Cultivating Critical Learning: Critical Food Pedagogy in FoodShare's School Grown Program

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Abstract

There are numerous problems created by the industrial food system. These include redefining the relationship between eaters and their food as one between a consumer and a product, and the concomitant consumer deskilling and lack of knowledge around all aspects of food production; impacts to human and ecological health; struggles for farmers; a loss of culture and sense of place; numerous forms of injustice; and the gross misuse of waste as an industrial output, rather than an ecological input. Academics, activists, not for profit organizations, and laypeople often state that better education around food can help to solve these issues, at least in part. However, this raises questions around the purpose, praxis, and impacts of food education, and its role in change: Can food education programs teach a critical perspective on the food system? Or do they reinforce dominant paradigms around food while teaching only particular aspects of food literacy?

This paper seeks to determine what knowledge and skills students gain in FoodShare's School Grown program, a secondary school market garden-based food and employment education program. It then asks whether the knowledge and skills gained foster a critical/emancipatory perspective or learning on the food system. It uses a case-study approach relying most heavily on interviews with the program coordinator, five graduated students, two teachers, two principals, a social worker, and a guidance counselor at the two schools involved in the program, as well as program documents, direct observation, and publicly available media.

The paper begins by exploring issues in the industrial food system for which education is often purported to be a part of the solution. It then outlines the theoretical framework of critical food pedagogy and several related concepts: ecological literacy, transformative learning, and critical place-based pedagogy. These concepts are applied to the idea of food literacy, building off of the work of Goldstein (2014) and Sumner (2012) to create metrics for measuring three kinds of food literacy: empirical/analytic, historical/hermeneutic, and critical/emancipatory.

The paper explores related models of school gardens, farm-to-school programs, and youth employment market gardens before describing FoodShare's School Grown program model and the results of the research. The data indicates that the program greatly impacts personal and interpersonal knowledge and skills, employment skills and opportunities, overall learning skills, and builds empirical/analytic and historical/hermeneutic food literacy knowledge and skills. In terms of critical/emancipatory learning, the program fosters and supports the beginnings of critical/emancipatory perspectives on food and related systems. The program also builds skills and knowledge that are linked to prosocial and proenvironmental attitudes and behaviours, and are ultimately related to critical/emancipatory learning, such as a sense of personal and group competency. The paper concludes by offering recommendations for supporting critical food pedagogy in the School Grown program. The findings can inform all food education programs that wish to foster critical perspectives on the food system.

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To begin, I would like to acknowledge this sacred land on which my research and my MES degree took place. It has been a site of human activity for 15,000 years. This land is the territory of the Huron-Wendat and Petun First Nations, the Seneca, and most recently, the Mississaugas of the Credit River[1].

I have had the great fortune during my MES degree to meet truly incredible people doing work in food and environmental education. I cannot thank each of them individually, but I want to acknowledge the inspiration and learning I gained from all of the people directly and indirectly involved in my Masters degree work. The MES program opened many amazing doors for me and the students, NGOs, faculty, researchers, activists and all-around food and community-loving people I met because of it had a hugely positive impact on my life. In particular, thank you to Katie German, Senior Coordinator of the School Grown program for her insights, presence, humour, and incredible knowledge and skills around both farming and work with youth. She welcomed my work with the School Grown program and I learned a great deal from it and her. Thank you as well to her colleagues in the Field to Table Schools office at FoodShare, particularly Meredith Hayes, for welcoming my presence at spare desks and inspiring me with their energy and passion for food work.

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A loving thank you to my friends, especially those who made Toronto home for me while I attended York, and to my family, especially my Mom, Dad, and sister Katie, for always supporting my learning and growth. My family has fostered my love for food, community, and the environment, and for that I am forever grateful. Thank you to Kristen for your love and support throughout this Masters and beyond, and for the countless delicious meals, music festivals, and laughter we've shared along the way.

Thank you to the staff and recent graduates of the School Grown program who agreed to be interviewed, and who shared their insights around food and learning very openly with me. I have great respect for the work that they do, and the School Grown graduates with whom I spoke- Jordan, Liam, Brooke, Cali, and Chris- highlighted for me the importance of programs like this one. Fukuoka says, "The ultimate goal of farming is not the growing of crops, but the cultivation and perfection of human beings." The School Grown program helped me to realize the incredible power of such programs for the growth and development of all involved, with talented staff and hardworking, insightful, observant youth. You see a side of the food system that many do not see, and I hope that that learning can spread to others through your continued work. Thank you.

Finally, in recognizing my privilege and the systemic injustices in our society, I am grateful for the collective visions that exist of a better future. May we all have clean air, clean water, and nourishing food. May we all share and respect the rights that come from being human. May we recognize our intimate interconnection with all living things, and that human rights begin with and can only exist when there is a deep reverence for this beautiful living ecosystem that we are a part of, this pale blue dot, our one and only home. Today and always, underlying everything else for which I give thanks, I am grateful for our shared home, and the chance to pass my time here in the company of so many good people.

[1] Thank you to the University of Toronto First Nations House for assisting me with this land acknowledgement.

Foreword

The Masters in Environmental Studies program was a perfect fit for me. I came into the program with many ideas around what I wanted to learn and how, and I loved the possibilities of a student directed program where I could incorporate practical experiences and have access to guidance and support. My goals in the MES program were to take what I had learned on a critical, transformative learning experience at Mama Roja Sustainable Living Centre in Argentina, and find out how some of this learning about sustainable living could be translated into a Canadian context. I approached my Plan of Study using the framework of building sustainable human communities, which I defined as communities that are resilient and able to adapt to change. This approach emphasizes that considering climate change and ecological degradation, we need to find ways as a broader human society to adapt to change positively, be resilient, and live more sustainably.

Within this framework, I emphasized food and environmental/sustainability education (ESE) as my two main areas of focus, as they are possible leverage points for creating a more sustainable society. I included social and environmental justice as an essential lens through which to work, arguing that societies can only be sustainable when they are socially and environmentally just, and that social and environmental justice are extremely important parts of work in food systems and ESE.

My learning in the MES program consistently challenged my views and beliefs, and expanded my understanding of the four components of my area of concentration. My black and white understanding of local, organic food as the most sustainable choice developed nuance as I learned about the complexity of the food system, from issues of transportation to scale to food justice. My understanding of the industrial food system as problematic deepened to include issues around migrant labour, consumer deskilling, and international trade. My belief that everyone should have access to food education remains strong, but it too became more sophisticated; in food and environmental education, and with regard to sustainability, I have learned that nothing is simple. I also learned that food and ESE is not a panacea, although I wish it were- improving these forms of education will not necessarily lead to systems change, especially if the food and ESE taught does not foster a critical perspective. Thus, I have learned that effective food and ESE is extremely complex, and absolutely must incorporate aspects of critical food pedagogy, critical place-based pedagogy, transformative learning, ecological literacy, and multiple forms of food literacy, and that social and environmental justice are key pieces of the kind of education required to consider different possibilities for relating to, producing, and consuming food.

My Major Research Paper on the School Grown program relates to several aspects of the three components of my POS- food systems and ecological/sustainable approaches to agriculture, environmental/sustainability education, and social and environmental justice- that I see as necessary for creating sustainable, resilient, adaptive human communities. Specifically, it relates to component 2.1, learning objectives 1 and 2, learning about current food systems and learning about areas of work that are attempting to find solutions to the problems of the industrial food system; component 2.2, objective 2, learning about urban and sustainable/ecological agriculture techniques; component 3.1 in environmental and sustainability education, learning objective 1, to obtain the ESE diploma; component 3.1, learning objective 2, to gain further experience with various ESE approaches; component 3.1, learning objective 3, to apply learning on ESE research methodologies to the development of a research project; and component 4, learning objective 1, to gain a well-rounded understanding of social and environmental justice analytical frameworks.

My MRP contributes to the literature and thinking around food and ESE, building on the work of Sumner (2012), Goldstein (2014), and others to deepen an understanding of what food literacy is, how it can be fostered, and how it can encourage critical perspectives on the food system. I chose to do this research at FoodShare because I did not want my work to be limited to academic circles. It was very important to me that my MRP contribute to a food education program, and, as evident in my POS, I am very interested in the tangible, holistic experience of growing food, and the potential that holds for learning.

My MRP, and all of my learning and experiences in the MES program, have contributed greatly to my understanding of "sustainable human communities." In particular, I have a broader and deeper view of the food system as a whole, and a stronger understanding of the forms of food and ESE that can foster a critical perspective toward it. My greatest overall learning from the MES program is that a neoliberal paradigm has created and reinforced a number of problems that reduce our sustainability, adaptive capacity, and resilience as a human society, and thus any education program wishing to foster sustainability, adaptive capacity, and resilience must be able to critically examine dominant paradigms, and envision alternative ways of being in the world. This learning has strengthened my own commitment to work imaginatively towards positive change, understanding that these dominant paradigms are not the only or best way of living on this planet. To paraphrase Orr and Einstein, the kind of education and thinking that has created ecological degradation (as well as social and environmental injustice) is not the kind of education and thinking that will resolve these issues. I hope to contribute to systems of education that can foster an ecologically and socially healthier and more just world.

Introduction to the Major Research Paper

"The disorder of ecosystems reflects a prior disorder of mind, making it a central concern to those institutions that purport to improve minds. In other words, the ecological crisis is in every way a crisis of education" (Orr, 2005, p. x). Based on these sentiments and considering that a) food is inherently ecological and b) eating is a pedagogical act (Sumner, 2008), it can be argued that the "crisis in the food system" (Wiebe, 2012) is also an educational crisis. This Major Research Paper focuses on the intersection of food and education. Specifically, it focuses on some of the issues in the industrial food system for which food education is often purported to be a part of the solution. It begins with a brief outline of the history of the industrial food system, and some of the prominent issues created by this model. It then explores educational concepts that relate to these issues and fall under the theoretical framework of critical food pedagogy. Through the lens of these educational concepts, the paper considers the current literature on school gardens, farm to school programs, and market garden employment and education programs as methods for fostering critical perspectives on the problems of the industrial food system.

With this foundation in literature, research, and theoretical concepts, this paper goes on to examine FoodShare's School Grown program, a Toronto secondary school-based market garden social enterprise that engages youth through classes and paid employment in an urban organic farming education. This education program is one of a number in the city of Toronto that work through a critical, food justice oriented lens. Despite this explicit orientation, previous research (such as Goldstein, 2014) has found that some food-based education programs may not impart a critical perspective to students, and may instead teach a non-critical form of food literacy. As food education is often presented as a part of the "solution" to industrial food problems and as a necessary component for broader systemic change to occur, it is important to understand what kinds of food-

based education programs are successful in fostering critical, emancipatory perspectives and actions toward the food system.

Chapter One: Research Project Outline and Methods

Introduction

This chapter outlines the research project, my background coming into the research, and how I selected the topic and study site for my Major Research Paper. It covers the goals of the research, the research questions, ethical considerations, and the reasons behind the methodological approach and sources of data. It also outlines the theoretical perspective used to frame the research and analyze the data, and explains the literature reviews and background information presented before the findings from the School Grown program are considered.

Background

This research project began with an interest in school gardens and a relationship with the not-for-profit organization FoodShare. When I entered the Masters in Environmental Studies program at York University, I wanted to know more about garden-based education and if and how school gardens could become more prominent in the Canadian environmental education landscape. As I explored environmental education, garden-based education, food education, the food system, and issues of social and environmental justice, I realized that there was a paucity of research that explored the interface of these areas. It was very difficult to find Canadian studies of school gardens, or to find studies of school gardens that explored student learning outside of traditional academic subjects (with some notable exceptions, such as Chawla, Keena, Pevec, & Stanley, 2014; Dyment, 2004, 2005a, 2005b, 2007; Dyment & Bell, 2008a, 2008b, and 2008c, and Dyment & Reid, 2005). I found no studies exploring if food or garden-based education programs were successful in promoting a critical perspective on the food system. In the fall of 2014 a student finished a Major Research Paper about food literacy in The Stop Community Food Centre's Food Leadership for Youth

program. Goldstein's (2014) work established metrics for two kinds of food literacy: an individualistic, functional approach to food literacy, and a broader, socially minded approach. Having started down this path of thinking already, her work gave me a base to build upon and adapt to exploring the impacts of School Grown, a garden-based food education and work program, on student learning.

Throughout my time in the MES program, I developed a relationship with the folks who work in the Field-to-Table Schools (FTTS) department at FoodShare, an internationally recognized nonprofit that works on food access and distribution, food justice, food growing, and food education, and began to talk to them about my ideas for a research project. My priority was that my Major Research Paper be useful to people working in food education. I met with the FTTS Senior Manager, Meredith Hayes, and Katie German, coordinator of the School Grown program, and we discussed ideas for projects to explore food education that would be useful to FoodShare. Katie had several concrete ideas for research projects and from these we determined the parameters for my work.

Research Goal, Objectives, and Questions

The ultimate goal of the research was to understand what knowledge and skills students gain through the School Grown program and, in particular, whether these skills and knowledge foster a critical/emancipatory perspective on the food system. The following objectives guided me toward this goal:

- understand what the terms "knowledge and skills" mean in relation to food education
- describe a critical/emancipatory perspective in relation to food
- describe the knowledge and skills students gain in the School Grown program
- explore whether the skills and knowledge gained foster a critical/emancipatory perspective on the food system

The right question helps the researcher achieve the goal of the research. As food education programs continue to proliferate, my main research question revolved around what students in these programs are learning, specifically, *What knowledge and skills do students gain through the School Grown program?* Underlying this more general approach is the question, *Do the knowledge and skills*

gained in the School Grown program foster critical/emancipatory learning about food or a critical/emancipatory perspective on the food system? Taking a broader approach initially also helped me to ground this research project in the needs of a community organization. The School Grown program is relatively new, and while FoodShare knew that the teachers, students, and administrators involved liked the program, they had not had time to evaluate its impact on student learning or obtain formal feedback from those involved. Thus, my research took a broad focus, which also allowed themes to emerge from the participants themselves. This approach purposefully did not force a predetermined objective or goal upon the learners involved. Within the interview questions about learning, I embedded questions pertaining to critical food pedagogy, food systems and food literacy, ecological literacy, critical place-based pedagogy, and transformative learning, to help me answer my questions about fostering critical perspectives on the food system through food and garden-based education. My theoretical framework and the methodological approaches I selected all work toward the goal of understanding what knowledge and skills students gain through the School Grown program and whether these skills and knowledge foster a critical/emancipatory perspective on the food system.

Researcher Positionality

I entered the MES program with significant interests in environmental and sustainability education and the food system. These interests were fostered through my experiences of being homeschooled with an emphasis on environmental education, obtaining a biological sciences undergraduate degree, living in rural areas where my family grew much of our own food with a mom who cooked every meal from scratch, working in ecological restoration programs, participating in service learning programs on food security and anti-oppression, and, finally, participating in a two and a half month internship at Mama Roja Sustainable Living Centre in the jungles of Misiones, Argentina. This internship had a critical, popular education approach. My science background, life experiences, and this program helped me to realize how much of the complexity of the food and

ecological systems that support us are hidden, as well as the fragility of these systems and our society's absolute lack of sustainability. My learning at Mama Roja brought to light the many interrelated issues of food, the environment, and education, and after I returned to Canada I applied to do my Masters in Environmental Studies with a concurrent diploma in Environmental and Sustainability Education. One of my greatest questions was, and still is, how to encourage more sustainable behaviour at the population level when so much information and knowledge is obscured in our current system, and so many skills for sustainable living have been lost. I realized that my own skills and knowledge around food growing, plant identification, and ecological thinking were certainly not "common sense" or common knowledge. My own experiences with gardening and with the environment had formed the basis for me to engage in a highly critical education program at Mama Roja which I personally considered to be both emancipatory and transformative, and this lead me to wonder how I could bring my own learning and transformation back to a Canadian context. Are there programs in Canada that can foster the kind of learning I experienced at Mama Roja? As populations move to urban centres, are there ways to teach the skills, knowledge, and ways of thinking that can support sustainability? Before entering the MES program, I also obtained a Permaculture Design Certificate in Toronto with a focus on urban permaculture. This course was excellent and based on ecological systems thinking, but was accessed only by those with the time, interest, and money to pursue it. For environmental and food education to have an effect at a larger level, it would need to be much more accessible. Thus, I came into this research as a great supporter of food and garden education programs in the public school system, but also with a critical and questioning perspective: Do these programs work? What kind of education is needed in a food system with so many problems, and in a world with severe environmental degradation? Do garden-based and food education programs simply perpetuate the ways of thinking that created these problems in the first place, or can they foster more critical and emancipatory perspectives? These thoughts underlie the questions I explore through my research study. I wished to conduct this study

at FoodShare because it is known across the country for its pioneering work in many aspects of the food system. FoodShare's food education programs are well-respected and their models and lessons have been adopted by many others providing food education. Like The Stop Community Food Centre, where Goldstein conducted her research, FoodShare wishes to foster more sustainable, just food systems and sees education as one method for doing this. Thus, feedback on whether one of their programs successfully fosters a critical perspective, and what kinds of learning students experience in this program, would be very useful.

Qualitative Methods and the Case Study Approach

This research takes a qualitative approach for several reasons. All of the areas explored, from critical food pedagogy, food literacy, and transformative learning to research in school gardens, are relatively new areas of research. Over time, as research in an area builds, it becomes possible to establish metrics, checklists, surveys, and other methods of data collection that lend themselves to quantitative approaches and comparison between sites. However, in areas that are not as well understood or researched, qualitative methods allow new areas of study to be uncovered and described (Cranton, 2008) and they allow previously unexplored themes to emerge from the data. Furthermore, in this study I was not interested in pulling together numbers or statistics, but in gathering rich, indepth data from participants' personal accounts and perceptions of their experience, a goal best accomplished through qualitative methods such as semi-structured interviews (Ritchie, Lewis, Nicholls & Ormston, 2014). These qualitative methods also allowed me to establish somewhat of a relationship and rapport with participants, rather than sending them a survey or trying to establish a formal experimental setting. Using methods such as semi-structured interviews were more informal, conversational, and comfortable ways of engaging with the research participants.

Like Goldstein (2014), I chose a single case holistic design, which "examines a case as a single unit of analysis within a larger context" (19). Case studies are particularly useful "when the investigator has little control over events, and when the focus is on a contemporary phenomenon

within some real-life context" (Yin, 2003, p. 1). The case study is well-suited to an education program that is complex, outside of researcher control, and is operating within the context of an extremely complex food system with numerous problems. I relied most heavily on semi-structured interviews to gather data from numerous interviewees, which a case study allows, along with other sources such as organizational documents and media (Yin, 2003). Another reason that the case study methodology was appropriate was that this research sought to find answers to questions that could inform complex theories around concepts such as critical food pedagogy and food literacy, and could inform program methods and directions. This case study was not intended to generalize information across all food education programs or all food education program participants, but rather to gain indepth information into one program from the direct (students) and indirect (staff) participants' perspective in order to inform broader thinking about program approaches and methods and about related theory. The case study allows for this depth of exploration and the analysis of themes that can inform program directions and theory. While it would be preferable to compare multiple sites in a longer term study, using a single case holistic design made sense in this instance given the constraints of a Masters research project, and the relatively strong depth and breadth of information available about the School Grown program through documentation and a number of willing interviewees.

Methods of Inquiry

While relying mainly on interview data, which are one of the most important sources of case study information (Yin, 2003), I designed my study to gather data from as many sources as possible given the constraints of the timing of the school year and the farming season. This approach is in keeping with the first principle of data collection, "use multiple sources of evidence" (Yin, 2003, p. 97) in order to be able to triangulate upon "converging lines of inquiry" (ibid, p. 98). To establish the context in which this study occurs, I conducted literature reviews of the problems in the industrial food system; in the literature, education is often purported to be a part of the solution to these

problems. Building from this perspective, I focused my theoretical framework around critical food pedagogy as a way to address the problems of the industrial food system through education. I applied this framework to the concept of food literacy in order to build off of the work of Goldstein (2014) and to conceptualize food literacy in a more holistic, less dichotomous manner. As there is a dearth of research and thinking on critical food pedagogy, I expanded this framework to include related aspects of ecological literacy, critical place-based pedagogy, and transformative learning, and used these areas to expand the food literacy metrics that Goldstein had created through her literature reviews. I also conducted literature reviews of two similar areas of food and/or garden-based education, school gardens and farm-to-school programs. Using mainly grey literature, I then sought out examples of market garden programs in Canada and the United States that are similar to the School Grown program. Finally, I give a background of FoodShare and the School Grown program.

Since my main method of inquiry was through semi-structured interviews, I sought to access a variety of perspectives in my data collection. I interviewed five students who had graduated from secondary school after participating in the School Grown program to gain insight from the student perspective. I then interviewed one teacher at each school that are directly involved in the program, the two school principals involved, a guidance counselor at one school and a social worker at the other school. I interviewed the program coordinator twice. Interviewees were selected purposively with insight from the program coordinator in order to provide a variety of perspectives on the program. As is often the case in community-based research, not all of the students who were eligible to be interviewed as graduates were available, and thus the data collection relied more heavily on an interview I conducted with three students. I conducted this interview in a focus group format with all three students at once on the advice of the program coordinator, who felt that individual students might be uncomfortable in an interview but would respond well to the conversational, social nature of a focus group. As such, my research methods had to adapt to the situation, and my "interviews" with those three students were really more of a focus group in the end. At the end of the 2015 school

year, I was able to interview two more students that had just graduated. Due to timing constraints, what was meant to be a second focus group discussion with three students became two individual interviews. The students I interviewed individually were very forthcoming and open, but I noticed that they felt uncomfortable being the centre of attention in the interview and speaking for so long. Thus, I felt that the data collected in these interviews was not as rich as the data collected through holding a small focus group, when students were able to take breaks from speaking to think through their answers, and responses were often sparked by something another participant said. Community-based research necessitates working within practical constraints, however, so my methods of data collection had to adapt to these situations. One more adaptation to the interview method was made: I had originally proposed asking students to draw a depiction of their experiences in the garden to spark conversation; however, I felt that this method was not particularly generative in the first focus group, and due to time constraints had to abandon it for the two individual student interviews.

