

**Growing the Seeds of Transition: The Role of School Food Networks in Scaling School Food  
Initiatives Towards Systems Change in the Vancouver School Board**

by

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## **Abstract**

School food systems are significant contributors to the overall impact of humans on the planet, influencing both what students learn about food and their cumulative effects on the food systems in which they are nested. Students are influenced both by what is formally taught and by how food is experienced throughout the school day. The food procurement practices of schools and the diets that are promoted can have a large impact on the shape of food systems. Increasingly actors involved in school food systems are raising questions about the sustainability and quality of health promotion in school food systems. School food gardens and farm to school programs are two initiatives that have been undertaken with the aim to get more healthy, local and sustainable food into the minds and onto the plates of students.

This qualitative case study explores the impact school food networks had on the policies and practices of the school food systems within the Vancouver School Board. The three overlapping school food networks examined in the case were Think&EatGreen@School, Farm to School Greater Vancouver and the Vancouver School Food Network, which were involved seeding and growing school food garden and farm to school initiatives in the Vancouver School Board between 2010 and 2014.

These school food networks in Vancouver played an important role in supporting the development of innovative school food initiatives at the school level between 2010 and 2014, effectively supporting ‘niche’ development. School food networks facilitated niche development at school level by supporting the creation of innovative models, building the capacity of teachers and school communities through professional development and providing logistical support. When looking at broader institutional rules and practices at the school district and higher levels, impacts at the regime level were much more limited.

## **Preface**

The research reported on in my thesis was undertaken as part of the Think&EatGreen@School project, a 5-year Community-University Research Alliance (CURA) project funded by the Social Sciences and Humanities Research Council of Canada (SSHRC). Dr. Alejandro Rojas was the Principal Investigator of the Think&EatGreen@School project, a community-university partnership that involved staff and students from UBC, the Vancouver School Board and numerous other community partners in a ‘community of learners’ working to create healthy and sustainable school food systems in the Vancouver School Board. I had the privilege of serving as the Project Community Liaison from March 2010 until December 2014. Dr. Alejandro Rojas began as my thesis supervisor, and when he retired Dr. Hannah Wittman took on the role.

For my thesis research I identified and designed the qualitative case study I undertook. I carried out data collection through participant observation at meetings and document analysis of relevant materials and policy documents. Dr. Hannah Wittman provided support and critical insight in scoping, providing feedback on outlines and giving input into my evolving written thesis. As a committee member Dr. Wendy Mendes also played a role as a sounding board and gave important feedback on drafts. PhD student Adrienne Levay also supported me as a tutor in the early stages of development.

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## **List of Abbreviations**

FTS	Farm to school
FTSGV	Farm to School Greater Vancouver
MLP	Multi-level perspective on sustainability transitions
SFG	School food gardens
SFNs	School food networks
TEGS	Think&EatGreen@School
VSB	Vancouver School Board

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## **Chapter 1: Introduction**

School food systems are important contributors to the overall impact of humans on the planet, influencing both what students learn about food and their cumulative effects on global food systems through food production, consumption, and disposal. The public education system influences the knowledge, attitudes and behaviours of the youngest members of society around important social and environmental issues, from racism to recycling. Within school settings, students are influenced both by what is formally taught and by how food is experienced throughout the school day (Black et al., 2015). Significant amounts of food are consumed in public school settings, and thus the food procurement practices and diets that are experienced and promoted within school environments can have a large impact on the shape of the food systems in a region. Where taxpayers' dollars are being spent to provide food at school, the 'power of the public plate' (Morgan, 2006) can be leveraged to improve student nutrition and food literacy, while supporting local food economies (de Schutter, 2014; Morgan & Sonnino, 2008). Many actors, including teachers, parents, students, health practitioners, food advocates and community-based organizations involved in school food systems, desire to see changes in policy to facilitate transformation in the scale and degree of sustainability and quality of health promotion in school food systems, beyond what can be achieved through initiatives in individual classrooms or schools.

A food system can most simply be conceived of as the broad set of activities ranging from production through consumption to waste management (Pothukuchi & Kaufman, 1999; Tansey & Worsley, 1995). A comprehensive and holistic analysis of how the current organization of food production, processing, distribution and consumption contributes to health and sustainability outcomes requires broadening the concept of a 'food system' beyond production and consumption

to include other economic, social, and environmental drivers such as climate change, poverty and international trade policies (Ericksen, 2008). In this study I use the term “school food systems” to broadly encompass the interaction of food-related practices, such as school meal procurement and food growing, at schools, with learning outcomes and curriculum development in kindergarten to grade 12 education systems. School food systems involve both school and school district operations and the teacher and learning dimensions, including “two ‘sides of the house’—the business side, where school food service, maintenance and operations, personnel, and budget functions reside, and the educational (or curriculum and instruction) side, where everything that goes on inside the classroom resides” (Evans, 2005, p. 255). In many cases, however, these elements of school food systems are not fully integrated and/or fail to communicate the same message around the importance of food for health. In these cases, curricular learning activities related to nutrition or more ecologically sustainable food production systems “can be undone if they conflict with ‘the hidden curriculum’—what the school teaches, whether consciously or not—through its actions” (Stone, 2007, p. 22). For example, what is sold in school vending machines or in the cafeteria could either contradict or reinforce the messages around healthy eating learned in the classroom. Or the quality of the food and the atmosphere in the cafeteria or lunchroom could communicate to students important health and social values of food or it could undermine them. Students receive many messages about food throughout the school day, both inside the classroom and across the school environment. The food procurement practices of schools and school districts can play a transformative role in leveraging public dollars to advance sustainable, local food systems to align with messages that may be taught through school food gardens and field visits to farms.

In response, numerous initiatives and activities are being undertaken across North America

to get more healthy, local and sustainable food into the minds and onto the plates of students (Conner et al., 2010; Joshi et al., 2008). Significant effort has gone into trying to improve the food procurement practices of schools and school districts, at a variety of different scales (Conner et al., 2010; Conner et al. 2011). For example, Farm to School (FTS) has been growing significantly in the US since the late 1990s, focusing on enriching “the connection communities have with fresh, healthy food and local food producers by changing food purchasing and education practices at schools” (“About National Farm to School Network,” n.d.). In Canada, FTS efforts have been emerging in a number of provinces across the country since the mid-2000s (Bays, 2010; Farm to Cafeteria Canada, 2013). School food gardens (SFG) and cooking programs “promote hands-on educational experiences ... in garden and kitchen classrooms”, with the idea “that through these intimate, sustainable food experiences, children will come to choose healthier foods, including locally grown fresh fruits and vegetables” (Hayes-Conroy, 2014, p. 4, 6). Change in school food systems has the potential to both transform the lives and practices of students as well as facilitate broader change in food systems and in the community (Barlow & Stone, 2011).

In Canada, as globally, a diverse array of food initiatives has arisen at the local level to “challenge the corporate-led, industrial food system by attempting to develop viable localised solutions” (Levkoe, 2011, p. 687). Emerging forms of alternative food networks (Goodman et al., 2012; Renting et al., 2003; Renting et al., Rossi, 2012) have “embraced efforts to promote food growing in communities as well as initiatives to (re-)connect primary producers with final consumers” (Sage, 2014, p. 255). School food garden (SFG) and FTS initiatives are examples of these efforts within school settings, seeking to leverage the public education system’s role through teaching practices, procurement and provisioning.

