 2013). In line with trends of de-contextualization and standardization in public school systems, students report feeling that science is not relevant to their everyday lives, and that they are disempowered to make positive, scientific contributions to society (Driver, Leach, Millar, & Scott, 1996). Scholarship is supportive of school gardens as sites of reconnection between students, nature, science, and society, and researchers have found that school gardens improve student attitudes towards school and science (Blair, 2009). Additionally, researchers have found that learning in a garden environment may engage students of diverse backgrounds and learning styles. Behaviors that may be deemed problematic or indicative of hyperactivity in a classroom environment may be channeled in unique and productive ways in the garden (Passy, 2014). Finally, Waliczek, Logan, and Zajicek (2003) applied Bloom's Taxonomy to garden-based education, and found that application-level learning, as would be expected, frequently occurs in the school garden. Additionally, they found that school gardens

engage both synthesis- and evaluation-level learning, which is promising, as those levels of Bloom's Taxonomy are difficult to achieve in classroom settings.

Blair (2009) conducted the most comprehensive review of school gardening literature to date. In her evaluation of the literature, she highlights multiple trends that extend beyond the use of school gardens for science or agricultural instruction. As garden curriculum and activities are often inquiry-based in nature, she notes that students respond positively to being *creators* of knowledge in the garden, rather than recipients of knowledge in the classroom. Of significance in the context of school gardens as alternative food networks, as well as sites of place-based learning Blair states, "school gardens had a strong community-building component, promoting teamwork, student bonding, a broader range of interaction with adults, and community outreach" (p. 21). This speaks to the community linkages inherent in AFNs and place-based education, as well as the spirit of civic engagement and individual empowerment that is cultivated among young students in a school garden.

A discussion of the benefits of garden-based education and school gardens is incomplete without addressing the nutritional side of these initiatives. As childhood obesity remains a prominent part of public discourse in the United States, many have turned to garden education in the hopes of combatting this epidemic (Berezowitz, Bontrager Yoder, & Schoeller, 2015). Though some scholars argue that the approaches of Farm-to-School and school garden efforts are missing the mark and distracting public health activists from the meaningful policy change needed to tackle obesity (Guthman, 2011), the fact remains that school gardens have been repeatedly shown to increase physical activity among students and encourage healthy eating habits (Berezowitz,

Bontrager Yoder, & Schoeller, 2015; Graham, Beall, Lussier, McLaughlin, & Zidenberg-Cherr, 2005; Ratcliffe, Merrigan, Rogers, & Goldberg, 2011; Williams & Brown, 2013). Additionally, as a means of developing food literate, reskilled eaters and consumers, school gardens have been found to not only increase fruit and vegetable consumption, but also increase student awareness of unique or foreign varieties of produce (Lautenschlager & Smith, 2007). A health-based argument for school garden programs can be extended even further, for physically healthy students have been repeatedly shown to be better learners (Basch, 2011). Physical health is not a stand-alone concept, and applying a public health lens, through school gardening and other nutrition-based interventions, to issues of educational policy and reform may help educators and legislators address the achievement gap in innovative and effective ways.

With all of the tangible benefits of school gardens in enhancing academic performance, creating meaningful student connections to curriculum, and improving student nutrition and health, scholars and practitioners alike ask why these programs continue to face resistance from school administrators and teachers (Yu, 2012). Though physical school garden spaces abound across American schoolyards, many volunteers, parents, and teachers who hope to establish new garden spaces at their schools face pushback from maintenance and administrative staff (O'Callaghan, 2005; Yu, 2012). Concerns on the physical garden side of the equation generally center on the cost of maintenance, the physical appearance detracting from the look of the school grounds, and questions of whose job it is to maintain the space. Though the concept of the "sacredness" of public education culture has not been explored in a garden-based education context, it may also explain teacher resistance. Scholars define sacred elements

of the school culture as norms, practices, and routines that reflect school and teacher values, and are subconsciously deemed vital to faculty and staff fulfillment of their responsibilities (Corbett, Firestone, & Rossman, 1987). Education literature on planned change and teacher resistance (new curricula, changes in educational standards, or changes in scheduling) often frames change as defiant towards these sacred elements (Rossman, 1988). At a basic level, opposition to school gardens may simply reflect the stubbornness of teachers and school administrators, and their deeply seated resistance to changes to what is understood to be sacred in school cultures.

Though school gardens, and a more thorough curricular integration of nature and gardening, were once a norm in mainstream education, they may now be seen as disruptions of the "sacred" structure of the public school to today's teachers. This lack of exposure to school gardens as an integrated feature of both the schoolyard and the curriculum is indicative of both school culture, and deficiencies in new teacher preparation. As teacher preparation programs mold and define beliefs and practices of future teachers, the absence of garden-based curriculum in teacher training is of concern, and presents additional challenges to the advancement of garden-based education (Desmond, Grieshop, & Subramaniam, 2004; Pajares, 1993). The opportunities for teacher exposure to garden-based education certainly do not end after teacher preparation programs, and literature has documented the desire among teachers for garden-based professional development (Blair, 2009). Except in rare instances, schools with garden programs do not fund a certified "garden teacher" the way that they may employ art, music, and physical education teachers. This structural difference blurs lines of responsibility, and makes it difficult for classroom teachers to know if they are the ones

who are supposed to or allowed to teach gardening. The ambiguity of school garden structures, coupled with a lack of teacher confidence and preparedness, helps explain why some garden programs struggle and use remains limited (Yu, 2012). As this review argues overall, school gardens are perhaps fundamentally different from the way teachers are trained and conditioned to approach student education and the purpose of school itself. Blair (2009) echoes this argument, stating, "The very qualities that render school gardening a potent and multidimensional experiential-learning experience—being outdoors and involved in hands-in-dirt digging, planting, and cleanup—may render it unpopular with teachers who prefer the safety, predictability, cleanliness, and ease of the indoor classroom" (p. 20).

Garden-Based Learning in Cooperative Extension Literature

Throughout the history of garden-based learning and school gardening, cooperative extension programs have often been leaders of the field (Hayden-Smith, 2006). Liberty Hyde Bailey, a pioneer of cooperative extension and the first dean of Cornell University's College of Agriculture is also credited with developing the nation's first elementary-aged gardening text in 1890 (Banks, 1994). To this day, Cornell Extension remains a leader in garden-based learning. Their program, "Learn, Garden, Reflect with Cornell Garden-Based Learning" is managed cooperatively through the College of Agriculture and Life Sciences and Cornell Extension and provides resources ranging from curriculum and Citizen Science projects to program planning and volunteer management toolkits (Cornell Garden-Based Learning, 2017). Garden-based learning initiatives are a natural fit within extension education, given that they combine

agricultural knowledge and skill building with the experiential learning that defines so much of extension programming.

The general themes that emerge from a review of extension-specific literature on garden-based learning are of particular use in building an argument around the dichotomies between the nature of non-formal garden-based learning and the nature of standard public education. Many garden-based learning programs are administrated by extension educators, and even though many are not, the philosophies and objectives of extension may be found throughout garden education initiatives of differing organizational structures. Though they have changed, modernized, and been shaped by financial and evaluative pressures, current cooperative extension programs in the United States, overall, remain guided by the experiential, hands-on, and regionally specific vision of extension education with which they were founded (Peters, 2002). While extension educators and program planners are often asked to frame their educational objectives in the jargon of public education, explaining, for example, that programs meet Common Core or Next Generation Science Standards, the efficacy of extension programming is not determined by standardized testing. Extension educators are frequently challenged to work cooperatively with public school systems, though the two educational paradigms may differ. Worker, Ouellette, and Maille (2017) argue that the term *learning* has become so ubiquitous and broad in both everyday language and the language of extension programming that extension educators may easily lose track of "what counts" as learning. They present the following definition of learning within the context of extension:

> Learning is the progressive and purposeful familiarity, use, and transformation of cultural tools and practices that influence one's changing and continuous capacity to act in and on the world. Learners construct and develop their own understandings, dispositions, identities, and motivations through sense making of experiences. Learning is mediated and oriented through culture, is situated in the cultural communities in which one participates, and emphasizes culturally determined learning outcomes leading to culturally valued development.

Though this definition is not presented in the specific content area of garden education, nevertheless it reflects the context-specific, constructivist philosophies and motivations of many garden-based learning practitioners.

DeMarco, Relf, and McDaniel (1998) discuss classroom teachers' use of Master Gardener volunteers to help with their gardening lessons. This article provides an introductory example to illustrate the dichotomy between the educational approaches of extension (the more constructivist example) and standards-based public education. Teachers in the study perceived that they benefitted from the help of Master Gardeners in their garden programs primarily in terms of horticulture expertise and classroom management. Though teachers recognized the interdisciplinary benefits of gardening with their students, they had not actually been trained to lead gardening activities themselves. Additionally, they needed the help of the volunteers to manage behavior in a garden setting, speaking to another potential deficiency of the teachers' training. Welsh, Whittlesey, Seagraves, Hall, and Harlow (1999) describe the Junior Master Gardener (JMG) curriculum, which, since 1972, has been adopted in some form in all 50 states. Though a more rigid curriculum than some garden programs employ, the JMG program

still helps illustrate the non-formal/formal dichotomy of garden-based education. In addition to developing horticultural skills, JMG's stated goals include identifying and fulfilling community needs through volunteer service, developing mentorship relationships between older and younger youth participants, and providing cross-curricular, hands-on learning opportunities. Junior Master Gardener is billed as a flexible curriculum that can be adapted to public school, home school, after-school, or youth club settings. By stretching traditional, school day boundaries of when, where, and how learning happens, JMG provides a clear example of the cooperative extension approach to garden-based learning (Cater, Fox, & Fletcher, 2012). Finally, Nelson and Shaw (2013) present extension-facilitated environmental education programs and natural schoolyards as solutions to the common barrier to use that classroom teachers simply lack time to utilize these opportunities. The authors also juxtapose the measures of student achievement used by extension-facilitated outdoor education programs with, for example, Common Core State Standards, once more demonstrating how these programs operate outside the realm of traditional public school.

Garden-Based Learning in Agricultural Education Literature

The fields of cooperative extension and agricultural education frequently overlap, often sharing space in university departments, at academic conferences, and in scholarly publications. While operating in similar physical and disciplinary spaces, agricultural extension education may be conceptualized as the non-formal counterpart to formal, school-based agricultural education. Having reviewed cooperative extension's approaches to garden-based learning, it is helpful to turn to garden-based learning scholarship from the field of agricultural education to illustrate a more formal, standards-

based paradigm. Research on school gardens and garden-based learning published in the *Journal of Agricultural Education*, while related to that of the *Journal of Extension*, presents a different epistemic and structural perspective. Researchers who publish in the *Journal of Agricultural Education*, and are members of the American Association of Agricultural Education, are usually former secondary agriculture teachers, and often write for an audience of teacher-educators. Because garden education programs generally focus on primary and elementary grades, there is not an abundance of garden-based learning literature in this body of work. Beckman and Smith (2008) even seem to reflect on the novelty of their research on a nutrition-focused, garden-based education program being published in the *Journal of Agricultural Education*, stating, "Readers of this journal will find the article significant because a garden program inherently incorporates agricultural education and can educate youth at an early age about nutrition from a food system perspective" (p. 12). However, the literature that exists is of value in illustrating how formal education, agricultural education in this case, approaches the school garden.

Agricultural education literature on elementary-aged, garden-based learning programs, as opposed to extension literature or resources produced by garden-based learning leaders such as Life Lab or Cornell Extension, is rife with terms such as "STEM" (science, technology, engineering, and math) and "agricultural literacy." At first glance, it is as though traditional agricultural educators—those coming from an FFA or secondary agricultural education background—are speaking a different language than garden-based learning practitioners and researchers. The term "agricultural literacy," or the working knowledge of the food and fiber system, is absent from any of the garden-based learning literature mentioned previously in this review of literature, but is used

frequently in relevant *Journal of Agricultural Education* scholarship (Brandt, Forbes, & Keshwani, 2017; Graves, Hughes, & Balgopal, 2016). Of course, garden educators would certainly agree that what they are doing is fostering in their students a working knowledge of the food and fiber system. It is, however, worth considering why these similarly motivated groups—garden educators and agricultural educators—are linguistically disconnected, and if that is reflective of a larger philosophical disconnection. The discursive divisions between the terms "gardening" and "agriculture" are fascinating, but beyond the scope of this review (Sachs, 1996).

While literature from the non-formal education contingent seems to view meeting Common Core or Next Generation Science Standards as bonus to the many additional, less quantifiable benefits of garden-based learning, agricultural education literature places standard methods of evaluation at the forefront. Researchers talk in terms of agricultural benchmarks (Trexler, 2000) or National Agricultural Learning Objectives (Brandt, Forbes, & Keshwani, 2017). Additionally, garden-based learning scholarship from the *Journal of Agricultural Education* refers more frequently to "horticulture" as the *content* area, rather than the garden as the *context* for learning (Graves, Hughes, & Balgopal, 2016). Each of these trends reflects the more rigid, disciplinary and assessment-driven bounds of formal education, as demonstrated within the frame of agricultural education. Graves, Hughes, and Balgopal (2016) specifically, present findings that run counter to most garden-based learning scholarship. They state that the teachers in their study felt that garden-based curriculum detracted from instructional time they could be devoting to content assessed on state standardized tests, rather than viewing it as enhancing and supplementing the assessed content. Whether presented positively or negatively, scholars

of agricultural education conceptualize garden-based learning in terms of standards and assessment.

In addition to the *Journal of Agricultural Education* themes that emerged related to content and assessment, the review of relevant literature also uncovered a trend of highlighting the "urban" or "inner-city" location of garden education programs (Beckman & Smith, 2008; Duncan, Collins, Fuhrman, Knauft & Berle, 2016; Mabie & Baker, 1996). While it is reasonable to view these terms as racially coded, and perhaps reflective of some of the cultural critiques of garden-based learning outlined later in this review of literature, they also speak to a clearly perceived division of agricultural knowledge between urban and rural residents. Though context is certainly important, and it would be logical to assume that a student from a farm background would possess greater agricultural knowledge, it is striking nonetheless that no other reviewed articles on garden-based learning, outside of the *Journal of Agricultural Education*, use the words "urban" or "inner-city" in their titles. It is as if there is a presumption that garden education is not a necessary endeavor in rural locations because of the predominance of agriculture, when it is clear that knowledge of growing produce or consuming healthy, fresh food is no longer correlated with living on a farm or in a rural area (Champagne *et al.*, 2007). The nuances of this phenomenon warrant further discursive examination, but for the purposes of this review it will simply be interpreted as evidence of *Journal of Agricultural Education* contributors writing about garden-based learning from a predominantly rural, agricultural perspective.

Issues of semantics and differences of terms aside, a final theme emerged from the agricultural education literature that was consistent with all other garden-based

learning literature, the efficacy and importance of experiential learning opportunities. Though researchers evaluated programs through different lenses and using different methodological processes, it was clear throughout the body of scholarship that, no matter the intended outcome, an experiential approach was deemed to be most effective (Duncan, Collins, Fuhrman, Knauft, & Berle, 2016; Mabie & Baker, 1996). Mabie and Baker (1996) articulate a prescient call for science teachers in the future to become more "constructive" rather than "instructive" in nature. Though they were publishing in an arguably standards-based educational journal, and well before the current school gardening and place-based education boom, the authors nevertheless express a perspective on education more often associated with that of progressive, non-formal educators. Additionally, they speak to the cyclical nature of garden-based learning, and the notion that what is thought to be new in education may in be fact quite old. The question, though, is if the recommendations of Mabie and Baker (1996) to increase experiential science education wherever possible, could withstand the impact of the Next Generation Science Standards unveiled seventeen years after their article's publication. If experiential learning is understood to be effective, can standards and standardized testing capture that and make room accordingly for appropriate teaching methods?

Gender in Gardening and Education

A way in which garden education may be marginalized in the context of mainstream education, and kept from fulfilling its transformative potential for students, schools, and society, concerns the gendered nature of gardening and agriculture. It has been argued that public schools are patriarchal institutions (Hansot & Tyack, 1988; Richardson, 2015). Not only do public schools reproduce societal expectations of

gendered behaviors and roles, but also the institution of public education is structured and categorized in specifically masculine ways. This review has already addressed the notion that the decontextualized, standardized nature of public schooling is both damaging to students and contributing to societal deskilling. These concepts, though approached differently in feminist scholarship, emerge again when investigating gender and education, particularly at the institutional level (Acker, 1987). Additionally, scholars have asserted that gardening is positioned in society as a feminine act, and in particular, the feminine alternative to masculine agriculture (Sachs, 1996). Applying a gendered lens to considerations of both public schools and gardening illuminates additional sources of tensions between the two, and provides a unique angle with which to consider the challenges faced by school garden programs.

School gardens, specifically, intersect gendered constructs on a number of fronts. First, the physical space of a school garden does not conform to masculine conceptions of tidy, tamed lawns or, by extension, schoolyards (Jenkins, 1994). The American lawn has come to define male ideals of dominance and control over nature, and pristine expanses of suburban grass have become great sources of pride among suburban Americans. Plopping a (potentially) messy, child-influenced garden down in the center of a flawless grassy schoolyard is enough to irk any landscaper. The garden, and the school garden in particular, is in many ways the opposite of the lawn. As a direct affront to the control and domination represented by the lawn, the school garden flourishes when control is relinquished and humans work in cooperation with nature (Blair, 2009). A second way in which gender may contribute to the marginalization of school garden programs lies with the gendered nature of gardening practices themselves. Hearkening back to deeply seated

understandings of a gendered division of labor, gardens, as opposed to lawns or farms, have long been seen as the woman's domain (Sachs, 1996). Additionally, when research is conducted on gendered attitudes towards nature, food, and the cultivation of the land, male and female motivations differ noticeably. Men are more inclined to use agricultural chemicals, engineered seed, and agricultural technology, while women are more likely to engage in small-scale or organic practices (Zypchyn, 2012). Women are also more likely to view agriculture as a nurturing act, and indicate that providing food for their families and communities, caring for the environment, and cooperating with the natural world are primary motivators in their agricultural participation (Allen & Sachs, 2007, Koch-Schulte, 1997). As women not only constitute a majority of primary and elementary teachers, but may also be in the majority of school garden advocates, founders, and instructors, these motivations are worthy of attention. Though one could argue that more feminine motivations and practices are not only better suited to advance the goals of garden-based education, but are also better for child development in the garden, scholars must ask if these feminine constructs are in fact limiting the reach of the school gardening movement.

Critiques of School Gardens

Until now, this review has argued in unabashed favor of school gardens as assets for schools and children, and argued that any limitations to the success of the school gardening movement are brought upon by purely external factors. It would be unwise to neglect altogether a discussion of the flaws of the movement itself, for as Dewey said, "optimism, untampered by criticism, declares that good is already realized and as a result glosses over the evils that concretely exist" (1948, p. 178). Alternative food networks,

and advocates of AFNs, may be criticized for their "whiteness" and for advancing a neoliberal agenda. Though scholars often illustrate these issues through examples of AFNs such as community supported agriculture (CSAs) or farmers' markets, the same critiques, if not always explicitly stated, apply to school garden programs nonetheless.

In the context of farmers' market and CSA participation, Guthman (2008) attempts to unveil what she calls the "double-edged sword of whiteness: color blindness and universalism" (p. 390) of alternative food. AFNs are very white spaces, meaning in *part* that most CSA participants, farmers' market attendees, or school garden enthusiasts are white. Beyond that, though, Guthman argues that AFNs perpetuate an understanding of white attitudes towards food and agriculture as being "the norm" or universal. This universalism is problematic on numerous accounts. First, it contributes to the "if they only knew" rhetoric in which it is determined that low-income consumers of color would simply make better food choices if only they were more educated. Second, it perpetuates a European-American diet, and relationship with food, as best and healthiest, and in turn deems other cultures, diets, and foods irrelevant. Both examples reflect an "othering" that occurs in alternative food movements. As Guthman states, "individuals portray their own values and aesthetics to be so obviously universal that those who do not share them are marked as other. These sorts of sensibilities are hallmarks of whiteness" (p. 393). Alice Waters herself, reflecting a common refrain of good food advocates, has been criticized for her universalist rhetoric (Hayes-Conroy & Hayes-Conroy, 2013). Though she insists that food is a "common ground" and that eating is a "universal experience," in truth individual and cultural relationships with food vary widely from those of the middle-class, white, slim culture of alternative food for which she advocates through the Edible

Schoolyard Project. Finally, promoters of AFNs are often driven by the spirit of Jeffersonian agrarianism mentioned earlier, which relies heavily on a white, American nostalgia for the rural past. In the context of a gardening program at a diverse school, for example, this can translate in troubling ways. A white garden educator extolling the virtues of growing your own food to black students whose ancestors may have been enslaved, or to Latino students whose parents may be growing *our* food right now, simply does not sit well.

Allen and Guthman (2006) criticize school gardens (under the umbrella of farm-to-school programs) as neoliberal institutions. An enormous concept with many manifestations, neoliberalism is generally characterized by a shifting of services to address human needs from public to private holders, and a placing of trust in the market to best meet those needs. In the context of school food, Allen and Guthman argue that farm-to-school initiatives, which attempt to address issues within the public school system caused by political and economic neoliberalization, are actually reproducing neoliberal practices themselves. Though much of their argument focuses on the intersection of farm-to-school programs and the National School Lunch Program (a social welfare program and remnant of the New Deal), in which a discussion of school gardening is less relevant, elements of their critique ring true in the school garden context. School garden programs often develop in response to student needs which are unmet by the school itself, and those needs are frequently unmet because of shrinking public funding. Examples of unmet needs include fresh produce in the cafeteria, ample outdoor time for recess or physical education, and access to green space or nature exploration. When outside volunteers or non-profit organizations step in to address these

issues through garden-based education, neoliberalism is perpetuated. Rather than working to address policy and reinforce the state's responsibility to meet student health and well-being needs through public education, well-meaning school garden programs contribute to the shifting of human services from public to private. With this shift come myriad neoliberal issues. School garden enthusiasts are fond of proclaiming that students "just need to know where their kale comes from and then they'll eat it!" This sort of messaging reifies the power of the consumer, and advances neoliberal ideals of individual "choice" and of demand determining supply, yet again ignoring policy-level change in favor of the market. Additionally, while publicly funded entities have, in theory, an obligation to serve all individuals, non-profit or privately funded programs do not. In this way, the neoliberalism of school gardening means that "communities and districts with the greatest resources – personal, political, financial – are most likely to develop into the most successful and longest-lasting programs" (p. 408).