In addition to interview data, the program coordinator sent me internal documents about the School Grown program, such as grant applications, so that I could see how the School Grown program is approached and viewed from FoodShare's perspective. While conducting these interviews, I spent time onsite at each of the schools, and while direct observation was not formally a part of my research design, my understanding of the School Grown program was certainly informed by these experiences and the observations I made during them. Throughout the course of this research, I was also positioned at FoodShare as a researcher for the Nourishing Communities Research Group, coordinated a related project for FoodShare, and attended an anti-racism training hosted by FoodShare. As I was at FoodShare frequently between all of these commitments, I was able to obtain semi-regular updates on the School Grown program and speak with the program coordinator as a peer. This direct observation contributed insights and understanding into the functioning of the program. Finally, I transcribed and analyzed a radio interview that a student from

the School Grown program participated in which was publicly available through the Canadian Broadcasting Corporation.

Ethical Considerations

All participants completed a written informed consent form approved by the FES Research Committee. My research proposal and consent forms were also approved by the Toronto District School Board in order to conduct research with TDSB staff. On my consent form, participants could indicate if they were comfortable with the interview being recorded, if I could directly quote them in my paper, and if I could cite their name should they be quoted. Several participants asked that any direct quotations be vetted by them before my final paper was submitted, which I was very happy to comply with. Any inclusion of the names of the schools involved in the School Grown program is with the explicit written permission of the school Principals and the Toronto District School Board.

I was particularly aware of the potential power dynamics coming in as an outside researcher, especially as I am white, middle-class, well-educated, and likely to be seen by student participants as someone with (undeserved) power and privilege. With this in mind, I took care to establish relationships with the student participants through the program coordinator. Students in the program respect and like the coordinator, and being seen to be on the same level as her hopefully helped students to be more comfortable in my presence. This was also a reason behind using a semi-structured, conversational format for interviews; students knew that I had a guide to follow, but as much as possible we spoke conversationally about topics that emerged through their dialogue. I also attended some School Grown events prior to conducting the research, so I had interacted with a few of the students previously. If the timing of the farming season and my Masters program had been more ideal, I would have volunteered regularly for the School Grown program in order to build greater rapport with the interviewees, but I had to work within practical constraints.

Data Analysis

Interviews were audio recorded and transcribed in full. The radio interview was also transcribed fully. All documents and transcriptions were read and similar themes and ideas noted to be included in the coding. I used the broad theme of learning to look for what kinds of knowledge and skills students gained in the program, and instances where these knowledges and skills fell into domains one, two or three of the food literacy model, "empirical/analytic knowledge/skills," "historicial/hermeneutic knowledge/skills" or "critical/emancipatory knowledge/skills." I coded the themes that emerged, and in my reading of the transcriptions and documents remained open to new or unexpected themes that might emerge. Repeated themes or ideas that came up formed the basis of my analysis and discussion, as well as instances where learning could be deemed to be "critical/emancipatory."

Conclusion

I came to this research with a strong background in food and environmental education and personal experiences of critical/emancipatory sustainability education. In considering education as a component of possible solutions to the problems of industrial food, I sought to understand the impacts of garden-based food education on students' knowledge and skills. Specifically, my research set out to understand what skills and knowledge students gain in the School Grown program, and whether the program fosters a critical/emancipatory perspective in its participants. The next four chapters lay the groundwork for exploring the School Grown program through the eyes of participants, teachers, and staff. Chapter Two discusses the problems present in the industrial food system for which food education is often suggested as part of the solution.

Chapter Two: Background on the Problems of the Industrial Food System

Introduction

"Schools and farms have become a lot alike. They have both become factories, with assembly-line controls and engineered inputs, cranking out either grades and test scores or 'food.'"- Ableman, 2005, p. 178.

A major shift in the way food was produced, processed, distributed, consumed and disposed of occurred in the 1950s and 1960s onwards. As discussed by Roberts (2013), Albritton (2012), and Wiebe (2012) as well as many others in the field of food studies, the technological innovations occurring during and after the Second World War, as well as the rise of monopoly capitalism in North America, contributed strongly to this shift. These innovations included chemical inputs such as fertilizers, pesticides, and herbicides, and mechanized forms of labour (Wiebe, 2012). In an industrial food model, features such as temporal and monetary efficiency, standardization, convenience, and increased production are favored. These features are enhanced in a linear system, where inputs are turned into outputs and success is measured as the efficiency with which this process occurs and the economic profit that it generates. As McMichael (2000) states, "[in industrialization], food was removed from its direct link to local ecology and culture, and became an input in urban diets and industrial processing plants" (21). While the industrial food system has enabled massive quantities of food to be produced with incredible efficiency, there are numerous problems that arise in this model. They include the deskilling of consumers and changing relationships to food; ecological and human health impacts; obstacles for small farmers; the destruction of culture, food traditions, and a sense of place; countless injustices; and a gross misuse of waste as an industrial output, rather than an ecological input. As will be further discussed in Chapter Three, the problems of the industrial food system covered here also obstruct food literacy by directly interfering with people's relationship to

and knowledge and skills regarding all aspects of food production and consumption. Chapter Three onwards will consider what forms of food education can promote critical perspectives on the problems of the industrial food system and foster a food literacy that could challenge these issues.

Changing Relationships to Food and Consumer Deskilling

Prior to the expansion of the industrial model of food production, small, diversified, family-owned and operated farms supplied food to their particular locale. Kitchen gardens were common even for those living in towns, and during WWII citizens were called to produce food in "victory gardens" (Astyk & Newton, 2009). These methods of food production depended heavily on relationships and an understanding of where food comes from: in poor crop years, towns suffered food losses along with farmers, and home gardening provided an immediate connection to the land and soil as a source of one's food. Conversely, the industrial approach to food production has resulted in the commodification of food, or the treatment and understanding of food as a commodity to be marketed, bought, and sold (eg. Kaufman, 2012). This has resulted in commodity fetishism, as Weis (2012) describes it: "[M]ost consumers see food as having a price, a brand, and a country of origin, but would find it difficult or impossible to answer a host of basic questions about most of what they eat with any precision" (p. 105). Commodity fetishism obscures the relationships between how food is grown, where it is grown, who grows it, how it is transported from where it is grown to where it is eaten, as well as "how […] these matters affect soils, water, biodiversity, energy consumption, and the atmosphere[.]" (Weis, 2012, p. 105). This political ecology perspective highlights a critical disconnection and lack of understanding of the social and ecological impacts and relationships of our food system. For example, as discussed by Roberts (2013), food relationships have been redefined as bringing together processors and consumers rather than farmers and eaters, resulting in "a depersonalized food system" (p. 38). This shift in thinking has had a profound impact on the food system.

This shift in relationships has also had a marked impact on how food production and consumption is understood and navigated in our current dominant paradigm. As Levkoe (2006) states, "The perspective of consumer implies an identity defined by a direct relationship with the market, one in which profit becomes the most important factor in economic, political, and social activity" (p. 1), versus the perspective of a citizen, which "captures the multiple private and communal interests and responsibilities of the whole person" (Jaffe & Gertler, 2006, p. 143). We can see this phenomenon clearly illustrated by the tendency of segments of the food movement to emphasize a "vote with your fork" approach to creating change. This approach declares that consumer preferences, as communicated through purchasing choices, are the only or the most legitimate ways of advocating for a better food system- that the role of consumers in the marketplace is more important than the role of citizens in their communities. This perspective is certainly limited in its vision; as Patel (2007) states, the actual agency of a consumer in a modern supermarket is extremely limited:

> Choice is the word we're left with to describe our plucking one box rather than another off the shelves, and it's the word we're taught to use [...] Most of what we consider our choices at the consumer end of the food system have been narrowed and shaped before we even begin to think consciously about them […] the way we eat today is the result of forces that are hidden from us, and to which we almost never pay any attention, because their effects have become normal. Through a few examples, it becomes easier to see that the way we choose food today comes from distinctly abnormal roots, and that 'normal' can often be a thin veil that blinds us to poverty, racism and sexism. (pp. 254-255).

What Patel is saying is that consumer "choice" and voting with your fork can be extremely superficial perspectives and actions, when the structure of the broader food system has limited choices to, for example, a decision between drinking Coke or Pepsi, or perhaps the choice between organic mass-produced apple juice from California or genetically modified soy milk distributed from Colorado, and grown somewhere not listed on the package. One of the risks of overemphasizing consumer choice in the food movement is that it potentially does very little to address underlying food system issues, or the changing ways people relate to and understand their food.

This change in relationships denotes a tendency toward greater distances, both physical and metaphorical, between the realities of the food that is produced and those who eat it. As Levkoe (2006) states, "The corporate food economy has led to an increasing separation of people from the sources of their food and nutrition. In his work, Brewster Kneen (1993) describes this process as "distancing"- the disempowering and deskilling of people from producing their own food and being able to eat well" (p. 90). This distancing harms both consumers, as "many consumers have lost the knowledge necessary to make discerning decisions about the multiple dimensions of quality, including the contributions a well-chosen diet can make to health, planetary sustainability, and community economic development," (Jaffe & Gertler, 2006, p. 143), as well as those who grow food: "The growing distance and separation between producer and consumer means that farmer-producers receive information on 'what the consumer demands,' only via food processors" (Jaffe & Gertler, 2006, p. 146). This reduces the autonomy and power of producers and consumers and leaves them reliant on these indirect sources of information, for whom profit is the highest priority. Jaffe and Gertler (2006) argue that this distancing of relationships in the industrial food system has resulted in a significant loss of consumer power, knowledge and skills, as well as the deeper meanings of food related to culture, social relationships, and human and ecological health. In their words, "most consumers lack the scientific and practical knowledge to make choices that reflect [our] fundamental interests in health, longevity, and obtaining value for money," and, furthermore:

> "We may also lack the orientation or presence of mind to think of foods and food choices as something we can use to exercise real influence with respect to our own family's health and the health of the planet. We are unlikely to be thinking about implications for hunger, for the distribution of power and control in the food chain, for local and international development, for animal welfare, or for the ecological impacts of provisioning activities" (p.157).

As evidenced, the issue of consumer deskilling and the concomitant reliance of consumers on the industrial food system, a reliance greatly supported, promoted, and taught by the industrial food system itself, is a major hurdle on the path to a more sustainable food system. The obfuscation of the relationships between food production and consumption, including the deeper meanings that

accompany both, has profoundly changed the way that food is "done" in North America. Some of the knowledge, awareness, and skills that link food to its ecological and health impacts, place and culture, justice, the plight of farmers, and waste are explored further below.

Impacts to Ecosystem and Human Health

The previous examples of the industrialization and accompanying distancing, depersonalization, and lack of understanding of the food system emphasize important disconnections that must be addressed. In the current model, the ecological impacts of how our food is grown, processed, and transported are disconnected and hidden (Weis, 2012), representing another arena in which skills and knowledge have been lost to many eaters. Invariably, these ecosystem impacts also harm human health (Diaz, Fargione, Chapin & Tilman, 2006); however, because both ecosystems and human beings are complex systems that react to changes over short and long term time frames, establishing causal relationships can be tricky (Meadows, 2008). For example, it can be difficult to ascertain if a middle-aged person develops cancer due to pesticide exposure from food, air pollutants, contaminated drinking water, working with hazardous materials, poor diet and lifestyle, heredity, or all of the above. It is certain, however, that the environment and practices that impact ecological systems play a role in human health. For example, Diaz, et al (2006) defines ecosystem services as "the benefits provided by ecosystems that contribute to making human life both possible and worth living" (p. 1301) and goes on to say, "the well being of the vast majority of human societies is based more or less directly on the sustained delivery of fundamental ecosystem services, such as the production of food, fuel, and shelter [and] the regulation of the quality and quantity of water supply" (p. 1301). This section highlights some of the human and ecological health impacts of the industrial model of agriculture and food.

Evidence indicates that industrial agriculture is the single largest contributor to soil loss and erosion, creates chemical runoff into waterways, threatens biodiversity, and has negative human health impacts (Tegtmeier & Duffy, 2004). In industrial agriculture, resources such as water are

extracted at unsustainable rates, while resources such as fertilizers are used at rates that are inefficient and often excessive, contributing to the degradation of soil microbial health and soil structure, and increased issues with weeds and pests (Horrigan, Lawrence, & Walker, 2002). Horrigan et al (2002) state, "The U.S. Environmental Protection Agency has blamed current farming practices for 70% of the pollution in the nation's rivers and streams. The agency reports that runoff of chemicals, silt, and animal waste from U.S. farmland has polluted more than 173,000 miles of waterways" (p. 447). Industrial agriculture has also been implicated in soil salinization when salts from fertilizers and irrigation water become concentrated in soils, reducing soil fertility, as well as concentrated animal production with accompanying pollution, health, and animal welfare issues (Horrigan, et al, 2002).

Agricultural chemicals have a significant negative impact on environmental health. Glyphosate, the active ingredient in Roundup, has been shown to have direct toxicity effects on earthworms, insects, and frogs and tadpoles, while glyphosate and one of the surfactants it contains, polyethoxylated tallowamine, are toxic to fish (Altieri, 2009). Many of these organisms are indicator species in their habitats demonstrating the negative impacts of agricultural chemicals. While older research often dismissed glyphosate as nontoxic to humans, more current research is revealing its links to endocrine disruption, toxicity to human placental cells, and its potential carcinogenic and mutagenic properties (Richard, Moslemi, Sipahutar, Benachour, & Seralini, 2005; Gasnier, et al, 2009). Roundup, licensed to the mega-corporation Monsanto, is used heavily on Roundup Ready crops genetically engineered to withstand massive doses of the chemical; research indicates that the combination of glyphosate and adjuvants in Roundup have a greater toxicity than glyphosate alone (Richard et al, 2005). Atrazine, another common agricultural chemical used in corn production, is a known endocrine disruptor (Altieri, 2009); further research has indicated its activity as a neurotoxin with the potential to disrupt motor, cognitive, and executive functions in humans (Rodriguez, Thiruchelvam, & Cory-Slechta, 2005).

There have been attempts to greenwash industrial agriculture practices such as the production of biofuels, but these too have been found to be ecologically corrupt. In his investigation, Altieri (2009) found that 2.5 to 27.5 times the global potential arable land would need to be cultivated in biofuels in order to feed the world's appetite for fossil fuels, an impossible task to say the least. The crops often processed for biofuels, such as corn, soybeans, and sugarcane, are grown through industrial mechanisms that require massive inputs of natural resources and synthetic chemicals, many of which are demonstrated human endocrine disruptors and carcinogens as described above. These crops have large ecological footprints and pose significant threats to global food security:

> "[T]he massive cultivation of corn, sugarcane, oil palm, and other crops presently pushed by the fuel crops industry- many to be genetically engineered- will not reduce greenhouse gas emissions but will displace tens of thousands of farmers, decrease food security in many countries, and accelerate deforestation and deepen the ecological footprint of the industrial agriculture model bringing a variety of new economic, environmental, and social problems" (Altieri, 2009, p. 236).

Clearly, there need to be mechanisms to learn about the hidden impacts and fallacies of industrial agriculture if there is to be any movement toward change.

The "industrial diet" has been adopted along with industrial agriculture. This is a diet comprised mainly of processed foods high in salt, fat, and sugar, where "edible food-like substances" (Pollan, 2009) are marketed, bought and sold as commodities: "the food industry has been enormously successful not only in transforming food but, more importantly, in constructing and diffusing an industrial mass diet…[which] impinges, to a greater or lesser degree, on the health of billions of human beings today" (Winson, 2013, p. 1). These processed food commodities include fast food, junk food and snacks such as potato chips, sweetened beverages, processed vegetables and fruits, and "convenience food" (Winson, 2013). The health impacts of such a diet include prominently Western diseases, such as diabetes and heart disease (Pollan, 2009) as well as the epidemics of obesity and overweight. While some rightfully argue the point that size and weight are not necessarily indicators of health, and are often the basis for unjust discrimination, there is no doubt that the industrial diet is linked to obesity and its associated risks, such as premature death and

comorbidities (Winson, 2013). For the most part, the health impacts of the industrial diet are ignored by the large corporations that govern the food system unless they pose a marketing advantage, such as low fat food products, diets and pills to help one lose weight, or clothing to make one look slimmer. Many "solutions" to obesity are based in the natural sciences and implicate individual responsibility in maintaining a "healthy diet," despite the fact that the issue of the industrial diet has social, economic, and political roots (Winson, 2013). Much of North American food today is comprised of "aggressively promoted, nutritionally compromised edible products that are themselves the outcome of an ensemble of agricultural and food technology processes, and marketing machinery" (Winson, 2013, p. 30). Overall the industrial diet, much like industrial agriculture, is resoundingly unhealthy and an issue of public health concern (Roberts, 2013). The implications of an industrial diet, and all of the processes that create it, are as obscured as those of industrial agriculture.

Impacts on ecosystem or human health are not accounted for in the traditional economics that govern agriculture and trade, and as these impacts occur outside of the market, they are called "externalities" (Horrigan, et al. 2002). Tegtmeier and Duffy (2004) calculated that the total annual cost of the externalities of industrial agriculture up to 2004 in the United States alone was $5.7 to $16.9 billion USD- an estimation that they deemed to be conservative. They state, "this study demonstrates that consumers pay for [cheap] food well beyond the grocery store checkout. We pay for food in our utility bills and taxes and in our declining environmental and personal health" (p. 14). Furthermore, they state that many industrial agricultural practices pose potential risks, which, if they were to occur, would further increase the externalized costs of agricultural production. In our current model, where price and advertising are the language of communication with consumers, the true cost of cheap food is being lost in translation.

Research on organic agriculture has demonstrated its positive impacts on ecosystem services, such as increased biodiversity from vegetation to insects and birds (MacRae, Lynch & Martin, 2014a). Ecologically speaking, increases in measures of ecosystem health such as biodiversity

further impact aspects of the broader system, such as pollination services, resilience, and water cycling. Organic farming practices were also found to reduce nutrient run-off and greenhouse gas emissions (MacRae et al, 2014a). Furthermore, organic production restricts pesticide use significantly: "Some 50 million kg of pesticides is applied annually in Canada, and of the more than 500 active ingredients registered, very few are permitted in organic production, and most of those permitted are essentially registered as low-risk products" (MacRae, Lynch & Martin, 2014b, p. 334). These ecosystem impacts have links to increased human health, at the very least due to a healthy ecosystem's increased ability to provide ecosystem services. There is also evidence, although inconclusive, to suggest that an organic diet results in improved human health over a number of factors (MacRae et al, 2014b). Despite the demonstrable environmental, ecological, and health benefits of organic agriculture, adoption of organic farming practices in Canada has not been as widespread as it is in other areas, such as in Europe (MacRae et al, 2014a). While the policy and regulatory environment certainly impact the adoption of organic agriculture (MacRae, Martin, Juhasz & Langer, 2014), consumer and citizen education impacts how organic food is viewed, and the understanding (or lack thereof) of the ecological systems and impacts behind its production, as well as how products and production methods impact human health.

The dominant model of food production in North America, and increasingly worldwide, is industrial agriculture. It is an inherently destructive and unsustainable model that runs counter to numerous ecological principles and requirements, such as biodiversity, nutrient and water cycling, and soil health. As the practices of this model are celebrated and marketed by the corporations which dominate the food system, and the ecological and human health impacts hidden through greenwashing, aggressive marketing, opaque supply chains, and a lack of awareness and education, it is not surprising that ecological knowledge has been lost to consumers. This marketing also plays to our evolutionary weaknesses with negative impacts on our health, as the industrial food system profits from human beings' love for salty, sweet, and fatty foods (Eisen, 2015). These industrial food

products and their advertisements are everywhere; as a colleague once queried in regard to public advertising of junk food, "Why do I have to work so hard to not be sold to?" Considering the impacts of this industrial model, and as increasing numbers of people move further from rural agricultural environments to live in urban centres, the problem of industrial food represents a central component of environmental and human health crises, as well as the "crisis of education" (Orr, 2004).

Struggles for Farmers

Accompanying the loss of knowledge of the relationships between eaters and their food, the ecological and health impacts of how food is produced, and the deskilling of consumers, is the loss of the family farm in Canada. The scale and marketing of industrial production demands standardization and volume, two capacities that are difficult to meet on a small, heterogenous, biodiverse, ecologically managed family farm. Family farms are being forced to adapt to the size and scale of industrial production, with unsustainable yields that virtually require the use of agricultural chemicals and mechanization. These inputs are patented, owned, and sold by major corporations such as Monsanto and Cargill (Wiebe, 2012). The increasing use of hybrid and patented seeds, and battles over the ownership of rights to seeds, forces farmers to buy seed (which they would have previously saved and traded with other farmers) from large companies. As the cost of inputs- fuel, fertilizers, seed, machinery, chemicals, etc.- increase, and farmers are forced to compete on prices set by industrial mega-farms in the global economy, Canadian farmers face what is known as the "cost-price squeeze" (Wiebe, 2012):

> "From 1985 to 2010, Canadian farmers[…] managed to produce and sell $723 billion worth (government payments excluded) of grains, livestock, potatoes, vegetables, milk, and other farm products- nearly three-quarters of a *trillion* dollars in gross revenue. But over that same period, farmers' net farm income […] was *less than zero*. All of the money farmers generated as gross revenue […] was captured by the agribusiness transnational corporations that sell farmers fuel, chemicals, fertilizer, veterinary drugs, machinery, technology, and other products and supplies" (Qualman, 2011, p. 26 in Wiebe, 2012, p. 162, emphasis added).

These struggles, and others including massive capital debt and corporate takeover, have been pushing the Canadian family farm out of existence, despite the images of rustic, smiling farmers

displayed in the grocery store. As current farmers near retirement age, the number of young farmers in Canada has declined drastically, and the barriers for new farmers entering the business are large: high land prices, lack of knowledge and training, large capital requirements, prohibitive farm taxation strategies, (Carter-Whitney, 2008) and virtually no security. One researcher found that young people who enter farming with strong ideals and a good understanding of the work are often forced to quit when they need job security to support a family, manage illness, or consider retirement (Wilson, 2014).

Here we see again the need for education, to support current farmers, new farmers, and business strategies, but also to engage a larger population of eaters with these issues: "More eaters are recognizing that family farming and local food are linked to eating well and having access to sustainably produced food from a known source" (Wiebe, 2012, p. 168). While education and engagement alone will not solve these issues, it is a key piece of the puzzle to finding and creating public support for the family farm and an ecologically and socially sustainable food system.

Industrial Food and the Loss of Culture and Place

Wiebe (2012) argues that the loss of the family farm contributes significantly to the destruction of the social fabric of rural communities, as young people, jobs, and a sense of community vitality head for urban centres. Perhaps less tangible but equally destructive are the loss of social resources related to food, such as culture and ritual, as we become more disconnected from what we eat and participate more fully in the industrial diet. Food is then seen as a commodity to be produced for consumption, rather than as, for example, a tool "for reinforcing cultural practices and norms that are important for social, emotional, and/or spiritual health" (Martin, 2012, p. 212).