In this study school food networks (SFNs) are defined as groups of actors who collaborate both formally and informally in nurturing and delivering alternative school food initiatives, including civil society organizations, teachers, students, parents, schools, school districts, universities and any individual or organization involved in seeking to change the practices and policies of school food systems towards sustainability, health and social justice. In essence, these networks are defined by shared relationships for the purpose of working toward common goals. Those relationships could include formal partnerships between an institution and a civil society organization to deliver programs or it could include informal relationships between teachers that are sharing their experiences taking their classes out to the garden. The SFNs explored in this study are those working to support “healthy and sustainable school food systems in the Vancouver School Board” (“Think&EatGreen@School,” n.d.). To clearly differentiate between the terms ‘networks’ and ‘systems’, I will follow the distinction made by McLeod Grant, understanding systems as a “*group of interdependent but interrelated elements that form a unified whole*.” Whereas ‘networks’ refers to groups, individuals, or organizations with shared relationships, ‘systems’ refers to the complex external environments in which social sector leaders are trying to intervene” (2010, p. 4). Renting et al. (2012) develop the concept of ‘civic food networks’ to “refer to wider networks than those narrowly engaged in food production–distribution–consumption practices, and may also include new forms of cooperation between different local actors ... showing the increasing importance of the role of civil society (and to some extent local and regional administrations) compared to market forces and the (national) state” (Renting et al., 2012, p. 292). These emerging networks are seen to “show different capacities to act as agents of change, at a local level (e.g. relations with public institutions and local communities) and, more generally, at the level of public opinion, culture, discourses, marketing strategies, political

agendas, etc.” (Renting et al., 2012, p. 299). The role of collaborative efforts for alternative practices and change at the local level is a consistent thread through the various understandings of alternative food initiatives and networks. Moore et al.’s (2015) description of building and engaging networks as a cross-cutting strategy for three types of scaling – out, up and deep – for systems change provides a framework to further examine the transformative potential of these networks.

This study examines how school food networks in Vancouver influenced policies and practices related to school food garden and farm to school initiatives in the Vancouver School Board between 2010 and 2014. I examine whether and how school food networks facilitated scaling the impact of these school food initiatives across spatial and institutional scales to achieve broader systemic change at the district level through impacting institutional practices and policies.

In Chapter 2 I will provide an overview of my conceptual framework, drawing from literature on systems thinking, sustainability transitions and social innovation. Chapter 3 outlines the background and context, nationally, provincial and locally, of the research I undertook and Chapter 4 summarizes my methods. Chapter 5 examines what impact the school food networks had on the policies and practices around school food garden and farm to school in the Vancouver during the period from 2010 to 2014. In Chapter 6 I examine the results through the lens of my conceptual framework by exploring the roles and strategies that school food networks undertook in seeking to scale school food initiatives for broader impact. Chapter 7 reviews my conclusions and outlines some next steps for future research.

## **Chapter 2: Conceptual Framework**

Literature from the fields of systems thinking, sustainability transitions and social innovation together can contribute to a deeper understanding of the dynamics of how networks support the creation and scaling of innovative initiatives with the aim of increasing systemic impact. Examining initiatives to transform school food from a systems change perspective contributes a number of key insights about change dynamics of complex systems (Barlow & Stone, 2011; Stone & Barlow, 2005). According to living systems theory, both “natural and social systems are characterized by a pattern of nested systems in which systems at one level are embedded in systems at other levels” (Barlow & Stone, 2011, p. 12; Capra, 1996; Capra & Luisi, 2014). It is important to remember that like other systems, school food systems “are influenced by the larger systems in which they are embedded, and in turn influence those systems” (Barlow & Stone, 2011, p. 4). School food systems are not isolated from broader food, education, economic and political systems, and as such can be difficult to change (Barlow & Stone, 2011; Spaargaren, Oosterveer, & Loeber, 2012a). Indeed, as transition theorist Geels has stated, “transitions to sustainability do not come about easily, because existing ... systems are stabilized by lock-in mechanisms that relate to sunk investments, behavioural patterns, vested interests, infrastructure, favourable subsidies and regulations” (Geels, 2010, p. 495). Understanding school food systems as nested systems supports the recognition that “changing schools’ food systems require[s] moving from working with individual schools to working at the district level and then to the larger educational and economic systems in which districts are nested” (Capra, 2005, p. 24). The multiple levels of organization and governance of school food systems need to be appreciated as “effectively addressing most issues, including school food and food-focused education, usually

requires efforts at multiple levels and from several directions: bottom up, top down, inside out, and outside in.” (Barlow & Stone, 2011, p. 12)

The multi-level perspective (MLP), developed most notably by Frank Geels, is a heuristic and analytical framework for examining transitions of socio-technical systems towards sustainability (Geels, 2010; 2011; Geels & Schot, 2007). According to MLP the niche is the “locus for radical innovations” (Geels, 2011, p. 26) where innovative practices and new models for sustainability can be developed, trialed and adapted through providing ‘key niche nurturing processes’ of “supporting learning, building capacity and fostering productive networks” (Hinrichs, 2014, p. 147; Smith & Raven, 2012). School food garden and farm to school initiatives can be understood as innovative practices at the ‘niche’, or individual school or classroom, level. MLP distinguishes between the niche level and two other analytical levels or scales. The regime level is “the locus of established practices and associated rules that stabilize existing systems” (Geels, 2011, p. 26). In the case of school food systems the ‘regime level’ corresponds primarily to institutional practices and policies at the school district level, whether that be in relation to curriculum and teaching, procurement, or food gardens on schoolgrounds. The landscape level is the wider context including demographics, public opinion, societal values, and broader political and economic patterns (Geels, 2011). The landscape level would include the other food, education, economic and political systems in which school food systems are nested. Examples of landscape pressures in the case of school food systems in Vancouver would include provincial budgets for education, public opinions on childhood hunger and obesity, climate change, and regional food system capacity. These landscape factors “form an external context that actors at the niche and regime level cannot influence in the short run” (Geels, 2011, 28). The MLP proposes that “transitions, which are defined as regime shifts, come about through interacting processes

within and between these levels” (Geels, 2010, p. 495). Figure 1 depicts the MLP as it relates to school food systems and scaling, which is the next concept that will be explored, by drawing from social innovation literature.