Summary

The youth of today stand to inherit some large and challenging societal issues from those that came before them. Disconcerting trends in public health and obesity, environmental degradation, and climate change are just a few problems in a very long list of pressing concerns. Combatting these challenges will require more than just an educated populace, it will require one that is civically engaged, informed, and skilled. This review has argued that one of the most promising paths towards reskilling and civic engagement in the population is widespread garden-based education. Scholars from Dewey, to Louv, to Sobel have championed the value of a hands-on, practical, place-based education, carried out in concert with nature, as a great source of hope for the

future of both human society and the planet. One small piece of their very grand vision is garden-based learning, which has been shown to contribute positively to student attitudes towards science and the environment, as well as student physical activity and consumption of healthy food. With the numerous virtues of school gardens and garden-based learning well documented in the literature, this review has argued that some of the best and most transformational features of school gardens are in fact holding the school garden movement back. In the future, researchers must consider how school garden programs negotiate the constraints and structures of the institution of public school. How do garden educators defend the legitimacy of their potentially messy, rough around the edges programs in the face of an ever more standardized approach to education? How can school gardens provide wild, natural spaces for children, while remaining in the good graces of the school's maintenance staff? How do educators help a garden-based curriculum conform to the constraints of the school day, or the school year, which often lies out of sync with the growing season? And, most importantly, do these negotiations, which are necessary if a garden program is to continue, in fact limit and stunt the potential of school gardens as transformative spaces for child growth and societal advancement?

CHAPTER 3: METHODOLOGY

Purpose and Research Questions

The purpose of this case study was to examine how the transition of control of a garden-based educational program from independent non-profit to school district affects various elements of the school garden, including participant perceptions and motivations, organizational mission, and teaching methods and philosophies. The central issue question that guided the study was: How does a change of control of a school garden, from volunteer or independent non-profit to public school district, shape the nature of the garden program and the learning experiences therein? Within this broader issue question, a set of sub-questions guided data collection. Because the research focused on a time of transition, answers to the sub-questions were sought from both the organization before the transition, and the organization after. These questions were:

- What are the motivators that drive teachers, administrators, parents, and students to engage with the school garden program?
- What are the barriers that hinder teacher, administrator, parent, and student engagement with the school garden program?
- What are the goals of the school garden program, and the actors within?
- What does learning in the school garden program look like?
    - Where does learning happen?
    - When does learning happen (in terms of schedule)?
    - With whom does learning happen (volunteers, parents, certified teachers)?
    - How does learning happen (teaching methods, content)?
    - How is learning assessed?

Research Design

This study employed an instrumental case study design (Stake, 1995). Yin (2003) states that a case study design is appropriate when: a) the study aims to address "how" and "why" questions, b) the researcher cannot manipulate the behavior of the participants, c) the contextual conditions must be included in the research because they are believed to be relevant to the phenomenon under study, or d) clear boundaries may not be drawn between the phenomenon and context. Furthermore, Stake suggests that an instrumental case study is used to accomplish something other than simply understanding a situation. The case exists to facilitate the researcher's understanding of a deeper issue or theory. The case may or may not be typical of other cases, but it is scrutinized deeply in order to get at the essence of the underlying issues. In this study, the case or bounded system was the Midwest Garden Education Project (MGEP), while the issues under scrutiny pertained to the above research questions and issues questions. The MGEP may not be typical of other school garden programs, but it provided a rich context in which to study the changes that occur when a garden-based educational program transitions to school district control. In line with Yin's suggestions, the phenomena that occurred within the bounded system of the MGEP case, and the context itself, were wholly inextricable.

Positionality Statement

In conducting qualitative research, the researcher serves as the primary instrument (Creswell, 2013). Because all data is filtered through and distilled by the researcher, it is necessary to recognize and address the researcher's position, background, and potential biases that may affect the final product. A thorough disclosure of positionality and

subjectivity is additionally important in case study research, which is often accused of fostering verification bias and confirming the researcher's preconceived notions about the study topic (Flyvbjerg, 2006).

My entire worldview about education, in general, and garden-based learning, specifically, is shaped by my time working for the Midwest Garden Education Project. It is what brought me to graduate school to study agricultural education, and what initially sparked my love of teaching. Every memory of a skeptical child tasting and enjoying a new vegetable, or a student with ADHD settling down to listen to the birds, or a classroom teacher remarking on how well their students took to the subject matter in the garden influences my perspective and fuels my personal bias. My recollections of those years in the MGEP garden are overwhelmingly positive, and admittedly tainted by nostalgia. I am passionate about garden-based learning for a million different reasons, and I am deeply committed to the idea that school gardens are transformational spaces that hold the power to improve our food systems, educational systems, and environment. As a practitioner and advocate for school gardens, this inexhaustible passion for garden-based learning is an asset. As a researcher, grasping for objectivity, however, it can be problematic. My natural inclination is to deflect or immediately refute the criticisms that are occasionally leveled at school gardens.

In addition to the philosophical and pedagogical influences that the MGEP has had on my life, it is worth mentioning a physical impact of my time there. On a stormy April day in the garden in the spring of 2015, lightning and static electricity in the air gave an electric charge to the garden's water spigot, and without knowing this I rested my right hand on its metal top. The injury from the shock, and subsequent surgeries, left my

dominant hand disabled. While I was off work recovering, I became a legend among the elementary students in the district. *Did you know that Miss Sarah **died** in the learning garden? I heard that her hand exploded! Well I heard that she was abducted by **aliens!*** While these rumors were based on a loose connection to fact, I did not necessarily mind being known as the garden teacher who survived an alien abduction… When I returned to the garden to conduct this research, one of the educators at the time said she still gets asked occasionally if "she's that girl that got electrocuted." Kids have impressive memories when it comes to thrilling stories I suppose.

As much as I was molded by the MGEP as an educator and individual, and inspired to pursue a doctorate because of my work there, the physical effect of the MGEP has, ironically, made academic life much more challenging for me. When the ability to write, transcribe, and use a computer mouse are direct antecedents to the successful completion of academic tasks, a disabled hand is certainly disadvantageous. Beyond that, the entire ordeal entangled me, and the organization, in a two-year legal battle with health insurance and workers' compensation. It was a very specific, complicated, negative way in which my relationship with the MGEP continued to bleed into my life long after I was done working there. Because the shadow of the situation hangs over me to this day, I felt it necessary to disclose here.

Regarding this study in particular, my bias emerges from my specific experiences in the MGEP garden. I aimed to examine the period of transition from non-profit to school district control of the MGEP, but my years of work there occurred in the heart of the non-profit era of the organization. I am potentially biased towards the non-profit structure, and in turn may miss or downplay the advantages and successes of a school

district controlled model. I tried to be constantly mindful of this bias, and worked to critically examine my own impressions of the data so that I can trust that my findings are as accurate as possible. I also worked to ensure that this personal bias did not pollute my methods of data collection, or even my communications with the research participants. I am close with my former supervisor, the executive director and co-founder of the MGEP, who has had a difficult time with the transition her school garden program to school district control. I needed to bracket out my conversations with her as a friend, and keep them from infiltrating the data. I also needed to give equal time to participants on both sides of the transition. Focusing too much on the non-profit side would be a sure way to impart verification bias on the study. In addition to my own journaling and critical reflection, this bias was mitigated through rigorous triangulation, peer debriefing, and, most importantly, member checks.

Finally, as a qualitative researcher, I believe it is important to disclose my personal epistemological commitment to constructivism, which follows in the vein of qualitative case study scholars whose work informs mine, Merriam (1998), and Stake (1995). Though this chapter contains methodological citations from Yin (2003), his more positivist epistemological orientation prevents me from aligning myself with him at a philosophical level. I believe that knowledge, particularly knowledge about educational experiences, is constructed and not discovered, and that there are many interpretations of reality. I believe that in this study, every participant's history of interactions with the MGEP, with education, with figures of authority, with gardening, with food, and with nature, colors their *knowledge* about the bounded system. As a qualitative researcher, I am charged with the task of interpreting and gathering others' interpretations of reality,

and presenting those interpretations to the reader for further interpretation. What motivates me as a qualitative researcher is gaining insight into how others make meaning of their surroundings and experiences in the world.

Participants

The critical feature of qualitative case study research is the case itself, defined as a "bounded system" (Stake, 1995). Noting that the case is a "system" indicates that it has integrated, working parts, and "bounding" it allows the researcher to delineate what falls within the system and what does not. As was described in Chapter 1, the bounded system of this study was the Midwest Garden Education Project (MGEP). Stake (1995) suggests a few criteria for case selection, namely that the case should maximize what can be learned and that it should be physically accessible and include receptive and willing actors. Though the MGEP is not necessarily a typical or representative case, generalizability was not the goal of the study, and there was much to be learned from the organization. Additionally, my connections to the organization and entrée into the research population help the case selection meet an additional criterion of Stake's.

Purposive sampling was utilized to determine participants who could provide the best insight into the inner workings of the bounded system, particularly at the time of transition from non-profit to school district control. Participants included the co-founder and current (at the beginning of the study) executive director of the MGEP, current and past AmeriCorps garden educators, the newly hired certified garden teacher, grade-level classroom teachers, and MGEP volunteers. The primary criterion for selection was lasting engagement with the MGEP program, as the garden site itself and corresponding program remained the central context of the case study. Secondary participants were

district kindergarten through fifth grade students who were observed during their regular garden classes.

Data Sources

This case study intended to illustrate the processes and activities of a unique garden-based educational program at a time of transition of control. To accomplish this, multiple sources of data were used. Case study research relies heavily on the use of multiple sources of evidence, which helps the researcher to tell a richer story about the bounded system, and also increases the trustworthiness of the final product (Yin, 2003). Yin argues that multiple evidence sources contribute to the development of converging lines of inquiry, and a process of triangulation and corroboration of the findings. In examining this period of transition, I have chosen to conceptualize the larger case, the MGEP program, as two smaller cases: the case of the volunteer and non-profit MGEP and the case of the school district controlled MGEP. Given this structure, multiple sources of data were of even greater importance, as they helped to paint a more complete picture of the workings of these two cases within a case. In an ideal situation, data collection would have been prolonged enough to allow me to spend significant time at the research site both before and after the leadership change. Because that was not feasible, multiple sources of evidence from before and after the transition provided the best alternative. Finally, collection of data from a variety of sources in a short amount of time allows researchers to reach saturation earlier and more efficiently (Creswell, 2013).

The primary sources of data were semi-structured interviews with the research participants, with supplemental data provided by focus groups, field observations of

garden classes, researcher reflexive journal entries, and organizational artifacts (Creswell, 2013; Stake, 1995).

Interviews

As with many methods of qualitative inquiry, case study research relies heavily on interview data (Stake, 1995; Yin, 2003). While observations provide the researcher with a glimpse into the activities within the bounded system at a present moment, interviews present insight into personal experiences that cannot be perceived by the researcher through observation alone. Stake (1995) puts it most clearly, stating, "Much of what we cannot observe for ourselves has been or is being observed by others. The case will not be seen the same by everyone. The interview is the main road to multiple realities" (p. 64). As the goal of a case study is to develop a comprehensive view of a bounded system, it is necessary to not only examine it from multiple angles through data triangulation, but to also seek out diverse participants' perspectives on the case. One-on-one semi-structured interviews were conducted with participants. During the interviews, participants were asked questions about their history and work with the MGEP, about their beliefs surrounding garden-based learning, and about their perceptions of the period of transition of control. Because the interviews were semi-structured, an IRB-approved interview protocol (Appendix C) provided baseline questions, while the questions changed and evolved throughout the process of data collection (Creswell, 2013). Observations of garden lessons also shaped the interviews, as I incorporated specific events I observed in the garden into interview questions throughout data collection. A diverse pool of participants, based upon their respective connections to and roles within

the MGEP, were interviewed to gain insight into the "multiple realities" of the case (Stake, 1995).

To best capture the longitudinal changes that occurred throughout the period of transition and data collection, interviews were conducted at different times during the months of fieldwork. Interviews were scheduled according to the participant's availability, but they were also scheduled at intentionally spaced intervals, with the hope of gaining insight into different snapshots of time during the transitional period. For example, a first interview with the certified garden teacher was conducted within the first month of school. She was new to the job, enthusiastic, and "living in the transition," but also her memories of time spent as a grade-level teacher in the district and former MGEP board member were fresh. The final two interviews, with the AmeriCorps garden educators, were conducted in February, nearly two months after the official date of the MGEP non-profit's dissolution. Lived experiences are subjective and vulnerable to influence, so attention was paid to how external forces, certain tensions between stakeholders, or milestone moments during the transition may have affected participants' attitudes, and an attempt was made to schedule interviews accordingly. I gained insight into many of these external dynamics during immersive fieldwork, and continually reflected on what I picked up from casual conversations. Additionally, the semi-structured interview questions evolved, narrowed, and deepened over the course of data collection, as I engaged in the iterative process of qualitative theme building.

All interviews were recorded and transcribed by the researcher.

Participant Pseudonym	Role	Interview Date	Interview Length
Faith	Former fourth grade teacher, current certified garden teacher	10/3/2017	74 min
Mark	AmeriCorps garden educator 2015-2016 school year	10/9/2017	64 min
Pete	AmeriCorps garden educator 2015-2016 school year	11/10/2017	80 min
Kerry	Co-founder of MGEP, executive director of MGEP non-profit 2013-2017	11/13/2017	138 min
Alan*	Owner and reporter at local newspaper	11/28/2017	90 min
Sue	Former MGEP board chair, former second grade teacher, current primary reading teacher	12/1/2017	68 min
Maggie	AmeriCorps garden educator 2016-2017 and 2017-2018 school years	2/17/2017	75 min
Tori	AmeriCorps garden educator 2016-2017 and 2017-2018 school years	2/25/2017	80 min
**Alan interview was not transcribed nor formally included in data analysis, but was used in triangulation and validation of findings*			

Figure 1. Participant Characteristics and Interview Information

Focus Groups

Over the course of fieldwork, it became clear that the dynamic of the current garden education team, Faith, Maggie, and Tori, was an important element of the MGEP transition, and that this dynamic shaped the nature of the instruction and learning that happened during garden lessons. Though each of the members of the team was interviewed one-on-one, I elected to add two focus groups with the garden education team to the process of data collection. The first focus group was held in December, just

days before the end of their first semester teaching as a trio, and just days before the end of the MGEP non-profit. The purpose of this focus group was to engage in a debrief of their experiences during the fall semester. This first focus group also allowed me to share some preliminary findings and give participants the opportunity to provide feedback on those emerging findings. The second focus group was held in February, and intended to hone in on participants' perceptions of changes to their work since the end of the grant in December. Finally, these two winter focus groups were held in the garden classroom. Both the possession of a physical, indoor classroom space, and the corresponding opportunity to provide instruction during winter months, were new assets to the MGEP program, and conducting the focus groups in the classroom contributed a deeper layer to the overall body of data collected for the project.

Focus Group Date	**Focus Group Length**
12/18/2017	74 min
2/27/2018	50 min

Figure 2. Focus Group Information

Garden Lesson Observations

Observational data collection occurred during regularly scheduled garden classes, and took place wherever the lessons did. Most lesson observations occurred in the learning garden space, though classes were also taught in either the indoor garden classroom or in other teachers' classrooms depending upon weather. After receiving the superintendent's permission to conduct research on the school grounds, parent/guardian notification letters (Appendix B) were sent home in Friday Folders with every one of the district's 812 kindergarten through fifth grade students. The letters introduced me,

mentioned my history of work with the MGEP, briefly described the research project and methods of data collection involving their children, and requested that if parents/guardians did not want their child included in the data (though the researcher would not be interacting with them) to contact me and request as much. I received no such communication, so all students who attended garden classes during the period of fieldwork were included in the sample. Opportunities came up throughout fieldwork to observe pre-kindergarten or middle school classes, but I denied those opportunities as those parents/guardians were not notified of the research, and those students were outside the boundaries of the case study.

There is a precedent for classroom observation data in qualitative educational research (Merriam, 1998; Stake, 1995; Yazan, 2015). Observations were conducted from October of 2017 to February of 2018, with the bulk of the observations occurring one or two full days a week during the months of October and November. I met with the garden teaching team at the beginning of the school year to discuss the research and choose dates and times for observations. I was also given access to the garden lesson calendar to see when each kindergarten through fifth grade class would be visiting the school garden. Dates during which the greatest number of classes would be held in the garden, up to five classes on some days, were prioritized for observation. School-based gardening activities are constrained by both the seasons and the flow of an academic year. The months of October and November were chosen because they provided the greatest stretch of time uninterrupted by school breaks or holidays, but also, in this region of the country, typically have weather conducive to outdoor education and gardening activities. Additionally, at the beginning of data collection, garden lessons were scheduled on a

three-week rotation, meaning that each grade-level classroom attended one garden class every three weeks. Scheduling fieldwork over the course of two months, with observations conducted each week therein, granted the opportunity to observe each grade level multiple times. Within each three-week rotation, all classes from each grade level received the same garden lesson. Observing multiple instances of each lesson, and the wide variety of lessons taught overall, provided the greatest breadth of observational data. The first time a specific lesson was observed, much of the observation focused on the activities, objectives, and flow of the lesson. Then, in subsequent observations of the same lesson, with different classes of students, I could attend to differences in student engagement or behavior, modifications made to the lesson on behalf of the instructors, or variations in environmental factors potentially impacting the lesson.

Merriam (1998, p. 97-98) provides a checklist of elements likely to be present in any setting. This checklist served as the starting point of the observational data collection (italics indicate element from Merriam, non-italicized words indicate examples from garden lesson setting):

1. *The physical setting:* Where the lesson is taking place (in the garden itself, in the garden classroom inside the elementary school, in a different classroom), weather, how/where students and instructors are positioned, what materials are used.
2. *The participants:* Classroom teacher, grade level, number of students, garden teachers, who is doing the teaching, who is doing the behavior management.
3. *Activities and interactions:* Sequence of activities, generally what is happening throughout the lesson, how students engage with activities,

teachers, materials, and each other, expectations or norms that affect activities, behavior, and interaction.

4. *Conversation:* Who is speaking, to whom, what they're saying (quotes from students and teachers are a main source of data so these were recorded immediately and directly).
5. *Subtle factors:* Spontaneous activities or changes to lessons, nonverbal communication, what does not happen that was supposed to?
6. *Your own behavior:* Where I sit, when and where I move, thoughts I have about what I'm seeing, things I want to follow up on, if/how I interact with anyone.

Repeated contact between the researcher and participants, in the form of these weekly observations, helped young students and instructors alike grow accustomed to the presence of a researcher. The garden teaching team usually introduced me, seated off to the side on a bench or picnic table, slightly out of the instructional space, by saying something to the effect of, "this is Miss Sarah, she's just here to watch our lessons and take some notes because she thinks what you're doing is really cool!" Everyone would share a quick wave, and any curiosity or distraction would be put to rest. Repeated observations also allowed me to notice trends and anomalous incidents, and to develop an "incontestable description" (Stake, 1995, p. 62) of the case. While quantitative researchers often approach observation with the intention of tallying repeated events and developing aggregates of coded information about the observed activities, qualitative researchers view observations as opportunities to extract rich, unique moments that reveal the complexity of the case (Stake, 1995). In this study, observations were also the only

opportunity for me to collect data from students. As such, capturing their reactions, words, and interactions with each other and the garden space itself was a priority during observations. Detailed, handwritten field notes were taken during each observation, and I completed a reflexive journal entry within 24 hours following the observation. Because the months of observational data collection and the dates of interview data collection coincided, observational notes often prompted new interview questions that were asked during the semi-structured interviews.

Garden Program Documents

Documents were collected to create a more complete picture of the MGEP, especially regarding the aforementioned "mini" cases of the MGEP before and after the transition of control. Documents are particularly useful in constructing these vignettes, because they allow researchers to mine information about a specific moment in time, even if that moment has already passed (Bowen, 2009). Additionally, they support the process of data triangulation that enhances the trustworthiness of the findings (Creswell, 2013; Stake, 1995). Documents included the MGEP website, the MGEP Facebook page, past and present MGEP newsletters, and MGEP lesson plans.

One unique artifact that merged the "garden program document" and "reflexive journaling" categories of data was my own internship report I submitted during my master's degree. My first work with the MGEP was the public health internship I held during the summer of 2013. After the internship, I was required to submit a report to the public health faculty detailing what I had done. Because this internship occurred mere months after the program received its major grant funding, this artifact provided

information about the early days of the non-profit organizational structure, as well as my perspective on it at the time.

I was also granted access to "K-W-L" data from the evaluator who was contracted by the regional healthy food AmeriCorps program to monitor all of the non-profit organizations under its umbrella. K-W-L, "*Know, Wonder, Learned*," is a method of student-led instruction and assessment originally proposed by Ogle (1986) that had been adapted for use in garden-based learning by the AmeriCorps program. At the beginning of each lesson, educators facilitated student development of a list of things they *know* about the day's topic. Then, they developed a list of things they *wonder*. Finally, at the end of the lesson, they came together to review what they had *learned*. The MGEP was one of seven AmeriCorps sites in the regional program, and all of them submitted their K-W-L charts to the AmeriCorps contracted evaluator after each class to gauge their efficacy in meeting learning objectives. Of the seven programs in the regional AmeriCorps group, K-W-L data from the MGEP was the strongest. Adding this data, along with the comparisons to other programs it afforded me, to the process of data collection contributed an additional layer of rigor to the study.

Reflexive Journaling

I engaged in reflexive journaling throughout the research process, and these journal entries constitute a supplemental data source. Rather than interview myself about my own work with the MGEP, I elected to use journaling as a way to reflect upon my experiences with the program and upon the research process itself. Journal entries were not explicitly coded or analyzed, but contributed to my metacognition and theme development. My journal also helped me track the progression of the research over time,

and contributed to the research audit trail. In addition to writing reflexive entries after each observation or interview, I would pause throughout transcription, coding, analysis, and the final writing process to reflect upon the experience, note emerging findings or future directions for research, or work through frustrations. Below is an example of a reflexive journal entry (copied verbatim with pseudonyms substituted in):

November 14, 2017

-Quick observation of a fourth grade class today. I was really looking forward to this one! Continuing the ethnobotany theme for the grade (mint tea last time), the lesson focused on using regional plant materials for shelter building. Groups of students made gingerbread-sized shelters out of local materials! They had to withstand wind and have a place for a fire. So cool

-The lesson was inside the classroom, and I asked if it was always planned to be inside, or if it was held inside because of the rain today. The team said they had been debating about this one. It was a messy project, but with the weather/rain/wind/lack of workspaces in the garden it would have been difficult out there.

-This was an interesting one to observe through the "before/after" or "nonformal/formal education" lenses, particularly with it being in the classroom. With the mess created, it certainly pushed the bounds of what a traditional teacher would be comfortable with in their classroom. Faith's classroom teacher background was evident in her repeated requests of students to clean up, keep materials off the floor, use as little material as possible, etc. Maggie and Tori were aware of containing the mess, but were not nearly as bothered by it as Faith

-Students used local red clay in building their mini shelters. However, they got it all over the bathrooms in the hall when washing their hands. The other teachers in the building were not happy about this! They made such a fuss. The custodians didn't seem to mind too much.