An intimate connection to soil, water, land, and a particular geographical "place" or locality is also lost along with ecological knowledge and skills. A sense of place can include knowledge of the diversity of native flora and fauna, including which are edible and the skills to gather and make use of them. For example, as a resident of Toronto and an instructor in organic gardening and wild

edibles, I find people are shocked to learn that numerous edible plants (broad-leaved plantain, garlic mustard, dandelion, and basswood, to name a few) are growing in their neighborhoods. Many are also astounded to learn of the range of foods that can be grown in Southern Ontario, including many varieties of eggplants, peppers, and fruits. On a more global scale, Barndt (2002) writes of the commodification of the tomato as it makes its journey from Mexican farm fields sprayed with agricultural chemicals, is harvested by low-wage workers, and transported by truck through the U.S., ending its journey on a burger in a fast food restaurant. Such distancing divorces us from the ecology that grows the tomato, including the history of saved seeds and diversity of plants, the workers who harvest and transport it, and any cultural meanings or rituals tied to its consumption. Barndt (2012) also argues that the corporate global food system destroys the connections that are built through "the process of preparing a meal and gathering around the table to share it (commensality)" (p. 68).

In "The Omnivore's Dilemma" and "In Defense of Food," Michael Pollan discusses how people have become disconnected from their food as the food system has undergone industrialization. Previously, many food habits were based in tradition, culture, and ritual. Many food traditions, such as cheesemaking, fermentation, foraged food, and long cooking processes, emphasized using whole foods and taking one's time preparing foods, and often incorporated live bacterial cultures that were very beneficial to one's health (Pollan, 2009). As the frenetic pace of an industrialized lifestyle has taken hold, however, these traditions and their cultural underpinnings have often been lost (Honoré, 2004). Often, the children of immigrants wish to eat the food of their new home country in order to fit in, rather than the traditional foods of their parents (Beagan & Chapman, 2012). This has contributed to the disconnection and distancing between eaters and their food in the industrial food system. With this disconnection, people lose traditions and cultures behind their food, and important information about health, family, community, and nourishment that was conveyed with them.

Along with cultural connection to their food and ways of eating, people are also losing the skills and knowledge to prepare food. This is exacerbated by the dearth of formal food-based education in

elementary and secondary schools; while food is mentioned in some areas of the Ontario curriculum, there is little to no education and training around making healthy food choices, growing, shopping for, preparing, or cooking food. This lack of education and the rise of industrialized food have occurred hand in hand, resulting in families where parents may not know how or choose not to cook, turning to prepared and processed meals instead. Besides school and the home, there are very few places where children, teenagers, and young adults can learn about food other than through marketing and advertising.

Is it Just Food?

The food system can be seen as an allegory for larger issues- a physical representation of the ways in which issues of power, privilege, and colonialism affect the structures and processes of the world today. As Alice Julier states, "cooking, eating, and food are material activities fraught with political implications for race, class, gender, and health" (2015). This is particularly evident in the racialized, classed, and gendered ways we are able to access food and knowledge about food and food systems. Our access to food and knowledge about food are influenced greatly by our access to social power. Often, these interactions are seen to be choices made by individuals: "As in all liberal democracies, there is a strong impetus to believe that individuals exercise free choice in the context of equal opportunity. Thus any inequalities are individualized, seen as the result of individual choices rather than systematic and historically rooted oppressions" (Beagan & Chapman, 2012, p. 140). In reality, "an individual's food 'choices' are often the product of government policies and marketing strategies that promote processed and refined foods to the exclusion of more traditional or unprocessed foods" (Martin, 2012, p. 208). For example, it is more likely that an affluent neighborhood will have access to fresh fruits and vegetables and high quality proteins from a supermarket than an impoverished neighborhood; lower-income, racialized neighborhood food environments tend to be dominated by fast food restaurants, corner stores, or little access to food at all in the case of food deserts (Beagan & Chapman, 2012). Organizations such as The Stop and

Community Food Centres Canada advocate for larger systemic changes which ultimately affect food choices, such as secure housing, increasing minimum wage, increasing access to healthy food, and promoting dignity as a deeply held ethic (Saul & Curtis, 2013). The traditional food bank model, they argue, is an often demoralizing and undignified way of receiving ultra-processed foods. It is at best a band aid solution for these deeper issues- marginalization, racialization and racism, poverty, etc.- which contribute to food insecurity in the first place. Both organizations incorporate fresh healthy food, cooking, growing, skill building, choice, and a sense of community into their work to address these issues, as well as providing food banks and emergency food services.

Martin (2012) discusses the impact of "unhealthy" foods on Canadian Aboriginal peoples. Known as the "nutrition transition," she states that it is closely linked to "the role of historical and continued colonization- that is, the dismissal, under-representation, or complete undermining of Aboriginal knowledge(s) regarding the important role of food within their communities in any discussions about Aboriginal peoples' food systems" (p. 210). In many cases, social and environmental injustice are intertwined, as racialized communities experience higher rates of both:

> Aboriginal peoples within Canada currently face struggles in accessing and using their traditional territories for food procurement activities like hunting, fishing, trapping, and agriculture. These struggles occur because of strict government regulations that inhibit traditional food-gathering practices, economic development processes that affect Aboriginal communities but do not include them in decisions making, environmental destruction resulting from unfettered development, and moral opposition to traditional food-gathering practices from non-Aboriginal people who are unfamiliar with Aboriginal livelihoods (Martin, 2012, p. 210).

Struggles with race and colonization affect people in other ways as well. For example, the face of the "alternative" food movement is predominantly white and middle class. There is an underrepresentation of immigrants, people of color, and the cultures and diversity of people who value their food (Lau, 2015). Groups such as the Growing Food and Justice Initiative (GFJI), hosted by Growing Power, Inc., focus on this issue: "GFJI…is a new comprehensive network that views dismantling racism as a core principal that brings together social change agents from diverse sectors

working to bring about new, healthy and sustainable food systems and supporting and building multicultural leadership in impoverished communities throughout the world" (Growing Power, Inc., 2015). The GFJI focus on racism and white supremacy as the core barriers to a just food system, noting that it is communities of color that are systematically prevented, through a variety of destabilizing mechanisms- poor immigration policies; lack of access to jobs, education, and training programs; insufficient social safety nets; discriminatory policing, hiring practices and wages; and lack of physical access to markets, to name only a few- from accessing the good food and good food knowledge required for personal and social wellbeing (GFJI Toronto training, personal communication, May 2015).

Globalization has exacerbated racial injustice in the food system in a few ways. Much of the food consumed in richer countries is produced in the Global South. The people producing the crops may not reap the benefits of its production, or be able to afford to eat the coffee, bananas, chocolate, and other "commodities" that they grow (Menchu & Burgos-Debray, 2010; Schlesinger & Kinzer, 2005). Historically and in contemporary agricultural trade, products such as sugar are produced in countries in the South, and exported in massive quantities to places such as the United States, Europe, and Canada- with the majority of the profits being made by the companies doing the exporting, rather than the workers (Galeano, 1998). Workers involved in the production of these foods for Northern consumption often experience poor working conditions such as exposure to chemicals, low wages, and unethical treatment (Barndt, 2002; Galeano, 1998; Schlesinger & Kinzer, 2005). On a trip to Guatemala I visited a chocolate museum in Antigua, and was shocked to find a world map that depicted the places where chocolate is produced (exclusively in the Global South) and where it is consumed (almost exclusively the Global North). More appalling was a sign by the map stating that the people who grow chocolate resist the temptation to eat it, and instead "choose" to sell it to the Global North- a narrative that completely obscures the trade and power relations which cause almost all chocolate to leave its country of origin and be consumed in richer climes.

These issues are present "back home" as well, as the Temporary Foreign Workers program and the Canadian Seasonal Agricultural Workers Program facilitate the entry of migrant farm labourers from the Global South to work in Canadian fields, orchards, and processing plants (Kauri, 2012). According to surveys, there are not enough Canadians willing to work in agriculture in exchange for the wage received and the conditions experienced. While there are many supporters of these programs, the potential issues faced by migrant workers are numerous: lack of health and safety training, unsafe working conditions, exposure to chemicals, unsafe housing conditions, isolation, language barriers, and lack of healthcare (Kauri, 2012). Other research has investigated the strong prevalence of food insecurity and health issues such as obesity among migrant farmworker families (Borre, Ertle, & Graff, 2010). Groups such as Justicia for Migrant Workers (J4MW) are involved in advocacy for better policies, programs, and working conditions. However, these foreign worker programs are deeply entrenched in the agricultural practices of many regions and have enrolled more workers every year since the practice officially began (Preibisch, 2010). Furthermore, scholars such as Preibisch (2010) argue that temporary foreign worker programs are a piece of a much larger issue: "relatively little debate has addressed the growing reliance of [first world] countries on migrant labour and its intrinsic role in capitalist accumulation" (p. 405). Workers advocating for more just wages and working conditions have had to appeal to large corporations, as in the case of the Coalition of Immokalee Workers (CIW) in Florida. It has taken years of advocacy to achieve a $0.01/pound increase in wages for Mexican tomato pickers (Keshari, Fish, & Rawal, 2014). Cheap labour, with little consideration for worker rights or the systems of global industrialization it supports, is a major obstacle to achieving food justice.

The environmental and ecological impacts of industrial agriculture discussed earlier raise issues of environmental justice. Resources such as clean air, sufficient water, healthy soil, and the ecological processes that support those resources can be considered to be within the public domain, or part of the civil commons (Sumner, 2012). Thus, the industrial agricultural practices which

endanger these resources represent grave environmental, and consequently social, injustices. Issues of justice extend to the creatures we consume as well. Concentrated Animal Feeding Operations (CAFOS) are the modus operandi for the industrial production of animal protein (Pollan, 2006). Animals in these operations experienced extremely confined living conditions, poor quality of life, high concentrations of antibiotics and growth hormones, unnatural feeding regimens, and shortened life spans (Pollan, 2006). In addition, these industrial practices contribute to climate change, which disproportionately affects impoverished communities around the world (Thomas & Twyman, 2005).

The injustices of the industrial food system revolve around issues of ownership and power and are filled with paradoxes: the rise of celebrity chefs and the elitist title of "foodie" has occurred while entire communities experience food insecurity and First Nations communities are forced to fight for land rights and against oil companies (Stiegman, 2013). Equality and inequality play out through the food system on a daily basis. One has to ask: who is being left out of the industrial food system? Who has access to food, and just as importantly, access to knowledge of food and control of the food system? Food education represents one form of creating access to information about the industrial food system, and unveiling the power imbalances which can perpetuate injustice. Thus, justice and related concepts such as power and control need to be considered when discussing food education.

Waste: Ecological Input or Industrial Output?

At the other end of our linear system of industrial food production, we are disconnected from the massive quantities of waste we produce. Sumner (2012) terms this a "metabolic rift" created by the global corporate food system. Despite the natural cycles of decay, energy transformation, and renewal present in all ecological systems, including the growing of food, the adage "in nature nothing is wasted" is skillfully avoided by the industrial food system. This may be one of the most egregious missing links in the current model. It represents a missed opportunity to take advantage of naturally occurring processes to create a cycling of resources. As Art Ludwig notes, "There is no such thing as waste, only unused resources" (2006, p. unknown).

Films such as Just Eat It: A Food Waste Movie, and anti-capitalist actions such as dumpster diving highlight the nearly unfathomable amount of food that is wasted. While accurate numbers are difficult to ascertain, it is estimated that up to 50% of available food is wasted in North America (Stuart, 2009). The long list of reasons for this waste includes many that can be traced back to an industrial system of food production and consumption. For example, supermarkets demand an aesthetic "perfection" in produce that is extremely difficult to achieve; fruits and vegetables that do not meet these purely cosmetic standards are disposed of or are left in fields to rot (Stuart, 2009). While this has resulted in some interesting marketing campaigns to increase consumption of "ugly fruits and vegetables" (The Huffington Post Canada, 2014), in most supermarkets, the cosmetic standard reigns supreme. Farmers may lack the equipment, proper storage, and processing capabilities to prevent crops that are ready to harvest from becoming waste. Post-consumer waste, or food waste which occurs after food has been purchased by the consumer, is a huge issue in developed nations. Stuart (2009) points out that in rich countries, overbuying and creating food waste do not carry the stigma that these actions deserve, considering their contribution to environmental and social problems. Finally, when food waste is disposed of it is often through landfills, which create anaerobic decomposition conditions that produce greenhouse gases. Pollution by other landfill components turns what would have been a composting feedstock into toxic material (Stuart, 2009). Thus the industrial food model creates a problem where there need not be one: there exist natural cycles of decomposition that could turn raw organic materials into compost, a coveted resource. Through emphasizing a linear model of food production, the industrial system disconnects us from the ecological cycles that support agriculture and recycle the waste products this system produces. In doing so, massive amounts of food are wasted throughout the food production process.

Where Do We Go From Here?

Examining the problems of the industrial food system can be extremely demoralizing for those seeking a more just and sustainable world. The disconnections and issues of the industrial food system are deeply intertwined; for example, a lack of food knowledge and skills is related to a lack of knowledge of the ecological foundations of food, and issues of food access are intimately connected to issues of food waste, food sovereignty, and social and racial justice. The food system that requires changing is composed of faceless mega-corporations, and countless individuals and communities that are often unknowing daily participants. It can be difficult to see where or how to make changes when the problems are so large, entrenched, and seem amorphous and intangible. Especially given the relatively short time period during which industrialization of the food system has occurred, the issues appear particularly complicated and convoluted.

So- what is to be done? If these are the problems, what are the solutions? There are many groups working on ways to improve the food system. Knezevic (2012) states, "By reclaiming the power to make decisions about food, citizens are shaking a metaphorical fist at industrial food and its ideological foundations. In doing so they create new spaces for production, exchange, and consumption of food upon which other social relationships can be built (Blay-Palmer, 2007), and they open new understandings of food and food economy" (p. 254). How can this metaphorical fist-shaking be encouraged? Including and beyond individual choice, can we learn to eat our way into a more sustainable future?

In terms of learning and eating, education is often purported to be a part of the solution to the problems of industrial food, and a necessary prerequisite for broader change to occur. For example, Levkoe (2006) discusses the education and civic engagement that occurs through a community gardening program, while Walter (2013) further theorises the pedagogical potential of these sites. Christy, Landman, Nowatschin and Blay-Palmer (2013) state that agricultural education should be included in every level of elementary and secondary school. Groups such as FoodShare, Food Secure Canada, Green Thumbs Growing Kids, and Sustain Ontario advocate for improving school food

environments and learning through student nutrition programs, school gardens, "food literacy," cooking skills, policy changes, and incorporating food into all levels of curriculum. There are even celebrities becoming involved in these issues- Jamie Oliver recently released a video with Ed Sheeran, Paul McCartney, Hugh Jackman and others encouraging people to participate in "Food Revolution Day" and sign a petition to incorporate food education into school curriculum.

An overarching issue of the industrial food system is that it perpetuates the lack of knowledge and skills regarding food and food systems that allow it to remain so entrenched and problematic. The "distancing" between food and eater (or producer and consumer) obstructs the development of food literacy as people lose food knowledge and skills: eaters learn to see themselves as consumers, and that "food" comes pre-packaged in grocery stores and fast food establishments. Processed food products often bear no resemblance to the whole foods- plants and animals- they originally came from and in recent generations many eaters have lost the capacity to understand food- how to recognize it, grow it, prepare it, eat it- or any of the issues prevalent in the industrial food system. Thus, the industrial food system perpetuates itself by effectively obstructing the knowledge and skills around food and food systems that comprise food literacy, an issue which will be further explored in Chapter Three and the remainder of this paper.

The literature and social movement around food education and how a lack of food knowledge and skills is deeply intertwined with the industrial food system lays the foundation for the remainder of this paper to examine food education more deeply. While not the only answer, it seems likely that change can occur on a broad scale only with the help of an aware and engaged population. Given this understanding, "education" appears to be a reasonable response to the question of how to fix industrial food issues, at least in part. But what kind of education is required? Is all food education created equal? Are there particular approaches to food education that can inspire a critical, anti-hegemonic perspective on the dominant food system? Can food education move beyond encouraging individual consumer choices to fostering advocacy at the community level? What collateral lessons

are absorbed when students learn to cook a carrot, or grow lettuce, or engage with others on food-related issues? These questions will be further refined and explored throughout this research paper.

Chapter Three: "Reading the World by Eating": Critical Food Pedagogy, Food Literacy, and Related Theoretical Frameworks

Introduction

One way to approach the topic of food education is through the lens of a critical food pedagogy theoretical framework (Sumner, 2015), which is a "a pedagogical approach that discourages acceptance of the status quo and encourages critique of our unsustainable food system and the creation of alternatives that are more environmentally, socially and economically sustainable" (Sumner and Wever, forthcoming). Critical food pedagogy builds upon Paulo Freire's seminal work in Pedagogy of the Oppressed (2000) and applies some of his ideas around critical pedagogy to the topic of food education. Freire emphasized the importance of "reading the world" critically as a text for learning. In the same way, Sumner (2013a) encourages learners to "learn to read the world by eating." Critical food pedagogy can be applied to the concept of food literacy to create a framework for evaluating food-related learning. Critical food pedagogy contains elements of transformative learning, ecological literacy, and critical place-based education.

Critical Pedagogy and Food

Central to the concept of critical pedagogy and thus critical food pedagogy is the idea that all education is inherently political, and can never be truly neutral (Freire, 2000). In other words, education can teach the learner to adopt a critical perspective on their society, or it can reinforce the dominant paradigms and norms and serve to perpetuate existing societal power structures. A critical pedagogy examines and unveils the 'hidden learning' and where power and privilege lie in a society. Freire (2000) termed this process and act of becoming aware "conscientization." A critical food pedagogy asks probing questions about the dominant industrial system of food production, and in

asking those questions and seeking the answers, unveils the hidden processes, systems, and power that are necessary to perpetuate the paradigm of industrial food: Who grows our food? Where did it come from? How was it grown? How did its production impact ecosystems and people? Who controls access to knowledge about the global food system (Sumner, 2008)? How are food prices determined? For example, critical food pedagogy can reveal the hidden learning in how schools approach food:

> An overlapping term, 'hidden curriculum,' […] points to the fact that schools transmit not just 'knowledge' but also norms and values. […] Sometimes the hidden curriculum's lessons are not intentional, but reveal unspoken, and often unconscious, values: the soda machine in the hallway outside the classroom where nutrition is being taught is hidden curriculum (Callenbach, 2005, p. 42).

Sumner and Wever (forthcoming) state that the goal of "food pedagogies" as communicated by Flowers and Swan (2015) involves fostering changes in food-related "behaviour, habit, emotion, cognition, and/or knowledge"; catalyzing this change requires an "understanding and critique of the industrial food system," which can be fostered by a critical food pedagogy. As Sumner (2015) states, "critical food pedagogies valorize the knowledge that challenges the industrial food system" (p. 185). If there is to be a positive change in the way food is produced and consumed, and if we are to imagine new ways of producing and consuming food within and perhaps beyond the current system, this critique and understanding are essential. Engaging critically with questions about the industrial food system is also one way of reconnecting eaters to their food, and can transform eating back into an "agricultural act," (Berry, 1990) as well as a "pedagogical act" (Sumner, 2008).

Pedagogy about food is literally everywhere and includes sites within and beyond educational institutions (Sumner, 2008). We learn about food from our families, through the media and advertising, through restaurants, from friends and communities, through educational institutions, in stores, in community gardens, through cookbooks and cooking shows, through the "school food environment" within and around schools (Winson, 2008; Sumner and Wever, forthcoming) and through festivals and markets. The biological necessity of eating entails more or less three

opportunities to learn about and through food each day, including the learning that occurs when access to food is restricted, or culturally appropriate and/or healthy food is unavailable. As discussed in Sumner (2008), food is both an object of and a vehicle for learning and it can serve as an entrée into much larger issues (Koç et al 2012). Food is rich with opportunities to learn- but what kind of learning do we want to encourage? As described above, there is a distinct difference between learning about and through food in which the dominant paradigms are reinforced, and current systems of power perpetuated, and the kind of learning that can examine those paradigms and systems critically. In order to challenge the industrial food system and learn or relearn better ways of producing and consuming food, we need to find and create pedagogical encounters that encourage a critical perspective (Sumner and Wever, forthcoming).

Food Literacy

The concepts of critical pedagogy and critical food pedagogy can help us to answer the question of what it means to be "food literate." "Food literacy" is a fairly new concept, and as it is emerging a number of definitions have been put forward without a clear consensus on what the term means. For example, in a recent Conference Board of Canada paper, food literacy is defined as "An individual's food-related knowledge, attitudes, and skills" (Howard and Brichta, 2013, p. 2). Since the creation of the Local Food Act the province of Ontario has defined "local food literacy" goals:

- Goal 1: Increase the number of Ontarians who know what local foods are available.
- Goal 2: Increase the number of Ontarians who know how and where to obtain local foods.
- Goal 3: Increase the number of Ontarians who prepare local food meals for family and friends, and make local food more available through food service providers." (Ministry of Agriculture, Food, and Rural Affairs, 2014)

There are numerous other definitions and parameters for food literacy. For example, as quoted in Goldstein (2014), Coveney, Begley, and Gallegos' (2012) definition of food literacy is "The capacity of an individual to obtain, interpret and understand basic food and nutrition information and services

as well as the competence to use that information and services in ways that are health-enhancing" (p. 634-635), while Stinson (2010) says that it is a "deeper understanding of the complex environmental and social components of food in our lives" (p. 2). All of the definitions except the last, however, are individualistic in scope and uncritical of the broader social context in which food is produced and consumed. This individual and uncritical perspective is problematic if our goal is an education which can challenge the status quo. Thus, as Goldstein (2014) discusses, before we can determine whether community food education programs facilitate food literacy in youth, we first need to understand and establish what food literacy is or could be, what the goals of food education are, and if these align.