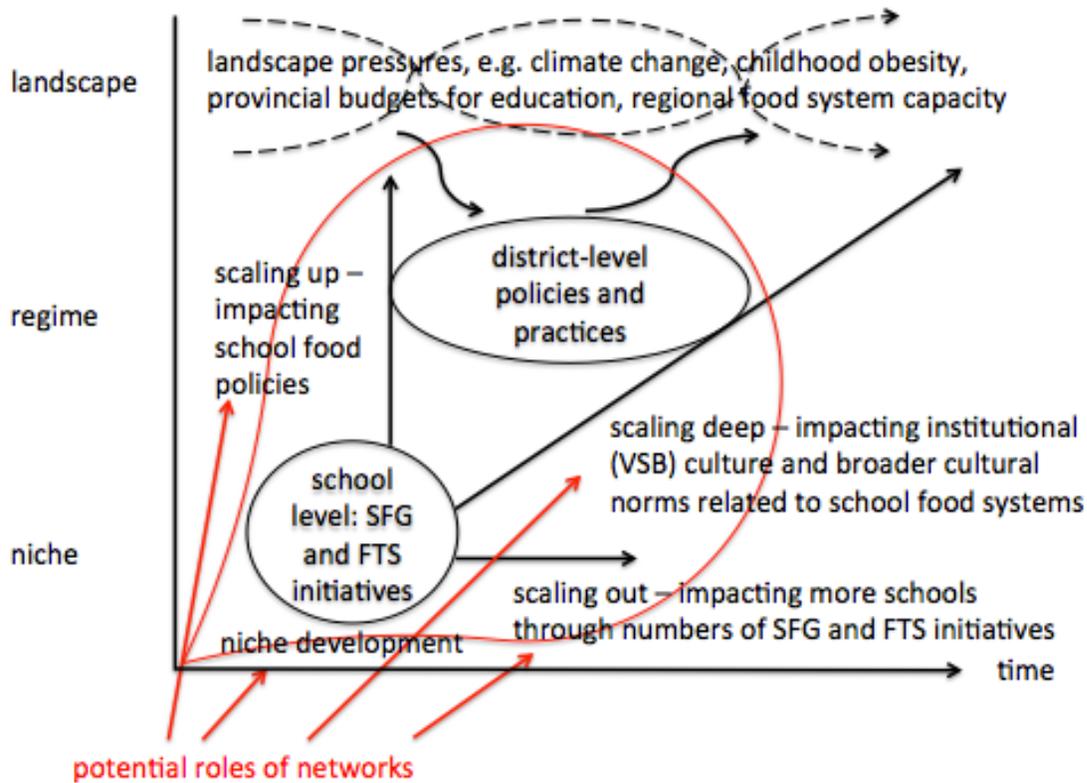
The field of social innovation offers some thinking that complements the MLP to help explain how ‘niche’ innovations can cross scales to lead to broader systemic impact (Moore & Westley, 2011; Westley et al., 2014). Moore & Westley assert that the more “scales an innovation crosses, the wider and deeper will be the impact, and more likely the innovation will result in totalizing and transformative change” (2011, p. 5). Moore et al. argue that the scaling niche innovations for systems change involves three different types of scaling (Moore, Riddell, & Vocisano, 2015, p. 77):

- Scaling out: Impacting greater numbers. Based on the recognition that many good ideas or initiatives never spread or achieve widespread impact.
- Scaling up: Impacting law and policy. Based on the recognition that the roots of social problems transcend particular places, and innovative approaches must be codified in law, policy and institutions.
- Scaling deep: Impacting cultural roots. Based on the recognition that culture plays a powerful role in shifting problem-domains, and change must be deeply rooted in people, relationships, communities and cultures.

Drawing from efforts by non-profit leaders to scale the impact of their initiatives in a variety of social sectors, Moore et al. further identify strategies associated with each type of scaling, such as: deliberate replication for scaling out, policy and legal change efforts for scaling up, and investing in transformative learning for scaling deep (2015). Importantly for this study, they identify “the need to build and engage networks for all three types of scaling activities” (2015, p. 75) and

conclude that broader systems change is likely to require a combination of the three types of scaling. Together this highlights the potentially transformative role that networks can play in advancing systems change as a cross-cutting strategy for supporting scaling out, up and deep.

Figure 1 depicts the relationships between MLP and types of scaling. The red arrows identify the potential role for networks in scaling for regime-level systems change, and the development of networks over time.



**Figure 1: Multilevel Perspective and Scaling School Food Initiatives**

Kirwan et al. (2013) explore local food networks within the concept of grassroots, niche innovations, drawing from Goodman et al. (2012) who see alternative food networks as “a form of niche development” (p. 66). Seyfang and Smith define ‘grassroots innovations’ as “networks of activists and organisations generating novel bottom-up solutions for sustainable development; solutions that respond to the local situation and the interests and values of the communities

involved” (2007, p. 585). Fitting with this concept, SFG and FTS initiatives can be understood as grassroots social innovations because they are bottom-up initiatives at the niche or school level to increase the health and sustainability of school food systems, leading to new organizational forms and alternative food practices that are initiated and facilitated by collaborative networks of actors.

Drawing on the vast and diverse experience of FTS in the United States, the National Farm to School Network describes FTS as enriching “the connection communities have with fresh, healthy food and local food producers by changing food purchasing and education practices at schools” (“About National Farm to School Network,” n.d.). Scholars and advocates alike have often understood different, yet complementary components of FTS initiatives. Bagdonis et. al. distinguish between “local food sourcing” and “experiential learning activities” (2008, p. 110). In addition to the “farm-to-cafeteria” component that aims at “transforming lunch”, Kloppenburg and Hassanein also highlight the importance of “in-class educational programs” and “political work associated with FTS programs” (2006, p. 418). For the sake of this study FTS initiatives will be understood primarily as the procurement and provisioning of fresh, local food at schools.

School food gardens are a complementary alternative food initiative in schools to “promote hands-on educational experiences” with the idea “that through these intimate, sustainable food experiences, children will come to choose healthier foods, including locally grown fresh fruits and vegetables” (Hayes-Conroy, 2014, p. 4, 6). Garden-based learning has been shown to have broad positive impacts on academic outcomes, healthy eating behaviours and students’ mental health and well-being (Morgan et al., 2010; Ozer, 2007; Williams & Dixon, 2013).

The work of SFNs in developing FTS and SFG initiatives can be articulated as a form of niche development. School food networks play a role in supporting these innovative school food initiatives through niche nurturing processes that facilitate their creation and development (Smith

& Raven, 2012). The metaphor of “seeds of transition” (Roep & Wiskerke, 2012; Smith et al., 2010; Wiskerke & van der Ploeg, 2004) is used to explain novel and innovative practices, with the niche level as the “seedbed for alternative innovation, ... vital for sustainability transitions” (Hinrichs, 2014, p. 147), corresponding to broader transformation of school food systems for greater health and sustainability. For SFG and FTS initiatives to lead to shifts in the established systems of food procurement, provisioning and food-based education they must be scaled to impact broader institutional rules and practices.

This study looks at the role that SFNs play to support the development of SFG and FTS initiatives at the ‘niche’ or school level, and their scaling toward systems change at the regime level in school districts, and the other systems in which school food systems are nested. In this study I will follow Levkoe and Wakefield, “exploring the role that food networks (rather than individual initiatives) play” (2014, p. 303) in developing innovative school food practices and working towards transforming school food systems.

Together sustainability transitions and social innovation theories give us some conceptual tools to understand whether, how and to what extent SFNs can facilitate the development and scaling of niche innovations to impact institutional food practices and policies to improve the health and sustainability of school food systems while developing food literacy of students.

## **Chapter 3: Context and Background**

### **3.1 National context**

Canada is one of the few industrialized countries that does not have a national school food program. Even so, there are a number of coalitions and networks at the national level that are focused on improving school food across the country. The Coalition for Healthy School Food, a part of Food Secure Canada, is focused on “a cost-shared Universal Healthy School Food Program that will enable all students in Canada to have access to healthy meals at school every day” (“Coalition for Healthy School Food,” n.d.). Farm to Cafeteria Canada, is a pan-Canadian organization that works with partners “to educate, build capacity, strengthen partnerships, and influence policy to bring local, healthy, and sustainable foods into all public institutions” (“What is Farm to Cafeteria Canada?,” n.d.). Across the country, numerous FTS programs are initiated by civil society actors at the local level. In spite of some emerging civil society efforts at a national level, there is a significant difference in how school food systems are approached from province to province in Canada, in part because education, agriculture and health are provincial mandates lacking federal guidelines and legislation.