Figure 3. Reflexive Journal Entry Excerpt

Collection of interview, focus group, artifact, and observational data was sustained until data saturation was reached (Creswell, 2013).

Data Management

Careful management of data is important in qualitative research, as there are often great amounts of data associated with each participant, and in case study research, data take many forms and must be handled in a consistent way (Creswell, 2013; Yin, 2003). Additionally, qualitative data can easily contain identifiers, and care must be taken to protect participant identities. Observation notes were written by hand, on paper, but were scanned and stored on my computer within one day of data collection. Interview recordings were uploaded within one day on the computer as well, and were transcribed quickly thereafter. Individual folders were created for each type of data: interview recording, interview transcript, observation notes, K-W-L, and program artifact. As soon as raw data was coded or otherwise altered, it was saved under a new file name and copied to a "data analysis" folder.

Embeddedness During Field Work

On days when I was observing garden classes, I spent the full school day in the company of the garden teaching team; usually the certified teacher and two AmeriCorps garden educators. During observational data collection, I worked to remain "spy-like" in my presence and observations; staying at the edges of the instructional space, listening and recording student comments but not interacting with students, *never* jumping in if I had a comment to interject or noticed a behavioral issue. However, between garden classes and during the lunch break each day, I became almost an auxiliary part of the garden team (a position I was happy to occupy). I listened and often joined post-lesson debriefs, shared my own stories from my time as a garden teacher, and gossiped about mutual acquaintances or teachers I also worked with while at the MGEP. Though I did

not audio-record or take notes during these informal, social conversations, their more relaxed tone often yielded valuable perspective on the research topic, prompted ideas for future interview questions, alerted me to additional elements to pay attention to during subsequent observations, and, if nothing else, contributed tremendously to rapport building. Bonds were built quickly over shared challenges with outdoor classroom management, frustrations with supervisors, or exasperation over the quirks of being an AmeriCorps service member. At the end of my first full day of observation, I asked the garden teachers to please let me know if I ever become a distraction, am in the way, or "overstay my welcome." In response, one said, "No way, it was so fun having you here!" I put forth sincere effort to maintain rapport, have positive interactions with the garden teaching team, and remain welcome in their space. Even after the official period of observational data collection ended in December, members of the garden team would regularly invite me back to observe a lesson they were really proud of, or share quotes from students or observations of their own that they believed would contribute to the study. I recognized that the research was infinitely easier with enthusiastic, open, welcoming participants on my side, and I made sure to share my appreciation and gratitude often.

Embeddedness was maintained through the process of data analysis as well. Though I had to cut myself off from collecting any more data as deadlines began to approach (I really enjoyed fieldwork, so this was hard!), I felt that it was important to maintain my connections with the research participants through the completion of the data analysis and writing processes. I returned to the MGEP as a volunteer for programming that fell outside the bounds of the study, such as the after school cooking

club for middle school students, or Saturday morning community garden workdays. The MGEP and its participants had given so much of themselves to the study; I felt it necessary to give of my time and energy as well. Though these visits did not yield formal data, I found that "unofficial time" with the participants and in the garden space proved enormously helpful in mentally processing through the data I had collected. Conversations with other volunteers triggered theme development and connections. One Saturday workday, while running the tiller and prepping rows in the garden's main production field, I was struck with an idea for organizing findings and conclusions; a challenge over which I had puzzled for days. Turning off my "researcher brain" and engaging in the manual work of cooking and gardening in the MGEP's physical space allowed themes and conclusions to surface organically.

Towards the end of the writing process, when I would return to the garden or engage socially with the research participants, I found it incredibly difficult to not call them by their pseudonyms. This phenomenon, of all but forgetting participants' real names and calling them their pseudonyms instead, took me by surprise, as I had not heard of such a thing before. However, there may be no clearer evidence of embeddedness in the research than this quirky occurrence. Thankfully, the participants were excited to feature so heavily in the research, and thought it was neat that they had pseudonyms, so their enthusiasm mitigated any awkwardness.

Data Analysis

Merriam (1998) suggests that data analysis in case study research is "the process of making sense out of the data… [which] involves consolidating, reducing, and interpreting what people have said and what the researcher has seen and read – it is the

process of making meaning" (p.178). The purpose of data analysis in this study connects directly back to the particular methodological approach of instrumental case study. In an instrumental case study, the bounded system is examined not simply to gain an understanding of the case itself, but to uncover answers to questions the case is suited to illuminate (Stake, 1995). Data analysis must be designed in accordance with the purpose of the research, and respond to the research question. Once more, the issue question that guided the research throughout, was: How does a change of control of a school garden, from volunteer or independent non-profit to public school district, shape the nature of the garden program and the learning experiences therein?

Data analysis in case study research may take two general forms, categorical aggregation or direct interpretation (Stake, 1995). Direct interpretation, arguably the most qualitative of the approaches, is defined by deep examination by the researcher of a particular instance; a pulling apart and then piecing meaningfully back together of a moment in time. Categorical aggregation, a more quantitative style of analysis, requires the researcher to search for and analyze a collection of instances that, in concert, provide an explanation of a particular phenomenon or relationship. Stake (1995) argues that the latter is of more value in instrumental case study, where the focus is less on highlighting the complexity of the case itself, and more on understanding the connections and relationships within the bounded system.

While Stake (1995) provides the philosophical foundation for the approach to data analysis, Yin (2003) provides an explanation for the concrete steps taken by the researcher. Yin presents five analytic techniques for the case study researcher, and the analytical approach taken in the study reflects two of them, explanation building and

time-series analysis. Explanation building, logically, consists of developing an aggregation of individual "how" or "why" causal links within the case. Explanation building is an iterative process with which researchers must engage throughout data analysis. It begins by developing an initial proposition about a relationship or behavior, then comparing the proposition against additional details about the case, revising the proposition, and then repeating the process as many times as needed until a satisfactory explanation has been constructed.

Time-series analysis, for the purposes of this case study, speaks to the conceptualization of the "before" and "after" cases of the MGEP within the larger bounded system. Though Yin (2003) explains this analytic process as reminiscent of experimental or quasi-experimental design, in this study time-series analysis simply allowed the researcher build explanations across a spectrum of time and a period of transition. Yin also suggests that chronologies may be developed within the time-series approach to analysis, and one facet of chronology construction applies directly to the approach of the MGEP case study. He states that when "certain *time periods* in a case study may be marked by classes of events that differ substantially from those of other time periods," (Yin, 2003, p. 148) a chronology approach can provide an even richer analysis and explanation building process.

Interview transcripts, observational field notes, and program documents were analyzed through the lens outlined above. Interview transcripts were analyzed first, followed by focus group transcripts, then observational notes, and finally program documents, though the iterative process of data analysis truly began with the first moment of data collection. As I transcribed interviews and focus groups, I quickly highlighted

significant passages and added comment bubbles to note my impressions of sentences and phrases. These impressions, along with the observations during fieldwork, contributed to the development of the pre-set codes in my codebook (Appendix D). Starting with the pre-set codes, I hand-coded hard copies of transcripts, adding emergent codes to the codebook as they arose. I paused to re-read the purpose statement and research questions of the study throughout the coding process to ensure that emergent codes remained within the scope of the study. Hard copy observation notes were coded similarly, by hand, using the codebook that was developed through the coding of interview transcripts.

After coding the complete transcripts of all seven interviews, both focus groups, observation notes, and artifacts, I began the process of aggregation into themes and categories by setting aside the coded data and free-writing about my lingering, overarching impressions from the complete body of data in response to each of the research questions. This process proved quite helpful, as prior to its undertaking I had found myself overwhelmed by the amount of data and focusing too much on the minutiae of each participants' words, rather than the broader significance of these experiences within the case. The free-writing approach to theme development also illuminated the necessity of presenting the findings in a clearly temporal manner; the findings must logically be presented as the "before" and "after" cases to which I had casually referred throughout the process.

An additional step that I took after scanning and saving the coded data was to return to each raw transcript and drastically cut down its content. Based upon a quick read through (now the fourth time through, counting one pass while transcribing and two

passes while coding), I deleted all content from the documents except for the richest participant quotes that directly responded to the research questions. It was at this stage that I was finally able to engage in clear categorical aggregation of the data and time-series analysis. Using the emergent themes and organizational structure that developed through the free-writing process, I began plugging in the rich, relevant chunks of participants' words beneath appropriate research questions and themes. Finally, I mined the unused data for brief participant quotes that exemplified the meaning of the emergent themes. Using participant quotes for all theme names was an intentional decision that further underlined the magnitude of their contribution to the research. While I did the work of organizing data into themes, the research participants deserved to have their words as the signposts of any writing about their lived experiences.

The data analysis process was unquestionably messy. It was messy, and low-tech, and perhaps more drawn out than it could (or should) have been had I utilized a coding software system. The process of data analysis, more so than even the extensive fieldwork, was an all-consuming one for me. However, the messy, complicated, low-tech approach to data analysis in this study illustrates the qualitative adage of "researcher as instrument." This researcher, as stated in the epistemological disclosure, is decidedly constructivist. I am also decidedly, proudly, low-tech. I make intentional decisions about technology use in all other areas of my life, and see no reason for the analysis of data on such a personally important topic to be excluded from this orientation. A storyline of this research addresses the impact of technology on the learning process, and my own learning process throughout the study is no exception to this inquiry.

Validation Strategies

Qualitative researchers grapple with how to best approach the validation of their work (Creswell, 2013; Creswell & Miller, 2000). Though the traditional language of quantitative research, terms such as validity and reliability, often reflects positivist epistemologies that betray the purpose of qualitative research, qualitative researchers are still charged with a responsibility to assure the legitimacy of their findings and interpretation (Stake, 1995). Given the constructivist epistemology of this study, I have opted to emphasize the establishment of trustworthiness and credibility in the findings, rather than validity and reliability.

Case study research, with its reliance upon multiple sources of evidence, lends itself to triangulation as a method of establishing trustworthiness (Creswell, 2013; Stake, 1995). Specifically, Stake (1995) presents several triangulation protocols that were followed in this study, namely data source triangulation and methodological triangulation. Credibility in qualitative research provides assurance that the findings are plausible, genuine interpretations of the data (Stake, 1995). Questions of research credibility must be asked throughout the research process, from the initial conceptualization of a research question, to data collection and analysis, and finally through the assertion of research findings and implications (Merriam, 2009). To establish credibility, I engaged in extensive reflexive journaling and maintained a comprehensive audit trail, as mentioned in the Data Management section, throughout data collection and analysis. Member checking was also employed throughout the research process to ensure that participants agreed with my interpretations of their experiences. Peer debrief with my

dissertation advisor and dissertation committee ensured that coding and theme development were plausible based upon the data collected.

Transferability in qualitative research refers to the extent to which findings can be transferred to other contexts or settings (Creswell, 2013). Rich, thick descriptions of the setting, participants, and findings were used to establish transferability, and to give the reader a multidimensional picture of the case. Though, in qualitative research generally and case study research specifically, researchers caution against claims of generalizability outside the bounds of their case, context, and participants, rich, thick descriptions allow consumers of research findings to identify elements that perhaps resonate in related settings. In many ways, the MGEP is framed by those who work within it (and those who casually encounter it) as a "model program" for school garden proponents and practitioners. This framing of the program as a model for others put forth an additional demand on me to ensure that abstract research findings maintain a level of clarity and transferability perhaps not expected of other case studies. If research participants operating within the bounded system of the MGEP see themselves as contributing to the greater advancement of garden-based learning in terms of practice, it is my obligation to do the same in terms of research.

CHAPTER 4: FINDINGS

Purpose and Central Issue Question

The purpose of this case study was to examine how the transition of control of a garden-based educational program from independent non-profit to school district affects various elements of the school garden, including participant perceptions and motivations, organizational mission, and teaching methods and philosophies. The central issue question that guided the study was: How does a change of control of a school garden, from volunteer or independent non-profit to public school district, shape the nature of the garden program and the learning experiences therein?

Outline for Findings

Throughout previous chapters, this case study has been referred to as the sum of two smaller cases, the "before" and "after" cases of the garden education program's transition of control. To respond to the central issue question, findings from both sides of the transition must be presented. Findings that have emerged through extensive fieldwork and interview data collection are presented in this chapter. Though many findings have a temporal frame to them, in that they are findings that apply exclusively to one side of the transition of control, many findings apply generally to the program over time. Artificially framing every finding as existing exclusively during the non-profit era of the MGEP, or exclusively during the school district era, would mute the richness and complexity of the findings, and oversimplify the case. To maintain this complexity, findings in response to each research question are presented generally beneath the (most) appropriate question, organized by abstract theme. Throughout each research question's findings is woven a

discussion of the ways in which the non-profit and school district era experiences may be similar or different.

Block quotes from participants, as well as notes from observational data collection, constitute the bulk of the findings, which have been presented with minimal interpretation. Quotes and observation notes have been organized thematically and contextualized, but beyond that they are presented in an unedited state to allow the participants' voices to shine through. Each abstract theme name is a direct quote from a participant, as well, to further underscore the centrality of their contributions to the study. Broader findings that emerged from the study and respond more generally to the central issue question are discussed in Chapter Five. It should be noted that though the findings presented here are broken up into discrete themes and sections for clarity, they are often inextricably connected and overlapping. Just as a garden is a living system, and more than the sum of its individual parts, findings presented in the remainder of this chapter should be considered a holistic representation of the bounded system in question, and read as such.

Findings

Research Question One: What are the motivators that drive teachers, administrators, parents, and students to engage with the school garden program?

"Garden education's dope"

A common sentiment among the research participants was an expressed love of garden-based learning, and a strong, personal commitment to the mission of the garden education program. Though the language and specific terms participants used to describe their motivations to engage with the MGEP differed based upon their backgrounds and roles, the participants shared a deeply felt belief that their involvement with the program was making the world a better place. Pete, a former AmeriCorps educator who had gone on to work for a different agricultural education non-profit since his time at the MGEP, said "…just getting them [students] pumped, that's the only way we're gonna save any of the forests or prairies or a local food system, just by getting the kids into it." He also expressed his philosophical commitment to garden-based learning, and to the MGEP specifically, by saying, "I believed in the program and I could see the effect it was having on kids. You've never seen a group of kids so willing to just eat mouthfuls of kale!" Tori, a current AmeriCorps educator, at the time of the study, with a background in public health, shared her perceptions of the broader community's commitment to the program, and said, "I mean nobody disagrees that the MGEP is beneficial. Everybody says yes, the MGEP is beneficial because you're teaching these kids to be physically active, teaching them to grow healthy, nutritious food, and eat it…nobody would argue with that." She also reflected on how rewarding she found her work, stating:

"You're so thankful that you're a part of it. I do try to hold those memories in my mind…it just makes you really happy to see all those things that we did. You still can't believe that you did that sometimes! We make kids eat Brussels sprouts, and kale, and they love snap peas!"

Pete also remarked, "what's better than digging in the dirt with kids and eating fresh vegetables and teaching them about all the stuff that you love like worms and pollinators and all that awesome stuff?" Pete and Tori's quotes illustrate a universal understanding among participants that the work they do is good for students and good for society. All participants found the work to be tiring, at times frustrating, and challenging, but they expressed a deep pride in what they did at a personal level.

"I see it as a place for kids to be kids"

Participants often framed the MGEP as an antidote to the stresses, structure, and constraints of the public school experience. Maggie, the other second year AmeriCorps member who also had a public health background, shared her perspective on the value of the outdoor classroom space:

"…the kids, they don't have to be just sitting at their desks, hands in their laps, silent, the kids can be looking up in the trees, looking down at the ground, they get to explore externally which then helps them explore themselves internally."

Much of Maggie's reflection on the garden as a "place for kids to be kids" revolved around the extreme amount of stress she observed elementary students to be experiencing. She said students talked about stress the way she talked about stress in graduate school. She wanted to make sure that the garden was a relief from that and not a

contributor to it. Specifically, Maggie discussed how the garden space provided a respite to students during state standardized testing the previous spring. She described how students were angry and anxious when they would come to the garden after testing all day, and so the garden educators would say, "Okay, we're going to pull weeds for half an hour!" She said:

> "Last year when we got the kids back after they finished testing we would address that to them, we said 'we know you've been all cooped up all week and in front of these computers' and they just, it kind of scared me a little, they're acting like little adults because they were so stressed about those tests and they had like a huge sigh of relief just being able to be outside again, do something hands-on, and not get graded for once."

The garden program, both in terms of the physical garden space and the broader philosophy of garden-based learning, was also seen as a respite of sorts by Faith, the newly hired certified garden teacher. She discussed at length the disillusionment, stress, and pressure she had felt after fifteen years in the district as a fourth grade teacher. She said:

> "Honestly, the pressures of teaching fourth grade are incredibly different than here [in the garden program]. In fourth grade you are responsible for [state standardized] tests, which is an incredible burden. It's incredible stress that if your students don't come up with good scores, then it reflects on you."

She then went on to compare those experiences to her experiences as the new garden teacher. She said, "…the atmosphere is just so different than an inside classroom. And it has lifted my spirits exponentially. I am in love with my job again!"

Though, over the course of fieldwork, after the transition of control, participants framed the MGEP as more a *part of the school* rather than *auxiliary to the school*, they still saw the program as meeting the needs of kids, and adults, in ways that the school district was simply not able to. During the non-profit era of the program, participants discussed the freedom they had to allow children to explore the garden space, even if that was not a specific objective of a lesson plan and, again, to let "kids be kids." This sort of free, exploratory language was not as prevalent during the school district era, but the garden program participants still saw themselves as facilitators of authentic childhood experiences.

Free exploration was a major part of the garden lesson observations, when lessons were held outside. Even the outdoor lessons that included significant time seated at the picnic tables in the garden, for writing, worksheets, or listening to an educator read a book, had time allotted for exploring the garden, sampling ripe herbs or vegetables, or watering. During these times, students would make small discoveries on their own of insects, birds, or sprouting seeds. They would point them out to the garden educators or to their friends with exclamations like, "I found a rotting piece of cantaloupe in the compost!" or "I accidentally killed a worm!" or "come here, I want to show you the flower where I saw the monarch butterfly last time." One first grade student, during a lesson about compost, while digging through the compost pile as he was instructed to do, remarked to his friend, "I wanna be free. I just wanna run around and do man stuff like this in the garden." Another student from the same class told Maggie on their walk back to the garden from the bathroom inside the school, "I just can't wait to get back and investigate more!" Because lessons held in the indoor garden classroom had a more

formal feel to them, and because there simply were not places to freely explore in the classroom, this was not a feature of indoor lesson observations.

"We saw that basic need of getting them outside"

The desire to get kids outside was central to the foundation of the original MGEP back in 2007. Kerry, the co-founder and former executive director of the program, reflected on the program's early days, stating:

> "…so our kids had been in school enough for us to see that they weren't doing anything outside other than recess and that time was very limited…in fact we had seen that decrease…[administrators] started cutting that as a district down to try to meet what were mostly state mandated curriculum minutes."

Kerry, who came to garden education from a background in forest ecology and conservation, remarked repeatedly that "getting kids outside" was a dominant accomplishment of the MGEP. When discussing the strengths of the program, she said, "There are lots of strengths, just simple time outside is a huge one. I mean you saw kids just get to come out and see the baby killdeer and it didn't really matter what else happened, that was enough." Kerry's focus on the value and utilization of the outdoor classroom space as a primary achievement of the MGEP contrasts with the priorities of participants who were more associated with the school district model of the program. Though others discussed the beauty of the garden space and the abstract value of place-based learning in the garden, "getting kids outside" as a priority did not weigh so heavily in their discussions of motivations and benefits of the garden program.

"Really paying attention to the whole child"

Participants believed that the garden education program was uniquely able to contribute to the well-rounded development of the schoolchildren. As with the framing of the previous two themes, participants often discussed these strengths of the garden as in contrast to what the public school system was able to provide. Some participants used the term "enrichment" to explicitly frame the garden as supplemental to the offerings of the school, but all participants were motivated to contribute to the MGEP because of its holistic approach to child development.

For some, a holistic view of child development was framed around the garden program's ability to engage learners of diverse styles. Sue, a former second grade teacher in the district who served as MGEP's first board chair, and was, at the time of the study, working as a reading specialist for primary students, shared a story about a particular student with whom she worked. She said:

> "I had a little friend, a little friend with autism, but I asked Faith if there was a time we could go out to the garden. I said my little friend just needs to move but he has not had very many real-world experiences. He goes home and plays his video games and then he comes to school. I had a book out about a garden, but he didn't know what a garden was. I went, 'oh, we can fix that,' so I looked to see if there was a time we could just go out to the garden and really do something."

Sue's quote about utilizing the garden to engage a student with autism is illustrative of sentiments expressed by several participants. Each shared stories of students who were hyperactive or disruptive in an indoor classroom, but who could focus and accomplish required tasks in the garden. They shared stories of students who

developed into real leaders in the garden setting, and they discussed the garden's ability to bring out students' diverse strengths and contributions. Faith talked about her own identity as a hands-on learner, and how she was motivated to reach similar students who may have had trouble with abstract content.

Maggie discussed seeing the garden program as a place for social, emotional, and physical development, in addition to intellectual development. She said, "I see it as a place for kids to grow emotionally, also physically because we're teaching them how to dig and weed, so fine motor skills and using tools." She also said:

> "I remember reading somewhere in one of my developmental psychology classes that kids don't even recognize plants are really living things until they're like seven years old, and so the fact that we can start talking to these kids in pre-school about plants being living things…I would love to see that kind of effect on how they interact with the world because they recognize that 'oh that tree over there is a living thing so I'm not gonna pull the bark off of it or pull the branches off or smash that anthill over there.'"

Sue shared a memory of a time when a group of students found a nest of baby bunnies in the garden that had been abandoned by their mother and died. She said, "They found the little baby bunnies and they had died in the mulch pile and we had to bury them and have a funeral, and they said kind words and they cried…look how sensitive and caring that was." She reflected that though this discovery had derailed the planned lesson for the day, it proved to be a valuable moment for social and emotional development among the students.

Mark, a former AmeriCorps member and MGEP volunteer, at the time of the study, framed the potential of the program for fostering social and emotional development in terms of students feeling safe and connecting with adults. He said:

> "I know that there were a couple students who would divulge very personal things to me, they were very trusting of me, and so they felt like they were in a safe place, in a supportive place, where they could kind of share with me…but like on the last day of cooking club [an additional MGEP program] for example a boy just said 'this is my favorite thing, I look forward to it every week and it really helps being here because my parents are getting divorced right now.'"