Kimura (2011) states that in Japan, the "'food literacy' approach is based upon a deficiency framework which posits individual knowledge and skills as sole reasons for inappropriate food choices, dietary behaviours, and culinary practices" (p. 465) and that "the food literacy approach is highly individualistic and apolitical" (p. 465). As discussed above, food choices are influenced by far more than individual choice, as they are linked very strongly with structures and policies which promote certain foods over others, or restrict or facilitate access to particular kinds of food and food knowledge. Kimura (2011) asserts that due to a Japanese policy requiring food education, and a suite of for-profit and non-profit groups competing with one another to provide that education, the educators involved are not motivated by challenging the dominant system. She states that "Subject to market logic, food education is at risk of becoming an exercise of superficial mastering of "sanitized" information" (p. 465). Such an individualistic perspective also reproduces the issues discussed earlier when people interact with the world as "consumers" versus as "citizens." The issues that Kimura (2011), Sumner (2013a) and Goldstein (2014) touch upon bring us back to the central concepts of critical pedagogy and critical food pedagogy: is the goal of food education to "[reinforce] the existing economic and cultural hierarchy" (Kimura, 2011, p. 468)? Is the goal of food education to perpetuate the norms and ideals of the industrial food system? Or is it a "broad [understanding]

that is motivated by political and social consciousness and pursues a structural understanding of current food conditions" (Goldstein, 2014, p. 35)?

Freire's (2000) literacy work with peasants emphasized that before teaching and learning literacy, one had to first examine and deconstruct the oppressive social structures that prevent literacy in the first place. From a perspective of social justice, it is particularly important that we first step back and understand the context in which learning about and through food does or does not occur. As outlined in Chapter One, there are numerous issues that obstruct food literacy, and examining those issues- distancing, lack of skills, injustice, lack of ecological knowledge- can reveal some of the skills and knowledge that are required for food literacy to go deeper than a merely superficial approach to learning, and to foster emancipatory food education. When we apply the theoretical framework of critical food pedagogy to the concept of food literacy, we can see two broad "types" of food literacy operating out of different paradigms. In her work, Goldstein (2014) evaluated 15 papers discussing food literacy and fit them into categories: a "narrow" definition emphasizing individual choice and perspective, a "broader" definition as referenced above, and definitions that contain a mix of both. She then turned the two extremes into a typology with indicators of either an "individual, consumer-oriented, functional approach to food literacy," or a "contextualized, systems-based, and politically/socially motivated approach to food literacy" (see Table 1 on p. 53 of Goldstein, 2014).

These two extremes of a food literacy definition come from different paradigms. Goldstein discusses the work of Lang (2005) and compares the concept of food literacy to the paradigms he puts forth, concluding that an individually focused food literacy is most similar to the productionist paradigm Lang discusses while a broader, socially/politically conscious food literacy mirrors the ecologically integrated paradigm. While envisioning these two ways to assess food literacy as emerging from distinct paradigms is interesting, it may not be the most useful way to understand the concept. In her work, Meadows (2008) discusses leverage points through which one can make

changes to a system. She states that the ultimate leverage point is moving beyond viewing the world through paradigms, and being able to choose which paradigm or perspective fits our purpose. In the case of food literacy and the issues present in the industrial food system that obstruct it, envisioning critical food pedagogy as a holistic concept, with individual knowledge as a single component, may be a more useful way to construct an understanding of what food literacy is or could be.

This approach builds from Sumner's (2013a) discussion of food literacy as requiring three distinct types of learning, based on Habermas' (1978) concept of three domains of knowledge. Sumner's approach focuses on the creation of a critical perspective: "To effect positive change in a globalizing world, food literacy must move beyond individualized prescriptions to become a concept that can analyze current foodscapes and model sustainable alternatives" (p. 84). The three domains of knowledge Habermas suggests are empirical/analytic knowledge, historical/hermeneutic knowledge, and critical/emancipatory knowledge. Sumner relates them to food knowledge in the following ways:

Empirical/analytic knowledge: nutrition facts, shopping and cooking skills, where to obtain food, what different kinds of food are. In short, empirical/analytic knowledge contains all of the knowledge and skills that are espoused by individualistic approaches to food literacy.

Historical/hermeneutic knowledge: the culture and meanings associated with food, attached through history, language, etc. For example, analyzing media messages about food, tracing the cultural and social changes in cookbooks over generations, and understanding people's cultural and personal relationships to food fall within this domain.

Critical/emancipatory knowledge: Sumner cites Morrow and Torres (1995) in describing this form of knowledge as "based upon a desire potentially to…transform reality through the demystification of falsifying forms of consciousness" (p. 24). Within this domain falls the forms of knowledge that challenge the industrial food system: critical reflection, unveiling the hidden power structures of the food system, critical questions about who gains and who loses in the current system, and perspectives that entice or suggest more socially and ecologically just methods of producing and consuming food.

Within this framework, individualistic learning is not negative or misguided- it is merely one component of a larger concept, and necessary for but not sufficient to comprise food literacy. Author Chimamanda Ngozi Adichie states something similar about stereotypes and understanding people: "The problem with stereotypes is not that they are inaccurate; it's that they are incomplete" (2009). The problem with individualistic forms of food literacy is not that they are bad or inaccurate; it's that they are insufficient for a holistic understanding of food if our goals in food education are to foster critical perspectives. Thus understanding these forms of knowledge as components of a larger concept of food literacy removes the false dichotomy of situating individualistic learning opposite that of collective learning, and does not force the concept of food literacy into boxes or a linear continuum. For our purposes, we are trying to "get to" critical/emancipatory understandings of food; however, a full understanding of food requires knowledge and skills in all three domains, which may develop at different rates and through different experiences. Representing these knowledge domains as nested circles may best represent the holistic concept of food literacy, as this understanding implies that you can possess knowledge and skills from a particular domain without possessing knowledge and skills from all of the domains, but also that without possessing knowledge and skills from all three domains, you will not be food literate (see Figure 1 for an illustration of this concept). We can apply this thinking to the idea of food labels to illustrate why multiple domains of food literacy knowledge are required. Learning to understand food labels is a form of learning about food, and one which is often included in food education programs. In the current industrial food system, a strong understanding of food labels is necessary in order to make "informed" choices and to navigate healthy food choices. However, learning to read labels is a form of empirical/analytic knowledge and is very individualistic in scope; it is insufficient to make broader systemic changes. As Knezevic (2012) discusses, label-reading downloads responsibility for making the "right choice" to the individual consumer, requiring specialized knowledge which often depends on socioeconomic status and education levels, rather than holding the food system accountable at a broader level.

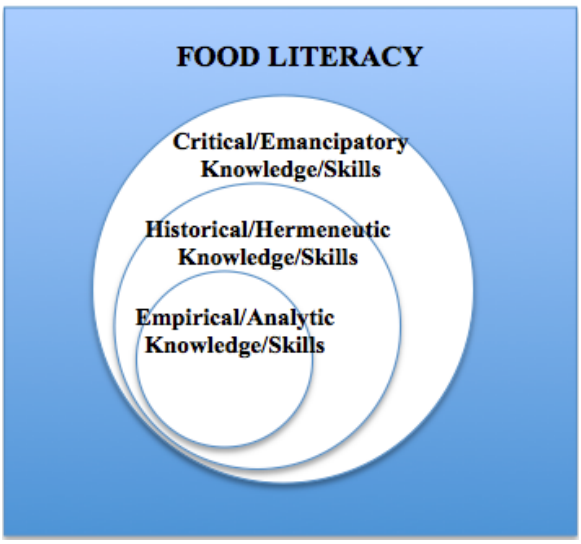

Figure 1: Envisioning food literacy as composed of Habermas' three domains of knowledge

However, in teaching learners about food, the solution is not necessarily to refrain from teaching label reading; a perspective of holistic food literacy would include teaching label reading *as well as* asking questions about the processes behind the label that we cannot see from simply reading it. As Knezevic states,

> "The road to a better food system is probably somewhere in the middle and includes individual choice, which once organized- as the effectiveness of historical mass boycotts tells us- can turn itself into a formidable political force. But choice is difficult in a complex, problematic food system, and it can be effective only when combined with appropriate policy changes" (p. 254).

In such a deeply entrenched system we must simultaneously learn to navigate the system in place while engaging in the kind of learning that can imagine, advocate for, and create something better. It is not a matter of choosing one form of food literacy over another; education for a complete understanding of food includes empirical/analytic knowledge and individual choice, but then purposefully and intentionally deepens and broadens that learning to include historical/hermeneutic and critical/emancipatory forms of knowledge and skills as well.

To illustrate, students may begin by learning individual cooking skills and nutrition knowledge and at some point experience a shift in thinking that opens up new knowledges and skills related to food; for example, learning individual skills (domain one) may enable a student to cook for their family, allowing them to connect with their food culture and to understand food as a catalyst for building community (domain two). A focus on individual health (domain one) may shift to a broader understanding of collective health or ecological health, and the larger structural changes required to facilitate a broader societal approach to health (domain three). Conversely, critical learning about some of the ecological issues related to food production (domain three) may motivate an individual to learn the skills to garden (domain one) as well as participate in political action (domain three). This holistic framework is therefore better positioned to perceive and understand the kinds of learning students may experience in food education programs and how their learning may shift over time or after particularly transformative experiences. For the purposes of this paper I will be operating from a framework of critical food pedagogy that envisions food literacy as being comprised of three domains of knowledge, represented by nested circles (Fig. 1). I will use the indicators of food literacy that Goldstein (2014) found in her review of the literature, and include indicators for three related concepts: ecological literacy, critical place-based pedagogy, and transformative learning (Table 1). These concepts were chosen to broaden the understanding of critical food pedagogy to include other food-related learning that is often left out in the industrial food system, or learning that is necessary to create change. As will be explored, ecological literacy can reconnect learners with the ecological foundations of their food, learning that is obstructed in the current system by distancing, commodity fetishism, and the misuse of waste as an industrial output, among other facets of industrial food production. Critical place-based pedagogy supports critical learning for social and environmental justice while grounding education in particular contexts and places. In many ways, this is the antithesis of the learning that happens in the industrial food system, which lacks particular social and ecological contexts and often perpetuates injustice. Finally,

transformative learning is a central concept in adult education for social change (Kitchenham, 2008; Cranton, 2013) and a necessary part of developing critical perspectives on the food system (Sumner and Wever, forthcoming).

Ecological Literacy

To expand upon these understandings, if we are to have a "full cycle understanding" of food, ecological literacy needs to be a part of our framework. Capra (2007) defines ecological literacy as "our ability to understand the basic principles of ecology and to live accordingly." He goes on to say that in order to understand the interconnections between food and food prices, world oil prices, and world hunger, one must be ecologically literate, and that the survival of the human race depends upon this literacy. If our goal is to understand food, we also have to understand ecology. Similarly, if our goal is to think critically about the dominant food system, the lens of ecological systems can provide such a critical perspective and alternate ways of viewing the world. I include Capra's ecological literacy as an integral component of food literacy; being "food literate" then includes our ability to understand the basic principles of ecology and how they impact and are impacted by human life, especially through the provision of life goods including food, air, and water, and our ability to live according to these principles.

Capra (2009) states that to be ecologically literate, it is essential to understand and think in terms of systems- that is, in terms of "relationships, patterns, and context" (p. 243). He calls these the

> "fundamental facts of life- that one species' waste is another species' food; that matter cycles continually through the web of life; that the energy driving the ecological cycles flows from the sun; that diversity assures resilience; that life, from its beginning more than three billion years ago, did not take over the planet by combat but by networking" (p. 244)

Thus, markers of ecological literacy include knowledge and skills related to cycles and relationships (such as the water cycle, food webs, the interdependency of plants and pollinators, and composting). This includes an understanding of the ecological processes, such as decomposition, soil microbial life, photosynthesis and nitrogen conversion, that allow life to exist. Ideally, students would learn

about these processes and relationships in detail, but what Capra states is that recognizing these relationships, the importance of context, and being able to apply the patterns of one context to another form the foundation of ecological literacy. Additionally, an ecological literacy would include knowledge of the plants and animals in local ecological systems and an understanding of them as co-inhabitants of a particular ecological place; for example, understanding that spiders are essential insect predators in a garden, that worms play an important role in organic matter cycling, that larger animals are participating members of ecological cycles and foodwebs that also include, affect, and are affected by humans, and an understanding and recognition of the plants that are found in an area- including cultivated plants in a garden and native and non-native plants in the ecosystem the garden is a part of. These relationships, cycles, ecological processes, and flora and fauna all affect the water we drink, the air we breathe, the health of the places we live, and ultimately, the food we eat. Thus, developing an ecological literacy is an essential component of developing food literacy.

As discussed in Chapter 1, two major issues with the industrial food system are an obfuscation of the ecological origins and impacts of industrial food, and the consideration of waste as an industrial output rather than an essential input for ecological cycles. A basic understanding of ecology can effectively unveil these aspects of the industrial food system and suggest alternative ways of thinking about food; thus, I place the knowledge and skills required for ecological literacy under Habermas' third knowledge domain, critical/emancipatory knowledge, and in the outermost circle of food literacy (see Table 1 for indicators of the three components of food literacy).

Critical Place-Based Pedagogy

Related to the concepts of critical food pedagogy and ecological literacy is Gruenewald's (2003) conceptualization of critical place-based pedagogy. Gruenewald argues that critical pedagogy, with its focus on issues of social justice, tends to ignore ecological issues, while place-based pedagogy, a tradition with roots in environmental, outdoor, and experiential education, tends to disregard issues of oppression, privilege, and power. Part of the reason for this may be that place-

based education's roots in "traditional" environmental education (Gruenwald, 2003) has largely isolated it from more "urban" forms of education. Urban education has often focused more explicitly on issues of social justice and power (Crosley, 2014), and tends to take a critical pedagogy perspective. Environmental education has largely ignored the urban context, even though that is the reality for many citizens (Gruenewald, 2003). In fact, it is argued that typical environmental education tactics such as wilderness experiences are not always relevant or beneficial to urban learners (Crosley, 2014). These experiences, when conducted outside of a social justice lens, can simply serve to paint nature as something "out there," stigmatizing what is "missing" in the urban experience. This misses the opportunity for exploring nature in the urban context through a critical lens of social justice, an exercise for which a food justice lens is well-suited (ibid, Crosley). Crosley cites Gottlieb and Joshi (2010, p. 6) in defining food justice: "Food justice seeks to ensure that the benefits and risks of where, what and how food is grown, produced, transported, distributed, accessed and eaten are shared fairly," and argues that a food justice framework provides an access point for urban environmental education:

> "a lack of attention to urban characteristics and issues has placed environmental education in danger of being, at best, irrelevant to and, at worst, ignorant of the lives and experiences of urban learners. The food justice movement has the potential to contribute to these margins by providing entry into the complexities of urban life in ways mainstream environmental education has often been unable to access due to its conventional focus on non-urban spaces, association with science education, and oversight of nuanced racial and sociocultural issues" (p. 55).

This points to the possibilities for food to be a galvanizing force in uniting environmental education and critical pedagogy perspectives and learning.

Critical place based pedagogy touches on these areas as well, building on the frameworks of environmental and social justice, critical pedagogy, and place-based education (Gruenewald, 2003). Gruenewald argues that education should be grounded in place and use place as a context for learning and that critical pedagogy, with its focus on "reading the world" and decoding the world through the process of conscientization (Freire, 2000), necessitates examining the places one inhabits

from a critical perspective. Thus, the two perspectives are not separate but should be deeply intertwined:

> Place-based pedagogies are needed so that the education of citizens might have some direct bearing on the well-being of the social and ecological places people actually inhabit. Critical pedagogies are needed to challenge the assumptions, practices, and outcomes taken for granted in dominant culture and in conventional education (Gruenewald, 2003, p. 3)

Gruenewald also argues that environmental and social justice are deeply intertwined with the environmental crisis, which, as discussed in Chapter 1 and in the concept of ecological literacy, intimately involves food as well:

> The crux of the problem is that the mainstream environmental movement has not sufficiently addressed the fact that social inequality and imbalances of power are at the heart of environmental degradation, resource depletion, pollution and even overpopulation. The environmental crisis can simply not be solved effectively without social justice (Bullard, 1993, cited in Gruenewald, 2003, p. 6).

With this in mind, Gruenewald argues that "ecological educators and critical pedagogues must build an educational framework that interrogates the intersection between urbanization, racism, classism, sexism, environmentalism, global economies, and other political themes" (p. 6). He also states that depending on the place one inhabits, the locus of environmental care may shift; ultimately, he says, "a critical pedagogy of place aims to evaluate the appropriateness of our relationships to each other, and to our *socio-ecological* places" (p. 7, emphasis original). We can see the overlap between critical food pedagogy, the third domain of food literacy, and ecological literacy in critical place-based education's emphasis on critically examining the world as we assume it to be, unveiling that which is hidden, and fostering a broader, more holistic, systemic, and ultimately ecological view of the world.

Gruenewald's work in critical place-based pedagogy adds skills and knowledges to our third domain of food literacy, critical/emancipatory knowledge. First, a sense of connection to a particular place, perhaps articulated through wanting to improve a place or learn about a place, rather than a standardized view of the world, should be present in students' understanding. Gruenewald discusses the importance of connection to the natural world in creating "ecologically literate and politically

motivated adults" (p. 7); it can then be argued that a critical pedagogy of place that includes food should foster a sense of connection to or love of food. Sobel (1996) discusses the idea that children must learn to love a place before they can be asked to save it; similarly, learners must learn to love and value food as a part of their connection to a place before they have the capacity to understand and potentially find solutions for problems in the food system. These connections are vital for the grounding, empathy, and capacity building necessary to actually affect larger change: "the point is not that these aims should be seen separately, but that the call to transform oppressive conditions that is so important to critical pedagogy must be balanced with experiencing an empathetic connection to others, human and non-human" (p. 8). Food, I argue, is a vital component of this connection to human and non-human others. Furthermore, this sense of relationship and connection is congruent with the knowledge and skills required to be ecologically literate, which, given that food is inherently ecological, we have already determined to be components of the third domain of food literacy. Thus, we can add these markers to our repertoire for the critical/emancipatory domain of food literacy: sense of connection to and care for a particular place, expressed through human, non-human, and food-based relationships.

Transformative Learning

As discussed by Sumner (2013a), critical food pedagogy and an understanding of food literacy which encompasses Habermas' three knowledge domains contains elements of transformative learning, or "the process by which we transform problematic frames of reference (mindsets, habits of mind, meaning perspectives)- sets of assumptions and expectation- to make them more inclusive, discriminating, open, reflective and emotionally able to change" (Mezirow, 2009, p. 92). Mezirow states that a frame of reference is composed of habits of mind- "broad, abstract, orienting, habitual ways of thinking, feeling and acting, influenced by assumptions" (p. 92) - and the points of view that come out of those habits of mind. These assumptions can change through experience, either through significant life crises or through the cumulative effect of multiple

experiences over time- and transformative learning can occur with or without conscious awareness. Mezirow identified a number of stages to transformative learning, indicating that it often begins with a "disorienting dilemma" (p. 94) and ultimately results in acquiring new skills and knowledge and negotiating new relationships with the self and others. Ultimately, transformative learning can encourage us to become more "critically reflective of our own assumptions and those of others, to seek validation of our transformative insights through more freely and fully participating in discourse and to follow through on our decision to act upon a transformed insight" (p. 94). Transformative learning is a fundamental part of learning to question the power structures and hidden aspects of the industrial food system, as well as to question our own assumptions about this system. As Mezirow (2009) states, "imagination of how things could be otherwise is central to the initiation of the transformative process" (p. 95).

Cranton and Hoggan (2012) say that we can evaluate the process, but not the product, of transformative learning; transformative learning cannot be forced to happen, and particular transformative outcomes cannot be predicted. They discuss the potential for transformative emancipatory learning and state, "emancipatory knowledge cannot be predetermined, predicted, or set up as an objective for a course" (p. 531). To evaluate transformative emancipatory learning, then, they suggest that we ask questions about the process of learning itself. For example: "Do learners view experience in terms of social and economic forces? Do people take a critical view of society? Can participants engage in inclusive and critical conversation?" (p. 523). Keeping these ideas in mind, we can determine a couple of indicators to watch for in determining if transformative learning has taken or is taking place. Critical reflection is a central element to the idea of perspective transformation in transformative learning, or the examining of previously held beliefs, and the changing of some beliefs in response to learning. Critical reflection differs from "straightforward reflection," which is "the act of 'intentional assessment' (Mezirow, 1995, p.44) of one's actions, whereas critical reflection not only involves the nature and consequence of one's actions but also

includes the related circumstances of their origin" (Kitchenham, 2008, p. 114). Thus, evidence of critical reflection, as well as the questions above, could mark the beginning of transformative learning. It is important to note, however, that "becoming more reflective is a developmental process requiring time and continuous practice" (Taylor, 2008, p. 11). In some cases we may be simply looking for evidence of initial critical reflection, as life experience is an important component of transformative learning (Kitchenham, 2008), and in younger learners the capacity to critically reflect may not be "fully formed." Another aspect of transformative learning is that an individual will make meaning of their experiences; however, individual meaning-making "becomes significant to the learner through critical discourse with others" (Kitchenham, 2008, p. 113). Thus evidence of critical discourse with others is a potential indicator of transformative learning.

The process of transformative learning often entails some kind of personal or social change for the better (Cranton and Hoggan, 2008). If a program can create the conditions to foster transformative learning around food, it is more likely that learning will occur in Habermas' critical/emancipatory domain of knowledge, as questioning personal and societal assumptions is paramount to unveiling that which is hidden in the industrial food system. Furthermore, as previously stated, the experience of transformative learning can cultivate a disposition that makes one more open to transformative learning in the future (Mezirow, 2009). Thus, markers of transformative learning are placed in the critical/emancipatory domain of food literacy, as transformative learning experiences around food are more likely to cultivate critical/emancipatory knowledge and skills, and to lay the groundwork for future transformative learning.

The previous sections have built upon some prior metrics for food literacy by clarifying and expanding our understanding of what food literacy is or could be through the lens of critical food pedagogy. There are other theories that relate to learning about food that also offer markers of learning that challenge the dominant industrial food system; thus, we have further expanded the food literacy metrics to include markers from ecological literacy, critical place-based pedagogy, and

transformative learning as components of critical/emancipatory knowledge and skills. Because the purpose of this research focuses on one program's role in fostering critical food pedagogy as evidenced through the development of critical/emancipatory forms of knowledge and skills, this domain of knowledge has been the most developed and has had a number of indicators added to it. Indicators of empirical/analytic knowledge have come from a review of the literature conducted by Goldstein (2014). This leaves the category of historical/hermeneutic knowledge significantly less developed; more indicators from future research and theory building are needed in this area. Moving through the three domains of knowledge and skills, we can see that their character changes from being very concrete (empirical/analytic knowledge), to relational and cultural (historical/hermeneutic knowledge), to concerned with understanding and transformation for social change (critical/emancipatory), or as Cranton and Hoggan (2008) state, "When people become aware of their oppression and individually and collectively challenge the social oppression, this is emancipatory learning" (p. 521). Thus the learning associated with the first domain is often easier to see and measure, while the learning that occurs in the second and third domains may be less tangible, but absolutely necessary if the goal of food education is to foster positive change in the food system.