### **3.2 British Columbia context**

British Columbia, Canada’s most westerly province, is divided into 60 public school districts with around 560,000 students enrolled in public schools, and another 75,000 in private independent schools (Government of British Columbia, 2016b). Civil society actors call for school food interventions as a response to high rates of socio-economic vulnerability in BC and low reported consumption of fruits and vegetables. In 2013, 20.4% of children in British Columbia were considered to be growing up in poverty, which is above the Canadian average of 19.0% (First Call Child and Youth Advocacy Coalition, 2016). The percentage of children living in lone-

parent families in BC was 50.3% (First Call Child and Youth Advocacy Coalition, 2016). Data from the 2013 BC Adolescent Health Survey reveals that despite the fact that the Canadian Food Guide recommends that youth eat several servings of fruit and vegetables every day only around a third (34%) of students that completed the survey had consumed fruit or vegetables only once or twice the day before taking the survey. 41% reported consuming fast food, such as pizza, hot dogs, chips, and fries, and 35% pop or soda at least once the day before (McCreary Centre Society, 2014). Despite these statistics, the majority of the 60 school districts in British Columbia do not have district-run school meal programs, with most students bringing packed lunches from home. Districts receive CommunityLINK (Learning Includes Nutrition and Knowledge) funding from the Ministry of Education that is targeted to supporting vulnerable students (“CommunityLINK,” n.d.). Despite the acronym’s link between nutrition and learning in 2012-13 only 26% of the provincial total of \$58,086,698 went to food and nutrition programs, \$13,156,020 to lunch program, \$1,568,292 towards breakfast and \$143,923 for snacks. Funding for the school meal programs that exist in BC combine market-based and subsidized models, with funds coming from CommunityLINK, some school district funds and community fundraising. The ‘Guidelines for Food and Beverage Sales in BC Schools’ (Government of British Columbia, 2013) were developed with support from the Ministry of Health, defining the nutrition standards for all food and beverages sold to students at school. Ongoing support for implementation of the Guidelines is provided through a number of provincial initiatives (Healthy Schools BC, n.d.).

Farm to School BC, a civil society led initiative that includes involvement from the health, education and agriculture sectors, was established in 2007 with a FTS salad bar initiative, which launched in 12 schools located within communities in the northern and interior health regions of British Columbia (Bays, 2010). With funding from the Ministry of Health, Farm to School BC

continues to provide support to approximately 50 individual schools across BC through provincial and regional networks for advocates and champions as well as planning and implementation grants for schools. Recently this has included the development of three regional hubs in Greater Vancouver, Greater Victoria and Kamloops, the 1<sup>st</sup>, 2<sup>nd</sup> and 5<sup>th</sup> largest metropolitan areas in the province respectively.

As responsibility for education in Canada falls under provincial jurisdiction, each province determines its own educational standards. In BC, the provincial Ministry of Education sets the education standards and learning outcomes for students in kindergarten to grade 12 through the provincial curriculum. Learning outcomes related to healthy eating have traditionally been located in the K-7 Career and Health Education curriculum, but were moved into a Physical and Health Education curriculum in 2015 as part of a much larger curriculum change. Home Economics: Foods and Nutrition is still offered from grades 8-12 in most school districts across the province, but is an elective course. No formal requirement or support exists at the provincial level for hands-on learning around food and nutrition through school gardens.

### **3.3 Vancouver context**

The Vancouver School Board is located in the city of Vancouver, the most populous city in BC with a population of 603,502 in 2011. The VSB has seen a declining enrollment in K-12 over the past 5 years, ranging from just over 58,000 in 2011-12 to just under 53,000 in 2015-16 (Government of British Columbia, 2016a). The VSB is currently composed of 93 elementary schools and 18 secondary schools (grades 8-12). As is the case elsewhere in most of BC and Canada, only a small percentage, 16% in the case of the VSB, of students participate in a school meal program, through both market-based and subsidized models. In the VSB, 26 of the 93 elementary schools have optional daily hot lunch programs, with approximately 2,700 students

participating across the 26 schools. This elementary lunch program is managed by the VSB, with most of the food delivered by a private sector contractor and warmed by on-site staff. 12 of the 26 elementary schools also provide breakfast programs, which are primarily targeted towards vulnerable students. All of VSB's 18 secondary schools have a cafeteria with a hot lunch program. Of these, eight are operated as teaching cafeterias that include students in the preparation of food through curricular programs, eight are operated by private sector contractors, and two are operated through school district employees alone (Vancouver School Board, 2015). Across the various school meal programs, the VSB has an annual food budget of roughly \$2 million per year (Farm to School Greater Vancouver, 2014).

In the decade previous to 2010 there were only a handful of school food gardens across the VSB, with the first developed in 1988 (Whyte, 1998). A growing community interest in food was notably promoted through the 2006 Vancouver City Council motion to “work together with the Vancouver School Board, the Board of Parks and Recreation, community groups, neighbourhood organizations, non-profit groups, individual citizens and other interested parties to create 2,010 new food-producing garden plots in the city by January 1, 2010 as an Olympic legacy” (City of Vancouver, 2006). Vancouver has a robust civil society and civic interest in food systems, with the City of Vancouver formally adopting a motion in 2003 “supporting the development of a just and sustainable food system for the City of Vancouver” that led to the creation of a municipal food policy mandate and the formation of the Vancouver Food Policy Council in 2004 (Mendes, 2003). City staff and the Vancouver Food Policy Council worked together to develop the Vancouver Food Strategy in 2013, which seeks to “provide a roadmap for action” and “integrate the full spectrum of food system issues within a single policy framework” (City of Vancouver, 2013). The Vancouver Food Strategy contains an action calling for advocacy for "a just and

sustainable food system with partners and at all levels of government." The Greenest City 2020 Action Plan from 2011 also includes the goal to collaborate with the VSB to ensure schools receive adequate funding for meal programs (City of Vancouver, 2011). While the City of Vancouver and Vancouver School Board are separate jurisdictions, they partner around issues of shared interest such as child care and healthier food systems in schools.

From 2010 onward there was a significant growth in interest and activities related to school food systems. This period can be characterized by "the growing network of government, academic and community-based agencies working on school health, sustainability and food system issues" (Black et al., 2015, p. 2380). In 2010 itself three overlapping SFNs were initiated that are the focus of this study, Think&EatGreen@School (TEGS), Farm to School Greater Vancouver (FTSGV) and the Vancouver School Food Network (VSN).