"Everybody eats, everybody deserves good food"

A final commonality among the participants' motivations to engage with the MGEP was their shared commitment to good food. Though all participants discussed the additional, varied benefits of the program, including environmental education, curriculum enrichment, and child development, they did not lose sight of MGEP's central identity as an edible garden-based education program.

Kerry talked about how the co-founders of the MGEP focused on food from the very beginning of the program. She recalled:

> "As we started really looking into it [establishing a school garden] then you see the data, the public health data on childhood obesity, and the availability of healthy, fresh foods, especially in rural areas, and the rates of being overweight or obese, the diseases associated with that, and it just seemed like a no-brainer and it seemed like definitely the right time."

Maggie viewed the garden as, "…a place to just produce good food for people." She also used the language of reskilling in food and agriculture in discussing her motivation as a garden educator, saying:

> "I feel like kids have the right to know where their food comes from, so that's very important because even talking to first graders you ask them 'where's your food come from?' and they say the grocery store, so, getting kids connected to the land again."

Tori, the other AmeriCorps educator with a public health background, shared similar sentiments about connecting children with agriculture. Unlike all the other participants, Tori was born and raised in the town where the MGEP is located. She shared a unique perspective about her community's relationship to agriculture and food, stating:

> "I think that people recognize that we are a rural community, but we are not healthy eaters. We do cattle and chickens, but we don't have gardens because when I was growing up, I mean, we didn't talk about healthy food. Nobody really grew *food*."

Mark made a similar comment about the disconnect between food and agriculture in the community. He said, "…a lot of kids too, they'd say 'oh I live on a farm' but then they would look at an orange tomato and think it was a pumpkin because they're living on a monoculture farm." Though Tori and Maggie, the public health professionals, spoke more specifically about integrating the content areas of nutrition and healthy eating into their work with the MGEP, being motivated to increase exposure to fruits and vegetables, and foster a culture of healthy, adventurous eating, permeated discussions with all participants. In the garden students are taught, "don't yuck my yum!" meaning that they

should not insult a food because their classmates might like it, or they might have worked really hard to grow it.

As the MGEP became a formal part of the school district, formerly strong bonds with the cafeteria staff and the district's food management company solidified and strengthened further. Participants expressed excitement about the potential to expand the healthy eating mission of the program through formalized farm-to-school endeavors. The current garden education team felt welcome in the cafeteria and food preparation spaces of the school, and they described their interactions with the food service staff as being very positive. They consistently brought student-grown produce into the school kitchen, and the kitchen staff readily utilized it in school lunches. Additionally, the MGEP team had regular access to the kitchen for after-school programming, and would often bring students into the kitchen to clean and prepare the produce they had harvested from the garden. While other emphases of the program and its participants may have waned or changed over the course of the transition of control, the commitment to growing healthy food and sharing it with students had not wavered.

Research Question Two: What are the barriers that hinder teacher, administrator, parent, and student engagement with the school garden program?

"They thought we weren't real teachers"

The term "real teacher" was used by every one of the four AmeriCorps members to describe the classroom teachers with whom they collaborated as garden educators for MGEP. However, the two classroom teachers who were interviewed, Faith and Sue,

neither referred to themselves as "real teachers," to the exclusion of the AmeriCorps educators, nor referred to the AmeriCorps educators in a similarly othering manner. The AmeriCorps members' discussions of the "real teachers" reflected some general frustrations with their attempts to integrate themselves into the school culture and collaborate with grade level teachers. Mark, speaking about his time during the non-profit era of the MGEP, said, "A lot of teachers did see us as supplementary, and so often they would come out [to the garden] and stand at the back on their phone, treat it as a 45-minute break in their day." He also said, "there were a few teachers that, maybe they weren't openly hostile, but they weren't really welcoming to us." Additionally, Mark observed the school's perception of him as "not a real teacher" trickling down to students, saying:

> "There were a few times where some of the older classes, like some of the fourth and fifth grade classes, had issues fully embracing us as authority figures. I noticed some of the older boys would sometimes challenge us a little bit more, maybe because they thought we weren't real teachers."

The dynamics between the garden educators and the certified teachers at the school shifted during the transition of control, though some unspoken hierarchies seemed to remain through the transition. Participants talked about the teaching certificate being a crucial element in gaining the respect of the teachers and the broader school community. Though Kerry, Tori, and Maggie all have master's degrees in their respective fields, they felt that they were still not seen as equals of the classroom teachers. Kerry commented on her efforts to engage with district administration during her time as MGEP executive director, saying, "…I felt like I was trying to impose myself into a professional

arrangement where they didn't think I belonged because I didn't have a teaching certificate, didn't have a formal education background."

The topic of scheduling challenges arose in discussions with all participants. During the non-profit era, classroom teachers were not required to participant in the MGEP (though all did), so the burden was on MGEP educators to reach out to classroom teachers and find times for them to come to the garden. Though, after becoming an official part of the school district, MGEP participation came to be required of classroom teachers, scheduling all the classes remained difficult. Maggie observed that classroom teachers expressed resistance to taking time away from required subjects for garden lessons. She said:

> "…some teachers are resistant to take their kids out of their extra reading time or speech, if they have to go to speech to work on their pronunciation or something like that, teachers are very resistant to give it up for just 45 minutes in an entire month."

Sue, providing a classroom teacher counterpart to Maggie's perspective, discussed a potential improvement to teacher engagement after the change of transition of control. Because the district now employed a certified garden teacher, grade level classroom teachers were no longer required to stay with their classes in the garden. Sue commented:

> "I think teachers just have so many things to do that it [attending garden lessons] was one more thing they had to do and then you get some resistance…so, there's a little bit of relief when you see it as a 'garden teacher' that I'm taking my class to."

Rather than continue coming to the garden lessons but stand "at the back on their phone" like Mark observed, classroom teachers could now get a true 45-minute break during their class's garden lesson. However, Sue also shared comments from teachers in the district who wondered why the salary for a certified garden teacher was even a district budget priority. In this way, hiring a certified garden teacher had both improved garden teacher-real teacher relationships and introduced a new strain on those relationships. Faith, the certified garden teacher, shared that she had felt isolated from her former grade level team, that she did not know where to sit in the break room anymore, and that she felt like "an island in the teacher world."

"It is scary if you've never come outside before"

A consistent goal of the MGEP program during the non-profit era was to get grade level classroom teachers to utilize the outdoor classroom space on their own. Though there had been garden educators, of some sort, leading instruction throughout all phases of the MGEP's life cycle, classroom teachers had always been encouraged to take their classes out independently for enrichment, curriculum supplementation, or simply a pretty setting for reading or writing. Despite the open-gate policy of the MGEP, classroom teachers rarely utilized the space outside of their scheduled garden lessons. Participants framed their perceptions of grade level teacher resistance to independent utilization of the garden around the fear of the unknown in the garden. Grade level classroom teachers are, in general, not exposed to outdoor education or outdoor classroom management in teacher-educator programs. As such, they are less comfortable in these non-traditional environments than in their own classrooms. Tori believed that if

teachers were simply exposed to the garden, and to outdoor education more, then they would not be so afraid of it, stating, "If they taught outside, they would come outside more." Though teachers were required to stay with their students in the garden during the non-profit era, they did not always engage with the lesson or grow more comfortable in the garden environment. During the school district era, when classroom teachers were not required to be in the garden at all, the participants expressed doubt that they would ever utilize the garden independently.

An extension of classroom teachers' general concerns about the garden, which was reflected in all the participants' discussions of barriers and challenges to garden utilization, was the question of outdoor classroom management. As Pete described it, "it feels really intimidating! You're like, I've got 20 kids, these are children, who knows what they're capable of! They could run out in traffic! They could eat a snake! Who knows what they're gonna do!" Mark echoed these concerns, saying, "I think that's the biggest thing, just the amount of distractions outside and the variables you can't control. There were some systematic behavioral things that we noticed, like kicking mulch was an ever-present issue." Distractions are inherent in context-rich, place-based educational efforts.

Sue, reflecting her background in formal education, discussed some of the challenges with classroom management faced by the pool of non-traditional educators that the AmeriCorps program brought to the MGEP. She said, "I think sometimes if you don't have an educational background and working with kids and planning a lesson and just crowd control and how to manage kids…I always thought that was a little bit of a drawback [to the non-profit structure]." To Sue, classroom management in an outdoor

classroom space was a greater challenge to the AmeriCorps educators because they lacked formal educational training. In contrast, the AmeriCorps educators believed that they were better able to handle the unique classroom management challenges that the garden space presented than the classroom teachers because of their comfort in the more constructivist, adaptive environment. Because they did not come to the MGEP with preconceptions of education or classroom management, the AmeriCorps educators' entire behavior management philosophies and toolkits were built in the garden. Talk of turning distractions or barriers into teachable moments emerged throughout discussions with these participants. Mark said, "there were several lessons that got interrupted by a turtle walking across the ground…but Pete just picked up the turtle and started talking about turtles and the kids loved it!" Pete reflected on the same experience with the turtle when describing his philosophy of outdoor classroom management, saying:

> "They [students] are just people, they're just like us, they just get a little excited sometimes. They wanna be out there, they want to learn about stuff, they've got that innate curiosity, so just kind of capitalizing on that, you know, a turtle, a snapping turtle walks into the garden, oh no! Ok, let's take this moment and let's learn about snapping turtles and then you know maybe we're learning about adaptations, how do you think its shell helps it as an adaptation? What does it do? So, turning it into a teaching moment, spinning it back to the lesson at hand, and then there you go, you're back where you started…just fifteen minutes later (laughs)"

During observational data collection, specifically the observations that occurred during outdoor lessons in the garden, the garden education team utilized a variety of

tactics to deal with student behavior. With young students, or with students who had not been out to the garden in a while, they devoted a bit of time at the beginning of the lesson to reviewing garden classroom expectations. Though these expectations were based off of the school's mantra of cultivating "Safe, Respectful, and Responsible Learners," a few additional expectations for behavior in the garden included using "walking feet," asking an adult before picking or tasting something, and staying with the group. Garden educators would often say things like, "Just because we're outside doesn't mean we're not in a classroom. We are in an outdoor classroom and we are not at recess, we are still learning." During a lesson with a particularly chatty group of first graders, Maggie instructed them to "catch a bubble" in their mouths to stop their talking. Occasionally, garden educators used the "safe seat," a bench in the garden off to the side where students would be sent if they could not behave themselves with the group. When a student was sent to the safe seat, a garden educator would eventually join them, talk about what happened, and make a plan for the student rejoining the group. The garden team also reinforced the school district's focus on "Positive Behavior Support" or the PBS learning environment. When they would catch a student following the garden rules and staying on task, they would draw attention to the behavior and reinforce it with comments such as, "I love how respectful my friend here is being to our Swiss chard plants," or "spinach is not for everybody, but I'm really proud of you for trying it," or "thank you to my friend who took his scraps to the compost without being asked," or "I love how you safely put your shovel away when you were done."

An additional barrier to outdoor classroom use, which had been mitigated by the indoor garden classroom that Faith, the certified garden teacher, had, was the role and

unpredictability of weather. The school district's official guidelines for canceling outdoor garden lessons were the same as the guidelines for outdoor recess; students could not be outside when the wind chill was below 20°F, when the heat index was above 100°F, or during lightning or thunder. Beyond those official rules, classroom teachers got the final say of whether they were comfortable taking their students outside in other weather conditions. Classroom teachers were wary of bringing their students out when the weather was hot, cold, or wet. Lesson execution and classroom management were both complicated by less-than-ideal weather. Kerry and others described the MGEP non-profit as pushing back against the rigid weather policies of the school district, and she expressed concern that as an official part of the school, the MGEP would no longer be that voice of challenge. Kerry said, "…there's been less willingness to take them [students] out when it's a little drizzly or a little uncomfortable, so I see less philosophical embracing of the importance of getting kids outside when it's not ideal weather." Sue said:

> "I think if you were a truly non-profit garden, if you wanted to go garden in the rain and put your little raincoats on and your boots that'd be super fun because that's just a whole different day in the garden, or if it's really cold. But sometimes we're in a school setting we get a little cut off."

Weather concerns extended a bit further among participants to a discussion of the changing seasons, and the tension between the seasonal flow of the school year and the seasonal flow of the garden. In terms of amount of garden work and corresponding potential for garden-based learning, the best times of the year in this part of the world are late spring, summer, and early fall. Maggie remarked:

"The really interesting thing is that one of the reasons why our school system is set up the way it is was to follow an agrarian society. We're not an agrarian society anymore and our school system is trying to be agrarian, and so it's like, we need kids here to help us with it!"

"Kids shouldn't be using knives"

Concerns about safety in the school garden, and discussion of safety as a barrier to teacher and administrator support of the program, arose repeatedly during conversations with participants. Just as an outdoor classroom presents unique distractions and behavior challenges in comparison to an indoor classroom, the very nature of the school garden program and its garden-based learning present distinct safety challenges. Teachers and administrators are charged with protecting the safety and well-being of their students, and this concern for safety can manifest itself in risk-avoidance; an orientation which the MGEP challenged. Instruction in the school garden relies on the use of garden tools, and harvesting and preparing food can require the use of knives. The garden educators viewed the garden as an appropriate place to teach safe use of these tools, and to develop fine and gross motor skills. Faith talked about safety concerns, and about the garden education team's approach to safety with students, stating:

"We tell them this is an outdoor learning classroom, we have the same expectations [as inside the school], in fact a couple more because we're outside. I can't have you running because if you trip on the mulch and fall on some of this big stuff [wood chips] you get stabbed. You know, I don't say that…but it can be a little more dangerous out there. It's not a flat surface, there's actual tools

involved, I know that. Last year, we used knives in the classroom and I took a lot of heat from my principal about that."

Kerry, complementing Faith's point-of-view by speaking from the non-profit perspective, expressed similar frustrations with the administration around issues of safety. She said, "We got yelled at last year for using cheese graters with second grade and first grade kids because somebody scraped a knuckle. And that resulted in an immediate call home from the school secretary." Though she acknowledged the unique safety challenges that the garden program presented, Kerry believed that the MGEP as an outside program was subjected to even harsher scrutiny from the school concerning student safety. She shared a story about a conversation with the school principal during which the principal was scolding Kerry for allowing students to use knives, saying that it was a violation of school policy. Kerry recalled:

"I said on the phone, I said '[principal], my daughter's in sixth grade and you guys are teaching her to shoot a bow and arrow,' so, yeah, I didn't think having fifth graders use paring knives safely to cut their carrots was an issue."

This double standard in terms of safety was also reflected in the discourse around student food or seasonal allergies. For example, one elementary student was not allowed to attend garden classes, whether the class was held outdoors or in the indoor garden classroom, because his allergies were deemed "too severe" by his doctor and parents. However, he was not kept inside during recess, or P.E. class, nor was he kept from participating in outdoor field trips or the extracurricular football team. The garden educators were frustrated by this, and wondered why the garden programming was seen

as optional to school administrators and parents, when other equally "unsafe" outdoor activities were not.

Finally, in a time of heightened concerns about school safety overall, the open nature of the school garden space worried the garden education team after the transition of control. Though the garden program was officially part of the school district, and subjected to its policies and procedures, the educators talked about not knowing what to do during an active shooter situation, or extreme weather event like a tornado, in the garden. While indoor classes lock down in certain dangerous situations, the school garden had no walls, doors, or locks.

"As we start talking about food, people take that personally"

In addition to philosophically challenging some of the school policies, participants talked about the MGEP as a challenge to the dominant agricultural paradigm in the region. While most participants, particularly those most strongly associated with the non-profit era, viewed the MGEP's role as challenger of the status quo to be a strength of the program, these philosophical conflicts occasionally manifested themselves through tense interactions with classroom teachers and administrators, and created an additional barrier to full support of the program. Kerry, Mark, and Pete each individually, and unprompted, shared the same story about an incident with a classroom teacher that illustrated the agricultural, philosophical tension between the garden program and the region. Mark and Pete were teaching a fourth grade lesson about the environmental impact of agriculture on water quality, and about how farmers attempt, or do not attempt,

to mitigate their environmental impact, and it was not well received by a particular teacher. Kerry recounted:

> "…Mark and Pete started talking about how large ag is one of the main sources of water contamination in this area, especially, but also globally. [Classroom teacher] came unglued. She just immediately jumped to the conclusion that they were insulting farmers and agriculture and, in front of the class, she just hijacked the lesson and said, 'my family are farmers and these families are farmers,' got really pissed, apparently went in and told all the other fourth grade teachers so they came out primed and pissed already."

Mark reiterated that she "interrupted the lesson, chastised us both, basically saying there's nothing wrong with farming…called us out, yelled at us in front of class. It was really uncomfortable." Mark and Pete, two AmeriCorps educators without formal educational backgrounds, experienced an additional layer of resistance in this situation because they were "not real teachers." The classroom teacher not only felt that they had disrespected her culture and identity, but she also felt that it was within her authority as a "real teacher" to interrupt their lesson and take over.

Tori and Maggie expressed differing but related frustrations with the presence of classroom teachers during garden lessons. They talked about all the intentional steps they took to make trying new foods a positive experience for students in the garden, but that classroom teachers generally demonstrated disinterest or resistance to the foods themselves. During a focus group, Maggie said:

> "When they [students] try a food we always say we'll try it with you, because I always try to frame it, I tell the kids, 'you know, when I was a kid I was a picky

eater, so I get less anxious when I see an adult trying something' and so we come up and we'll try it with them, we'll do like a countdown."

Tori responded, "but none of the teachers ever try it and that drives me crazy still. We offer it every time to them, we say, 'would you like to try?' 'No.'" Classroom teachers contradicting the behavior modeling of the garden educators was a theme that arose during other topics of conversation, too. In addition to modeling positive food behaviors, Tori and Maggie worked to intentionally demonstrate comfort with insects and animals in the garden, comfort in warm or cool weather, and comfort with getting dirty. Maggie said, "when it comes to dirty hands there's some kids that just can't stand it, but I call them 'garden hands,' so if you've got your garden hands that means that you did some good work today!" Tori said that classroom teachers responded to garden hands with "hand sanitizer all around." When discussing philosophical contradictions with classroom teachers, Tori continued:

> "Or if the kids harvest and we make a salad then we would wash the salad and stuff but because the kids all touch the lettuce the teachers refuse to eat it. I'm like, they touch your desk, they sneeze on all of your papers that you have. I'm sure you've been exposed to worse things than just touching a leaf and then we wash it and eat it."

Though claims cannot be made about the philosophical tensions of the MGEP in a rural, conservative region lessoning over the transition of program control, it is worth noting that Faith had been a part of the community for nearly two decades, and before that she lived in an even more rural and conservative region of the state. Her personal integration into the community and its agricultural paradigm may mean that she was less

likely to challenge the status quo, while it also means that her perspective may be more comfortably accepted by fellow teachers. When Faith chose to challenge the dominant agricultural and educational paradigms of the school and region, she was taken more seriously than when Mark or Pete did.

Research Question Three: What are the goals of the school garden program, and the actors within?

"To grow their own gardens and eat their own food"

A central goal of the MGEP had always been to teach people, young students to adults, how to grow, prepare, and enjoy healthy, fresh food. While this goal had been interwoven with other related goals and motivations throughout the history of the program, it still stood out as a focal point of discussion with participants. Tori said she hoped that after participating in the MGEP, "kids will try new foods, and hopefully be a little more conscious about what they're eating later in life, so we can finally do something about these chronic diseases related to obesity, which is everybody's main goal." Tori and Maggie, the public health professionals, spoke most explicitly about having goals of addressing chronic health issues through production and consumption of fresh food in the garden.

Kerry believed that the food and gardening emphasis of the program filled a particular need in the school and community. She said:

> "I think the focus on growing and eating healthy food is a huge strength…they don't really get any of that hands-on cooking and eating and growing food and

talking about making food choices anywhere in school like they get with the MGEP and I think that's a huge strength of it."

Mark perceived the incorporation of fresh fruits and vegetables into the school cafeteria through farm-to-school initiatives to be a primary goal of the program. Though he was pleased with the amount of involvement from the school food service staff during his time with the MGEP non-profit, he saw boundless potential for expansion of this side of the programming over the course of the transition of control. He spoke of wanting to meet with the food service director in a more formal way to outline shared goals for crop production in the school garden. Mark said:

> "We tried a few times to meet with [food service director] in the spring and say, 'what do you want for your meals?' and, 'how can we plant it and at the right schedule to get it in these particular times?'…I really wish we could've had a very formalized schedule of plantings and harvestings and lunch menu items and just really ramp up that piece, because I feel like most kids, they're only going to be coming out to the garden maybe max six times a year, but they eat in the cafeteria every day, and that's really what the end goal is. It's great to be out in the garden, isn't this all pretty? But like, eat the vegetable, you know?"

Learning to grow and eat good food was a central goal of the students in the MGEP as well. Though the adults involved in the program viewed food as a hook to get students to think about health, the environment, or even core academic subjects like math and English, students were excited about the food itself. To be selected for the after school elementary garden club, students had to write an essay about why they wanted to be in the club. Maggie talked about one student's essay, recalling:

> "All we ask them is, 'Why do you want to be in garden club?' and we get the cutest answers. One girl labeled, 'Point one.' She's like, 'and these are the reasons I want to be in garden club. One, two, and three. One: save the Earth. Two: make new friends. Three: learn how to grow food.'"

Maggie also reflected on how the effect of teaching gardening and food preparation to young students rippled through whole families and the broader community. She said:

> "I think that's a natural progression. We teach the kids about it and then they want to do it, like I don't know how many times kids will come to us and say, 'oh we're starting a garden' or 'we're planning our garden for the first time because we love growing stuff here.' And that's just awesome."

Faith believed that students in the garden were primarily interested in the food. She said, "that's their main goal when they get out there, they always ask, 'what do we get to eat?'" This belief was substantiated during garden class observations. When garden educators would read young students a book about trying new foods, and they would get to the part of the book where the main character finally tried a new food, most classes in the garden erupted in unprompted cheers and applause! During tasting time in the garden, garden educators encouraged students to taste with all of their senses, and asked them to describe whatever it was they were eating. These descriptions were often colorful, like the first grader who ate a peppermint leaf and said, "This leaf tastes like Cinnamon Toast Crunch," or the kindergartner who tasted Swiss chard, asked for seconds, and then said, "I want to put chard in my soup!" Students were disappointed when there were no ripe crops in the garden to taste during their lessons, especially if they were hoping that a crop

they had planted during the last lesson would be ready to taste. If students planted seeds or transplanted crops the last time they were out in the garden, they always asked about those crops during the following lesson, demonstrating great pride in and concern about what they had done. Over the years, the MGEP had created a culture of enthusiasm for food in the garden, and students of all ages appeared to buy into that culture. Even if they tasted a vegetable from the garden and did not like it, students seemed to know that they were *supposed* to like it, as if the forces of peer pressure in the garden were actually working towards more adventurous student eating and comfort with new foods.