Table 1: Benchmarks of food literacy

(adapted from Goldstein, 2014; normal text is taken directly from Goldstein while the headings and all italicized text have been added)

Empirical/Analytic Knowledge/Skills	**Historical/ Hermeneutic Knowledge/ Skills**	**Critical/ Emancipatory Knowledge/Skills**
- Increased nutrition knowledge - Improved cooking skills - Cooking more meals from scratch; ability to cook for oneself - Ability (and desire) to purchase healthy foods - Improved food safety behaviours - Ability to budget/plan meals - Increased consumption of fruits and vegetables - Interest in trying new foods - Confidence and motivation to use food knowledge to make healthy choices - Ability to make informed decisions and judge marketing, new products, and quality of food - Ability to influence family/friends in purchasing/cooking/eating decisions - Satisfaction, creativity, confidence, resilience because of food knowledge and skills - Ability to cook with substitutes - Knowledge of where food comes from & various food terminology (eg. GMO) - *Ability to read and interpret food labels*	- *Knowledge of one's food culture* - *Understanding of food as a catalyst for community building* - *Knowledge of how food's role in society has changed over time* - *Knowledge of unhealthy relationships to food* - *Ability to understand and dissect food advertising* - *Ability to analyze the role of food in media such as television, movies, literature, etc.*	- Knowledge and awareness of the multiple dimensions of food (broader engagement) - Ability to reflect critically on food and the food system, interest in seeking change - Awareness of socio-political impacts of the food system and ability to analyze associated discourses - Interest in active citizenship as it relates to food - Ability or attempts to disrupt current food system through informed actions - Exercising food-related behaviours that support a democratic, socially, economically *and ecologically* just food system - Knowledge and awareness of food & agricultural systems and their relationship to environment and health - *Knowledge and/or skills related to ecological relationships, processes, cycles, patterns, and context* - *Knowledge of the plants and animals that affect the ecological aspects of growing food* - *Sense of connection to and care for a particular socio-ecological place, expressed through human, non-human, and food-based relationships* - *Evidence of critical reflection in support of transformative learning* - *Evidence of critical discourse in support of transformative learning* - *Critical knowledge of the social and economic forces of a society that affect food*

Chapter Four: Growing Solutions and Cultivating Learning: Education Programs to Address the Problems of Industrial Food

Introduction

Many of the problems of an industrialized food system relate to the issue of increasing physical and metaphorical distances between eaters and the source of their food- the land, water, animals, and ecological systems that support its production, the people involved in its growth and processing, and the systems of power that dictate food access. This distancing, and the convenience of industrial food, contributes greatly to the deterioration of food-related skills and knowledge.

School gardens (both food and non-food gardens), farm-to-school programs, and market garden education and employment programs are three methods used to address this distancing and build food knowledge and skills. FoodShare's School Grown program is one of an emerging number of school market gardens, which incorporate aspects of school gardens and farm-to-school programs with youth employment in a market garden into an innovative approach to food-based education. A brief review of each of these approaches and their connection to student learning is given below.

School Gardens and Learning

School gardens can range from potted plants outside of a classroom, to vegetable gardens, to entire schoolyard naturalization projects. They may be started for a number of reasons, including the desire to build community, educate, increase students' access to nature, and support the local food movement (Nowatschin, 2014). Much of the literature looks at "green school grounds" without discriminating between food and non-food school gardens. While there is significant evidence to show the positive impacts of school gardens on student affect and learning, there is a dearth of research examining the link between school gardens and critical food education.

A number of the direct and indirect pedagogical benefits associated with school gardens have been documented in the literature. Williams and Dixon (2013) found that school gardens have

positive impacts on "(a) personal, social, physical, and moral development that also addresses self-concept, self-esteem, and motivation […] (b) positive environmental attitude and empathy […] (c) increased food literacy and healthy eating habits […] and (d) school bonding, parental involvement, and formation of community" (p. 212). Additionally, their examination of literature on the academic impacts of garden-based learning found positive, direct academic outcomes in the areas of science, math, and language arts. Lieberman and Hoody (1998) also found positive impacts of gardens on academic achievement, as well as enthusiasm for learning. In her review, Blair (2009) found garden-based education resulted in consistent reports of increased student enthusiasm and positive attitudes toward school, numerous components of community building such as teamwork and student bonding, and a diversity of possibilities for learning about the environment, science, math, the food system, and nutrition. School food gardens have also been successfully utilized to teach about food and nutrition by improving the efficacy of nutrition programs and steering students' preferences toward the consumption of fruits and vegetables (McAleese and Rankin 2007; Morris and Zidenberg-Cherr 2002). In addition to direct links for imparting curriculum and the possibilities for improving indirect links to learning, such as healthy eating habits and student bonding, there is strong evidence to support the social and personal health benefits of school gardens. Kuo and Taylor (2004) found green spaces to be associated with a reduction in attention deficit/hyperactivity disorder in children.

Dyment and Bell (2008a) found that green school grounds, including school gardens, provided a wider variety of options for physical exercise, rather than the asphalt and flat playing fields that dominate many school grounds and promote particular and competitive forms of physical activity. Green school grounds thus allowed for students of all abilities to choose physical activities they preferred, resulting in greater and more inclusive play. In another publication, Dyment and Bell (2008b) discuss the ample evidence to support the positive health implications of green school grounds, including improved physical health (eg. increased physical activity, safety, and nutrition

knowledge), social health (eg. increases in cooperation and socially inclusive behaviour, reductions in aggression), mental health (eg. improved self confidence and relationships) and spiritual health (eg. a greater sense of curiosity and wonder).

In a study involving youth ages 6 years to 18 and school alumni, Chawla et al (2014) looked at the impacts of access to nature in various school based settings. These settings included elementary school grounds with a woodlot or other natural settings as well as more traditional playground equipment and sports fields, and high school gardening programs ranging from an agricultural biology class to a required horticultural class for teen mothers. In the high school gardening programs, nearly all of the participants reported feelings of happiness, joy, calm, peace, and relaxation in association with working in the garden. Feelings of love and feeling good were also frequently reported. One participant stated, "It makes me feel good inside, all fresh, good...I enjoy touching the soil, the plants. You can feel them...I feel part of them...Yes, it makes me feel that I can care more about things...Being more gentle, caring more, the plants are like people" (p. 9). These students also discussed how working in the garden helped them to let go of stress, take time to think and reflect, cope with mental health issues, and how their time in the garden resulted in greater attention, energy, and focus when they returned to academic and other tasks. In their analysis, the authors discussed how green school grounds can help youth to build resilience, defined as "the capacity to overcome challenging stressors such as poverty or illness to become competent, confident and caring individuals" (Benard, 2004, cited in Chawla et al, 2014, p. 1). All of the cross-curricular benefits discussed above directly and indirectly affect student learning, and have the potential to be transformative experiences in their own right, whether or not they affect measures such as food literacy or skills such as critical questioning.

Williams and Brown (2012) argue that our current model of education utilizes a mechanistic metaphor. They focus on school gardens as sites for an alternative pedagogy with seven guiding principles: "cultivating a sense of place, fostering curiosity and wonder, discovering rhythm and

scale, valuing biocultural diversity, embracing practical experience, nurturing interconnectedness, and awakening the senses" (p. 14). From their experiences creating and teaching in school gardens, their research, and their theoretical grounding they assert that school gardens present a practical means for transformative, interdisciplinary learning for sustainability. This is supported by Breunig (2013a), who examined the impacts of integrated environmental studies programs, a form of interdisciplinary curriculum-based pedagogy in Ontario secondary schools, on students' pro-environmental and pro-social attitudes and behaviours. Food education emerged as a theme motivating attitudinal and behavioural changes. Breunig noted in particular that experiential learning in the form of gardening and farming impelled students to make pro-environmental and pro-social food choices. Based on her findings, Breunig's other recommendations for transformative learning experiences include students preparing a weekly locavore meal and visiting local farmers. Furthermore, she encourages the adoption of food-specific environmental education curriculum in all grades as one means to transform students' environmental attitudes and behaviours.

Theorizing from critical food pedagogy, proponents of school gardens link them to a form of learning that runs counter to the industrial paradigm of education described by Taylor (2010) as well as the industrial food system discussed above (Stone & Barlow, 2005). This learning includes principles of ecological literacy. Such an education can serve to reconnect students to the source of their food and the ecological cycles upon which we all depend, countering the disconnect between food and consumer that epitomizes the corporate food economy (Levkoe, 2006). However, school gardens may not form a path to critical learning, depending on the curriculum, educator, teaching style, etc. There has been little research explicitly exploring whether school gardens actually create this critical link, or what practices and factors in school gardens can help to foster a critical perspective. Empirical evidence from Chawla et al. (2014) suggests that some students working in a school food garden took away profound ecological lessons. One student stated, "It all connects one way or another, so I figure that I'm helping the environment, it's helping the garden, I'm helping

myself. It's not that everything is about me, it's that everything is about everything else" (p. 9), while another stated, "I like it [the school garden] because I know it all works together, just a big old complete cycle. It calms me down. It makes me feel relaxed, at ease. It reminds me of who I am, and I don't have to worry about anything else" (p. 9). It is also important to consider that while an explicit critique of the current food system may or may not be included in a school garden program, depending on the educator involved, intimate learning about the source of one's food could potentially form the basis for future critical questions: Who grew this food? Where did it come from? Did they use compost or synthetic fertilizers? How did it get to me? What impact does my food have on the environment and the people that produce it? Determining whether students leave the School Grown program asking such critical questions and demonstrating evidence of critical food-based learning is one of the main goals of this research study.

Farm-to-School Programs

The term 'farm-to-school' (FTS) encompasses a range of relationships among schools, farms and farmers. FTS most often signifies a direct marketing relationship whereby farmers supply fresh, local food to a school cafeteria or classrooms (Vallianatos, Gottlieb, & Haase, 2004). In other examples, a school builds relationships with one or more farms and farmers, potentially taking students on field trips to the farm, bringing farmers into the classroom, and celebrating the local foods grown in the area through school events such as Harvest of the Month (ibid.). Schools may include school gardens and hands on learning as a part of a FTS relationship, and/or links to curriculum and classroom education (Joshi, et al, 2008). The FTS movement began with a few isolated cases in the mid-1990s and has grown exponentially in some states and regions (Joshi and Beery, 2007). FTS relationships are most often framed through a health perspective, emphasizing offering healthy meal options to students and nutrition education (Bagdonis, Hinrichs, and Schafft,

2008; Izumi, Wright, and Hamm, 2010). The second priority for many programs is to support local agriculture (Bagdonis et al, 2008).

Education is often included in FTS initiatives, with different states and organizations offering resources to teach farmers how to give farm tours, and educators to incorporate food and nutrition knowledge into their work (Joshi & Beery, 2007). Closer to home, Farm to Cafeteria Canada is a national network that promotes, supports, and links farm to cafeteria programs, policy and practice in all forms of public institutions from coast to coast (Farm to Cafeteria Canada, 2012). One of the programs in their network, the Farm to School Manitoba Healthy Choice Fundraiser, operates as an alternative to school fundraising initiatives. The program encourages educators to take advantage of the learning opportunities presented by the fundraiser, suggesting lesson topics such as healthy food choices, Manitoba agriculture, and sustainable food systems (Farm to School, 2014).

Much of the research on FTS programs comes from the USA, with little research on Canadian FTS initiatives. Furthermore, much of the research on FTS looks at the economic impact on local farmers, distributors, and schools, or the impact FTS programs such as salad bars have on student health (with measures ranging from fruit and vegetable intake to more pernicious strategies such as using the Body Mass Index) and general food and nutrition knowledge and behaviours, such as an understanding of what foods are grown locally or students' willingness to try new fruits and vegetables (Joshi et al, 2008; Allen and Guthman, 2006). Although FTS programs are often touted as a way to reconnect society's youngest eaters with their food (Izumi, et al, 2010), there has been very little research looking at whether students actually learn or perceive this connection, and no research on whether FTS initiatives can help to foster a critical perspective on the food system.

Despite this lack of empirical data, FTS programs seem to have the potential to build fertile ground for transformative learning experiences by countering the disconnect so prevalent in industrial agriculture through connecting students and the adults in their lives with good food and the people who grow it, as well as the local environment and community. These learning experiences

also have the potential to be explicitly critical, as observed in the case of The Food School at Centre Wellington District High School in Fergus, Ontario (Food School, 2014). The school runs a series of courses on the growing and preparation of food, serving student-prepared meals in a school café. The school builds relationships with local farmers and takes students on field trips to see where their food is grown, with the mission to "highlight a hopeful, insightful and tasty food alternative" and foster "critical and confident food growers and consumers." Citing such influences as Michael Pollan, Vandana Shiva, and The Stop Community Food Centre in Toronto, the program incorporates the growing of food in a school garden. However, despite this potential for FTS programs that operate through a critical lens, there remains a paucity of research into the impacts of FTS programs in general, and in Canada especially, particularly in regard to what kind of student learning is fostered.

Furthermore, Allen and Guthman (2006) raise serious concerns regarding the discourse and framing adopted by many FTS advocates. They state that FTS initiatives in the United States have arisen as local responses to declining public school lunch programs; while FTS programs may receive some public funding, they are often dependent on more precarious sources such as private foundations. These local responses, as opposed to a national, publicly supported program, perhaps inadvertently assume much of the language and perspective of neoliberal, market-driven, private organizations. Allen and Guthman assert that students are often framed as consumers in these programs, being taught to make good choices- again, conflating the idea of the "responsible consumer" with the "engaged citizen"- instead of asserting that all children have the right to nutritious food. FTS programs compete for funding and resources, privileging regions with strong champions, access to volunteers, and the economic, social, and political wherewithal to further these programs. To justify their worth, "advocates of FTS programs often invoke neoliberal frames of academic performance and obesity" (p. 410), which, the authors point out, "help separate the deserving from the undeserving to justify the drastic inequalities associated with economic neoliberalization" (p. 410). This raises questions of what agendas are being furthered by agricultural

education programs such as FTS. For example, the government of Ontario runs a program called Ontario Agri-Food Education Inc. (OAFE) which works to counter the disconnect between consumer and producer and provide curriculum linked agricultural education materials to teachers and classrooms (Ontario Agri-Food Education, Inc., 2015). While not an FTS program per se, it operates with government funding and seeks to build connections between schools and the agricultural community. Interestingly, "members and supporters" of this initiative displayed on its website include agrifood mega-corporations Monsanto and Syngenta. With such valid concerns regarding the agenda and framing of FTS and related initiatives, determining the capacity of food education programs to promote a critical perspective is particularly important.

School and Youth Employment Training Market Gardens

An approach that combines some aspects of school gardens and FTS programs are social enterprise market gardens that either work with schools, or incorporate youth employment and youth garden employment-based education and training as an integral component of the program. FoodShare's School Grown program works with schools while integrating youth employment, and it has drawn inspiration and ideas from a number of similar programs across Canada and the United States (Senior Coordinator, personal communication, April 2015). These programs vary widely in their approach, and the lines between "school gardens," "farm-to-school programs," and "youth employment gardens" can become very blurry. Fresh Roots in Vancouver operates Schoolyard Market Gardens through an agreement with the Vancouver District School Board (Fresh Roots, 2015). These are social enterprise market gardens that operate on school properties. Teachers and students are welcome to use the space as an outdoor classroom, and Fresh Roots collaborates with those interested to create links to curriculum and to utilize the space for youth education. Fresh Roots sells their produce at farmers' markets, through a CSA model, and to the school cafeterias. However, they do not include youth employment or employment training as a part of their model. Roots to Harvest in Thunder Bay works in schools throughout the year facilitating teacher and student food

education, and has established Farm to Caf, a Thunder Bay-based FTS program (Roots to Harvest, 2015). In the summer, Roots to Harvest hires youth interns through a government employment program for seven weeks of paid work, including food education and employment skills training. However, the youth employment, school food education, and FTS aspects are not as tightly linked in this program as they are in FoodShare's School Grown program. As well, Roots to Harvest is not as production focused as School Grown (Senior Coordinator, personal communication, July 2015).

FoodShare is also similar to youth employment programs such as The Food Project in Boston, and a Food Project-inspired program called Urban Roots in Austin, Texas. The Food Project has 70 acres of growing space and hires youth to work in a seven week summer program that focuses on food justice and employment training (The Food Project, 2015). Once they have completed this program, they may continue to work on weekends and evenings during the school year and continue to build their employment and food justice skills. A follow-up study of The Food Project Alumni indicated perceived program impacts in six main areas: Becoming a Worker; Leadership; Experiencing, Appreciating, and Valuing Diversity; Deepening Understanding of Social Issues; Appreciating Food; and Sustainable Agriculture (Brigham and Nahas, 2008). Urban Roots also has a focus on youth employment and training, as does Supa Fresh Youth Farm in Oregon, which incorporates learning about sustainable agriculture, healthy nutrition, and environmental stewardship with paid employment that includes intentional employment skills development. However, none of these programs work directly with schools to integrate farming and school food education with their youth employment training focus.

A preliminary scan of the literature indicates that these wide-ranging programs that operate as educational market gardens in various forms are not well represented in research. If they are, the research does not tend to explicitly explore program impacts on learning, although learning may be imbedded in related themes such as work skills, or familiarity with social justice and diversity issues such as in Brigham and Nahas, 2008. However, the potential impact on student learning of programs

integrating school market gardens, youth employment, and food education is an area of research with much room for growth and discovery. Determining whether these models can promote a critical perspective on the food system could help to inform program goals and capacity, and inform theory around what kind of food-based education can support critical food pedagogy.

Conclusion

School gardens, FTS programs, and school and youth employment training market gardens are three general models used to counter the disconnect between young eaters and their food while incorporating a variety of other program goals such as links to curriculum, healthy eating and local food knowledge, and employment training. There is a large body of literature around school gardens, less around FTS programs, and very little around market garden programs that incorporate youth education and/or employment training. Additionally there is little, if any, research examining whether these three forms of food education programs foster critical perspectives on the food system, or what program components are key in supporting critical food pedagogy. FoodShare's School Grown program incorporates aspects of each of these models into a market garden social enterprise that educates youth around food and incorporates employment training. Their model is outlined in Chapter Five.

Chapter Five: FoodShare's School Grown Program Model

Background

The School Grown program is a part of the not for profit organization FoodShare. FoodShare was established in 1985 as a "hunger hotline" and has since expanded to include food access and distribution, food justice work, community garden animation, and food education, with an annual budget of over $6 million and close to 60 staff (Wever, forthcoming). The School Grown program is in FoodShare's Field-to-Table Schools department, which focuses on food education and literacy for

children and youth. The School Grown program combines several aspects of school gardens, FTS programs, and youth employment training programs that utilize schoolyard market gardens.

FoodShare established a garden at Bendale Business and Technical Institute (BTI), a secondary school in Scarborough, in the spring of 2010 with funding from a climate change action grant. That year, five youth were hired to work in the garden with one FoodShare staff member. Over the next few seasons funding was precarious, with support to hire youth but no funding to hire FoodShare staff to mentor and supervise them, or funding for short term employment but no year round program coordinator. FoodShare staff discussed how this is often the case with school gardens and school greening projects, where funding is accessible to initiate projects, but not for continued maintenance and the staff funding required for project animation. To counter this, in 2013 FoodShare developed the School Grown model. This model was intended to generate revenue from school-based market gardens to build more financial sustainability, and provide access to land and food-based educational and employment opportunities for urban youth. In this year FoodShare also developed raised bed planter boxes on the rooftop of Eastdale Collegiate Institute (CI), a school in Toronto's east end which provides small class sizes, caring staff and a supportive environment to students who are headed to either the workplace or college. Incorporated into the school is a Special Education program with non-credit classes for students with a Mild Intellectual Disability. The idea of growing food on public land is not new; as mentioned above, it is used in other schoolyard farms and youth employment market gardens, and many urban farms are taking advantage of underutilized public spaces for agriculture and community development (Vuchnich, 2015). The use of public land for food growing is also the focus of Project SOIL (Shared Opportunities on Institutional Lands), which assesses the potential of using public institutional lands to grow food and for which the School Grown model was a recent case study subject (Mount, n.d.).

When they started growing food at Bendale BTI, FoodShare developed a relationship with the Focus on Youth program, a provincial government employment program administered through

the Toronto District School Board. Through this program they hired five youth for the summer of 2010, increasing to ten youth in 2013, 12 in 2014, and 14 youth in the 2015 growing season. Youth from Bendale BTI and Eastdale CI are hired for seven weeks from July to August and work in all aspects of the market gardens, from seeding, planting, weeding, watering, composting, maintenance, harvesting, and market preparation, to running farmers' market stalls at several markets across Toronto. Their employment focuses on building job skills and incorporates multiple forms of education and support. For example, youth are facilitated as a work team with a focus on teamwork, communication, and conflict resolution; they receive individual support from FoodShare staff and mentors at regular check-ins; weekly cooking classes, food and farm-based field trips, and documentary viewings are standard components of the summer program; and food and growing skills and knowledge are taught on the job. Students have the opportunity to use this summer employment for co-op credits to contribute to their Ontario Secondary School Diploma, and receive support in developing resumes, cover letters, and interview skills.

There are a number of possibilities for student exposure to work in the gardens, including employment, in-class work, extracurricular and volunteer work, while the permanence of the garden lends itself to informal student visits and participation. In addition to the summer employment program, throughout the school year FoodShare maintains a presence on the two growing sites and continues to work with students in a variety of ways. Revenue generated by the market garden has allowed FoodShare to hire students during the school year for part time work such as maintaining the compost and working at the markets in the spring and fall. Eastdale CI runs an extracurricular Garden Club that students can join. Classes such as Green Industries at Bendale BTI and Science at Eastdale CI also participate in garden work on a regular basis (two-three times per week or more during the growing season). At Eastdale CI, the main science teacher has created an interdisciplinary workplace level "Seed to Market" course where students are involved in every aspect of the garden and related learning, from growing food, food education such as grocery store and community

garden tours, lessons on agriculture, and the marketing of School Grown produce. Other classes, including non-credit classes at Eastdale CI, participate throughout the spring and fall seasons as well; marketing and business classes at both schools have created advertisements for garden produce and marketed vegetables to staff and community, and culinary classes at each school regularly utilize fresh garden produce. Currently, the program sells produce to FoodShare's Good Food Box program, at several farmers' markets, and to several restaurants within Toronto. According to grant applications, in 2014 the gardens generated $17, 775 in revenue to support program costs, with hopes to increase revenue in the 2015 season.