<b>Network Actors</b>	<b>Involved in TEGS</b>	<b>Involved in FTSGV</b>	<b>Involved in VSN</b>
Fresh Roots Urban Farm	✓	✓	✓
Think&EatGreen@School (UBC)	✓	✓	✓
Vancouver Coastal Health	✓	✓	✓
Vancouver School Board	✓	✓	✓
Edible Garden Project		✓	
Evergreen	✓		✓
Farm Folk City Folk		✓	
Farm to School BC / Public Health Association of BC	✓	✓	
Farm to Cafeteria Canada		✓	
Fresh Choice Kitchens, Greater Vancouver Food Bank			✓
Growing Chefs	✓		✓
Intergenerational Landed Learning Project / Sustainable Opportunities for Youth Leadership	✓		✓
Metro Vancouver	✓		
Project CHEF	✓		✓
Richmond Food Security Society			
Society Promoting Environmental Conservation	✓		✓
Vancouver Food Policy Council	✓		

**Table 1: School Food Networks and Network Actors**

Table 1 summarizes the organizations and institutions that were involved in the three overlapping school food networks between 2010 and 2014. The first four actors were involved in all three networks, highlighting their overlapping role as hubs within these various networks. Of note as well is that they represent four different sectors: non-profit, civil society, university, health and education.

The TEGS project formed as a community-university research partnership, centred out of the Faculty of Land and Food Systems at the University of British Columbia (UBC), after receiving a 5-year, \$1 million dollar grant from the Social Sciences and Humanities Research Council of Canada, to focus on healthy and sustainable school food systems. Actors and organizations involved in the TEGS project included: local community-based organizations focused on food security and sustainability; city-wide organizations and bodies, such as the VSB and the regional health authority; university-based partners, primarily from the Faculty of Land and Food Systems at the University of British Columbia, but also other faculties and universities; individual schools that participated in the different activities, as well as the teachers, staff and students involved (Rojas et al., 2011). In addition to research activities, the main “integrated action areas” of the TEGS network included: small grants, involvement of university courses with schools and community partners, professional development for teachers, support for food policy development, and data collection and analysis (Rojas et al., 2013).

FTSGV formed as a collaboration between representatives from the health, education, and farming sectors with the aim to get fresh, local food into lunch programs, often through the initiation of FTS salad bars or the incorporation into existing programs. The main driving force that led to the formation of the Steering Committee was the pursuit of funding to support FTS programs in schools. The focus of the efforts were aimed at changing the food procurement and

provisioning practices of schools with the vision that school children have “access to healthy, safe, culturally-appropriate lunches made with locally grown food and are connected with local farms and farmers” (“Farm to School Greater Vancouver Terms of Reference,” 2011).

The Vancouver School Food Network is “a network of school, community, and health agencies and programs who are working towards healthier and sustainable school food systems in Vancouver” through “education about, modelling of, and support for growing, preparing, eating and appreciating healthy, sustainable foods, and managing waste” (“Vancouver School Food Network,” n.d.). The VSFN was first established by a number of leaders from civil society organizations, health, education and academia to work together to jointly offer through professional development opportunities to train teachers and schools. The sessions were offered on both professional development days and after school for a marginal fee, and were primarily focused on SFGs and food preparation activities.

With this context, the initiatives supported by the SFNs can be understood as innovative practices at the ‘niche’, or individual school or classroom, level to improve the health and sustainability of school food systems in the Vancouver School Board while developing food literacy of students. When looking at the school food systems of the VSB and its schools, the ‘regime’ as the “established practices and associated rules that stabilize existing systems” (Geels, 2011, p. 26) is primarily defined by the policies and practices at the district level within Vancouver School Board. School food systems are nested in other food, education, economic and political systems which are part of the “landscape of social and physical factors that provide a macro-level structuring context” (Smith et al., 2010, p. 440) for the niche and regime level. In this study the food, education, economic and political systems of the national, provincial and municipal context correspond to the landscape level.

This study examines how SFNs impacted practices and policies around school food garden and farm to school initiatives in the Vancouver School Board between 2010 and 2014, including whether and how these networks were able to facilitate scaling the impact of these school food initiatives across spatial and institutional scales to achieve broader systems change.

## Chapter 4: Methods

To examine the impact of SFNs on policy and practices of the school food systems within the VSB I utilized a qualitative case study approach (Yin, 2014). This approach allows for a detailed analysis of complex interventions, relationships, communities, or programs (Baxter & Jack, 2008; Yin, 2014) such as school communities, networks and systems change efforts. The SFNs explored in this case study were those working to support “healthy and sustainable school food systems in the Vancouver School Board” (“Think&EatGreen@School,” n.d.). The SFNs working in Vancouver over the time period of 2010 to 2014 were involved in both SFG and FTS initiatives. Examining two related school food initiatives supported by SFNs over the same time period allowed for a comparison between how the work unfolded with the case.

When analyzing school food initiatives and systems change, impact is defined as discernable policy changes and/or new practices at the school or school district level that support healthier and more sustainable school food systems, and the food literacy and food citizenship of students and school communities involved. This fits with the desired impacts of the SFNs to explore “how food policies, food practices and food learning within the Vancouver Board of Education and its schools can support a transition towards a more sustainable food system in Vancouver, Canada” (Rojas et al., 2011, p. 764). The development of SFGs “where vegetables and fruit are grown to be prepared, consumed, disposed and studied in great detail” and FTS programs that support “access to healthy, safe, culturally-appropriate lunches made with locally grown food” (“Farm to School Greater Vancouver Terms of Reference,” 2011) are consistent with the desired impacts of the SFNs.

My research was undertaken as part of the TEGS project, a 5-year community-university research alliance project. During this time I was involved in several capacities in the SFNs and

initiatives in this study, including as the TEGS Community Liaison and Food Policy Research Lead, a FTSGV Steering Committee Member, an active contributor to the VSFN, and the volunteer Co-Chair of the Vancouver Food Policy Council. As both an insider, in my role as an actor, and an outsider, in my role as a researcher, I was consistently reflexively navigating the ‘spaces between’ (Corbin Dwyer & Buckle, 2009), seeking to carry out community-based research as a reflexive practice that aims to transcend boundaries between the researcher and subject. Being an insider enabled me access to people, events and information, which might not have otherwise been available or knowable (Mendes, 2006).

Data collection was carried out between 2010 and 2014 through participant observation and document analysis. As an active participant within these networks over 5 years, I had opportunities to participate in and observe numerous meetings with TEGS university-based staff, community partners, and VSB staff related to SFGs, FTS, local food procurement and other school food systems issues. Document analysis included: TEGS materials, both public and academic; VSB Committee and Board meeting minutes; VSB School Food Garden Policy and Process and relevant materials; FTSGV funding reports and applications, as well as Learning Lab materials; VSFN website and workshop promotional materials. Multiple source verification was ensured through triangulation of participant observation and key documents. I undertook thematic content analysis of participant observation notes and relevant documents, identifying key themes connected to my conceptual framework, both inductively and deductively. In addition to providing a case for testing the theoretical framework, this approach allows for lessons to be drawn about the dynamics of school food systems change that can inform efforts for change in policy and practice in other jurisdictions.

## **Chapter 5: Results**

This section will now turn to the cases of SFG and FTS initiatives as innovative school food practices within the VSB community. These results will explore the impact SFNs had around policy and practices related to each case.