In general, though discussions of all participants' *motivations* to engage with the school garden centered on healthy food, their explicit *goals* referred less frequently to achieving food and gardening outcomes than to achieving other educational outcomes.

"The goal has always been to enhance their learning"

In discussing the MGEP transition of control with participants, and how it shaped the goals of the garden program and the actors therein, talk of meeting concrete educational objectives through garden-based learning dominated conversations. While public health professionals Tori and Maggie spoke about achieving health goals and *simultaneously* achieving learning goals in the garden, Faith and Sue, the formal educators, spoke *exclusively* about the garden's ability to meet school and state learning goals.

Kerry discussed anticipating the school's focus on meeting state learning standards through the MGEP when describing conversations with district administrators

before the transition of control. Speaking about a particular MGEP ally in the administration, she said:

> "…we don't call it Common Core, but the new learning standards are eerily similar to Common Core and Next Generation Science Standards…he [administrator] gets how a program like this is really going to help meet the objectives and guidelines for those."

Tori, Maggie, Faith, and Sue all talked about the garden's ability to supplement and enhance core classroom content, though each framed their discussion of this curricular enhancement slightly differently. Sue believed that the garden should be more incorporated into each content area, and that classroom teachers should be encouraged to utilize the garden independently much more than they were. She said:

> "I think it should be an extension of our curriculum. It doesn't have to drive the curriculum, but we spend so much time seated and inside, it's nice to go outside in the environment and have some fresh air and move and you can still keep learning out there. So I think that's maybe the biggest goal is to be an extension of the curriculum."

The way in which Tori described her perceptions of the MGEP's goals was indicative of the complicated, constructivist, and interconnected nature of the program elements during the non-profit era in which her experience was rooted. She was unable to parse out discrete program goals, because as she saw it the goals were inextricably interwoven. She said:

> "One of the main purposes of the garden was to help with standards in the classroom, but also teaching them something that you can't teach in a classroom

like gardening. I don't know. I think it's a little bit of both. We want to teach them how to grow their own gardens and eat the food, but also teach these basic skills like adding, subtracting, and all of these core subjects out in the garden as well. They don't even realize that they're doing it!"

Faith's perspective on the evolving program goals was unique in that she was the individual explicitly charged with developing the goals and objectives of the school district's official garden program, and she was charged with demonstrating that those goals and objectives had been met. Though she repeatedly remarked that her main goal was to "make learning fun again!" she went into greater detail about structure and standardization when describing her objectives as an educator. Faith also referred to the garden program as a "special," a term used to denote classes within the district such as art, music, and physical education. The framing of the garden program as a *special* contrasts the framing of the garden as *curriculum enhancement* or enrichment. However, just as Tori was unable to separate out discrete goals, Faith would contradict her own framing in conversation. She said:

"I think the goal has always been to kind of enhance the students' learning. I think the purpose now is probably just a bigger version of that, that it is kind of perceived as a special, like art or P.E., but it's so much more because we can actually teach things that they will use in life and things that will teach them to be problem solvers, how to grow food, those are basic things that everybody needs to know about, so to me it's definitely more than a special."

Faith's comments occasionally mirrored Sue's, in that she saw a goal of the MGEP to be experiential enhancement of classroom content, but she spoke more

extensively about the goal of directly meeting state learning standards in the garden. To describe the former goal, Faith said:

> "…enhancing what they [classroom teachers] have been teaching and seeing…when you touch something it becomes more real. When you do it, it becomes more real, other than somebody just telling you about it. And so when they can make that connection, it has more of an impact on their learning. And that's what we're trying to do. To me this is like almost a, not like the gifted program, but this is an enrichment program."

To describe the latter goal, she said, "We're taking the [state] standards for each grade level and incorporating those into the lessons that we teach. So, we're trying to cover some of those that the classroom teacher can't always get in." When discussing how her goals as a certified teacher may contrast with the goals of the MGEP non-profit, Faith said:

> "I don't want to change anything. The only change I see is just making it bigger and better…and more formalized. If we're going to teach those standards, then there has to be a formal written out 'this is what we're doing' lesson plan…just like every other district teacher."

"The goal was to help transition"

The experiences of Maggie and Tori as AmeriCorps members exemplify the shifting goals and objectives within the MGEP over the transition of control. Both were AmeriCorps members during the final full year of the MGEP non-profit era, and both had their second year of service completely transformed by the transition of control. They

started their second year of service with a different direct supervisor and organizational home than they finished it. To them, a central goal of their second year of service was to get Faith, the certified garden teacher, up to speed on the MGEP's way of doing things. Though they left the MGEP after two years, they were direct agents of organizational transition and bridges between non-profit and school district. In describing her second year as compared to her first, Maggie said:

> "I definitely feel like there's a little more responsibility because I think the goal, the goal of this year was for Tori and me, since we were AmeriCorps members last year, was to help transition this new educator into our MGEP teaching style, how we've done things. We had the institutional knowledge, and so it's our goal this year to pass that on to the educator."

In reflecting on the institutional knowledge that she and Maggie would be taking with them when they leave the MGEP, Tori expressed concern about the certified garden teacher's ability to manage the program without them. While Tori and Maggie were AmeriCorps members of the MGEP, after their second year the school district itself became administrators of any future AmeriCorps educators, with Faith as their supervisor. Tori said:

> "I think she's going to have a hard time with new AmeriCorps members coming in because she's still confused about the structure and what all needs to happen out in the garden physically, as well as all the classroom stuff. I told Faith, 'you probably need to experience these things a little more in depth because you'll be the one in charge next time, because they will have never done this before.' I just hope it goes over well with the new AmeriCorps [members] because, sometimes,

it can be disheartening when you put so much effort into all these things. I hope it all stays together and is successful."

Finally, Maggie talked about how one particular facet of her responsibilities to the MGEP would not align with the school district structure. For about a year, she had been traveling to a nearby school district one day a week to help them with their newly established school garden program. As an agent of a school gardening non-profit focused on both partnering with a particular school district, and advancing the reach of garden-based learning in general, this aspect of her workload made sense. However, as an agent of a particular school district, this would not be appropriate. Maggie said:

"So next year especially the stuff I'm doing with [neighboring school district]…that won't be a thing anymore, because right now the non-profit is paying for our cost-share so it's no big deal that I go to another district, but it'd be a little outrageous to ask one school district to pay for one person that's sneaking off to another district…not really the most polite thing to do."

As Maggie's comment demonstrates, the funding and administrative structures of an organization constitute serious determinants of the organization's goals. Public school districts have specific funding sources and community stakeholders to whom they are accountable, and in the microcosm of a school garden program, these demands and drivers of program goals are displayed.

Research Question Four: What does learning in the school garden program look like?

"I think it's really authentic"

While other themes that have been discussed demonstrated a wide range of variation of perceptions among participants, and often varied in ways that were shaped by participant backgrounds, discussions of the essence of learning in the MGEP garden were overall consistent among participants. Participants used a common vocabulary of terms to describe learning in the school garden program, such as "experiential," "hands-on," "interactive," "broad," and "exciting." Maggie reflected on the ubiquity of the term "experiential" in describing learning in the MGEP, saying:

> "I would call it experiential learning, hands-on learning. I feel like that's a thing I say so many times that people get tired of hearing it! It's hands-on, experiential learning in the garden, because everything we do when we create our lesson plans we think, 'ok, how do we get the kids moving? How do we get the kids using their hands?' I don't think we've ever had a lesson where the kids just sat there the whole time listening to us talk."

Tori described the learning that occurred in the school garden as "hands-on, lots of interactive activities, kids holding plants, holding bugs. I think it's more memorable in that aspect." Tori also spoke about the effect of the MGEP's experiential learning on students. She said:

> "It's so broad. It's exciting. The kids are moving. They're eating and learning. They probably don't think that they're learning that much when they're out there

doing these things like weeding, but they are. It's impactful for later in life and reflected in their schoolwork, I think."

What Tori alluded to was described by others as well. Faith once compared the learning that occurred in the garden to "those brownies that have spinach in them," in that students were learning or consuming something good for them, but did not realize that they were. "Sneaky learning" it was also called. In addition to being an environment for "sneakily" integrating core academic subjects into hands-on gardening activities, Faith also described the learning that occurred in the garden as achieving a higher level, in the vein of Bloom's Taxonomy, than that of traditional classroom learning. She said:

> "You can do every subject. And, you know, they planted some spinach, they've planted some beets, other things, and then something's gotten in there and eaten it, so we've got another variable that no other teacher has to worry about. Why isn't your project coming along the way it should be? Well I can't stop the damn grasshoppers from eating my plant, what do I do? How do I problem solve that? So, there's still that problem solving, that higher order of thinking, but it's in a different way."

Where does learning happen?

"She's got that classroom now"

Perhaps the single most significant change to the MGEP over the course of transition to school district control was the acquisition of the garden classroom. During the five years as a non-profit, the MGEP operated out of an off-campus office space in

town. Lessons were taught in the school garden on school grounds. The garden contained picnic tables and other seating areas, as well as a shed to store garden and lesson materials, though most supplies were stored in the off-campus office and hauled in for lessons. In the event of poor weather, MGEP garden educators had to either cancel a lesson, or ask the grade level classroom teacher whose class was to come out to the garden if they could bring the garden lesson into their room. This was hectic and stressful for the garden educators, whose lessons did not necessarily translate from the outdoor to indoor classroom, and classroom teachers were not always eager to have messy garden lessons in their rooms.

As a certified employee of the school district, Faith's position came with a regular classroom, right next door to the art room and school library. Maggie and Tori moved their workspace into the classroom at the beginning of the school year, and with that transferred much of the MGEP operations and materials. Though set up roughly like a normal elementary classroom, with tables and chairs for students to work at, Faith's room contained a full-size refrigerator from the previous MGEP office to store garden produce, large bins for recycling and compost (the MGEP handled all recycling in the school since the district had canceled its recycling contract years before), grow lights and trays of plant starts, some gardening equipment, and cooking implements. At one point during data collection, a significant portion of the ceiling was covered with mint bundles hanging to dry, which had been harvested by students to later use for mint tea.

With the classroom came a legitimacy of the garden's presence in the school, as well as a place to hold classes in inclement weather. The classroom also provided a place to hold lessons for three additional months during the winter (December, January,

February), a period of time during which the MGEP non-profit had not taught. Maggie perceived the classroom itself, and her and Tori's presence in the classroom and consistent presence in the school through the transition, as elements that strengthened Maggie and Tori's place in the school district. Maggie said:

> "I think that made it feel very real because the kids get to see us a lot more, the teachers see us more, so you feel like, 'ok I am part of the school district.' Like, just walking to the classroom in the morning I'll have three kids come up and give me a hug or something like that, so, I think that was probably the biggest part of the transition, just that classroom space."

Like many changes over the transition of control, participants perceived the acquisition of the indoor classroom space to be a change that brought both positives and negatives with it. Tori talked about the challenges of planning exclusively outdoor lessons before the transition of control, and then being forced to move them inside haphazardly in the event of inclement weather. She said:

> "Maggie and I, we had to do it mostly outside. If we had to go inside the classroom, it was hard for us because we didn't know what we'd pull up on a SMART board. Can we use a teacher's SMART board? What can we use in the classroom? What can we not use? If we didn't have the materials to do an indoor lesson that's reflective of the outdoor lesson, it was difficult. We just rescheduled it for another day."

Kerry talked about how the classroom was certainly an asset to the program, but that the classroom coupled with Faith's background in indoor education and comfort inside diminished the MGEP's role as challenger of the school district's policies and

structure. She said, “There have been more classes inside because she [Faith] has that classroom now which is nice, you know we would have loved to have had a classroom for those days that you can’t be outside or during the winter.” Tori commented on Faith’s seemingly greater comfort inside the classroom, and how that conflicted with Tori and Maggie’s background and educational philosophies. She said:

> “I get a feeling that Faith is more comfortable inside, and she doesn’t like to go outside. That’s deterring for Maggie and me who are more comfortable outside teaching the lesson rather than inside. We have a little difference there.”

Tori expressed frustration with teaching inside more, but she acknowledged that teaching through the winter, even if it was in an indoor classroom, granted them more contact hours with students than they otherwise would have had. She said:

> “Now, I feel like we’re inside a lot more, which maybe just because we didn’t teach inside before. I think we stopped our lessons in December, January, and February last year. We started back up in March last year. Now, after the transition, we have to teach once a month no matter what. I feel like we’re doing more inside stuff.”

Before the transition, the garden educators planned exclusively outdoor lessons and had to haphazardly move them inside, or cancel them, in bad weather. After the transition, the garden educators planned indoor lessons for the three winter months, but could not easily move them outside on warm winter days. Tori said:

> “I would like to go outside, but sometimes, it’s hard to move the lesson outside. I think even if the weather is somewhat nice, we stay inside to do the lesson

because it can be hard to take it outside when you have papers and anything like that."

This challenge was evident during observational data collection. One observation occurred on a warm, dry, and sunny winter day. When asked if the lessons, which had been planned for inside, would be moved outside that day to take advantage of the weather, the participants said that the lesson would not really work outside, and that it relied on the use of the SMART board and access to the internet for a YouTube video.

The role of the garden classroom, as a theme of the research findings, engages in complex ways with additional themes, and influences findings in response to the remaining research questions. Learning designed to be place-based, like the learning that occurs in garden education, is naturally shaped and determined by the place itself. As such, all elements of student learning are affected when the "place" is transformed from an outdoor garden environment to an indoor classroom.

When does learning happen (in terms of schedule)?

"Schedules are so crazy"

For as long as the MGEP has existed and attempted to provide garden education during the school day, scheduling has been a primary challenge to the success of the program. When the MGEP was an independent non-profit, the burden was exclusively on the garden educators to work with the classroom teachers to schedule garden lessons. Because garden programming was seen as supplementary, it was not built into the teachers' schedules at the beginning of the year (the way a "special" like art would be).

So, any time that teachers chose to devote to garden-based learning had to be taken away from a previously scheduled part of the day. Coupling this time crunch with the aforementioned perception that garden educators were "not real teachers" caused frustrations on the part of classroom teachers and garden educators alike.

At the time of data collection, after the transition of control, there were forty-one kindergarten through fifth grade classrooms in the district, and each classroom had to be scheduled for one 45-minute garden lesson every four weeks. Though, with the transition, attending garden lessons became non-optional to classroom teachers, scheduling did not necessarily become easier. Individual classes were receiving garden lessons more frequently than they ever had before. As Faith put it, "the scheduling has been…a tremendous learning curve." In this school district, kindergarten, first, and second grade classes were housed in the primary school building, and third, fourth, and fifth grade classes were housed next door in the elementary school. Each building had its own infrastructure (cafeteria, kitchen, library, gymnasium) and its own specials teachers. However, Faith and the garden team served both buildings, giving them double the number of grade level classrooms juggled by the art or music teachers.

While Tori expressed concern that the garden team's teaching load was so heavy after the transition, they would not have time for additional tasks like garden maintenance, volunteer coordination, or after school club planning, Maggie commented that, "Faith worked with the elementary vice principal to create our schedule. She budgeted about an hour at the end of each day for extra projects and things like that." This concern over renegotiation of workload and roles, in terms of time constraints and scheduling, was a common theme of discussion among participants. In addition to

teaching more lessons than ever before, the garden team was now responsible for all garden maintenance, when previously the MGEP non-profit had employed a part-time garden manager. Reconciling teaching and gardening schedules was a contentious point for participants. There was also an ongoing tension between the work schedules of the AmeriCorps members, which expanded to meet the size of the workload (meaning they regularly worked more than 40 hours per week, including evenings and weekends), and the work schedule of Faith, who felt strictly bound to her teaching contract (school days only, no weekends or evenings). Nonetheless, Maggie acknowledged that Faith's institutional knowledge of the school schedule was an advantage of the transition, commenting, "She's really good at following the schedule and system of the school, she has all that knowledge that Tori and I don't have, which is a huge benefit." Whereas before, the AmeriCorps garden educators were on call at all times for garden maintenance, Maggie perceived a change to scheduling expectations with the transition of control. She said:

> "I feel like since our current supervisor [Faith] is a teacher, she kind of has us adhere to a school schedule, instead of before, where we could get a phone call or text at any time saying, 'hey, we need to cover something' now it's a little more consistent. It's between seven and four p.m., that's when we're figuring our stuff out and if we don't figure it out then, then we'll figure it out, you know, the next day between business hours."

"You know it will be more impactful"

Though conversations about scheduling, workload, and working with classroom teacher schedules maintained an air of frustration through the transition, participants also perceived there to be significant improvements and benefits to the overall teaching schedule through the transition. Faith talked about how, as a fourth grade teacher, she found that non-profit MGEP lessons were often scheduled too far apart to build upon each other or provide scaffolding in a meaningful way. She said:

> "In the old days, you know we didn't get to really see the whole cycle…you do a lesson and you do a lesson and you do a lesson and you wouldn't see them again until spring. And so actually getting that follow through I think is what's gonna be interesting here. They're gonna be able to plant and harvest and see the progress of their plant by being able to see them more regularly. It's still not every week, that's just impossible with the number of kids…but not to say that it won't happen someday."

Faith also remarked that the impact of the program would be increased with more frequent student contact, saying, "I think with the program the way we're trying to design it, it will become more of their norm." Maggie echoed Faith's comments about frequency, saying:

> "This year it's really cool because we're on a four-week rotation, and we get to see the kids more often, so now it's like we don't have that big break…you're seeing the same faces cycle through. It definitely gives us more of a workload in the winter, but it's nice because it keeps us engaged and we can keep refining our teaching skills."

Maggie's reflections on the scheduling of garden lessons illustrate the clear connection between the scheduling of learning and the physical location of learning. She acknowledged that teaching through the winter was not possible before the MGEP had the indoor garden classroom. She also drew connections further, noting the relationships between the frequency of student contact and the skills and legitimacy of the AmeriCorps members as educators. Maggie reflected:

> "During the winter, since we have this indoor classroom, we are still teaching lessons consistently as AmeriCorps members. Last year we stopped teaching, I think, right at Thanksgiving and didn't start up again until seed starting time in the spring, so, that's quite a few months to not be interacting with the kids and you could kind of tell that it would affect the relationship with the students. You would come back after a couple of months and then they can't remember your name, sometimes they don't even remember your face they're just like, 'who's this?'"

As with other elements of the transition, the process of scheduling lessons, and the final class schedules, were subjected to positive and negative changes as the MGEP moved from non-profit to school district control.

With whom does learning happen (volunteers, parents, certified teachers)?

"That certification seems to carry a lot of weight"

Just as the acquisition of the indoor garden classroom marked the most significant change in the physical learning space associated with the MGEP, the hiring of a certified

garden teacher to lead the garden-based learning program marked the most significant change in terms of educators associated with the MGEP. Though the two second-year AmeriCorps members, Maggie and Tori, continued to teach with the certified garden teacher through the transition, Faith's presence and job title were defining factors of the school district's control of the MGEP. In conversations with participants about how garden-based instruction, as an extension of the actual instructors, changed over the transition, the teaching certification, and its weight in the eyes of the school district administration, came up repeatedly.

Though Kerry had shifted away from doing much instruction in the garden during the non-profit years of the MGEP because she was occupied with administrative duties, she had at one point expressed interest in applying for the garden teacher position. As co-founder and executive director of the MGEP, she believed that she would have been a natural person to consider for the garden teacher position to carry the organization through this major transition. She shared a story about visiting with the superintendent about the MGEP transition, and said:

> "…so as I talked with him and I said, 'well I'd be interested in that position, can it be structured in a way that that's a possibility?' and immediately he said, 'well no it'll have to be a certified teacher.' I mean that certification seems to carry a lot of weight. Doing this for ten years doesn't carry any weight at all apparently, but if I had that piece of paper…"

Though Kerry acknowledged that her perspective on the hiring of the new garden teacher was influenced by her disappointment in being left out of the process, and her frustration over the position description being written in a way that excluded her from

consideration, she was able to reflect on her own limitations as a non-formal educator, as well as the limitations of the garden teacher job description. She commented:

> "I've always felt like if I did have a teacher's background I would have been able to kind of get the curriculum integration and integration with the school really going. I always felt like it was much more of an uphill battle than it should have been."

Kerry believed that the superintendent's approach to creating the garden teacher job description was indicative of his unfamiliarity with the intricacies and magnitude of the program. According to the job description as written, any individual who was certified to teach elementary science was qualified for the garden educator position. She said:

> "He wrote the position as a nine-month, typical classroom position, so it's a nine-month job, it doesn't say anything about coordinating a program, supervising AmeriCorps garden educators, oh by the way there's a summer…and weekend stuff, and all this outside of normal teaching contract things."

Faith, as has been mentioned, brought fifteen years of experience as a fourth grade teacher in the district to her new role as garden teacher. At the time of her hiring, she was also serving on the MGEP board of directors, though she resigned before the school year began so as not to cause a conflict of interest. Faith acknowledged that her strengths as a garden teacher lay not in extensive gardening or nutrition experience, but in years of classroom teaching experience and in years as a community member. She remarked, "Would they be better off with someone who's a botanist and a teacher? Probably! You know, or maybe, a horticulturist, is that the word?" Faith believed that she

brought enthusiasm and legitimacy to the position, commenting, “People that already know me know that this isn’t just fluff. And they know I’m really teaching things.” She also acknowledged that she was actively learning the gardening side of the work from Tori and Maggie, saying, “I could not do this by myself. These girls work like dogs, and I’m learning so much from them.”

When asked if she thought her formal teacher training and years of classroom teaching experience would hinder her creativity in the garden classroom, Faith answered:

> “I have always been the kind of person who kind of thinks outside the box, I like to do things a little differently. I want to get my hands dirty, I want the kids to get in and actually do things, my classroom was always the loudest one in the hall, you know, ‘my gosh what’s she doing now?’”

In some ways, Faith felt as though the school district had finally created a position that really resonated with her natural orientation as a hands-on learner and experiential educator. In contrast, Tori believed that garden-based learning facilitators benefit from not having a formal teaching background, saying, “I think it’s better to have someone who has not been in a classroom teaching because the MGEP is an outdoor classroom and it’s completely different than inside.” Though Tori recognized the legitimacy that Faith brought to the program, she believed that the philosophical and pedagogical constraints of indoor education left an unshakeable imprint on the teaching of longtime, formal educators.

"You lose something when you don't go out to the garden with your class"

Sue's insight into the question of "who is doing the garden education?" was unique in that her involvement in the MGEP school day garden lessons ended before the transition to school district control. As a second grade teacher, Sue saw a different version of garden-based learning than the garden education teamed practiced through the transition. Sue's comments revolved around the differences in classroom teacher involvement during the non-profit era of the MGEP and the school district era, specifically the fact that classroom teachers were no longer obligated to stay in the garden with their classes (and none did) after the transition because garden instruction was now led by a certified teacher. Sue said:

> "I think before because the people who worked in the garden weren't certified staff, I think maybe for liability reasons the teacher stayed with her class, and we helped facilitate the lesson. But I like that partnership better because I helped facilitate, and I also felt like there were more hands on deck, sometimes you would split us up into little small groups, I thought that was always a good idea."