Program Goals and Objectives

The program prioritizes hiring students who face challenges to employment. Some students involved have learning disabilities, while others are new immigrants to Canada. The School Grown Senior Coordinator shared that they try to hire a group of students that will reflect the makeup of the school, and prioritize hiring students of colour and others who may face systemic challenges in accessing employment opportunities and training. As School Grown stated in a grant application, "Both schools are ranked high on the Learning Opportunities Index, a TDSB tool that helps determine the needs of school communities and works to ensure that historically marginalized student populations receive an equitable allocation of resources and support. Our program prioritizes hiring youth who face systemic barriers to accessing employment; predominantly youth who are racialized, live in poverty, or have a learning disability. We focus on hiring youth who are behind in their credit accumulation and need a supportive work environment." One of the main goals of the program is building employability skills and supporting students' educational goals. As in much of the work that FoodShare does as a broader organization, food education and food justice are also important goals and lenses through which the School Grown program operates.

From literature reviews of school gardens and FTS programs, and a scan of the literature on school and youth employment market gardens, School Grown appears to be one of few programs that

integrate youth employment and the growing of food on school property with food education and social enterprise revenue generation. Many school gardens donate produce to organizations or contribute to their school cafeterias and many non-school youth employment gardens operate as social enterprises; however, it is far more difficult to find school garden models that hire youth and operate as highly productive small-scale farms, specializing in high-value crops and intending to generate program revenue. One of the reasons behind this model is increasing financial sustainability; while the program is dependent on the Focus on Youth funding to hire youth in the summer and other grants for FoodShare staff's salary, revenues nearing $20,000 annually allow School Grown to hire youth for part time work through the school year, and contribute to program stability. The program focuses on employability skills through food and farming employment and education. The School Grown staff state, "We grow food to grow people," reiterating a sentiment shared by a number of the youth employment programs discussed above which see food and farming as pathways for multiple forms of learning, engagement, and development.

At this point there is not yet a formal logic model for the School Grown program. The Senior Coordinator discussed that the program now has the funding to create a program manual, which is in development and will be released in late 2015. In addition, in March 2015 students that had been employed by School Grown were paid as curriculum authors to collaboratively write a formal curriculum for the program. These students were taken through a series of workshops to learn what they felt to be necessary knowledge and skills for anyone who participates in the program. Some of what they perceived to be necessary content will be included in the discussion of this paper.

As the program manual is in development, I relied on conversations and interviews with the Senior Coordinator as well as grant applications the Coordinator shared that reveal how School Grown perceives and represents itself. The program considers itself to have a social and food justice perspective that guides how it works on youth employment skills and supports youth in reaching self-determined goals. As mentioned previously, the program views food and farming as a pathway

for achieving these overarching objectives; at the same time, food and farming education are integral components of the program. The Senior Coordinator expressed that the program takes a critical perspective, as FoodShare staff and School Grown students often discuss issues of poverty, power, oppression, marginalization, and racism. Her interpretation of food literacy encompassed the critical/emancipatory domain:

> *"[In education] we talk about literacy as being able to decode text and then encode text. So food literacy is being able to decode the food system. Like how do you make sense of the food system? And then how do you encode it- how do you participate in it? How do you fit yourself in there, and create your own "texts"? So part of that is just learning knowledge, learning skills, all about food, and then also learning what is your own agency in that? And gaining knowledge and sharing knowledge, and learning skills and sharing skills, and creating change." - School Grown Senior Coordinator*

Conclusion

Working through the lens of food justice, the School Grown program appears to have the potential to foster critical perspectives on the food system while concomitantly furthering its multiple objectives around youth employment training, food education, and student development. The extent to which it can foster these critical perspectives, as well as the other skills and knowledge that participants gain, will be further explored in Chapter Six.

Chapter Six: Themes From the Research

Introduction

As this research set out with the broad aim of examining what knowledge and skills students learn in the School Grown program, the responses of participants and staff revealed learning that is both within and beyond the scope of food literacy and critical food pedagogy. While not all of the learning experienced can be examined through the lens of food literacy and critical food pedagogy, the other themes that arose from the data are important as they all relate to learning and to the broader purposes of programs such as School Grown. Additionally, some of the responses that do not initially appear to relate to food literacy are actually connected to factors that encourage civic

engagement and pro-social and pro-environmental behaviours, and thus can be considered to foster critical and emancipatory learning. This connection and learning will be further explored in the discussion. The following subsections highlight the themes that emerged from the data.

1. Personal and Interpersonal Impacts and Learning

Staff and students interviewed repeatedly expressed how the program resulted in personal and interpersonal impacts and learning, particularly with reference to knowledge and skills. One guidance counsellor noted how students feel good to be engaged in a garden program with very positive, tangible outcomes, and how positive that is for students' mental health and sense of achievement. The staff and teacher participants noted multiple times that students who typically have not experienced success in traditional academic settings are able to experience it in the School Grown program. Interviewees noted that participation in the program increased student confidence, self-esteem, and ability to be positive. For example, the Senior Coordinator shared the story of a student who struggled to wear a t-shirt to work due to body image issues. After a few weeks of farming, this student arrived to work in a t-shirt and proudly shared with the Senior Coordinator that farming helped them to realize that they were strong and confident. Another student who was on the autism spectrum was able to overcome severe shyness in order to introduce themselves to others and to make several friends through the program. Students gained a sense of pride and accomplishment, as well as a sense of efficacy. Students noted increases in independence, and learning what kinds of work and experiences they enjoy and excel at. The following quotations illustrate some of these points:

> *Some of the students that I referred to the program are students who had multiple struggles and had not had an easy time and just the way that [Foodshare] embraced the students and the possibilities that were open for them- amazing. There is no therapy that could do as much as that garden did for several of those kids. ~ Natasha, Social Worker, Bendale BTI*

> *[After School Grown] I always think that I'm a hard worker, because now I can look at the accomplishments that I've done like building the Eastdale garden with Brooke and Jordan…I say it's made me stronger, have more confidence in myself and my friends and believe that I can always do any job. ~ Liam, School Grown graduate*

[School Grown] made me a bit more confident in myself, like sometimes I think that I haven't done anything but then I realize, wait, I have *done something, there's people that tell me I've done something and they were really proud of me and they look up to me and I look up to them and they respect me. It's made me see that I shouldn't keep putting myself down. And if they're going to have faith in me, then I should have faith in myself. ~ Jordan, School Grown graduate*

I respect other people more now because I've seen that everything that I do also reflects on other people. So if I were to be at work and be like oh, let's go do this or that to somebody it will reflect on them and it might be something bad or it might be something good. And I want it to be something good. ~ Chris, School Grown graduate

It showed me that I can do whatever I put my mind to, because working in the garden on hot days…you could get really frustrated with people, and just everything around you, including if you're having a bad day, but if you…stay positive, you just get through it. So I found that if I just stay positive I could get the job done. ~ Cali, School Grown graduate

It allows them to engage with community members with a sense of pride. For example, they'll have people walking along the sidewalk while they're working in the garden and the community members will say 'Hey, what are you growing, what are you doing?' and the students will explain very proudly about what they're growing or harvesting. ~ Wendy, Principal, Bendale BTI

I think [students gain]…a sense of satisfaction and the fact that it's possible for them to have gardens…One of our students lives in community housing and he's very involved in it and…he's started a garden outside… where he lives. So he's taken seeds from here, and he's composting at home now too. ~ Martha, Principal, Eastdale CI

Students also learned conflict resolution and teamwork, as well as related skills such as accountability and responsibility, which are noted in the next section. Students had opportunities to develop self-determined personal goals and to work towards them with support from FoodShare staff that they perceived to be caring leaders, and that school staff perceived to be outstanding community role models for youth. As a result, students expressed feeling safe and cared for in the program.

I enjoyed that if you ever had a problem…you could just go talk to Katie or someone who was working…if you needed help with anything they were always there to help you. And they would always like show you what to do and like give you instructions on anything you needed, they were always there for you…I guess just having people like that, it just helps you get through your days better, and you know that you're comfortable and you're safe where you are…That's helped me out a lot because you actually have people to talk to and that are there for you and you can feel the difference between people that just don't care and people that actually want to make sure that you're doing what you need to do and that help you and give you the support you need. And then having people around you like everybody you work with that are supporting you, helping you out…if they need help they can ask you and you can

help them out…everyone was there to be friends, like be a team player...it was really good to have my first job like that.
~ Brooke, School Grown graduate

[FoodShare provides] positive role models for the kids. Because they're not teachers, so they're not disciplining kids, and they're kind of cool, so [students] see adults that are younger, but a little bit older than them, that have neat jobs and treat them respectfully, but put demands on them…So it's a great partnership for role models. ~ Martha, Principal, Eastdale CI

They [FoodShare] create an atmosphere of collaboration and taking care of each other so for example, there was a student who was really impacted by anxiety and just because they created such a community of safety, collaboration and it's OK to be who you are and to bring with you all the aspects of who you are as a human being, it really was helpful to this kid to…get out of their shell and to be more open because they had that experience with people they could trust, and I think FoodShare does a wonderful job with that… the people who are involved in the project are always very skilled and they just have personalities that invite the best in people…they're just so friendly and tolerant and understanding yet with clear expectations, and I think our kids really respond well to that. ~ Natasha, Social Worker, Bendale BTI

The supervisors, they're amazing, they're easy to talk to, they're fun, you can learn a lot from them…there's a really good vibe working with the people, and you get paid, and it's work experience. ~ Jordan, School Grown graduate

[It's] a great program because there's great staff that care about you and look out for you. If you need help with anything they're there for you. You learn a lot of things from basically just being out in the field because you're not just stuck inside, cramped, looking at a book, or in an office. ~ Chris, School Grown graduate

Two interesting impacts which will be further explored through the lens of food literacy and transformative learning are that a couple of students expressed feeling more open-minded and empathetic after their School Grown experience, including a field trip to Black Creek Community Farm:

Since Black Creek Farm's around Jane and Finch it's like a bad neighborhood, they kind of use [the farm] as like a positive motivator so people can view Jane and Finch in a more positive light and the same thing's for Bendale, a lot of people think it's a bad school, so I'd say…the program helped me be more open minded… I'd say that for that aha moment, maybe I just wish that other people had that moment, that like they saw what I saw, that maybe they shouldn't think that it's such a bad place…they shouldn't believe everything they see, and they shouldn't believe half of what they hear, they should hear it and just look into it for themselves. ~ Jordan, School Grown graduate

Students also expressed that a field trip to the Centre for Addiction and Mental Health (CAMH) Sunshine Garden that FoodShare operates helped them to relate to people with mental health struggles, and to see that gardening was a positive and effective way to cope.

Overall, the data shows that the School Grown program helped students to experience success, building confidence and a sense of efficacy. Students learned teamwork and conflict resolution from strong, positive role models in a safe and enjoyable environment and noted that the program, particularly their field trip experiences, helped them to be more empathetic and open minded about how different people and neighborhoods are perceived.

2. Impacts and Learning Around Employment Skills and Opportunities

Participants stated that students in School Grown gained knowledge and a number of skills related to employment, including punctuality, work ethic, responsibility and accountability, teamwork, and leadership, as well as job specific skills such as money management and customer service. Students came away from School Grown with work experience on their resumes and recommendation letters, and often their experience in the program encouraged them to develop resumes and cover letters. Staff noted that many of the students employed by School Grown would struggle to access employment elsewhere or to gain the support needed to find work. For example, one School Grown student was a recent immigrant to Canada and enrolled in a non-credit program. She faced barriers to employment around her language, reading, and writing skills, but had excellent interpersonal skills such as teamwork and counselling fellow students, which were fully engaged as a participant in School Grown:

> *Marketable skills, project management, encouraging your teammates, those kinds of things that are hard to quantify but create a situation where when that student is looking for other opportunities and they're looking for reference letters…you've got reams of stuff to say. So it does make them more employable, more independent, more likely to be able to sustain themselves, either because they've got work or because they can produce their own food. ~ Matt, Guidance Counselor, Eastdale CI*

As noted above, students learned what a healthy workplace felt like, as well as how to engage in a

work environment in a healthy and positive way. For example, one student commented that he learned how to talk to his boss without getting angry or upset, and how to act appropriately in his work environment. Despite some students struggling with school attendance, engagement in the School Grown program was very high, with excellent attendance and participation. For some students, participation in the program has caused them to consider pursuing a related field of study or employment after high school. As the program builds, teachers at Bendale BTI are also starting to get calls from community gardens interested in hiring students that have been involved in the garden.

> *[The program] teaches you how to be punctual, like how to actually do your job and ask for help and it kind of gives you like some experience before you actually get out of school and get a full time job. ~ Brooke, School Grown graduate*

> *I think a lot of [students] are thinking about going into horticulture and going into green industries, and that's largely I think because…of the work in the garden... And the culinary arts…definitely I can see a huge impact for them and their choice of future profession. ~ Natasha, Social Worker, Bendale BTI*

> *Other pieces of learning extend much more broadly for the kids who have employment opportunities in the program. So marketing skills, business skills, money management, customer service. Planning, warehousing, you name it, all of those pieces of learning… that it matters that you show up, that it matters that you show up at the time you said you were going to. That if you don't, that you're part of a team. That all of it happens because everybody does their part, and when somebody doesn't, people need to either step in or find out what's going on or support the other person so that sort of collective notion of contributing to things.*
> *~ Matt, Guidance Counselor, Eastdale CI*

> *It also taught me [that] you can be productive and have fun at the same time. Because people usually don't like working so when you know that work can actually be fun, you can enjoy the people around you and you can enjoy what you do, it's a good thought and it means that you can find that in the future and you'll know what you want and what kind of people you want to be around. ~ Jordan, School Grown graduate*

> *I think for some students, just being exposed to the fact that there are careers and potential employment opportunities working with plants and seeing that it can be pretty rewarding work, that's certainly been some of those aha moments up here, like the kids connecting with some of the work and feeling like it might be something that they want to build into their life going forward. Those few students like that, it's been really big moments for them. ~ David, Science Teacher, Eastdale CI*

> *A big part of it is conflict resolution and learning how to be both independent and interdependent in your work and in your life and knowing when to ask for help and knowing when to say you did something wrong…the community meetings are a part of that but then*

it's also just like as things come up we work with students to work through things in a way that they can do that [themselves] in the future. And [learning] that things actually get resolved, and so skills around that. ~ Katie, School Grown Senior Coordinator

Katie helped me a lot…after our employment ended… she knew I was looking for work so I came down here a couple times, she helped me fix my resume, she helped me email some jobs, and actually that's how I got my landscaping job, because she was helping me email them and they called me for an interview.
~ Brooke, School Grown graduate

The School Grown program taught skills, knowledge, and experience related to employment, from the practical skills of working in a garden and selling food to a number of transferable skills and knowledge such as punctuality, work ethic, and a sense of a healthy work environment. Additionally, the program opened up opportunities and possible career paths for students that may not have previously considered work with plants or food.

3. Impacts to Overall Learning Skills

As noted in the literature review on school gardens, the School Grown program also had a very positive impact on students' learning experience and overall learning skills. Staff stated that this was because learning was integrated rather than segregated as well as experiential. The School Grown program gave students a chance to experience learning that was "real world" and concrete, and because teachers and FoodShare staff supported it, there were numerous opportunities for inquiry-based learning. Student engagement in learning increased throughout their exposure to the gardens, and staff noted that these positive experiences are building lifelong, ongoing learning skills.

A lot of it is driven by questions that they have…we'll say we have a flea beetle problem. And then like what are the options? And inevitably someone will say what about pesticides or something, and so you can talk about what would it mean if we introduced [pesticides]?...it's about getting them to ask those questions and answer those questions themselves and sort of think critically…a lot of it is self-directed…we're making worm tea- why? OK. What else could you use? A synthetic fertilizer. OK. What does that mean? What does that come from? And it's more just like you kind of learn by doing. ~ Katie, School Grown Senior Coordinator

You can see the success, you start with a seed and all of a sudden you're eating a plant two months down the road…in January they were very disengaged…we came back [after the February long weekend] and we had all these sprouts and they all finally got excited. I actually had grade ten students skipping class in the morning to come here and check out their seeds. [I said] go to class, I'll water them!...the initiative they take now and the lack of

apathy is really nice to see…they want to come in and work, they're asking for things to do instead of waiting to be told…They're like are we going out with FoodShare tomorrow?...if it rains can we still go out? ~ Greg, Green Industries Teacher, Bendale BTI

It's practical. And it's tangible…it provides kids a way to engage with learning… where they haven't had success before. So they're used to sitting in classes and not really understanding, or you know, writing a test and not getting a good result on it…having learning be an abstract thing…This feels a lot more concrete. And connected across a bunch of things. Connected around interpersonal stuff, connected around actual nutrition and food, eating meals…I think the students that are engaged actually really learn something. ~ Matt, Guidance Counselor, Eastdale CI

For some of these students who are really hard to engage in the classroom…some of the tasks up here…they have a sense of what the task is, they can see it, they can visualize it, they can participate in it in a hands on way and it just makes more sense to them than some of the stuff that happens in the classroom that's again more abstract…less tangible. So for some of those kids for sure, big behavioural turnarounds. ~ David, Science Teacher, Eastdale CI

If I were to read it in a book, I would never be able to remember it or even know what it was. If I see it and I'm touching it or I taste it or something I'll remember it, because I can remember the feeling of it, the taste, or how it looks. ~ Chris, School Grown graduate

[The garden has] tied the science and the hospitality departments together in ways that we just haven't been connected before. So we do a bunch of cross curricular stuff …we integrate lessons about food preservation, so we hook both those classes up and do science and the tech, about canning some of our stuff up here, so that's been really nice….[and] it's really expanded the opportunities that we have to offer inquiry based learning at the school. There's lots of growth and lots of questions for students to answer up here so the space has provided a lot of opportunity here for kids to come up and to answer questions and design inquiry based projects. ~ David, Science Teacher, Eastdale CI

The nature of the work and learning in the School Grown program was very tangible with concrete results, lending itself well to hands on learning and inquiry-based learning. This resulted in high student engagement and built learning skills that students will be able to draw on in future work, learning, and life experiences.

4. Food Literacy Impacts and Learning: Empirical/Analytic and Historical/Hermeneutic Food Literacy

The data shows a great increase in food literacy in the empirical/analytic and historical/hermeneutic domains. This is not surprising, given that this kind of learning is one of the main objectives of the program:

> *[Students learn] every part of growing food for yourself. So starting seeds and what kind of seeds and how to care for those plants and what they need and how to harvest…and then the skills that go along with that, so if it's learning how to harvest it's using the knife and caring for it and storing it properly and so it's those practical sort of skills of food production. A lot of that is taught just on the job, it's like now we have to trellis these tomatoes, this is how we do it. ~ Katie, School Grown Senior Coordinator*
>
> *They're certainly learning gardening skills. After participating in the program they come out with the ability to grow their own food on a small scale, local level so just in terms of being able to maintain gardens, have that sort of experience, maintain a compost program…they certainly have that knowledge. ~ David, Science Teacher, Eastdale CI*
>
> *I know how to grow my own plant now, like I know that there's more to it than just putting a seed in dirt. And…I've like learned more like I learned how to grow a dragon fruit and I had one growing on my balcony. ~ Jordan, School Grown graduate*
>
> *I learned how to grow different vegetables and fruits and how to harvest them, and also how to cook with the fruits and vegetables we grew… I learned planting, how to plant seeds properly, and how to harvest the vegetables and fruits once they're ready. I also learned about different kinds of vegetables that I've never seen before, or that I've never seen in the grocery store. ~ Cali, School Grown graduate*
>
> *The stuff I've learned from composting and the roof top garden at Eastdale…I brought it home and I continue to expand my garden and I also have a compost. At home I don't have any bins, so I just have like a big compost pile, so each week we have a bin inside where we collect the food scraps and I take it out and put it on the compost heap…I use it, once it gets warmer, for the garden. I grow tomatoes, kale, peppers, and sometimes lettuce. I try and respect the soil and try to reuse the soil as much as possible. ~ Deshanel, School Grown student* (Elton, 2015)

Without hesitation, all students interviewed agreed that the School Grown program changed how they look at food in some way. For some students, the program was their first exposure to how food is produced, and how food carries lessons around commensality. Students brought up eating meals together, and staff commented on the learning they saw as well:

> *I think something as simple and basic as where does that food come from? What does it look like? Does it grow in the ground, does it grow on a plant, how long does it take, what does it taste like when it's truly fresh?...When we can point to a kid in the building who as a result of involvement in this program has taken seeds home, planted a garden, produces his own food, composts…it doesn't get better than that, right? And we know that that means that they have access to better food….[and] learning things like at FoodShare, I know when kids go [there] and everybody eats lunch together [it demonstrates]the value of community and the tool that food is in terms of supporting that. ~ Matt, Guidance Counselor, Eastdale CI*

Some of the classes that are integrated with the School Grown program incorporate broader

education around food as well:

> *[Students in the Seed to Market course] gain knowledge about [the] life cycle of plants. [We talk about] food production in the city, urban agriculture is a concept. Barriers to people eating healthy, issues of access to food and poverty, socioeconomic status. Environmental issues that surround the food distribution system and some of the issues with producing food in far away places and shipping it here. And then the practical skills, pruning, taking care of fruit bushes, some of the design considerations and the actual production of a large garden that many of the kids were involved in [creating]. ~ David, Science Teacher, Eastdale CI*

Several staff discussed how students are learning how the process of growing food is much different from simply purchasing it in the store:

> *[They learn] the importance of the amount of energy that goes into creating food that we take for granted. A lot of them have told me that time and time again, "I had no idea it was this much work to grow a carrot," yet we'll go buy a bag of baby carrots for 99 cents. And learning the difference between what real food is compared to what we're told real food is. ~ Greg, Green Industries Teacher, Bendale BTI*

> *They're picking up the skills around….planning over a longer term. So from a seed to the product it actually takes a long time, it goes through many stages, requires lots of different levels of expertise, so part of what they're learning is process. And sequencing and necessary steps between a beginning point and an end point. ~ Matt, Guidance Counselor, Eastdale CI*

These thoughts bring to mind Barbara Kingsolver's question: "I wonder what it will mean for people to forget that food, like rain, is not a product but a process. I wonder how they will imagine the infinite when they have never seen how the stars fill a dark night sky" (2002, p. unknown). Combined with ecological knowledge, students in this program are learning that food is comprised of many factors, including water, soil, compost, time, and their own hard work.