### **5.1 School food garden initiatives**

In February 2010 the VSB passed a new school food garden policy that stated the “important role school food gardens can play in students' learning”, including in relation to diverse academic subjects, as well as healthy eating and sustainability (Vancouver School Board, 2010a). Previous to 2010 the VSB’s policy in regards to school gardens was restrictive, requiring a chain link fence four feet high and an area no bigger than ten feet by ten feet. Garden advocates suggested that this discouraged schools from pursuing a school food garden due to the cost, which schools would be expected to cover, for such a relatively small growing space. In the year or two leading up to the policy change in 2010, a number of new school gardens or expansions moved forward with VSB approval as ‘pilots’, as they did not fit the official requirements for a school garden at the time. These pilots ultimately led to senior district staff’s idea to change the VSB’s policy approach to school gardens. There were a number of champions within the VSB that were supportive of SFGs and garden-based learning, including an Associate Superintendent and several principals, who helped to facilitate the change to a more enabling policy by advancing the new policy through the different internal VSB committees and board meetings. A major turn of support came when the importance of SFGs was articulated by the network actors, including those inside the VSB and outside, involved in drafting the policy primarily in relation to students’ learning, as can be seen in the first line of the School Food Garden Policy Statement: “The Vancouver Board of Education recognizes the important role school food gardens can play in students' learning”

(Vancouver School Board, 2010a). The strategy to frame SFGs as firstly connected to the school district's core institutional mandate around students' learning can also be seen in that the policy itself was taken by senior district staff through the 'Education and Student Services' committee rather than 'Planning and Facilities' where such issues would normally have appeared. This framing and strategic direction emerged through conversations of network actors from the cross-sector collaboration between education, health, academia and civil society in the lead up to and development of the new school food garden policy.

As the new School Food Garden Policy was passed at the beginning of 2010, SFNs' efforts around policy change related to SFGs between 2010 and 2014 were primarily focused on making sure the garden approval and development process was working for the schools and community organizations involved. SFN actors were involved in working with staff from the VSB Grounds department, who have a responsibility for schoolyards and are involved in the approval of SFG plans, in making revisions to the 'Gardens How to Guide' (Vancouver School Board, 2013c). These revisions, including the creation of two intakes per year to facilitate ease of planning for VSB Grounds staff and the addition of appendices on topics such as garden bed design were aimed at providing further clarity about requirements and best practices to ensure successful and thriving gardens that were actively producing and were regularly being used by teachers to engage students in learning to support academic outcomes, as well as improved food literacy and healthy eating behaviours..

Another milestone for SFGs in the VSB was the establishment of two schoolyard market gardens –including “a commercially producing educational farm on school land utilized as an outdoor learning classroom” – at two secondary schools in 2013 through a partnership with Fresh Roots Urban Farm, a non-governmental, civil society organization (Vancouver School Board,

2013a, 2013b). The sites both provide learning spaces for teachers to utilize for experiential education and grow produce for sale to schools and through on-site markets. The partnership to establish these two approximately quarter acre sites was built on an extensive memorandum of understanding, developed with involvement from supportive actors within the VSB and the civil society organization involved, that was partially based on the School Food Garden Policy. The seed for the possibility of using VSB land for larger market gardens to produce food for VSB programs and provide for educational opportunities was planted by school food network actors much several years earlier during the development of drafts of the Food Action Plan, several iterations of which went to a multi-stakeholder committee of the VSB for discussion a number of times in 2011 (Vancouver School Board, 2011a, 2011b). Drafts of the plan included an action regarding the establishment of three schoolyard farms or market gardens by 2015. As explored further below, the Food Action Plan was put on hold due to a teacher job action alongside significant transition in senior management of the VSB responsible for this file. The policy and precedent at the institutional level opened the door that wouldn't have otherwise likely been a possibility. SFN actors successfully made the case that the schoolyard market gardens provided educational benefit to the school community and was thus a justified use of school land. In keeping with the VSB School Food Garden Policy, school food network actors emphasized the important role that engaging students in hands-on learning in food gardens can play in improving academic outcomes, healthy eating behaviours, and student mental health and well-being (Morgan et al., 2010; Ozer, 2007; Williams & Dixon, 2013). While the size of these market gardens was much larger than any other SFG in the VSB, there was still an emphasis on the benefits of engaging students in hands-on learning, and a focus on building off of other successes.

<b>Key Activities and Outcomes</b>	<b>Date</b>
Adoption of VSB School Food Garden Policy	February 2010
Beginning of Think&EatGreen@School	March 2010
Formation of Vancouver School Food Network	June 2010
First professional development day workshop offered by Vancouver School Food Network	October 2010
First Think&EatGreen@School Summer Institute	July 2011
First Think&EatGreen@School Small Grants	Fall 2011
First revision to the ‘Gardens How to Guide’	October 2011
First schoolyard market garden established through memorandum of understanding with Fresh Roots at VSB secondary school	March 2013

**Table 2: Timeline of School Food Garden Activities**

From 2010 to 2014 there was significant support from the SFNs for seeding and scaling SFG initiatives. The scaling out of SFGs through replication was encouraged through a variety of activities. Starting in 2011 and continuing for 4 years TEGS small grants of up to \$2000 were given to schools. Many of the schools that received grants used the funding to purchase materials for SFGs, including wood, soil and seeds, while others used the funding for release time for teachers to do collaborative planning around integrating garden-based learning into curricular activities (Orrego, 2015). While there is a cost to constructing SFGs it is often relatively small, often with no cost to the school district, and is quite achievable to cover through grants and fundraising, making it possible for the significant growth in the overall number of SFGs in the VSB. Many community organizations worked together to serve as a “community network to support the development and upkeep of gardens”(Vancouver School Board, 2011a). By the end of 2014, 84 of the 111 schools in the VSB had gardens, a three-fold increase from the 27 gardens in 2010.

Support for scaling deep the capacity to create and maintain SFGs, and particularly to support their use in making learning connections across the curriculum and embed them within the culture of the school was facilitated through professional development activities and investment in

supporting a “community of learners”<sup>1</sup> working towards school food systems change (“Think&EatGreen@School,” n.d.). Between 2011 and 2014, TEGS and the broad array of community partners, including those formally involved in the TEGS network (see Table 1), as well as others from across the region involved in school food initiatives, participated in 4 multi-day Institutes to “grow the vision and capacity of school staff, students, and school communities to collaboratively develop and share knowledge on healthy and sustainable food systems at their schools” (“Institute,” n.d.). These institutes included hands-on experiences for all participants in gardening and cooking, as well as supporting connections to curriculum and school-based action. The community organizations involved in the VSFN were also involved in supporting numerous professional development activities related to SFGs, both on district-wide professional development days and after school sessions (“Past Pro-D workshops,” n.d.).

Between 2010 and 2014 SFNs helped shift VSB policy and practices around SFGs by working at a number of levels. SFNs supported the development of SFGs as niche innovations at school level by working directly with teachers and school staff through professional development, helping with planning, building, planting and maintenance of SFGs at numerous schools in collaboration with school staff, students, parents and other community members. Actors involved in the SFNs also played a role in impacting policy and institutional practices that allowed SFGs to flourish across the district.

## **5.2 Farm to school initiatives**

In the VSB context FTS initiatives, understood primarily as the procurement and provisioning of fresh, local food at schools, were most directly supported by Farm to School

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<sup>1</sup> In some schools parents played an important role in developing and supporting school food gardens. However, SFNs predominantly engaged with teachers and school staff in hopes of building the capacity of staff and embedding institutionally, rather than relying on intermittent and transient parent labour.

Greater Vancouver (FTSGV). When the FTSGV Steering Committee first started meeting in 2010, the focus of the efforts was aimed at the vision that school children have “access to healthy, safe, culturally-appropriate lunches made with locally grown food and are connected with local farms and farmers” (“Farm to School Greater Vancouver Terms of Reference,” 2011). Over the period of study FTSGV engaged in two main strategies. The first included supporting the development of FTS programs in individual schools through grants and support for working through the logistics such as determining a model, creating relationships with individual farmer(s), menu, pricing, kitchen and lunchroom needs. The second included focusing on district-wide procurement and provisioning.