In addition to improved classroom management with the help of the classroom teacher, Sue believed that having the classroom teacher stay out in the garden, and engaging with the lesson, afforded ample opportunities for connections to classroom content. The garden teachers had no way of knowing exactly what students have covered in their respective classrooms, but their classroom teachers did. Sue used the framing of the garden program as a "special" in these discussions as well, which she saw as a deficiency of the transition. She said:

"I think that you need some teachers that are a little more invested, because now we go to the garden and there's a teacher who teaches us and we don't even have to stay with our class if we don't want to, I think you need to have a little more buy in, and the teacher's out there and sees what you're doing because then I can link that back into what I'm doing in my room."

Because Sue believed the greatest strength of the MGEP was its potential for curriculum extension, enrichment, and cross-curricular integration, she also believed that losing the consistent engagement of classroom teachers with the garden program was detrimental to fulfilling its purpose. However, she acknowledged the trade-offs and the lack of time in classroom teachers' schedules for any enrichment. She observed:

"I saw a change this year. I can see, I think there's a lot on teachers' plates, I can see why maybe we did change this year. I think teachers have a lot to do so this kind of gives teachers a little bit of a break, but I think you lose something when you don't go out to the garden with your class to see what they're doing out there. I think you understand your students better because, if you only go out to the garden once a month, the [garden] teacher doesn't really know your students very well. But if I stay out there with them I can kind of help with crowd control, but at the same time I'm learning what they're doing out there and I can take that back into my room."

"The current educator gets to color the experience that the kids have"

For better or for worse, primary and elementary classroom teachers in public schools generally come to the profession with highly similar and standardized

backgrounds and training. As earlier findings indicated, what matters in the eyes of a public school district is a teaching certification. In this way, yet again, the non-profit era MGEP challenged the status quo of public education broadly, and of the school district specifically. In the history of the non-profit MGEP, it employed nine total AmeriCorps garden educators. Of those AmeriCorps members, only one came to the MGEP with a teaching degree.

Participants, current and former AmeriCorps members in particular, believed that an asset of the MGEP-style of teaching and learning was that the individual educator was empowered to shape student learning experiences based on the educator's unique background and expertise. Though curriculum and lesson plans did not vary dramatically depending upon the educator at the helm of the lesson, this diversity in teaching was demonstrated mostly through the off-the-cuff comments made by educators during a lesson, or in the specific connections they would draw in one-on-one conversation with students. Mark, who brought a humanities background and interest in cultural anthropology to the garden, focused more on connections between humans and food culture in his teaching. He said, "Maggie and Tori are both public health professionals, and so, I think they see the garden a little differently than Pete and I did." Maggie and Tori's off-the-cuff comments tended toward nutrition-focused information and information about physical activity in the garden. Mark went on to say, "To me, that was always the coolest part of the MGEP, was that you could teach anything there. Even though, by and large, the curriculum remains based on plants and being more comfortable around plants."

Kerry reflected on this facet of the MGEP, historically, and on its potential disappearance as part of a more traditional educational model. She said:

> "One of the strengths I think, and it's one that is greatly in danger now, is that the program has always brought in a lot of other people from the community, and from outside the community, to have a hand in the education of the kids, and I think that's a tremendous benefit. We were talking about diversity, and diversity is good in all ways, and the more adults who care about kids and care about what they're learning, the more time kids can get with those people, and the more benefits kids can get from what those folks are doing behind the scenes is huge, and it brings in perspectives that are outside the silos of the school building and the school district. I think that's one of the key reasons that the program has become as successful and as big and as impactful as it's been, because we've had such a diversity of people and thought and ways of doing things and resources that the school just didn't have access to before"

The MGEP non-profit drew AmeriCorps members to its small, Midwestern home from as far away as Baltimore, Maryland, Portland, Oregon, and many rural and urban places in between. These educators brought expertise in public health, nutrition, sociology, anthropology, environmental science, biology, English, and much more. Additionally, four of the nine AmeriCorps members during the years of the non-profit era were men, and many volunteers with the organization were men as well. In a district that employed, at the time of the study, forty-one kindergarten through fifth grade teachers, but among those, zero men, this is significant. When Kerry spoke about the MGEP bringing diverse people and perspectives to the education of the community's children,

this was what she was talking about. In transitioning from a broad and diverse non-profit to a narrowly focused program of the school district, Kerry, and others, worried about the worldview and reach of the program and its participants constricting as well.

"We're not the two weirdos that live in the shed anymore"

Though people like Kerry valued the diversity of backgrounds and perspectives that the AmeriCorps educators brought to the school district, the AmeriCorps educators continued to battle the "not real teacher" stigma throughout the transition. While Maggie and Tori recognized that their association with Faith legitimized the MGEP program overall, they still felt awkwardly located somewhere between "real teachers" and not. Maggie and Tori, during one of the focus groups, commented on their repeated contact with students through the transition. Tori said, "They think that we're teachers, garden teachers. I don't know how an actual teacher would feel about calling us the garden teachers…I don't know if that's weird." Maggie replied:

> "But when it comes down to it, at the end of the day we're here for the students, not for the teachers, so the fact that the kids get to see us more, and they recognize us and they feel comfortable around us, I think that's more impactful then, because the teachers have to support us no matter what, because the administration makes them now!"

Though Maggie believed that their primary duty as educators was to the students, she still felt constrained and frustrated by the school policies. In a different conversation, she commented:

"With the school, since we're not officially employees, we have a lot more restrictions, like we don't really have a key to get in and out of the school, so for garden club if a kid has to go to the bathroom we have to make sure we got the key from our supervisor [Faith] before she leaves."

Tori perceived some confusion over the power dynamic within the garden education team of Tori, Maggie, and Faith to be trickling down into their dynamic in garden lessons. At the time of the study, they were team-teaching nearly all of the garden lessons. While Maggie and Faith liked the team-teaching style, Tori found it frustrating. Tori said, "I don't see the need for the three of us teaching one class. Someone is always getting talked over, or something different is being said." Tori, who strongly identified as a planner, and someone who did not want to improvise any more than necessary when teaching, was also frustrated when what she perceived to be fixed roles in a lesson were upended once the lesson began. She said:

"It's never predetermined, like, 'Are you leading this lesson, and we're helping? Or are we leading? We'll get into a classroom, and we're thinking that maybe Faith is leading the lesson. Then, all of a sudden, she turns it over to Maggie and me unexpectedly. We're like, 'Oh, well, I guess we're leading this lesson now.' We've both been frustrated with that multiple times."

Finally, Tori, felt that the team teaching dynamic kept her from actually being able to teach as much as she wanted to. She said:

"I feel like I do get lost in the teaching because they…I feel like Maggie knows more than I do. I let her explain things. I will step back, or she feels like she can explain something better than I can. Then, Faith is just loud. I get lost between the

two. I never know, when should I step in and help? I mostly just sit with the kids and make sure they're understanding what's being taught."

During garden lesson observations, the confusing dynamics of the garden education team were evident as well. On occasion, students seemed to have a difficult time determining where to focus their attention, when one garden educator would speak and then another would take over from a different part of the garden or classroom.

How does learning happen (teaching methods, content)?

"They learn every subject in school in the garden"

It has been mentioned that, overall, participants viewed the MGEP program as both an agent of *garden education* and *garden-based learning*. These two concepts, though related, are differentiated nonetheless. Garden education refers to the teaching of straightforward skills of gardening, harvesting, and food preparation. It is in the "garden as a special" framing that the garden education component of the MGEP has emerged. Garden-based learning, in contrast, refers to methods of instruction that may use the school garden as the physical learning environment, but in this environment, teach lessons from all subjects and content areas. Garden-based learning connects to the curriculum integration mentioned repeatedly by Sue and others, and the "power standards" mentioned by Maggie; standards-driven content that is taught in the grade level classroom and reinforced by the MGEP garden education team.

Though Tori valued the life skills of learning to garden and learning to feed oneself that the MGEP cultivated among students, she also appreciated the diversity of

core content areas they could teach in the garden. She said, "they learn every subject in school in the MGEP garden as well. I mean, you can go from reading, math, science, to social studies, history…then, you have your agricultural and environmental sciences."

When talking about the content and curriculum of the MGEP program during his time as an AmeriCorps member, Mark's comments reflected the aforementioned curricular personalization that garden educators could engage in based upon their own backgrounds and expertise. Mark said:

> "I think Pete and I, we really contributed a little bit more of a social focus, or at least since my background is more in the humanities I wanted to try and incorporate some of the history and culture behind food, so we designed some lessons looking at the cultural foundations of food. We had a whole lesson with the fifth graders about African crops, Native American crops, and the crops that the Europeans brought over. That seemed to go really well."

Maggie reflected upon the MGEP's ability to fill voids in the school curriculum. She noted, as others have, that the MGEP had the freedom and capacity to address content that classroom teachers may not have had time to fully cover. However, she also spoke about how she personally recognized a deficiency in the school curriculum, and used her position as a member of the MGEP team during the non-profit era to design lessons that attended to the deficiency. Maggie said:

> "I noticed that there weren't a lot of extra languages being taught in the primary and elementary schools, and from what I know about childhood development, that's a really good time to introduce kids to other additional languages. So, we came up with an idea where we talked about the seed to plant life cycle, but we

did it in English and in Spanish to teach second graders some Spanish words. Throughout the whole semester, each lesson, we would add six more Spanish words, so by the end of the semester they had close to twenty words. And, we actually got a few teachers sending us an email saying that they really loved it and thought it was a great idea, so that was pretty cool to hear!"

Though Pete and Maggie did not overlap in their AmeriCorps service, Pete commented on the freedom that garden educators had to develop innovative lessons, like Maggie's, during the non-profit era. Because Pete went on to work at another agricultural education non-profit after his year at the MGEP, he demonstrated a perspective more grounded in the non-profit structure than other AmeriCorps participants. He said, "That's one of the benefits, I think, of working as a non-profit as opposed to being managed by the district, you have a little more freedom to teach what you want."

In designing lessons, garden educators drew from a variety of sources, ranging from informal conversations and meetings with classroom teachers about their content and potential connections to the garden, to pre-written, complete curricula from other garden-based learning organizations. Mark said, "Maybe 60 or 70% of what we taught either came from previous lessons that [former AmeriCorps members] did or from *The Growing Classroom* text." *The Growing Classroom* text is a seminal book of curriculum in the garden-based learning community, written by the Life Lab organization in Santa Cruz, California and published by the National Gardening Association. It contains dozens of complete lesson plans at all grade levels, connections to national learning standards, and suggestions for classroom extension activities. Additionally, with the book comes access to the Life Lab online database of additional lessons, appropriate standards

connections, and garden resources. The Edible Schoolyard Project, founded by Alice Waters, also maintains an online database of user-generated garden and cooking lesson plans. Participants in the study referred to these two resources regularly. Though all of the garden educators, AmeriCorps and non, acknowledged the relative freedom they had to create novel lessons and curricula, they all spoke of building off of what previous educators had done, and not "reinventing the wheel" when lessons had been successful in the past.

"The tactile nature of the lessons is the biggest strength"

In line with the central focus of experiential learning theory, participants discussed how the lessons in the MGEP garden brought abstract content to life for students by engaging them in hands-on learning. Sue talked about how, with the appropriate guidance from the garden educators, the hands-on nature of the garden-based learning experiences could lead to inquiry-based, student-led learning as well. She commented:

> "It's very authentic, the kids are in the soil, it's all hands-on and then there's just the natural dialogue that happens, and I think that part's really cool because sometimes kids are leading us where we want to go, or they want to go, and if you're really listening that can lead your instruction."

In addition to being tactile, Mark, and others, referred to the curriculum as "novel" and "memorable to students." Pete shared a story that illustrated the ability of the MGEP's garden-based learning to connect abstract content to real life. He said:

"I think it was second grade, because we were talking about water and soil, and we did an erosion lesson. So, we took a poster board and folded it into a rectangular prism, four sides, and we set it upright and we poured water from a watering can at different heights next to the sides of the poster board. So, [on one of the sides] we didn't pour water, one we poured from knee high, waist high, shoulder high…to see how far up it splashed on the poster board. We measured it, we took some data…I could have gone further, could have done a lot with that lesson with older kids, but we just went that far and then unfolded it and it's just a graph made by the splashed water and soil, it shows a linear graph, and students are like, 'that's like math!' and I'm like, 'yes! Math is just how we express natural phenomena in numbers!' It's so cool to see them connect those two things. With soil and watering cans and poster board."

In talking about her impressions of the transition to school district control, Tori expressed that she had seen changes in the curriculum from the non-profit era to the school district era. Her impressions of these changes were closely connected to previous discussions of the reliance on the indoor garden classroom after the transition, as well as discussions of the team teaching and power dynamics of the garden team through the transition. She said:

"I do think [the curriculum] has changed. I feel like we do a lot more crafts, in my opinion, which I guess is useful for the kids, but I don't know. I'm not into all the crafty things that we do, I'd rather do more physical planting, starting seeds, things like that."

Tori acknowledged that perhaps they were relying on crafts because they were easier to do in the indoor garden classroom, but she also believed this change was connected to Faith's relative inexperience with gardening herself. Crafts were a focus of the garden lessons during observational data collection. During one observation, in the garden classroom, students made plant-able seed paper from recycled paper to sell as an MGEP fundraiser during the local Earth Day celebration. During another observation, also in the garden classroom, students used pipe cleaners and other craft supplies to make plants with various environmental adaptions. This lesson was requested by the grade level teachers, because they did not feel they had enough time to adequately cover plant adaptations in their classes. However, there is some irony in using craft supplies, indoors, to teach about plant adaptations when right outside the school building lies a garden brimming with plants of all shapes and sizes.

"I think they are trying to push the standards more"

The act of connecting garden lessons to state learning standards was a frequent topic of discussion among participants, though the framing of the importance of state standards varied depending upon the role of the individual participant in the MGEP. For educators firmly situated in the non-profit era, connections to state standards were viewed as a "bonus" of the garden programming; a hook to get the buy-in of teachers and administrators. For educators on the school district side of the transition, the fulfillment of state standards was essential to the planning, execution, and assessment of garden lessons. In reflecting upon the lesson planning process during his time as an AmeriCorps member, Mark said:

> "We kind of used the [state] standards as a guide for designing our own lessons. We were really more focused on making sure that we were teaching what the state needed us to teach, which I think was probably short-sighted on our part, because we had more freedom than we even thought."

Mark's comment is reflective of both his time in the MGEP during the non-profit era, and of his continued engagement with the program as a volunteer through the transition to school district control. In some ways, he felt as though he and Pete missed an opportunity to really push the bounds of MGEP programming to the edge, because while they were only informally required to meet state standards with their lessons, after the transition school district controlled garden educators were mandated to do so.

Sue viewed the integration of state standards into the garden curriculum as a "natural extension" of classroom education, and she spoke of the process of standard integration as almost effortless due to the breadth of topics educators could cover in the garden environment. While some participants framed tying garden lessons to standards as a restrictive or stifling act, Sue did not. Perhaps her decades of experience in education gave her a deeper level of familiarity with the process of meeting learning standards through hands-on learning. Or perhaps, as a primary educator, compared to Faith's experience as an elementary educator, learning standards in Sue's world were simpler in general. Sue reflected:

> "I think you can teach how to garden in the garden, but I think you could use the garden for lots of other things. Lots of other learning standards can be accomplished because we wrote in the garden, we made observations about change, we measured our seeds, we've done math in the garden, we've made

maps in the garden, we wrote Haiku in the garden, we've done lots of things in the garden."

In talking with Sue about challenges to getting administrator buy-in to the garden program, I remarked "well, students love hauling mulch in the wheelbarrows, but there's no state standard for mulch hauling." Without missing a beat, Sue deftly responded, "there is if you go back inside and write about it."

Naturally, the participant who spent the greatest amount of time discussing state standards and the garden curriculum was Faith. After all, she was the one who was charged by the school district with formalizing the curriculum, and justifying it in the eyes of the local school board and the Department of Education, through the achievement of state learning standards. Faith acknowledged that she had inherited a strong curriculum, developed over the previous decade by the MGEP non-profit. She said, "I'm writing curriculum to go along with what's already been taught, and what we're planning to teach, and incorporating those state standards." Faith demonstrated a comfort with the learning standards that was similar to Sue's, and like Sue, she talked about being able to meet learning standards through myriad garden-related activities. Faith said:

> "They're learning life skills, but I'm still able to get those standards taught at the same time. When you can kill two birds with one stone in one lesson…that's pretty amazing. We talked about our objective of how to try new foods, and then we're taking it and introducing it through a book, and we're teaching alliteration at the same time because we're reading *Sylvia's Spinach*."

Tori spoke about Faith, and remarked that she had a much greater level of comfort with the learning standards than either Tori or Maggie. She said, "Faith, she knows how

to read those standards, which I've tried before. I can't follow them." She commented that Faith not only had formal teacher training in standards-based education, as well as years of experience working with the standards, but she also had access to online databases and school resources for standards integration that Tori and Maggie did not. Tori continued:

> "Faith has that knowledge. We do not. It's definitely something that has to be learned. You can't just jump in and learn all the standards and be able to connect them. That's something that would take me forever to figure out."

Faith talked about the online program through the school district she was using to develop the formalized garden curriculum. This was a resource that the MGEP did not have access to during its non-profit days. Faith explained:

> "It's called BYOC, or Build Your Own Curriculum. It's online, and in that way it's easy to cut and paste specific websites that I use for information, or upload some of the worksheets or recipes or whatever may go along with it."

In addition to the explicit learning standards, there were numerous signs of curricular standardization, more generally, throughout observational data collection. This was alluded to by Kerry during her interview, in which she said, "…already some teachers have said that there have been worksheets. We never did worksheets, but now there have been a lot of worksheets." Numerous lessons that were observed included worksheets of some sort, which were difficult for students to hold on to during outdoor garden lessons, and indoor lessons often utilized SMART boards to display videos or online learning tools.

Though Faith spoke enthusiastically about the freestanding value of hands-on learning experiences in the school garden, there was one particular discussion that revealed how bound she really was to meeting state standards, and to the standardized approach to public education overall. When asked about her favorite lesson from the non-profit era of the MGEP program, she immediately recalled and eagerly shared her answer. She recounted:

> "One of my favorite lessons ever, and Kerry did it, it's been years ago, but we were teaching map skills, and I mean, you know, actual maps that you look at, which we don't all do anymore because we have Google maps…but teaching them north, south, east, west, and latitude and longitude. Kerry had set up a scavenger hunt in the garden and they had to find specific things by going west and going east and turning right and left and…it really resonated with them and they got it."

However, when asked if, as the new garden teacher and person in charge of the garden curriculum, she would teach the same lesson again, her response was quite different. She said:

> "…well, it depends on if that's something that still needs to be taught. If you're trying to stick with the standards, social studies has changed since then, and science is changing now…we don't standardized test on social studies anymore, which is where those map skills came in, so, to the Department of Education, is that really something that's important?"

"There's a lot more STEM"

Just as participants from the non-profit days of the MGEP spoke about connections to state learning standards as bonus to high quality, experiential learning, they spoke about engaging science, technology, engineering, and math (STEM) in the same, bonus, way. Non-profit MGEP educators prioritized garden-based learning experiences, and any incorporation of STEM concepts was effortless and constituted an additional perk. In contrast, talk of STEM in the garden was at the forefront of conversations about the garden after transitioning to school district control. Formal teachers often place school gardening and garden-based learning within the STEM "box," perhaps because it is a familiar place for them. However, non-profit MGEP AmeriCorps members, and MGEP individuals more aligned with a non-formal teaching paradigm, viewed STEM topics as a small segment of content that could be covered in the garden.

When asked about how he saw the MGEP focus changing since his time there, and his vision for the future of the program, Pete reflected on the retention of the program's central purpose of hands-on education in spite of structural changes. Pete envisioned the following:

> "Maybe they'll [garden education team] do something and it'll be even better and kids will be even awesome-er, or maybe they'll change something and have more of a focus on, like, math, or something the kids aren't as interested in, you know, just make it feel more like a classroom. But they're still gonna be outside, they're still gonna be digging in the dirt, they're still gonna be eating vegetables, and I think that has an inevitable impact on their environmental consciousness and stewardship and their interest in STEM fields."

When Kerry, who had the strongest personal stake in the earlier iterations of the program and its formerly broad curriculum, was asked how she saw the focus changing under school district control, she said, "STEM, of course, is a big buzzword in education and a big focus right now, so I think that's gonna be a big focus of the program."

As with discussions of previous themes, when speaking about the shifting focus of the curriculum, Maggie connected it to changes in both the learning environment with the acquisition of the garden classroom, and the teaching schedule. She said:

> "I would say that, especially since we have all these winter lessons now, there's been more of a focus on STEM, so, we try to do garden-related projects in the winter, but they always come back to science, math, technology…not very much engineering…though I guess we did some with structures that the fourth graders made, that was teamwork and engineering I guess…but yeah, I would say there's a lot more STEM involved instead of just saying, 'alright kids, we're gonna go out and weed this row over here.'"

Throughout the history of the MGEP program, there has been a tension over the role of technology. During my time as an MGEP AmeriCorps member, the independently wealthy family of one of the school's classroom teachers donated dozens of iPads to the school. Whenever the garden team would meet with this particular teacher's grade level team, she would talk about garden-related apps the MGEP should consider using, and she would ask repeatedly why the team was not using more technology (specifically her family's gifts) in the garden. When the garden team would explain to her their philosophy of place-based education and experiential learning free from technology in the garden, and talk about how they believed the garden should be the one place at the school where

students do not have to be in front of a screen, she would get noticeably agitated. She felt personally insulted by this philosophy, and it was a constant barrier to her acceptance and appreciation of this program. This example simply illustrates an ongoing battle between the MGEP and a system of public education that relies more heavily on technology with every passing day.

Sue, who championed a personal philosophy of hands-on education, kids in muddy boots, and the value of getting students outside, commented critically that "…we spend a lot of stagnant screen time, worksheet time." However, in the same interview, when asked about her vision for the program, she said:

> "I would really like to see more technology. I would like to see them utilize iPads out there, I think you could do all kinds of things out there. Take pictures, write, you could have all kinds of data over time with your iPad in the garden."