The Senior Coordinator discusses how cooking skills are a big part of the program, with the ultimate goal that students will be able to cook without needing a recipe and using whole ingredients that are affordable and nutritious. Weekly cooking classes begin by following a recipe, and progress until at the end of the program students are able to cook an entire meal with whatever ingredients are ready from the garden. Students and staff noted that the program impacted how students talked about food and their willingness to eat new and healthy foods.

> *Some of it is healthy eating, introducing them to new foods, like they've eaten kale, they've eaten beets, they've eaten all sorts of stuff that they wouldn't eat otherwise. ~ Martha,*

Principal, Eastdale CI

I've seen students have more conversations about what is healthy food, like being able to recognize healthy food versus less healthy foods. I've seen them use the food in our cooking program or at events where we've had a mini market stall and…they can talk about it, like…why are these carrots purple?…Why would you want organic food versus non organic food? So their language about it and their knowledge has increased. Whether it's changed how they prepare food at home or how they include food in their lunches, I don't know enough to sort of say. ~ Matt, Guidance Counselor, Eastdale CI

On Fridays they're coming in with containers from food school, [asking] can I bring home some sprouts? [Now they have] the understanding that if I eat this, can I save the seeds and plant it?... I know definitely the respect for food and the understanding of where the food comes from and what's in it…they can talk about that now and defend their choices. ~ Greg, Green Industries Teacher, Bendale BTI

I learned a lot, like how you grow it, how to take care of it, what you need to do and like when's the best time to grow certain kinds of fruit, and vegetables and everything else… I never was into that stuff before. ~ Brooke, School Grown graduate

At home now I eat a lot of vegetables, like more vegetables and we always have like lots of vegetables in the house but like otherwise than that I like gardening but I don't really know. I just say working in the garden gave me more choices about what you can do with vegetables...If ever I get offered vegetables, I always eat them now. Like I was working in the [FoodShare] warehouse and [staff] always give me a food box and I bring it home for my family. ~ Liam, School Grown graduate

[I] eat a lot healthier [now]. No more junk food. Since last year I haven't really been eating as much junk food, I've been eating a lot of greens. ~ Chris, School Grown graduate

It made me more open minded to what I want to eat…before I just didn't eat vegetables because I just assumed I didn't like it and I think that's like all the cartoons I watched, the characters made it seem like those are bad, I'd prefer junk food…but then as I worked with Katie in the gardens I ate more and it made me more open minded and now…[today] I looked at the salad and I said I'm going to be more open minded, so I decided to eat it…I said no at first and then after I finished my food and I saw the salad I'm like I want more food and that's a vegetable…I'm going to try it, I'm going to be open minded, and I did it. ~ Jordan, School Grown graduate

Teachers commented that after exposure to the School Grown program students began to ask questions about what food choices were healthier, and combined with viewing the documentary Food Inc., had begun to brag with classmates about eating less meat.

After participation in School Grown and the integrated courses, teachers saw increases in students' ability to interpret food information:

> *Kids come out of the course with a new knowledge of where food comes from, and the benefits of eating locally. That's a strong learning that happens and a lot of kids come out of the classes that we teach…being able to identify now in the grocery store where things are produced, having a concept of how far some of these countries are away…and really like seeing the value in terms of both environmental benefits and just like taste and nutrition benefits from eating stuff that hasn't traveled quite so far. So I see that as a pretty profound and common thread that students can bring out of the courses. ~ David, Science Teacher, Eastdale CI*

However, several participants noted that systemic barriers remain that restrict students' ability to bring all of their new learning home. Several students recognized and articulated these barriers, which relates to critical/emancipatory learning as well:

> *They're reading labels that they weren't before and they know where to go for things, so it's definitely informing their decisions…it doesn't always change them, because the options aren't always economically viable or, you know, obvious.*
> *~ David, Science Teacher, Eastdale CI*

> *If you get organic stuff at like grocery stores it's really expensive so I find a lot of people go more for junk food because it's a lot cheaper to buy and so that also is a problem that they have that they should probably work on, because it's getting people to eat more of like the fast food, like go to McDonald's and get a burger, instead of going and getting a healthy meal because it's so much money…now that I live on my own I have to go buy all of my groceries myself and like I'm trying to eat healthier for myself and it's so expensive just to get some fruits and vegetables. ~ Brooke, School Grown graduate*

> *One of my biggest problems in the food system is probably poverty because I don't really come from a lot, so I know how it is to struggle and not have food and good food in your house…I find if you don't have…a lot of money you can't buy healthy things, or things you need for your body, you can only buy chips and processed foods and fast foods and stuff because it's just faster and easier and cheaper…a bag of lettuce in the grocery store would probably cost two dollars but at like a farmers' market it costs four or five dollars and people who don't have that money to spend can't get that healthy food because it costs so much. ~ Cali, School Grown graduate*

In addition to their current learning, Natasha, the social worker at Bendale BTI, stated that what students are learning is potentially long-lasting:

> *It's not just one way that the garden is impactful in the lives of young people, it's many different ways…I think it's important to see not just what is happening in the moment but what kind of implications these learnings have for their future view of food and healthy eating and other things…And they extremely enjoy it. They really enjoy being able to cook food for each other and to eat it.*

She also suggested that the program fosters a sense of dignity as students are involved in food

production and in creating meals together:

> "*Maybe if they were just given something, that might make them feel a certain way, [but] if they feel that they are a part of creating something and then it's shared, it's a very different way of seeing people and kind of offering support."*

Participants also noted that their general interest in food had increased. Some students noted that they had never been interested in food before and had never thought about where their food came from. One student stated, "*I've grown more interested in food, in like how it's organic and how it's made and all that."* Students also noted that the field trips allowed them to learn that there were many people growing food in the city, and that they were "not the only ones."

The School Grown program successfully taught a number of skills and knowledge related to empirical/analytic and historical/hermeneutic food literacy. This included all of the skills required to grow a plant from seed, harvest it, and sell it at market, as well as related skills such as composting. Students became more interested in food because of the program, learned to cook "from scratch," and shared that they ate more fruits and vegetables because of their experience in the program. The program also promoted a sense of community and dignity around food, and has the potential to impacts students' food choices and experiences after they leave School Grown. Several interviewees noted, however, that many systemic barriers remain that can prevent participants from fully incorporating their learning into their lives.

5. Food Literacy Impacts and Learning: Critical/Emancipatory Food Literacy and Critical Food Pedagogy

The data showed some learning around food that can be considered critical or emancipatory, as well as great potential for future critical/emancipatory learning as a program curriculum is developed. In this section I will report some of the learning perceived by students and staff that relates to aspects of the critical/emancipatory food literacy benchmarks. In the next chapter I will analyze these and other responses and relate them to a broader discussion around food literacy and learning.

In the Seed to Market course, which is integrated with the School Grown program, the main instructor reported learning related to ecological literacy and an understanding of the relationship between the natural world and food. This learning contained elements of both empirical/analytic and critical/emancipatory food literacy:

> *Students definitely come out of here having a better awareness of waste reduction systems in Toronto and…trying to limit the amount of stuff that goes into the garbage because they better can see the environmental impacts of those kind of choices. Yeah so we see a stronger commitment for sure to composting and waste diversion after participating in the program…the kids come out with a concept of the benefits of ecological farming practices, including organic farming and…I see kids start to use that terminology in their language and in the discussions that they have, so for sure their ecological literacy is improving, specifically with those two areas, waste reduction and ecological farming practices. Also around transportation issues too, and figuring out where your food comes from and how far it has to travel, that's a big one too. ~ David, Science Teacher, Eastdale CI*

One of the students reported that the School Grown program piqued her interest in environmental issues and small domestic changes such as recycling:

> *I would say [what I've changed is] just mostly recycling. Like I never used to do it before but then like you see like all the documentaries or on the news all like the plastic and stuff is in the oceans and it's like harming animals and stuff so I just recycle now rather than throwing it all in a bag and throwing it in the garbage.*

When asked how she came to think about issues such as recycling she stated:

> *Mostly [from] learning about all of the other stuff [in the garden] and it gets you interested to go look up other stuff or you hear about it and then it just kind of clicks in a bit more and then coming here and like listening to other people and they show you the compost, recycling and other stuff, it kind of gives you like maybe you should just try and change like the things you do. ~ Brooke, School Grown graduate*

Other students reported increased knowledge about natural systems such as composting, and changed attitudes and behaviours around the importance of composting:

> *I learned how to maintain the compost, how plants grow and how much nutrition you need to put back in the soil to have the plants grow…When I come to check on the compost my job is to make sure there's enough moisture, the temperature's OK and to see if there's more food scraps that need to be chopped up and put in the compost bin. The food for the compost heap comes from the hospitality class at Eastdale. We have to collect it like once a week, the food scraps, and then bring them down to here. And then you get maybe like a couple of litres of dry materials, leaves, wood chips, wood shavings. You put the wet food scraps first, then the dry materials on top, then you continue layering it, then you need to continuously turn it to give it air so the good bacteria can start growing…I do this because it's fun and it helps the*

> *excess food waste being thrown into the land fill and it helps the school also and the soil because it helps the good nutrients for the plants…it's much better than the soil you buy from the stores. ~ Deshanel, School Grown student* (Elton, 2015)

> *For me I always try to compost now. And what sucks is that…in a lot of buildings they don't have compost bins or any of that, they just have garbage and recycling so…I want to try and like maybe promote the idea of having a compost section [in my building] or something…I just know that it'd be really good for the environment if we composted more, if more buildings did it more. ~ Jordan, School Grown graduate*

As noted, some students were also taking these behaviours home and continuing to compost, and were thinking about how to make broader changes so that composting would be more accessible. For example, Eastdale CI began a school-wide composting program with organics bins in the cafeteria and classrooms since they now have access to the School Grown composting system, and students were hired by School Grown to maintain the compost throughout the school year.

Students and teachers also expressed sentiments related to developing care for and a sense of place and relationship with the natural world, as well as an understanding of natural cycles:

> *Their respect for the school grounds, wanting to keep it clean, wanting to keep it organized, going in, picking up garbage out of their plant beds…Their respect for the environment definitely has improved, just even understanding what's good for the soil, bad for the soil. What's in our water, what's in our plants…Again they'd rather spray compost tea all over the food they're going to eat than something we're told will help plants grow. ~ Greg, Green Industries Teacher, Bendale BTI*

> *I realized that for nature, like insects, I realized how reliant they are on things like our garden, like even if we don't want certain insects eating our stuff I see that they need it too and…yeah just like how food and everything around it kind of all comes in full circle, if that makes any sense… If I saw a garden I wouldn't like step on it or anything or steal from it but I'd always admire like what they did to make it look the way it is, and now for me I've done the same, and to see how other people treat it, yeah I can't help but not like what they do, and understand what hard work other people put in, because I put in that same hard work…it also connects to what I just said like not only do we need it, insects need it and other things, animals, just since they need it maybe we shouldn't like, like other people shouldn't like mess it up for them. ~ Jordan, School Grown graduate*

> *[The garden] gets them connected to the natural world in ways they just don't have a lot of experience and so that can be as simple as seeing the process of a seed starting and being harvested and the life cycle of a plant is big for these students…in terms of their knowledge of the natural world simple things like even just knowledge of the parts of a plant like what you're eating, where your food comes from, that stuff is severely lacking in our students, so to actually be able to show them in a fairly engaging way, this is where a carrot comes from…it's not intuitive for many students and the knowledge that they build here, actually*

seeing the process…can be pretty profound and really creates life long learning experiences that seem to stick with them more than the four wall stuff. ~ David, Science Teacher, Eastdale CI

Well before I think I really didn't care. Like I was like whatever because I wasn't interested in none of it. But then after you work and you do it and you see people like throwing garbage in [the garden beds] you get mad because you're like, it takes a lot of time and effort to actually maintain it…It just changes it all for you, it changes how you think about it and how you actually care about the stuff [referring to the garden] afterward I find. ~ Brooke, School Grown graduate

Working, gardening, it shows you that you need to respect the earth because that's where all your food, that's where everything comes from. And if you destroy the earth then you kind of won't have anything left. ~ Cali, School Grown graduate

I used to litter and then I started actually taking out all the garbage that was in the fields…because I know…that it's probably some of my garbage that I've thrown out before. And I've just stopped littering…Because if you don't take care of the environment then how are you taking care of yourself? All the food comes from the environment…I see things a lot brighter [now]. So I used to walk with my head down and now I walk with my head up. I look around and I look at the grass and I see how green it is and I look at all the trees and see how green they are. [The garden helped me see this] because there's a lot of colours in the garden…And I liked the colours and it made me think, why not look around? ~ Chris, School Grown graduate

Some students also reported individual behaviour changes related to learning about the environment and the larger food system, and an awareness of larger food system issues:

Basically if you go to a grocery store and buy vegetables…they're sprayed with a whole bunch of chemicals and FoodShare…has taught me that I can grow food in a backyard or somewhere, vegetables, and have it organic instead of sprayed with a whole bunch of chemicals…I'd rather have it in my backyard than getting it all the way from a different country and it's being shipped and on a truck and knocked around, old, it's not even picked at the right time. ~ Chris, School Grown graduate

I remember when I was watching the Food Inc. documentary and they were talking about cows eating grass, and basically what some farmers are forced to do is they have to feed cows corn and the corn is not good for them because like you're changing the way the cow eats and it messes up their body, they get diseases and they're not digesting it well and they produce a different kind of methane gas that actually messes up the…ozone. And then they'll like kill the cow, they'll slice the meat up, put it on a production truck and just send it out and like to try and kill the bacteria they'll use like basically urine and…it made me more hesitant on wanting to eating certain things. ~ Jordan, School Grown graduate

This student commented that because of his learning, he has reduced the amount of meat that he consumes, due to personal health concerns and his concern for animal welfare and the

environment. The Senior Coordinator also commented that "*the trend is that they get more involved and interested in the environment as [the program] goes on,"* indicating the importance of multiple and continued exposures to the garden in creating opportunities and foundations for critical learning.

The classes that are integrated with School Grown cover some broader food systems issues, such as sustainable agriculture in the Green Industries class at Bendale BTI. David, the science teacher at Eastdale CI, commented on how he incorporates multiple food-related issues into his workplace course:

> *We look a lot at systems of food production…we looked a lot at the issues around access to food. Socioeconomics and the concept of food deserts and where people have access to [food] and so we toured a bunch of organizations that were specifically working to provide healthy food to lower income places in the city, so we went to the community food centre in Regent Park and to Black Creek Community Farm and so we addressed those issues pretty strongly in the class. Barriers to people getting healthy food in the city.*

The specific content covered in these courses and how the content is taught is ultimately up to the discretion of the individual teacher. For example, the spring 2015 Green Industries teacher at Bendale BTI modified his class to focus almost exclusively on agriculture once he realized the extent of the partnership that existed with FoodShare, and the potential to use food and agriculture to engage his students. While the teacher at Eastdale has been involved for the entirety of the project, nearly every year at Bendale there has been a new Green Industries instructor due to staffing changes. All of the staff involved pointed to FoodShare as a consistent and strong community partner which allowed the program to remain stable despite these staffing fluctuations; however, it has meant that the School Grown program has to continuously negotiate the involvement of the Green Industries class with the new teacher. While this has not affected the employment program per se, it leaves less opportunity for a teacher to develop critical content such as that used in the Seed to Market course at Eastdale CI.

While much of the critical/emancipatory learning expressed by students in the interviews related to ecological cycles, a sense of place, and some broader understanding of food system issues,

a project undertaken by the Senior Coordinator revealed deeper understandings of how food is tied to other systemic social issues. Through her Masters in Education, the Senior Coordinator engaged School Grown students in a curriculum writing project to decide what future School Grown participants should learn about. This project ties in with the perspective of the program, which is very intentional about recognizing issues related to food justice:

> *We're just more explicit about recognizing that there [are] systemic forms of marginalization that some people face in this city and in this world and that some don't and that if we have the capacity to employ people or train people or provide opportunities for people we want to do that in a way that is actively working towards changing those barriers and like dismantling those barriers and moving beyond those barriers. ~ Katie, School Grown Senior Coordinator*

In terms of how the program runs, the Senior Coordinator explained that it was often white, male students that were recommended for the program when they began. This sparked conversations around race and justice between FoodShare and the schools involved. As the Senior Coordinator stated, hiring predominantly white males

> *doesn't reflect the make up of the population of the school, of the student body, it doesn't reflect the neighborhood, and it doesn't reflect like the actual way that bodies are raced and experience access to employment differently and access to schooling differently and are read differently by school administrators…we need to have more students of colour, and more diverse gender representation…we have a social justice and food justice lens and…we're going to prioritize hiring students who face systemic forms of marginalization and don't necessarily have external supports. And [we're going to] have that sort of class and race and gendered lens to what we're doing.*

The curriculum development project further reflects this commitment to food justice:

> *All the students who farmed with us before are part of the curriculum writing and so they said 'this is what a School Grown program should be'…when you farm at School Grown you should learn about how the cost of housing is tied to food access, and the importance of food and marketing and media and so there's this whole big list that we'll go through but the idea is [that FoodShare staff] and I will work with the leadership students to now take that curriculum and make it into workshops or lesson plans or short activities or whatever so that…by the time you finish a summer at School Grown you'll know how food is tied to poverty or all the other stuff that they came up with…and the good thing is that whole thing just came from the students. So it's all stuff that they've identified as…important. And this is what people should learn. It's not just me being like I think it's cool to learn about squash. ~ Katie, School Grown Senior coordinator*

The issues that students raised in these sessions reflect a broader, critical perspective on the food system:

> *Poverty was the biggest [issue raised], the cost of food came up a lot. Physical access so a lot of farmers' markets are too far away. Grocery stores that had the food that they wanted were too far away. They had to walk too far to get to the Chinese grocery store because the grocery store in the neighborhood didn't have the food that they actually eat…They brought up a whole thing about meat which was interesting. That people eat too much meat…some things I [prompted and] I said nothing about that, so that was really interesting…and a lot of it was about media and marketing, like the way that food is marketed to them. Processed foods and how they're cheaper and we did talk a bit about, they didn't use the word environmental racism, but just like where things are and where are the really [bad] grocery stores that have the really [bad] food and what parts of the city those are in and what neighborhoods those are in…and are there grocery stores with rotting food in wealthy neighborhoods? They didn't think so. So that came up a lot. Physical access came up. And then they also said that they wanted to know about who was farming…they brought up First Nations food production….so they were raising these issues…that are really about justice, fundamentally.*
>
> *Someone said in the curriculum writing "Housing's too expensive," and I was like "Is that about food?" and one student was like no, and then all the other students were like "I think so," and just having that conversation, and realizing that our food is tied to all these other systems, economic systems…being able to draw those connections. ~ Katie, School Grown Senior Coordinator*
>
> *I see the way I eat at my house and then I see the way other people eat…I also see that we eat this way because we don't have the money to eat, like we have the money but not all the time to eat healthy and to have organic foods or fresh food and stuff like that. ~ Cali, School Grown graduate*

According to the Senior Coordinator, these issues come up regularly as issues in the lives of students in the School Grown program.

> *We make it a part of our conversations, so it's not uncommon to talk about racism or sexism while we're harvesting radishes, or…when you're out working in the garden and the police officer pulls up…and he's there as the school resource officer so [for us] to have this conversation about policing and we're open to having those and we don't shy away from conversations like that…when we had the students sort of write the curriculum, they brought up, like those are real relevant day to day issues in their lives so the idea that we should avoid it is like well you can avoid it but they're still going to encounter it, you know? Every day, everywhere they go…*
>
> *They've never shied away from a conversation about race and racism, or like ageism, or any form of oppression. They're so wanting to talk about it. And often our conversations are…do you get to talk about this in school? And often they don't. And so that's why our program is kind of interesting, because they're at school, but they're not at school, but they're physically at school, and they're doing something different, and so I think that's an interesting space to*

be in, because then they come back in the fall, but they come back a little different, because…they just spent their summer at school but different.

I think we talk about power a lot. Like when we talk about anything…who has power and who doesn't, and who's marginalized and who is marginalizing, and being able to have those conversations.

We've had really specific conversations about microaggressions for example, and a lot of students identified, 'That actually happens to me all the time'. And then being able to say it's because of large systems of racism and structures of racism and that there's covert racism and overt racism…they always knew that that was happening to them but then to name it and be able to hear them later talking to other students about what it is, and calling it what it is…a lot of the students that did the curriculum writing with us this March…they identified that they were sharing ideas they learned while at School Grown.

These statements reflect the issues that are coming up for students participating in the program and the manner in which those issues are approached by the staff involved. They also reflect a level of analysis and articulation befitting someone in the position of Senior Coordinator; students also raised issues of poverty, access, and justice in interviews, but were not necessarily able to articulate these interconnections to the same degree. However, the understanding and lived experience of systemic issues of oppression related to food and its many interconnected issues were present in dialogue with some of the students. According to the Senior Coordinator, a role of the program is to help students to recognize and name these issues from their lived experience, and then to develop more nuanced understandings of them.

Overall, students learned knowledge and skills that can be considered critical/emancipatory based upon the theoretical framework described and the food literacy metrics established in Chapter Three. These included changing attitudes and behaviour around the environment and food such as composting, developing care for a place, and eating less meat. The Senior Coordinator also shared that students raised and discussed a number of critical/emancipatory perspectives on food, such as how food is linked to poverty, access, and other issues related to justice.

Conclusion

Students' learning in the School Grown program included personal and interpersonal impacts, knowledge, and skills; training that taught employment skills and knowledge and provided employment opportunities and experience; and overall learning skills and engagement. In regards to food students gained a number of skills and knowledge in the empirical/analytic and historical/hermeneutic domains, including cooking skills, food growing skills, and a greater knowledge of healthy eating. Students also experienced learning in the critical/emancipatory food literacy domain, such as connecting food consumption attitudes and behaviour with environmental impacts and care for the natural world. However, students' learning and reflection from the critical/emancipatory perspective was less developed and articulated less clearly than their learning in the empirical/analytic and historical/hermeneutic domains. In Chapter Seven, I will analyze their responses in the critical/emancipatory domain and some of the other knowledge and skills that students gained.