Within the VSB there is a diverse patchwork of different approaches to school meal programs, from the majority of elementary schools where students pack their own lunches, to a number of contract-catered cafeterias at secondary schools. The efforts to support FTS initiatives have sought to engage that diversity by supporting a number of different models as identified and initiated by teams from schools. After forming in late 2010, the FTSGV Steering Committee was successful in receiving grant funding to be able to offer small planning grants of \$1500 to four schools in the VSB to initiate FTS programs in the 2011-12 school year. Small planning and implementation grants continued to be a strategy used by FTSGV to engage teams in schools in getting engaged with FTS initiatives. Along with funding, support was provided by a farm liaison or animator, to help schools connect with farms and optimize logistics of program within the school.

Around the same time that the first FTSGV activities to access funding to support schools to initiate programs were underway, the VSB adopted a Sustainability Framework, which included the action to develop a Food Action Plan (Vancouver School Board, 2010b). Several iterations of

the draft Food Action Plan went to a multi-stakeholder committee of the VSB for discussion a number of times in 2011 (Vancouver School Board, 2011a, 2011b). Drafts of the plan included a strategy to “leverage purchasing dollars for school food programs to support a just and sustainable food system through supplying students with healthy food options and reducing the environmental impact of the food system.” A draft target explored a percentage of local food to be purchased by 2020. A next step in the development of the Food Action Plan, and other sustainability plans, was to be the development of a multi-stakeholder sustainability committee, including teachers and other union representatives. A teacher job action in 2012, along with a transition in senior management of the VSB responsible for this file, led to the Food Action Plan being put on hold.

Initially the main focus of FTSGV activities was on supporting small pilot projects such as FTS salad bars that were offered 1-2 times per week in participating schools. Early FTS efforts focused on school purchasing directly from farmers. Several schools supplied their salad bar through a combination of food purchased from an urban farming organization within the city of Vancouver and small amounts of produce from the school garden. Another had weekly deliveries from a nearby peri-urban farmer from adjacent municipality. Establishing direct relationships proved to be challenging. Orders for small programs offered one or two days a week were relatively small and didn’t always justify the effort required by a farmer to deliver directly to a school. There were concerns about what, if any, positive impact this may be having on farmers and the local food economy.

After the first year of grants to schools, interest within the FTSGV Steering Committee grew to simultaneously work at the school and district level to have a larger impact on both the number of students participating and the local farmers that were involved. This greater focus on institutional practices and policies, included a focus on district-wide food procurement and

contracts, contributing to aspects of the Food Action Plan that had been stalled. In 2012 the FTSGV Steering Committee commissioned external consultants to explore best practices from other jurisdictions as well as opportunities locally (Stott & Nichols, 2013a, 2013b). The research pointed to innovative models of district-wide food procurement from other jurisdictions outside BC such as Toronto, Portland and Seattle. Together with the research exploring opportunities within local school districts in Greater Vancouver, including barriers and facilitators for local, sustainable food procurement in public institutions in BC, the FTSGV Steering Committee made the decision to pursue funding to initiate a food procurement Learning Lab as a strategy to engage key stakeholders from the school district and supply chain in a process.

The Learning Lab was based on a successful model implemented by School Food FOCUS in the US to help larger, urban school districts adapt their procurement systems to increase the amount of healthy, local and sustainable food being served to students (Conner et al., 2011, 2010; “School Food FOCUS,” n.d.). School Food Learning Labs are “a collaborative research process ... to discover methods for transforming food options within their operations” by bringing “school food-service professionals and district partners together with research and technical assistance to study and work on specific procurement goals” (Conner et al., 2011, p. 58). These labs are consistent with emerging multi-stakeholder systems change processes like collective impact and social innovation labs (Kania & Kramer, 2011; Social Innovation Generation, n.d.) that seek to engage key systems actors in collaborative strategic efforts. The Learning Lab in Vancouver involved VSB district staff from the procurement and food services department, as well as a variety of on-site school food service staff, including teachers running culinary arts programs and unionized staff that work in cafeterias. Together these staff are responsible for purchasing food at

both the board and school level, so their opportunities and influence are different, but all important.

The objective of the first meeting of the Learning Lab that took place in November 2013 was to establish three to five goals that would help change the way local and sustainable food is purchased for cafeterias and food programs across the district, which would be the focus of the activities moving forward. Goals set included: “Increase procurement of local and/or sustainable food”, “Procure foods that model sound nutritional practice for students,” and “Provide training and support to develop capacity to procure local, sustainable food” (Farm to School Greater Vancouver, 2013). As the objective of this meeting was to agree on high level goals specific targets were not set at this stage. Related accompanying actions included the following: “Establish baseline of current food purchasing from local food suppliers; Work with major suppliers to determine point of origin of food and increase availability and knowledge of local product; Explore the development of a test kitchen that will develop new seasonal healthy recipes aligned with curriculum and create cost and nutritional analysis for recipes” (Farm to School Greater Vancouver, 2013).

Late in 2014 the Learning Lab Coordinator worked directly with the VSB’s major broadline distributor to ascertain the current baseline of products purchased from the region and province and explore opportunities to further increase the amount of local and sustainable produce coming into the schools and achieve cost savings on multiple items. A test kitchen also took place in October 2014, hosted by the same major broadline distributor, and including the distributor’s staff in addition to cooks and purchasing staff from six secondary school cafeterias, as well as several FTSGV committee members. Outcomes included participants learning how to “cook and purchase food for 12 seasonally based menu items, allowing them the creative space to base their

menus (and food budgets) on what is available locally throughout the school year. Participants enjoyed healthy, local, sustainable menu items and explored opportunities for bringing them into cafeterias across the [VSB]” (Public Health Association of BC, 2014, p. 1).

After being delayed and stalled a number of times a final version of the Food Action Plan never went to Board of Trustees for adoption. This was partially related to a number of teacher job actions in 2012 and 2014, as well as significant turnover in the senior management of the VSB. Efforts to get decision makers to make commit to policy around shifting procurement practices to support FTS goals faced a number of challenges. Significant regular turmoil around the VSB’s funding package from the province and annual budgeting process each year, with associated discussions of staff lay-offs and school closures, proved to be a barrier to influencing policy. This was also accentuated by the perception of higher cost of implementation of more local, sustainable purchasing practices from VSB staff responsible for purchasing and food services. It also proved to be much more difficult for decision-makers to see the connection between procurement practices and the core institutional mandate around student learning, likely partially due to separation between the business side of school boards, where school food service, maintenance and operations, personnel, and budget functions reside, and the educational or curriculum side. This can be seen in the VSB Sustainability Framework, with separate Key Result Areas for ‘Educational and Organizational Culture’ and ‘Procurement and Supply Chain Management’ (Vancouver School Board, 2010b). The goals and activities of the Learning Lab made some progress in supporting innovative purchasing and provisioning in a select number of schools, particularly where champions from the secondary schools that participated in the Test Kitchen, as well as the elementary schools that received grants and capacity building support from FTSGV. A number of schools continue to directly purchase small volumes of produce from farmers and a

several secondary school programs have been able to access more local produce through the VSB broadline supplier. However broader systemic impacts were limited, partially due to the failure to scale up from pilot projects to the policy level.