Technology use, it has been mentioned, featured heavily in the indoor lessons the garden team led during the winter months, or during poor weather. When the garden educators were unable, for whatever reasons, to expose students to authentic learning experiences in the school garden, they attempted to replicate them by playing videos on the SMART board. In the winter, when pollinators were not active in the garden, the garden educators showed students a high-quality video of pollinators pollinating various plants. The school district garden education team also had older students use iPads to film short "tour" videos in the garden, or to take photos from their point of view in the garden. Faith compiled these photos and videos, as well as photos and videos taken by the educators, into monthly video newsletters to share with the whole school community, showing them the goings-on in the garden that month.

While Kerry recognized the value of technology as a tool to spread the message of the garden program, and even had a more liberal view of student technology use in the garden than others associated with the non-profit era, she expressed concerns about shifting boundaries regarding technology use through the transition of control. These concerns reflected her earlier, broader statements, about the MGEP once serving as a challenger of the school district's way of doing things, but after the transition becoming complicit in their approaches to education. She said:

> "From what I can glean from Faith, technology is a big thing for her, so kids are using tablets out in the garden, and they've worked towards getting WiFi out there…because (sarcastically) we needed more technology in the garden. Because we've had so many people say, 'hey, the garden's great but we need more technology!' No. Nobody's ever said that. In fact, people say the opposite. They value it as a place where students are not plugged in."

How is learning assessed?

Assessment of learning in the MGEP program at any particular point in its history was tied directly to the structure of the program at that time, and perhaps more importantly, to the funder of the program at that time. For the five years that the MGEP operated as a non-profit organization, its primary source of funding for all salaries, stipends, and operations was the $500,000 grant from the statewide public health foundation. Because of the public health focus of the funder, assessment of MGEP programming and outreach, in the form of reports submitted to the foundation, focused

specifically on health-related outcomes. The grant funders were not an educational entity, so their concern was not necessarily that the MGEP was identifying and meeting state standards and learning objectives.

An additional layer of accountability and assessment was provided by the umbrella regional healthy foods AmeriCorps program that oversaw the AmeriCorps members who worked at the MGEP, during the non-profit era and through the transition. Over the course of the MGEP's life, the assessment expectations and reporting tools of this entity evolved. In the earlier days of the non-profit era, to meet the assessment demands of the regional AmeriCorps program, members only had to submit the pre- and post-test results of a "neo-phobia survey" that quantified the health of the food environment at the school, students' comfort with new foods, and the effect of AmeriCorps member on improving both.

Over time, the AmeriCorps assessment process formalized, and the neo-phobia survey was replaced by the K-W-L assessment. After every lesson, AmeriCorps members submitted their K-W-L data to a single, contracted evaluator who recorded and analyzed the instructional effectiveness of the entire regional AmeriCorps program. Even this, though relatively formalized for the AmeriCorps program, is informal by public education assessment standards. As Maggie said, "…the K-W-Ls, they don't feel like an assessment. It feels like a conversation with students." The shift from the neo-phobia survey to the K-W-L assessment, combined with the shift from public health grant funding to school district funding, shaped both the instruction of the program and its corresponding assessment.

When asked about assessment of garden programming, Maggie spoke of the K-W-L assessments actually fostering inquiry-based learning among students. She said, "…the K-W-L assessments we do, it's supposed to be more student-led learning, so they'll ask questions about what they wonder, and that will guide your teaching." In one of the focus groups, she also spoke about an assessment-based disconnect with the classroom teachers. Maggie remarked:

> "They [classroom teachers] do a lot of pre-test, post-test assessments that are a little different from our K-W-Ls. When we first started doing this, we started asking a lot of the teachers, 'Hey, are you familiar with this?' They said they are familiar with it, but they barely do them."

Tori continued, "…we only see them for 45 minutes. That's the only way to get that info. They [classroom teachers] have time to pre-test them, do the activity, and a week later do the post-test. We don't have that."

K-W-L time was a relatively consistent feature of the garden lessons that were observed. With few exceptions, the garden team started a lesson with the "K" discussion, and then the "W" discussion, before moving into the instructional part of the lesson. When timing worked out as they planned, the class and garden educators reconvened at the end for the "L" discussion. However, this was dropped when lessons ran long, though sometimes Faith or another member of the team would collect more informal "L" data from students by walking through the group, asking questions, and jotting down notes about what they learned. During a kindergarten lesson about growing, observing, and tasting spinach (the one in which they read the book *Sylvia's Spinach* referenced earlier),

held out in the garden in the fall, the following comments were made by students during the three parts of the K-W-L discussion:

I Know…	I Wonder…	I Learned…
"…my mom eats spinach even though she doesn't like it"	"…if the spinach we planted has grown yet"	"…that spinach is good"
"…you can eat spinach with salad"	"…if our spinach is sweet"	"…that spinach is really good!"
"…spinach starts out as a little sprout"	"…if spinach can be a different color"	"…that spinach is healthy"
"…we can get spinach in the cafeteria"	"…if spinach can be poisonous"	"…Sylvia didn't use to like it but she changed her mind"
"…sometimes spinach is green"	"…if it can grow anywhere in the garden"	"…you can eat it with anything"
"…you can try a small piece or you can take a fork and put the whole thing in your mouth!"	"…if you can pick it and put it in a big red barn"	"…what spinach looks like"
"…we eat the leaf"	"…if spinach has seeds"	"…spinach can be super duper super duper yummy!"
"…we can eat the stem, too"	"…if it grows anywhere in the world"	"…that you can try new things"
"…I never tried spinach"		"…you have to try new things to know if you like them"
"…I tried salad before but I don't remember if I like it"		"…the seed starts under the ground"

Figure 4. Example "Know, Wonder, Learned" Chart

After the transition, as an official member of the school district and recipient of its funds, Faith was tasked with establishing, maintaining, and justifying the efficacy of the garden program as a means of meeting state standards and accomplishing standardized learning objectives. Tori spoke about this, saying, "Faith takes care of all that stuff. She

submits her reports. I don't know if it's quarterly or what, but she's constantly submitting reports on how the MGEP is meeting standards, what lessons we're teaching." Though Tori and Maggie, as AmeriCorps members, continued to report K-W-L data to the AmeriCorps program evaluator, Faith was obligated to the school district to assess the garden program within their framework and understanding of learning. Referring to the BYOC program that she used in constructing the curriculum for the garden program, Faith talked about building objectives and assessments into the curriculum as she went. She said:

> "I'm doing my SLOs on kindergarten, which are student learning objectives. Since this is a brand new program for the district, and I'm writing curriculum as we go, I wanted to start with a class that this year was the first time they had been in the garden. I am starting with kindergarten and I'm going to build on them as I go. I hate to use the word track, but that way I can see, okay, I'm going to track one class, but they are all getting the same lessons. I can keep track of this one group and build on the knowledge they gather in kindergarten and then on up."

Faith designed the SLOs to directly correlate to the state learning standards for each grade, and at the time of the study, according to her individual assessment based upon K-W-L data and more subjective, conversational data, 100% of classes were meeting the SLOs she had set forth for each lesson. She spoke of receiving overwhelmingly positive feedback from her supervisors on the curriculum and assessment data she had submitted through the BYOC program. She said, "To be able to put 100% not matter what the objective is, is saying a lot. That was impressive enough to bump me up a point [in the system]."

CHAPTER 5: DISCUSSION

> "I told the superintendent, 'what it feels like you're doing is taking this thing, the MGEP, that's already a big, beautiful tree, and you are cutting its branches and roots off, and you're sticking it in a pot that you're familiar with and you feel like you can take care of. Like it would be better under a grow light in the corner of Faith's room.' I said, 'don't do that. You're gonna kill it.'" -Kerry

Introduction

This final chapter begins with a brief discussion of the purpose of the study and its central issue question. Discussions, conclusions, and implications of findings are organized beneath appropriate research questions, as the findings themselves were in the previous chapter. Broad, crosscutting conclusions from the study as a whole are discussed holistically. Chapter Five concludes with a discussion of recommendations for practice, and recommendations for future research derived from the findings and conclusions. All findings, as well as corresponding conclusions and implications, are applicable to the bounded system of the research case, as determined by the experiences of the participants, the researcher's interpretation of their interview data, and the researcher's own experiences and observations. I acknowledge that other interpretations of the data are possible, and that my role as the instrument of qualitative research has shaped the findings and their interpretations. The case is not intended to represent all school gardens or garden-based learning programs; it was chosen because of its uniqueness and ability to provide insight into a deeper issue (Stake, 1995). Additionally, the experiences of the research participants are not necessarily representative of all individuals who have interacted with the MGEP over the years, though the participants were purposively

selected due to the insight they could offer, and data collection was continued until saturation was reached.

Purpose

The purpose of this instrumental case study was to examine how the transition of control of a garden-based educational program from independent non-profit to school district affects various elements of the school garden, including participant perceptions and motivations, organizational mission, and teaching methods and philosophies. The central issue question that guided the study was: How does a change of control of a school garden, from volunteer or independent non-profit to public school district, shape the nature of the garden program and the learning experiences therein?

The findings that emerged from the study reaffirmed the choice of case study as the research method, in that the contextual conditions of the case were relevant to the phenomena under study, and that clear boundaries could not be drawn between the phenomena and the context (Yin, 2003). The nature of the Midwest Garden Education Project and the learning experiences it facilitated were indeed shaped by the administrative entity in control of the program at any given time, and as such, were altered by the change of control of the program. Because the bounded system of the MGEP was made up of inextricably interconnected elements, even a slight change to one element, initiated by the transition of control, caused ripple effects across all others. A prime example of this, which emerged repeatedly throughout the previous chapter, was the acquisition of the indoor classroom. Though the garden classroom itself was but a single element of the newly school district controlled program, acquired during the period of transition, it altered and was altered by all other elements of the bounded system. The

introduction of an indoor classroom into the MGEP affected the nature of the lesson plans, the teaching methods, the classroom management, the instructional team, and, in the end, the learning experiences of the students. The role of the classroom will be discussed in depth later in this chapter, but was mentioned here as a single symbolic representation of the transition of control.

What are the motivators that drive teachers, administrators, parents, and students to engage with the school garden program?

Though scholars have begun exploring motivation in garden-based learning through peer-reviewed research, thus far this research has been limited to student motivation and engagement in the school garden (Skinner, Chi, & The Learning-Gardens Educational Assessment Group, 2012), and has not explicitly addressed the motivations of adults who establish or maintain school garden programs. Researchers have found that students' perceived autonomy, ability, and intrinsic motivation predict engagement in the garden program, and in turn predict their learning in both the garden setting and broader school setting. The world of garden-based learning and school gardening is overflowing with anecdotal evidence and media coverage of participant enthusiasm for the work, but the motivation-centered findings from this study make a unique scholarly contribution to the body of garden-based learning literature.

In this study, adult participants were motivated to engage with the school garden program because of a personal commitment to the mission of the organization, a philosophical commitment to garden-based learning, a desire to allow "kids to be kids," a

desire to offer a holistic educational experience that the school district was unable to provide, or a commitment to exposing children and community members to "good food." Though research has not explicitly framed adult facilitation of garden-based learning in terms of adult motivation, these motivators as discussed by the study's participants aligned with the student learning and health outcomes of successful garden-based education programs (Berezowitz, Bontrager Yoder, Schoeller, 2015; Blair, 2009; Hirschi, 2015).

While participant motivations to engage with the MGEP remained relatively consistent over the course of the transition, the changes in the structure of the program after coming under school district control constrained the realization of some of the participants' desires. Kerry spoke about being motivated to co-found the organization because she had witnessed a reduction in student time outside since her children started school in the district. As the organization shifted from independent non-profit to school district control, and as Kerry's role in the MGEP was reduced and eventually ended, a focus shifted from facilitating free play and basic time outside to teaching academic content and meeting state learning objectives. These could be accomplished in the indoor classroom, and thus the independent motivation of "getting kids outside" was reduced.

Literature confirms that free play, outdoor exploration, and simple time in nature are crucial factors in young children's development of an environmental conscience, and that unstructured time outside fosters in children an emotional connection to the natural world, the impacts of which correlate to environmental behaviors in adulthood (Louv, 2008; Sobel, 2004; Waliczek, Logan, & Zajicek, 2003). Though other participants did not speak as extensively about the freestanding value of time outside as Kerry did, they did

talk about attending to the development of the whole child in the garden, and instilling in children a sense of wonder about the natural world. Pete believed that engaging children with outdoor, place-based, environmental education was the only way to save endangered ecosystems or local food systems. If, in the future, members of the MGEP team hope to achieve these sorts of grand outcomes through garden-based learning, the programming and learning environment must be maintained in a way that is reflective of those motivations. Environmental education scholarship is skeptical about whether indoor, content-focused environmental learning experiences have any lasting impact on student environmental behaviors (Howes, Graham, & Friedman, 2009; Louv, 2008), and scholars have argued that the purpose and practices of environmental education and traditional schooling may be too conflicting to be effectively combined (Stevenson, 2007). Though the MGEP has become an official part of the school, it must continue to serve as a challenger of the school status quo and a facilitator of outdoor learning experiences, or alter its mission, vision, and participant recruitment accordingly.

What are the barriers that hinder teacher, administrator, parent, and student engagement with the school garden program?

Barriers to engagement with the program, as expressed by the participants, fell into a few general categories: time or scheduling challenges, safety concerns, or cultural differences between the program and the individuals it hoped to engage. The AmeriCorps participants spoke specifically about a divide between them and the "real teachers" in the school. They saw this divide contributing to a lack of support from classroom teachers,

creating additional challenges with the scheduling of garden lessons, and causing issues with power dynamics during the lessons. Maggie and Tori perceived some improvements in their working relationships with the grade level classroom teachers through the transition, which they attributed to their connections with Faith and the consistency of their presence in the school building.

The collection of barriers to engagement that were discussed in Chapter Four, generally, reflected challenges to what was seen as "sacred" in the school culture in which the MGEP operated (Corbett, Firestone, & Rossman, 1987). The MGEP challenged the school culture's notions of who should be allowed to educate its children, where learning should take place, what that learning should look like, and how risky or dangerous it should be. Concretely, it directly challenged school weather and safety policies, which had become an ingrained, sacred part of the school culture.

AmeriCorps member and certified teacher participants alike faced challenges to finding enough time for garden programming during already busy schooldays. These challenges were not unique to the MGEP case, and have been examined repeatedly in other scholarship (Williams & Brown, 2013; Yu, 2012). Garden-based learning and school gardening opportunities provide a respite from jam-packed, stressful school days for young students. However, the ironic challenge is that, as school days become fuller and fuller with increasing expectations of content hours and the increasing demands of high-stakes testing, students need the outlet that gardening provides even more, but teachers have less and less time to fit gardening into their schooldays. This is why a key, as Sue described it, to effective classroom teacher engagement is curriculum integration,

as well as clear articulation of that curriculum integration by the garden education team to the classroom teachers, district administrators, and policymakers.

Advocates of garden-based learning must carefully hone and present their messages to classroom teachers, particularly in terms of time and schedules. If a language arts lesson can simply be moved to the garden space, still meet the same objectives as if it were held indoors, but incorporate gardening activities and a bit of free exploration, the classroom teacher has not lost any precious time in her day and the students have gained the additional benefits that come with garden-based experience. This slight alteration and reshaping of in-class curriculum, of course, requires extra effort on the part of the classroom teacher, and moving an indoor lesson outside presents additional barriers and challenges. However, supplementing formal educator knowledge and experience with the non-formal educational knowledge and experience of AmeriCorps, or similar non-traditional, educators during curriculum development and lesson planning can maximize learning outcomes and minimize barriers. This continued collaboration will, over time, break down unnecessary and limiting divisions between "real teachers" and not. When schools open their doors to new perspectives on and new participants in the education of their students, students, teachers, administrators, and society stand to benefit (Sobel, 2004).

Participants' perceptions of concerns about student safety creating a barrier to teacher and administrator engagement were reflective of the broader tensions between the nature of garden-based learning and the nature of public school in the United States (Blair, 2009; Desmond, Grieshop, & Subramaniam, 2004; Yu, 2012). Though safety, specifically, is mentioned throughout existing scholarship as a challenge to full utilization

and support of school garden programs, scholars have not devoted extensive attention to discussions of navigating safety in the school garden. The difficult negotiations that school garden practitioners must make concerning safety are, again, a microcosm of the larger tensions between garden-based learning and public education. In an attempt to please school administrators, school gardeners could limit "unsafe" activities in the school garden; eliminate the use of shovels or other potentially dangerous tools. Or, they could transition fully to the indoor model of education, in which garden activities are limited exclusively to those that can occur inside the classroom; crafts, virtual simulation activities, seed starting, or basic science lessons. I argue that this could not be considered garden-*based* learning, as the garden context would be nonexistent. Glimpses of these compromises were seen throughout the examination of the MGEP case, and the potential, negative effects on student learning and engagement were seen as well. Alternately, the school could work with the garden-based learning experts to reevaluate some of their policies and determine where the garden program could be given a bit more leeway, or where policies could stand to be made more flexible overall to encourage out-of-classroom experiences.

What are the goals of the school garden program, and the actors within?

The individual participant's role within the MGEP organization, and their position on either the non-profit or school district side of the transition, shaped their personal goals within the organization, and their perceptions of the MGEP's goals overall. As with the discussions of motivations, discussions of goals meandered between agricultural

reskilling (Carlsson & Williams, 2008; Howes, Graham, & Friedman, 2009; Stone, 2016) and educational enhancement or transformation (Blair, 2009; Passy, 2014; Sobel, 2004). Regarding food and health in the garden, literature has established the positive effects of garden-based learning on children's dietary habits and activity levels, and the positive outcomes are not explicitly linked to organizational or participant goals (Berezowitz, Bontrager Yoder, & Schoeller, 2015; Graham, Beall, Lussier, McLaughlin, & Zidenberg-Cherr, 2005; Lautenschlager & Smith, 2007). Being in a garden and being exposed to new foods, regardless of curriculum, structure, or facilitator, leads to improved diet and increased physical activity.

Though participants, specifically those from a public health background, spoke vaguely about goals of using garden-based learning to teach healthy eating, and by extension address chronic disease, in general the goals of teaching gardening and cooking skills were standalone. There was consistent language among participants that referred to students regaining lost skills, connecting students with the land "again," and bridging disconnects between producer and consumer. Participants spoke about an imagined, agrarian past in which young children automatically gained skills of food production, preparation, and consumption at home. They believed that this knowledge and these skills had been lost to time, and that the MGEP was instrumental in bringing them back. Though the participants did not know or use the terms deskilling or reskilling, many of their stated goals fit perfectly within a reskilling paradigm. These findings present a promising contribution to literature on alternative food networks, as this study is the first to examine school gardens, exclusively, as potential sites of reskilling in the food system.

Participants with a traditional education background, Sue and Faith, most specifically, were conditioned to think about the academic potential of the MGEP, and framed their goals in terms of the MGEP's obligation to meet state educational standards and supplement the work of grade-level classroom teachers with hands-on experiences. These goals are consistent with literature as well, and reflect consistent research findings that school gardens enhance academic performance and provide a rich context for teaching myriad academic subjects (Berezowitz, Bontrager Yoder, & Schoeller, 2015; Graham, Beall, Lussier, McLaughlin, & Zidenberg-Cherr, 2005). There is a risk, based upon trends observed during data collection for the study, that the demand to meet state standards and demonstrate academic outcomes in the garden program will overtake other goals and motivations, such as time outside or exposure to new foods. During the non-profit era, primarily due to the demands of the funder, success in the MGEP was measured according to health outcomes. Going forward, the school district will measure success in the garden program the same way it measures success of its other academic programs. Scholarship indicates that the ability of school gardens to improve academic outcomes comes in part from their respective curricula and academic content, but mostly from their cultivation of healthier students and experiential curricular enhancement (Basch, 2011; Koch, 2016; Meinen, Friese, Wright, & Carrel, 2012). Healthy, active students learn better. Future garden educators in the MGEP should be cautioned against leaning too heavily into the academic side of the program, as the academic success of the program cannot be disentangled from the health and food goals. Garden educators must argue to administrators and departments of education that time in the school garden

growing, harvesting, and eating healthy food is not time *away* from learning, but time that is *essential* to learning.

Again, the school garden as the central context of all MGEP programming—health, food, core academic content, and all gray areas in between—is what will allow the program to change and evolve moving forward without experiencing major sacrifices to achieving its intended goals. Though the pull to move lessons inside into the classroom is strong, and on the surface it seems that learning outcomes can be reached just as easily, if not more efficiently, indoors, garden educators must resist that pull. If the educational context of the edible school garden remains at the center of the MGEP going forward, organizational and individual goals can shift towards the academic without sacrificing the health outcomes.

What does learning in the school garden program look like?

Though this broad question was broken into its narrower sub-questions in the previous chapter, here the findings from the individual sub-questions will be discussed as a whole. The individual elements of learning in the school garden program, as singled out in Chapter Four, make up an interconnected system of learning and are considered here as such. Once more, the sub-questions are:

- *Where does learning happen?*
- *When does learning happen (in terms of schedule)?*
- *With whom does learning happen (volunteers, parents, certified teachers)?*
- *How does learning happen (teaching methods, content)?*

- *How is learning assessed?*

Participants described learning in the MGEP as authentic, engaging, experiential, and memorable. They shared vivid descriptions of "kids holding worms," kids tasting new foods, and abstract content coming to life in the garden. Discussions of learning in the school garden aligned closely with literature on experiential learning from Dewey (1938) and Kolb (1984) alike. It was clear that even the participants without formal or non-formal training in education had absorbed the language of experiential learning theory (Kolb, 1984) over the course of their work with the garden program. Lessons in the garden were designed with a brief review of content at the beginning, followed by some sort of lecture or content delivery, and then a hands-on activity to reinforce the abstract content. At the end of lessons, the "L" column of the K-W-L chart was completed, engaging students in reflection, as suggested by the Kolb cycle, or if there was no time for that there was at least an informal discussion of what was learned that day. Just as positive health outcomes could be gained spontaneously and naturally in the school garden setting, experiential learning was automatic in the school garden setting. Even if garden educators attempted to fill the 45-minute lesson with a didactic lecture, simply by virtue of being in a rich environment students would be exposed to more experiential learning opportunities than had the same lecture been delivered in the classroom. Of course, in formal classroom teacher vernacular, those "experiential learning opportunities" would be called "distractions."

Participants acknowledged changes to the nature of the learning in the garden program over the course of the transition of control. These broad changes could be traced directly to specific changes to the learning environment in the form of the acquisition of

the indoor classroom, the increased frequency of garden lessons from six times per year to once every four weeks including winter, and the creation and filling of the certified garden teacher position. Under the umbrella of changes to student learning created by those elements, more narrowly focused changes occurred as well. Student learning was assessed according to the state learning standards and expectations of the school district, the effects of which trickled down into the curriculum. Technology became an increasingly important part of the MGEP's activities, and whereas before the MGEP had seen itself as a protector of unplugged space and time for students, after the transition SMART boards and iPads made regular appearances in garden lessons. And finally, before the transition, classroom teachers had to stay in the garden with their students during garden lessons. Though they may have been disengaged and stood "at the back on their phones," they were physically present during garden time. After the transition, the certified garden teacher's presence in the garden was enough to appease the district, and so classroom teacher had no more contact with the garden program than dropping their students off at the garden gate.