Chapter Seven: Critical/Emancipatory Food Literacy and Critical Food Pedagogy Analysis and Discussion

Summary of the Data

From the data presented, the program is most successful at teaching skills and knowledge related to personal and interpersonal relationships, overall learning and engagement, general employment and job-specific employment, as well as food literacy in the empirical/analytic and historical/hermeneutic domains. The food literacy gained in these domains relates to knowledge about growing food and plants, cooking skills and knowledge, label reading and understanding food's origins, making personal choices about food, a desire to make healthy food choices, trying new fruits and vegetables, an ability to analyze media messages about food, and an understanding of how food is related to community building.

Within the critical/emancipatory domain, students demonstrated knowledge and skills related to ecological literacy, including some understanding of natural cycles, and a sense of place and a relationship to the natural world. Some students have changed behaviours, such as composting and eating less meat. While these behaviours are occurring at the individual level, they have been inspired by a broader understanding of food systems and environmental issues. The program itself operates from a critical perspective, prioritizing hiring youth that face forms of systemic marginalization. Students were also able to discuss forms of oppression related to food such as poverty, food access, and racism in the context of writing curriculum for future School Grown participants. Students struggled to fully articulate their thoughts on some of these issues during interviews and not every student showed similar levels of understanding. However, their recognition of these issues was very interesting, particularly given students' developmental stages and education levels. These students have just completed high school and often have struggled academically, but after completing the School Grown program were much more aware of broader food systems issues even if they were not always able to critically reflect on or articulate them. Additionally, the intensity of the interview experience with an interviewer with whom they were not very familiar may have contributed to students' discomfort and lack of articulation on some of these issues. As evidenced in discussion with the Senior Coordinator, a number of very indepth, systemic issues were brought up in the curriculum writing project when students worked with someone whom they knew very well. While this project was very cognizant of navigating the barriers between academia and the community, future researchers in the School Grown program may wish to consider integrating themselves into the program as part of their methodology.

Some students expressed feeling more open minded and empathetic after participating in the School Grown program. Mezirow (2009) discusses how these are two qualities strongly related to transformative learning. Empathy and being open minded allow an individual to imagine the world as different from how it is and to see a situation from various perspectives. Being able to imagine the

world differently and to think critically about why things are the way they are, as well as to understand multiple perspectives on a situation or issue are skills that can be learned and practiced. Students can become better at these mental transformations with time, however, two fundamental qualities required are open mindedness and empathy, which the School Grown program has the capacity to foster.

Thus, it is clear that students gain great skills and knowledge in the School Grown program in several areas, including in empirical/analytic and historical/hermeneutic food literacy, as well as gaining introductory skills and knowledge in the critical/emancipatory domain. Are there other ways in which the skills and knowledge gained in the program impact broader learning about food systems and its numerous interconnected issues? Do students learn skills and knowledge that could contribute to an understanding of broader societal issues such as those discussed in Chapter Two? In wondering whether the skills and knowledge gained in the School Grown program can promote critical/emancipatory learning, we can look to a larger body of literature around what forms of environmental education foster pro-social and pro-environmental behaviours. As discussed, issues of environmental degradation, ecological literacy, social and environmental justice, and food are complexly intertwined, and according to many scholars and activists and as cited in Chapter Two,

> "The crux of the problem is that the mainstream environmental movement has not sufficiently addressed the fact that social inequality and imbalances of power are at the heart of environmental degradation, resource depletion, pollution and even overpopulation. *The environmental crisis can simply not be solved effectively without social justice*" (Bullard, 1993, in Gruenewald, 2003, emphasis added).

The same can be said about food: the issues in the food system involve ecological and social problems, and thus the kind of education needed to address these issues must foster students' capacity to understand and engage with complex socio-ecological systems. In considering effective forms of education to promote a holistic food literacy- including critical/emancipatory learning about

food- we can look to literature on environmental education that is not specific to food, but that is striving to foster learning that will promote positive actions for society and the environment.

Food Education for Prosocial and Proenvironmental Behaviour

According to Chawla and Cushing (2007), there are two main types of environmental action. The first are private, individual actions, such as recycling, taking public or active transportation, not littering, etc. The second are public actions that advocate for broader systemic change. This framework does not quite map on to our conceptualization of three domains of learning for food literacy. In our conceptualization a student that chooses to eat less meat because they have learned about the environmental degradation caused by Concentrated Animal Feeding Operations (CAFOs) and take issue with poor animal welfare has still undergone critical/emancipatory learning: they have recognized that they are connected to a system of food, feel a sense of ecological relationship with the environment and with other organisms, and are critically examining their knowledge and choosing to take action for the betterment of the environment, as well as for their own health. However, they are (at this point) only taking action within the private sphere. As Chawla and Cushing state:

> An analysis of the world's most serious environmental problems, however, suggests that the effect of private actions is limited unless it is combined with organizing for collective public change. If environmental educators confine themselves to fostering private sphere environmentalism, they may in fact be leading students astray (p. 438).

They do not declare a dichotomy, however, stating that both forms of action are important:

> Gardner and Stern (2002) argue that although private actions for the environment are important, the most effective actions are collective, when people organize to pressure Government and industry to act for the common good. Within the private sphere, people should make similar strategic decisions, as some choices have larger impacts on the environment than others (p. 438).

For example, while collective action is necessary, it can be argued that if every individual in North America reduced their meat consumption, this would have an enormous positive impact on carbon

outputs. Ideally, these individual actions would be facilitated and incentivized through supportive policies and programs; for example, a carbon tax on meat and supportive programming around vegetarian cooking would likely reduce the amount of meat our society consumes. These policies and programs may be put in place due to collective action when groups of individuals choosing to reduce meat consumption band together. Thus again we see that it is not an issue of promoting one form of environmental action over another, just as one domain of food literacy is not more or less important than the others- all are important and should be facilitated through education programs.

If the goal of food education programs is to promote positive change, however, critical/emancipatory learning must promote both individual actions as well as actions for the common good. Learning from environmental education, what forms of education promote public actions for the environment? Food-based education can be seen as a holistic tool for environmental and social justice education, with the goal of promoting both pro-social and pro-environmental behaviour. With this in mind, can we apply these lessons from environmental education to food-based education, which includes education for the environment?

Chawla and Cushing (2007) reviewed the factors associated with responsible environmental behaviour, civic engagement, a sense of personal competence, and a sense of group competence as key areas in developing pro-social and pro-environmenal attitudes and behaviours. Mapping their findings onto the School Grown program indicates that it facilitates a number of skills and knowledges that can foster pro-social and pro-environmental behaviours and attitudes. For example, the authors discuss how youth becoming familiar with social inequities or environmental problems in their own neighbourhoods through service or local involvements is a key form of education for civic engagement. School Grown focuses on social and environmental issues that are local for their participants. Even more importantly, Chawla and Cushing discuss how a sense of personal and collective competence are absolutely vital for the involvement of young people in social and

environmental issues. From an ecological psychology perspective, they state that "Action for the environment in the home or in public arenas like schools and communities requires a personal sense of competence and a sense of collective competence, or confidence in one's ability to achieve goals by working with a group" (p. 437). Gaining a sense of personal competence is an essential developmental stage that helps individuals feel a sense of efficacy and motivates them to set and work towards challenging goals. Key factors in developing personal competence include having excellent role models, having peer leaders in a role model position, verbal encouragement, and the success that comes from mastering tasks- all factors that are present in the School Grown program that students and staff discussed in their interviews. Collective competence builds on individual competence and is important for encouraging collective action. To reiterate, key factors associated with building collective competence include positive role models such as having peers in the position of role model, experiencing success as a group, fostering discussion as the foundation of democracy, and developing conflict resolution skills- again, skills and knowledge gained through the School Grown program and highlighted in the interview data. Evaluating student learning in the School Grown program through the lens of Chawla and Cushing helps us to see that much of the skills and knowledge learned that do not appear to be related to food are related to actively participating in a democratic society, which is ultimately related to issues of social, ecological, and food justice.

Garden-based Food Education and Capitalism

Another perspective to view the program from is the revolutionary nature of garden-based education, particularly when it is undertaken with a critical perspective. Jaffe and Gertler (2006) comment on the problems of consumer culture, stating

> "The profitable employment of wage labor is based, in part, on the ability to turn workers, and their families and neighbors, into new kinds of consumers- those who invest a minimum of time and effort in their food. This leaves more time for wage work, but also more time for other (more profitable) kinds of consumption" (p. 145).

By this measure, making your own dinner "from scratch,"- and growing the ingredients used to make that dinner- is a profound act of resistance to the corporate capitalist framework. Choosing to grow a garden in a social housing project, with the potential to ignite hope in others and stimulate educative and community building conversations, is even more revolutionary. These are skills and actions that students in the School Grown program are undertaking.

It is interesting to note that this program, like many others, strains against the financial realities of precarious funding by operating as a social enterprise business within the capitalist framework. However, it operates as a business with a great emphasis on community and team building, education, social justice, and teaching skills and knowledge that are very different from those espoused by the neoliberal paradigm. Jaffe and Gertler also state that "commodity fetishism- inevitable under capitalism- means substituting consumption for the satisfaction to be gained through creative production and social relations, and deflecting onto consumption powerful emotions and desires" (p. 154). The School Grown program actively reconnects students with the "satisfaction…gained through creative production" (growing beautiful food through one's own labor) "and social relations" (working as a part of a team, connecting with the community at the market, etc.) If these actions are combined with the skills of critical reflection that could allow students to connect their learning to broader social and environmental issues, the act of collectively producing food in a program like School Grown can be truly powerful. As Severn Cullis-Suzuki stated in the 2015 documentary film Haida Gwaii, "Growing your own food and participating in community are two of the greatest acts of resistance, and they are inherently uplifting" (Wilkson and Schliessler, 2015).

Conclusion

It appears that the School Grown program fosters food literacy in all three domains, although the greatest learning is seen in the empirical/analytic domain. This is not surprising given the focus of the program and the age and development of the participants. The program does introduce

students to critical/emancipatory learning in ways that could be very profound in students' development as citizens and eaters. Other studies of transformative learning in the food system have focused on undergraduate students in university-level courses (eg. Galt et al, 2013) or adults with the social and economic means to participate in Community Supported Agriculture (CSA) programs or buy organic food from farmers' markets (Kerton and Sinclair, 2010). Very few studies have looked at the potential for food-based transformative learning, or critical/emancipatory learning, in young adults that experience oppression on a daily basis. Thus the potential of the School Grown program to truly foster critical food pedagogy is very high. The next section will offer recommendations for continuing to build critical food pedagogy and critical/emancipatory learning into the program. In the case of the School Grown program, growing and selling food are significant components of the program that greatly impact student learning. However, the essence of these recommendations, as well as components of the program such as the curriculum writing project, can be extrapolated and applied to all forms of food-based education that are striving to teach a critical perspective.

Chapter Eight: Program Recommendations and Learning From the Research

Introduction

This chapter outlines some recommendations for improving critical food pedagogy in programs such as School Grown. These recommendations are specific to School Grown and consider some of the learning activities that students raised in their interviews as impactful experiences. Other recommendations are based on the work of Chawla and Cushing (2007) and the factors in environmental education programs that they found to promote pro-social and pro-environmental attitudes and behaviours. While geared toward the School Grown program, these recommendations are applicable to other food education programs.

Recommendations to Improve Critical Food Pedagogy

1. Build in more purposeful critical reflection

Critical reflection is the foundation of transformative learning and must be intentionally incorporated into programs, especially as there is a strong distinction between reflection on activities, and critical reflection (Mezirow, 1990). There are many opportunities for discussion within the School Grown program, which may lead to critical reflection, but not many structured opportunities to teach students the skills of critically reflecting on their experiences. Given students' dislike of writing, I recommend exploring alternative forms of critical reflection. These may include arts-based methods such as drawing, creating videos, or taking photographs, or activities that are hands-on, physical, and tangible such as asking students to respond to questions by physically moving around an area and discussing their responses. Another method related to pro-social and pro-environmental learning is incorporating "sit spots" where students regularly spend time alone observing, reflecting, journaling, and drawing (Breunig, 2013b). Extrapolating from this, having students map their neighborhood food environment or the path that food takes in the city of Toronto could help them make personal links to larger learning about food, and encourage them to think about issues of food in terms of their daily experience. Supporting students in developing the skills of critical reflection will serve them in lifelong ways and help them to continuously learn from their experiences.

The opportunities for discussion that already exist within the program could be made more critical through incorporating a structure that embeds reflection on learning as a regular event, and encourages students to be role models for their peers. For example, in the weekly check-in, it could be helpful to have students discuss one big piece of learning from the previous week and how it connects to their lives. At the beginning of the program, FoodShare staff could role model this behaviour, and then have School Grown leadership students continue to act as role models so that critical reflection on learning becomes a group norm.

Video and media seemed to be very impactful methods that inspired students to think critically about food. As such, it would be helpful to continue to incorporate documentaries such as Food Inc. with guided discussions or critical reflection activities to help students integrate their learning with their experiences. Students may also enjoy making videos about their experience in School Grown, and critical reflection on learning could be incorporated into this activity.

Staging mock debates or role plays where students have to assume different perspectives could help them to develop empathy and understanding and the ability to see situations from various perspectives and would be another useful tool for critical reflection (Chen & Martin, 2015).

2. Continue to incorporate field trips

Field trips were also very impactful experiences that students brought up and should remain a regular part of the program. Field trip sites should be selected by considering the building of personal and group competence. For example, students really enjoyed seeing how the food they grew was prepared at restaurants and George Brown College and related strongly to other urban farmers. Students found the field trips to Black Creek Community Farm and to Regent Park to be particularly impactful because they related to working in an area with negative stereotypes unjustly placed upon it, and enjoyed seeing how food and farming can counter those negative messages. Thus, the program should continue to take students to places that help them to critically reflect on the food system and their role in it, as well as to places where they meet role models they can relate to. Based upon Chawla and Cushing's research, a field trip to another area where youth are working on food related projects would be a very valuable experience. If a physical trip is not feasible, perhaps a Skype or video meeting could be arranged with other youth working on urban farms.

3. Build in pre and post program assessment

In the interviews, students noted a number of experiences that impacted their learning and personal choices, such as watching Food Inc. and discussing composting with someone who lived in

an apartment building, which were not necessarily the first activities that the Senior Coordinator discussed. If there is time and the staff necessary, it would be helpful to design a short series of questions to ask students about their knowledge and skills at the beginning and end of the program. This could help determine what created the most impactful learning experiences. These questions could be incorporated into regular student check-ins and the exit interview.

4. Include students in curriculum feedback and revision and project management

Student responses indicate that the curriculum writing helped to foster significant learning and reflection. The Senior Coordinator commented that students would be included in curriculum feedback and the data, corroborated by Chawla and Cushing, indicates that this course of action would improve the program as well as inspire student learning that may not have happened otherwise. Holding regular focus groups to discuss the curriculum, as the Senior Coordinator intends to do with the three year grant money awarded for the curriculum writing project, will be very helpful. In keeping with fostering the skills of democracy, decision making about projects and learning should be democratic whenever possible. Additionally, whenever it is possible to have students direct and manage projects themselves, continue to do this. Some of these actions may not always be practical, as the Senior Coordinator commented that, for example, students could not direct the crop planning decisions at this time due to limited growing space, but continue to look for opportunities for students to determine the program direction as this was a very impactful experience for those involved.

5. Continue to build in leadership, role modeling, and recognition

The longer that students can remain engaged with School Grown, and the greater the number of ways they can encounter the gardens, the greater their potential learning. Building in leadership positions, as has begun in the program, provides one more opportunity for students to encounter the program from a different perspective. Additionally, having students in leadership positions fosters

personal competence as well as creates opportunities for students to see behaviours such as critical reflection and learning modeled by their peers.

If applicable, involve students in related political action to help them see their role and potential leadership in creating change. Consider taking students to a food related rally or an event around a related issue such as poverty or racism. Have students write letters to councilors or participate in a Toronto Youth Food Policy Council (TYFPC) or Toronto Food Policy Council (TFPC) meeting so that they can begin to see themselves as potential actors in political change. One of the greatest considerations in these activities is the importance of students experiencing success and being recognized and valued for their contributions. For example, if School Grown students present about their work for the TYFPC or TFPC, the Senior Coordinator could ensure that the TYFPC/TFPC sends a letter afterward thanking students. Students could also be included in presentations to future School Grown participants or to their schools, or even to the Toronto District School Board. Students enjoyed being recognized through School Grown YouTube videos and on FoodShare's website, so finding other areas to share their work will continue to build on their sense of success.

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Appendix 1: Interview Subjects

# of Interviewees	Interviewee Role	Interview Information
5	Graduated student	1 focus group with 3 students and 2 individual interviews
1	Program coordinator	2 individual interviews
2	Teacher	2 individual interviews
2	Principal	2 individual interviews
1	Guidance Counsellor	1 individual interview
1	Social Worker	1 individual interview

Appendix 2: Semi-Structured Interview Guides

Please note that in keeping with the format of a semi-structured interview, the following questions provided a context and acted as a guide for the interviews, but were not prescriptive in nature. Interviews were conducted conversationally. As interviewees express their thoughts and feelings, the interviewer would choose to encourage particularly interesting or indepth responses. The interviewer may have chosen to abandon certain questions and modify or rephrase others in order to, to the best of the interviewer's abilities, fully capture the interviewee's thoughts and feeling. However, all questions and aspects of the conversation followed the spirit and intent of the questions below.

Semi-structured interview guide for students

1. Please begin by reflecting on the time you have spent in the Eastdale and/or Bendale gardens. What did you learn? How did you spend your time? How do you view yourself in the garden? Please draw a picture that represents how you see yourself in the garden.
2. Please describe your picture to me. Why did you draw what you did? (Ask about details of the picture as appropriate)
3. Thinking back, what made you want to start working in the garden?
4. What did you know about growing food before working in the garden?
    a. What did you learn about growing food by the end of the program?
5. Tell me about your work in the garden. What was a typical day or week like?
6. What was your favorite part of working in the garden? Why was it your favorite? What was your least favorite part, and why?
7. What would you tell other students that are interested in working in the gardens? How would you describe the program to them?
8. What did you tell your friends/family about working in the garden?
9. Thinking about what you have learned from working in the garden, what kind of **skills** did you take away? What do you know how to do now that you didn't before you started working in the garden?
10. Thinking about what you have learned from working in the garden, what kind of **knowledge** did you take away? What information do you know now that you didn't before you started working in the garden?
11. Think back on your time in the garden. Did you have any "lightbulb" moments, or "aha" moments? A moment where you suddenly understood or saw something differently? Please tell me about what you learned in those moments.
12. Has working in the gardens changed the way that you view food? Did it change the way that you eat, or the way you view the food system? What changed? Why did it change?
13. Has working in the gardens changed the way that you view the environment? What changed about your view? Why did it change?
14. What is a problem with the food system or the environment that interests you, and why? Did you learn about this problem through working in the garden?
15. How has working in the gardens changed the way you view yourself or others?
16. Is there anything that you do differently now that you have worked in the Eastdale/Bendale gardens? (if prompts are needed: do you continue to grow food, do you cook, do you recycle) Why or why not?
17. How has what you learned from working in the gardens changed other parts of your life? Has it affected your family life? Your job?
18. Is there anything you would like to change about the School Grown program, or about the garden at your school?
19. If you could have your very own garden where you live, would you? Why? What would you grow? Why would you grow it?
20. Is there anything else you would like to add?

<u>Semi-structured interview guide for staff</u>

1. What has your involvement been with the School Grown program? How did you become involved in it and what has your role been? What interests you about the program?
2. Tell me about the students that participate in this program. How are they selected? What are their backgrounds?
3. What do you think are the goals/objectives of the School Grown program?
4. What do you think students are learning from participating in this program?
    a. What new knowledge are students learning?
    b. What new skills are students learning?
    c. What other learning is happening?
    d. How can you tell that they are learning these things?
5. Can you give me some examples of student learning in the program? Please feel free to interject at any point with examples that come to mind.
6. What are students learning about food and/or the environment by participating in the program?
7. Do you see behaviour changes in the students that participate in the School Grown program? What kind of changes do you see?
8. Do you see changes in student attitudes or behaviour around food after participating in the program? What kind of changes?
9. Do you see changes in student attitudes or behaviour around the environment after participating in the

program? What kind of changes?
10. What other changes do you see in student attitudes or behaviour after participating in the program?
11. How do you think the garden affects students who aren't involved in the School Grown program?
12. How does the School Grown program affect student engagement at your school?
13. How do you think the garden affects staff at your school?
14. What impact has the School Grown program had on you personally? What have you learned from it?
15. What are the main challenges to the School Grown program in general, or at your school specifically?
16. What changes would you like to see in the future of the School Grown program at your school?
17. What do you think would happen to the program if you were to leave Eastdale/Bendale?

Semi-structured interview guide for the program coordinator

1. Please tell me about the history of the School Grown program. How did it get started at Bendale and Eastdale?
2. What is your role in the program?
3. How are the students selected that participate in the program? What is their background? What does their participation look like (hours, tasks, class credit, compensation, etc.)?
4. Please describe a typical day or week in the program.
5. I am interested in what students learn while in this program.
    a. What **knowledge** do you focus on imparting in the program?
    b. What **skills** do you focus on imparting in the program?
    c. How do you teach/share these knowledges/skills?
6. How do you approach the topic of environmental sustainability or ecological literacy?
7. How do you approach the topic of food literacy?
8. Do you have an explicit or implied social justice orientation to the program? If so, how does this orientation play out in the day to day? How does it affect what you do in the program and how you do it?
9. What do you think students are learning from participating in this program (in terms of skills, knowledge, and other learning)? How can you tell that they are learning these things?
10. Do you see changes in student attitudes or behaviour around food after participating in the program?
11. Do you see changes in student attitudes or behaviour around the environment after participating in the program?
12. What other changes do you see in student attitudes or behaviour after participating in the program?
13. How do you think the gardens affect students who aren't involved in the School Grown program?
14. How does the School Grown program affect student engagement at Eastdale/Bendale?
18. How do you think the garden affects staff at Eastdale/Bendale?
19. What impact has the School Grown program had on you personally? What have you learned from your work with it?
20. What are the main challenges faced by the School Grown program?
21. What changes would you like to see in the future of the School Grown program?