Recommendations for Practice

Keep the garden in garden-based learning

My central recommendation for practice is to prioritize, above all else, the physical school garden site as the location of garden lessons. There is a reason that the role of the indoor garden classroom came up repeatedly in Chapter Four, and continues to surface throughout Chapter Five. Garden-based learning is predicated on an understanding that getting kids outside, engaging them in the production, preparation, and consumption of food, and exposing them to tactile learning experiences, is best for

students (Blair, 2009). Scholarship on school gardens and garden-based learning prioritizes the garden as the learning site, and when learning *about* gardening occurs in a traditional classroom, it is categorized as STEM and not garden-based learning (Desmond, Grieshop, & Subramaniam, 2004; Graves, Hughes, & Balgopal, 2016). Garden-based learning must be based in a garden.

I argue that the impacts of all of the other, potentially negative, shifts towards the public school paradigm that might occur through the transition to school district control, can be mitigated by maintaining the school garden as the core site of the program. The certified garden teacher may bring a more constrained, narrow view of education to the process of lesson planning and delivery than her non-formal educator predecessors. She may adhere to the demands of state standards and formal education's notions of classroom management more than her non-profit counterparts. However, if she is committed to teaching lessons in the school garden, even when it is cold or drizzly and even when staying in the indoor classroom would be easier, the hard edges of formal education will be automatically softened by the richness of the learning environment. For example, worksheets are difficult to use and hold onto in the school garden because they may get damp or rip or blow away, so teachers planning outdoor lessons are naturally averse to incorporating worksheets. Replacing worksheets with hands-on activity benefits students. Tori talked about how, since the transition, Faith had planned more craft-based lessons for garden classes, and how Tori did not feel that those were teaching any real skills or meeting any real standards. Had Faith planned those lessons for out in the garden, she would not have needed to come up with tangentially garden-related activities

like crafts to fill the 45 minutes, because those 45 minutes could have been filled with hands-on garden work.

Other elements of learning in the MGEP would be similarly "softened" by the retention of the physical garden space as well. When Sue talked about wanting to see more technology in the MGEP, she was referring to using iPads in the garden to take photographs, create videos, develop journals, and document changes throughout the seasons. In this framing of technology use, the iPad was merely an additional tool in the garden-based learning arsenal, not that different from the shovels, magnifying glasses, and butterfly nets already used to facilitate learning in the garden. By retaining and prioritizing the garden space as the learning environment, the introduction of technology can only alter student learning incrementally. In contrast, technology use in the indoor garden classroom represented dramatic changes to the learning itself. Garden lessons planned and executed in the indoor classroom used videos, the SMART board, and other learning technologies *in place of* the experiential learning that occurred in the garden. Technology in the garden merely serves to document the experiential learning that happens anyway.

Legitimation of garden-based learning

In addition to urging educators to keep the garden in garden-based learning, my remaining recommendations for practice revolve around a concept I have termed "legitimation of garden-based learning." Legitimation of garden-based learning refers to a collection of tangible actions and intangible shifts in school culture that I believe will expand and strengthen the impact of garden-based learning in public education.

The inspiration for the suggestion of legitimation emerged from moments throughout data collection in which participants spoke about the school garden as an important part of the school culture, a point of pride, and an element of the school identity that had crossed into "sacred" territory (Corbett, Firestone, & Rossman, 1987). A fifth grade teacher talked about how she had a new transfer student in her class that year. When it was her class's turn to visit the garden for their monthly lesson, the other twenty students knew exactly what to do in the garden, and they headed straight for the row of cherry tomatoes they knew to be ripe and available for snacking. The new student was confused and scared, and did not know what his classmates were doing. To the other fifth grade students, the garden was a legitimate, official part of their school day. This legitimation only occurred through repeated exposure, and the guidance of an "on-board" grade-level teacher.

Many of the challenges and tensions that were observed and discussed throughout the study stemmed from perceived hierarchies and disconnects that placed garden-based learning, and its facilitators, below or marginal to "real teachers" and formal education. AmeriCorps garden educators experienced barriers to fully integrating into the school culture. For example, they did not get their own keys to the building and they were not part of official school district professional development events. Though the relationship between the AmeriCorps educators and the school district improved over the course of the transition, much of the improvement was attributed to the legitimacy of Faith in the eyes of other teachers and administrators.

Suggestions for legitimation of garden-based learning among individual educators emerged from a conversation with Pete, one of the former AmeriCorps educators. After

his year of service ended with the non-profit he was working for at the time of the conversation, Pete planned to enroll in an agricultural education bachelor's program. Pete was going to take his three years of experience in a non-formal, non-traditional school garden setting with him to a formal, traditional teacher education degree program. Pete's epistemology and educational worldview had been formed by those experiences, which would shape and affect his experiences in the bachelor's program. Perhaps they would shape his peer's learning, too. Another former AmeriCorps garden educator at the MGEP enrolled in an education master's program following his service, and went on to become a third grade teacher. Tori and Maggie both expressed interest in continuing their careers in education of some sort, higher education for Maggie, and perhaps health education someday for Tori. Reflecting on the impact the MGEP had had on their educational philosophies, Tori said:

> "I think about how if Maggie or I were to become certified teachers how much we would take our classes outside and how we would start a garden. I feel like after working at the MGEP, I would take my kids out all the time to grow food, just explore outside, find bugs, things like that, just because we have this experience and see how beneficial it is."

Maggie said that her experience with the MGEP changed the way she thinks about education, and that now she views indoor education as "rigid and structured with extremely different expectations" than outdoor education. Long-term legitimation of garden-based learning must come from teacher preparation programs. Teacher preparation programs, including but not limited to agricultural education, should make a concerted effort to recruit students from non-traditional education backgrounds. Pre-

service primary, elementary, and special education teachers should be placed with garden teachers of formal and non-formal backgrounds. It is unrealistic to expect classroom teachers to integrate gardening into their pedagogy if they are not exposed to garden-based learning in their own education.

While legitimation of garden-based learning may be accomplished through the avenues outlined above—a legitimation of non-formal backgrounds or non-traditional epistemologies *through* traditional teacher certification—administrators and school districts must consider expanding beyond the teaching certificate as a criteria of singular importance in hiring decisions. As Kerry mentioned, she co-founded and ran the MGEP organization for ten years, and under her guidance it grew to be of such value to the school district that the administration chose to take it over and fund it. However, simply because she did not possess a teaching certificate, she was not qualified for the garden teacher position. This narrow view of who is qualified to teach, and who is not, represents a severe constraint on the potential growth of the garden-based learning movement within formal education. One could argue that Kerry was, in fact, the most qualified individual for the garden teacher position due to her intimate knowledge of garden-based content, familiarity with the quirks of the program and its history, and identity within the community as a symbolic pillar of school gardening. Because Kerry's knowledge and background were not valued in the traditional public education paradigm with its prioritization of teacher certification, she was not considered.

I suggest that school boards and administrators consider a more holistic view of candidate qualifications for unique positions such as garden teachers, school garden coordinators, or farm-to-school coordinators. I suggest that if position descriptions are

written to include teacher certification as a criterion it be listed as "preferred" rather than "required." Additionally, administrators could offer alternative qualifications in the position description, such as "teaching certification OR master's degree and three years non-formal educational experience." Finally, if the certification remains non-negotiable to the school board, administrators should forge clear paths to alternative certification for garden educators, and be willing to hiring non-certified, non-traditional educators with the contingency that they acquire a teaching certificate within a reasonable amount of time.

Legitimation of garden-based learning includes the legitimation of non-formal and non-traditional forms of learning assessment. Though the K-W-L assessment emerged from formal education scholarship, the teachers with whom the MGEP educators worked admitted that they did not use it to assess learning in their own classrooms. The impact of garden-based learning on students cannot be quantified solely through standardized testing, and the academic value of the experience cannot be separated from the holistic and health-oriented outcomes.

Finally, I suggest that legitimation of garden-based learning can come from garden-based learning professional development. I suggest that school districts with any sort of outdoor classroom or school garden host these professional development sessions. One well-established avenue for this is the Life Lab Growing Classroom workshop, which Sue and others mentioned repeatedly. These workshops, which are led by experts from Life Lab in Santa Cruz, California at schools across the country, are tailored to classroom teachers. They expose classroom teachers to the philosophy of garden-based learning, present best practices for outdoor classroom management, share example

lessons from the Growing Classroom curriculum, teach "back pocket" activities or quick activities for when you have extra time outside, and demonstrate curriculum integration and connection to educational standards. Sue believed that the Life Lab workshops were most effective because they brought in "outside experts," and therefore tempered any classroom teacher hesitation to engagement that emerged from MGEP fatigue or personality conflicts. Additionally, because they targeted and empowered classroom teachers to utilize the garden themselves, they encouraged independent utilization of the garden and reduced the framing of the MGEP as a "special" that was the responsibility solely of the certified garden teacher. Garden-based learning advocates can facilitate similar classroom teacher empowerment by inviting grade level teachers to garden conferences, such as the annual Children and Youth Garden Symposium.

Legitimation of garden-based learning does not mean adjusting garden lessons and school garden activities to fit the confines of the public school system. This is what occurred, discursively, when the MGEP was framed as a "special," and the resulting impact on the teaching and learning in the program was apparent. Though garden educators and garden-based learning advocates must, of course, make some compromises to avoid angering the teachers and administrators with whom they hope to work, by legitimizing garden-based learning, they demonstrate that it has inherent value to the health and education of children. In *Ripe for Change* (2015), Jane Hirschi challenges anyone who thinks that full integration of garden-based learning into public education is an impossible feat to consider the case of learning technology. There was a time, not that long ago, that the idea of computers, iPads, and SMART boards in every classroom seemed an implausible, far-fetched dream. However, it is clear that now, with few

exceptions, technology integration has become a non-negotiable part of public education. Hirschi believes, and I agree, that through appropriate advocacy, research, and support, garden-based learning could one day become as integral to a public education as the SMART board is.

Recommendations for Research

This instrumental case study has constituted a broad, introductory examination of a school garden program experiencing a transition of control, and a first step towards understanding how integration into a public school district constrains, supports, or alters the learning that occurs in the program. Because the MGEP was studied during this period of transition, some of the perceived or observed changes to the program and the learning it facilitated may have simply represented the uncertainty of the transitional time itself, and not long-term alterations to the MGEP. To further substantiate the existence of these changes, and to establish their impact on the overall program, longitudinal research should be conducted on the MGEP over the coming years. This research will tease out and qualitatively "control for" the effects of individual personalities on the program, and will indicate what sort of long-term pattern the program falls into. Faith was still adjusting to her new role at the time of the study, and the indoor garden classroom was a novel addition to the program. Perhaps Faith's teaching will become more non-formal over time, and perhaps the indoor classroom will lose its novelty and lessons will shift back outside.

The concept of "legitimation of garden-based learning," suggested in this chapter, should be explored further through qualitative research. I suggest undertaking a grounded theory approach to understanding the process of legitimation of garden-based learning

among formal, grade level classroom teachers. Additional research will solidify the concept of legitimation, and the focus on classroom teachers will provide new insight into their perceptions of garden-based learning, and their willingness to incorporate it into their pedagogy. The grade level teachers interviewed for this study were selected because of their history of involvement with the MGEP, so they did not represent a wide cross-section of classroom teachers in the district. This research will also respond to original call of Blair (2009) for qualitative research into how success is maintained in sustainable, smoothly functioning garden programs, and generate additional, practical recommendations for educators and administrators.

Quantitative or mixed-method research should also investigate the efficacy of the K-W-L assessment tool for garden-based learning. Establishing the credibility of this tool will contribute to the global process of legitimation of garden-based learning. The K-W-L tool, though rooted in formal reading education, is an appropriately constructivist, student-led assessment tool for a field like garden-based learning. Establishing its ability to assess student learning in the garden setting, and by extension demonstrate the value of garden-based learning overall, will help bridge some of the divisions between non-formal, garden-based learning, and formal, public education.

Finally, the MGEP was selected for this case study because of its uniqueness, and its ability to provide insight into the phenomena under investigation; the changes over the transition from non-profit to school district control. It is the uniqueness of the case, and the very nature of qualitative case study research, that make replication impossible. However, there is much more to be learned about the constraining influence of public education on the philosophies and practices of garden-based learning. The story of the

MGEP is unique unto itself. No two school gardens emerge, evolve, or are sustained in the same way. The school district version of the MGEP grew directly from the foundation that was established over the preceding decade of the program. Though there is no other school garden that has followed the exact trajectory of the MGEP, there are many programs throughout the country that are presently grappling with questions of long-term sustainability, and are navigating their relationships with their respective school districts. Additional qualitative, quantitative, and/or mixed method research must be done to understand how those organizations wrestle with questions of control, assessment, and funding, and how those negotiations are shaping the landscape of garden-based learning, agriculture, and public education in the United States.

APPENDIX A

CONSENT FORM TO PARTICIPATE IN A RESEARCH STUDY

Researcher's Name: Sarah Cramer
Project Number: 2009080

Project Title: Garden-based education in public school: A qualitative case study

INTRODUCTION

This consent may contain words that you do not understand. Please ask the investigator or the study staff to explain any words or information that you do not clearly understand.

You are being asked to participate in a research study. This research is being conducted to document the story of the school garden, and of those who have worked in/with it. When you are invited to participate in research, you have the right to be informed about the study procedures so that you can decide whether you want to consent to participation. This form may contain words that you do not know. Please ask the researcher to explain any words or information that you do not understand.

You have the right to know what you will be asked to do so that you can decide whether or not to be in the study. Your participation is voluntary. You do not have to be in the study if you do not want to. You may refuse to be in the study and nothing will happen. If you do not want to continue to be in the study, you may stop at any time without penalty or loss of benefits to which you are otherwise entitled.

WHY IS THIS STUDY BEING DONE?

The purpose of this research is to develop a complete picture of a successful school garden program as it transitions to school district control. This will be accomplished by studying the teaching and learning activities of the garden education program, and by documenting the experiences of teachers, volunteers, administrators, and students who have interacted with the garden over the years.

WHAT AM I BEING ASKED TO DO?

You will be asked to participate in a one-on-one, audio-recorded interview about your experiences with the school garden.

Additionally, if you are an educator who leads classes in the garden, you may be asked to participate in an on-site observation of garden classes. During these observations, the researcher will sit in the garden, take notes, and videotape (without capturing faces or identifying features) students and teachers. Parents of students, as well as the district

superintendent, have been informed of these observations, and observational data is being collected to paint a complete picture of garden education activities.

HOW LONG WILL I BE IN THE STUDY?

It is anticipated that your one-time interview will take roughly one hour, though you will be welcome to talk for longer than that if you have more to share, or if you'd like a follow up interview that is possible as well. Additionally, you can stop participating at any time without penalty.

WHAT ARE THE BENEFITS OF BEING IN THE STUDY?

Your participation will contribute to the growing body of research on school garden programs, and allow you to share your personal experiences with garden-based education. At this time of transition and change, your interview will help capture a snapshot of the life of the garden and the impact it has on the community.

WHAT ARE THE RISKS OF BEING IN THE STUDY?

There are no known risks of participating in the study.

CONFIDENTIALITY

All interview transcripts will be de-identified, and you will be referred to by a pseudonym for the duration of the study (from the transcription of the interview until the final paper is published). Additionally, the names of the garden program, school district, location, and other participants will not be used in the research. Videotapes from observations will not contain faces or identifying features.

Information produced by this study will be stored on the researcher's password protected computer in her locked office. Information contained in your records may not be given to anyone unaffiliated with the study in a form that could identify you without your written consent. Audiotapes of the interview will be transcribed and used for data analysis, but will not be shared with anyone unaffiliated with the research.

WHAT ARE MY RIGHTS AS A PARTICIPANT?

Participation in this study is voluntary. You do not have to participate in this study. You may ask to end the interview at anytime, or later on contact the researcher and ask for your interview to be removed from the study.

WHO DO I CONTACT IF I HAVE QUESTIONS, CONCERNS, OR COMPLAINTS?

Please contact Sarah Cramer (sectx9@mail.missouri.edu) or her advisor, Anna Ball (ballan@missouri.edu) if you have questions about the research. Additionally, you may ask questions, voice concerns or complaints to the research team.

WHOM DO I CALL IF I HAVE QUESTIONS OR PROBLEMS?

If you have any questions regarding your rights as a participant in this research and/or concerns about the study, or if you feel under any pressure to enroll or to continue to participate in this study, you may contact the University of Missouri Campus Institutional Review Board (which is a group of people who review the research studies to protect participants' rights) at (573) 882-9585 or umcresearchcirb@missouri.edu.

A copy of this Informed Consent form will be given to you before you participate in the research.

APPENDIX B

UNIVERSITY *of* MISSOURI

DEPARTMENT OF AGRICULTURAL EDUCATION AND LEADERSHIP

DIVISION OF APPLIED SOCIAL SCIENCES

Hello [redacted] primary and elementary parents and guardians!

My name is Sarah Cramer, and I am a former garden educator with the [redacted]. Now, I am at the University of Missouri completing my PhD in Agricultural Education. This year I will be conducting my dissertation research about the [redacted], and I am so excited to be back in [redacted]!

As part of my research, I will be spending time in the garden observing classes. I plan to visit and observe one to two days a week during the months of October through February. While in the garden, I will be taking notes during lessons, but I will not be interacting with students. I will not record any identifying features (faces, names, etc), and the notes will be seen only by me and only used for the purpose of this research project.

Though there are no known risks to this research, if you do not want your child to be included in the observations please let me know and I will not include them.

If you have questions or concerns, please contact me at sectx9@mail.missouri.edu, or my advisor, Anna Ball, at ballan@missouri.edu.

You may also contact the University of Missouri Campus Institutional Review Board, the group that reviews research studies to protect participants' rights, at (573) 882-9585 or umcresearchcirb@missouri.edu. The IRB project number for this research study is **2009080**.

Thank you, and have a great school year!

Sarah Cramer

Sarah Cramer, MPH
PhD Candidate

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Missouri's Flagship University

APPENDIX C

SEMI-STRUCTURED INTERVIEW PROTOCOL

Garden-based education in public school: A qualitative case study

Interviewer: Sarah Cramer

Time of interview:

Date of interview:

Location of interview:

Participant pseudonym and title:

Interview questions:

1. Tell me about your work with the garden program.

   Probes: What is your role with the garden? How long have you been involved with the garden?

2. (*If participant worked with garden program during volunteer/non-profit era*) What are your memories of the garden program from the times when it was a volunteer/non-profit program?

   Probes: What was your role with the garden during those times? Has your role changed during the transition to school district control?

3. Describe the process of transition from non-profit organization to school district control.

4. Describe the learning that happens in the garden. Has your perception of student learning in the program changed over the transition?

5. Has your work with the garden program changed this school year since the school district has taken over (or is transitioning to) control of the program? *If so, how?*

6. What do you perceive to be the purpose of the garden program?

7. Do you perceive that the purpose of the program has changed during the transition of control? *If so, how?*

8. What do you perceive to be the strengths of the garden program?

9. What do you perceive to be the weaknesses/challenges of the garden program?

10. Do you have any memorable (good or bad) experiences in the garden that you would like to share?

    Probes: A story about a student learning or discovering something in the garden? A memorable community event? A lesson?

11. Where do you see the garden program in five years? Ten years?

12. What advice would you have for others who may want to establish a garden-education program at their school?

13. What advice would you have for a school district interested in hiring a certified garden teacher?

14. Is there anything else you would like to share about the garden program, your experiences, the school district, etc?

APPENDIX D

Code Book

Experiential Learning (EL)	Certified Garden Teacher (CGT)	Content Integration (CI)
Standards (S)	STEM	Seasons (Ss)
Administration (Ad)	Demonstrating Value (DV)	Garden Classroom (GC)
Community (Com)	Uniqueness (U)	Nature (N)
Change over Transition (CoT)	Classroom Management (CM)	Lesson Planning (LP)
Curriculum (Cur)	Mentoring (Me)	Professional Development (PD)
Content (Con)	Pressure (P)	Dirt (D)
Barrier (B)	Content Adaptability (CA)	Constructivist Teaching (CT)
Motivation (M)	School Culture (SC)	LG vs School District (LGvSD)
Assessment (As)	Garden as School Identity (GSI)	Contract (C)
Educator Background (EB)	Life Skill Education (LS)	Political Climate (PC)
Educator Future Plans (EFP)	Grade Levels (GL)	Agricultural Knowledge (AK)
Student Engagement (SE)	Garden Team (GT)	Farm to School (F2S)
Funding (F)	Hierarchy of Authority (HA)	Authority in Classroom (AC)
Scheduling (Sc)	Boards of Directors (BD)	Garden Maintenance (GM)
Technology (T)	Founders Syndrome (FS)	Workload (W)
Environmental Ed. (EE)	Communication (Comm)	Nonprofit (NP)
Parental Engagement (PE)	Goals and Vision (GV)	Volunteers (V)
Classroom Teacher Engagement (CTE)	Model Program (MP)	Educator Philosophy (EP)
Investment in Garden (IG)	Unpredictability (Un)	Garden Early Years (GEY)

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VITA

Sarah Cramer grew up in Columbia, Missouri, the home of the University of Missouri. She is a sixth generation Missourian, whose family has farmed in Osage County, MO since they first arrived from Germany. Though her grandfather left the farm and went on to become a professor of agricultural economics at the University, her father and his side of the family remain deeply rooted in Missouri agriculture. Sarah's mother, a nurse from "the big city of St. Louis" (as her father puts it), instilled in Sarah a love of gardening, cooking, food preservation, and health. Sarah attended Truman State University for her undergraduate education, where the views on food, the environment, sustainability, and agriculture she had developed earlier in life matured and evolved. Sarah graduated from Truman State in 2011 with a bachelor's in biology, and enrolled in graduate school at the University of Missouri. While completing her master of public health degree at Mizzou, she was connected with a young school gardening non-profit in the area, where she went on to work for three years. In 2015, she enrolled in the Agricultural Education doctoral program, again at the University of Missouri, and transitioned from teaching kindergartners in a school garden to undergraduates in a college classroom. In 2018, Sarah graduated from Mizzou, for the last time, and began her academic career as a Brown Fellow in Sustainable Food Systems at Stetson University.

Sarah envisions a healthier, kinder, greener world in which all schools have gardens and all students reach their full potential; physically, emotionally, and academically. She hopes to do her part to build that world through teaching, research, outreach, and, of course, gardening.