<b>Key Activities and Outcomes</b>	<b>Date</b>
Formation of Farm to School Greater Vancouver (FTSGV)	November 2010
First draft of VSB Food Action Plan with local food procurement strategy and target to VSB Committee	April 2011
First FTS programs initiated with grants offered by FTSGV	November 2011
Completion of reports on district-wide food procurement by consultants	March–April 2013
First Learning Lab meeting	November 2013
Test Kitchen	October 2014
Meeting with distributor to determine baseline of current food purchasing from local food suppliers	October 2014

**Table 3: Timeline of Farm to School Activities**

A closer look at the development and growth of FTS initiatives in the VSB between 2010 and 2014 reveals a limited number of impacts. The SFNs worked to nurture innovative models with the number of FTS programs in schools growing from zero to eight during the time period of the study. Impacts of FTS initiatives were largely restricted to the limited number of schools that initiated FTS programs. Efforts to scale up to impact district level policies and practices, both through the Food Action Plan and the Learning Lab was yet to have the impact that was desired, though it is unclear if that will eventually be the case.

## **Chapter 6: Discussion**

Literature on sustainability transitions and social innovation inform this analysis of the role and impact of SFNs in growing the ‘seeds of transition’ toward “healthy and sustainable school food systems in the Vancouver School Board.” (Think&EatGreen@School, n.d.). Wiskerke & van der Ploeg (2004) develop the metaphor of ‘seeds of transition’ to explore the dynamics of novel and innovative practices at the niche level. The metaphor is revisited in later writing, with an emphasis on the “need of fertile institutional embedding or regime shift in order for them to settle and flourish” (Roep & Wiskerke, 2012, p. 208). The research questions can then be reframed to whether and how SFNs were able to plant and grow the seeds of transition through the development and scaling of innovative practices for broader impact at the institutional or regime level.

### **6.1 Niche development through nurturing processes**

SFG and FTS initiatives can be seen as grassroots innovations at the niche or school level to improve the health and sustainability of school food systems while developing food literacy of students (Kirwan et al., 2013). The SFNs in Vancouver supported niche development of these initiatives through key ‘niche nurturing processes’ (Smith & Raven, 2012). The broad support and resources of time and funding to initiate school level initiatives allowed an environment for many of these innovative practices to get established in the midst of busy school days and crowded educational agendas. This support corresponds to the protective properties of ‘nurturing’ through “supporting learning, building capacity and fostering productive networks” (Hinrichs, 2014, p. 147). At this relatively early stage of niche development it was critical that this space and supportive environment be established to facilitate the initiation of new models of how school communities shift their practices. For innovative initiatives to be eventually scaled up, impacting

policy, and deep, impacting cultural roots and norms, they first need to be firmly rooted and be successfully scaled out, impacting more schools and students through a greater number of SFG and FTS initiatives (Moore et al, 2015). The development and spreading of innovative models through small grants, professional development and logistical support, was a significant role the SFNs played to influence practices around SFGs and FTS between 2010 and 2014.

## **6.2 The impact and role of SFNs in ‘scaling out, up, and deep’ toward systems change**

Questions of “whether and how social networks can help facilitate innovations to bridge the seemingly insurmountable chasm that separate local solutions from broad system transformation” (Moore & Westley, 2011, p. 1) have come into more focus in the social innovation literature. These insights, particularly the articulation of three types of scaling – out, up and deep – along with associated strategies by Moore et al. (2015) can help us better understand the impact and role of SFNs in supporting the scaling for systems change.

### **6.2.1 Scaling out**

Scaling out by “impacting greater numbers” (Moore et al., 2015, p. 77) was achieved to some effect and impact within the Vancouver School Board. The number of schools, and thus number of students, involved in SFG and FTS activities was increased. This was definitely more significant in regards to the greater numbers of SFGs, which increased from 27 to 84 between 2010 and 2014. FTS programs in schools went from zero to eight over the same time period. Efforts to support new schools to initiate their own SFG and FTS initiatives through TEGS Small Grants and FTSGV Planning Grants would fit with Moore et al.’s scaling out strategy of “deliberate replication” (2015, 77). As well, as Moore et al. recognized scaling out mostly concentrates impacts on the niche level, through developing more niches, with limited impacts on established practices and policies at the regime level (2015).

### 6.2.2 Scaling up

Scaling up by “impacting law and policy” (Moore et al., 2015, p. 77) happened to a lesser extent. Most notably, the VSB School Food Garden Policy was passed at the beginning of the time period of analysis. Though prior to this study’s time period many of the actors that were later involved in the more formalized SFNs examined in this study were involved in the processes that led to the policy change in February 2010. While the policy change did not in any way mandate school gardens, it did create a more enabling environment in which SFG initiatives were able to flourish with the support of the SFNs. Together with the on-going support from SFN actors to support the creation of new school gardens the policy change can explain why there was such a significant increase in the number of school gardens.. It was likely the synergistic effect of the policy change in early 2010, followed by the development of a “community of learners” through the initiation of TEGS and the first professional development activities of the VSFN that supported a deeper practice around SFG and garden-based learning. However, it should be noted that despite over 75% of schools in the VSB having SFGs it is not entirely clear how many teachers are using the gardens for curriculum-based learning. Formal curriculum, an educational policy established at the provincial level, and broader educational culture at a landscape level have not changed in any significant way to support SFG and FTS initiatives.

There were also efforts by the SFNs to support policy change at the district level around FTS and local food procurement, particularly through the Food Action Plan and, to a less direct extent, the Learning Lab, despite the fact they were as yet unable to achieve these policy changes. The Learning Lab was initiated to create a multi-level strategy that sought to impact district-wide procurement alongside efforts to support individual schools in FTS programs, with the desire to engage decision-makers in a collaborative process that would ideally be supportive of and

followed by policy changes. While a number of innovative models emerged at the school-level, the amount of commitment and energy required to initiate or modify meal programs made for a more challenging environment in which to scale up these innovative practices. The challenges in scaling up efforts through policy change, included teacher job actions, significant turnover in the senior management of the VSB, and budgetary issues. With the VSB consistently facing budget deficits over the time period under study, including laying off of staff, it was hard to make the case for a larger commitment to shifting food procurement dollars, contracts and models, where there may be any more cost associated with these changes. This is especially the case where there is not a clear mandate or resources from the provincial level to support this. With limited resources and capacity, priority was given to ensuring at least basic programs for vulnerable populations through existing and new models.

### **6.2.3 Scaling deep**

Scaling deep by “impacting cultural roots” (Moore et al., 2015, p. 77) was most evident through significant efforts to support teachers and school teams to address school and educational culture through professional development and networks of learning, at both the school and district-wide levels. Several activities of the SFNs would fit within the broad scope of Moore et al.’s scaling out strategy to “invest in transformative learning” (2015, 77). Less effort was given to Moore et al.’s second strategy associated with scaling deep, “spreading big cultural ideas”, which would correspond to MLP’s analytical level of the broader landscape including societal values and public opinion, in this case relating to public education and food.

### **6.3 Networks as cross-cutting strategy for scaling**

Moore et. al. also describe a number of cross-cutting strategies that were associated with each of the three types of scaling (2015). Most relevant and significant for this study is the cross-

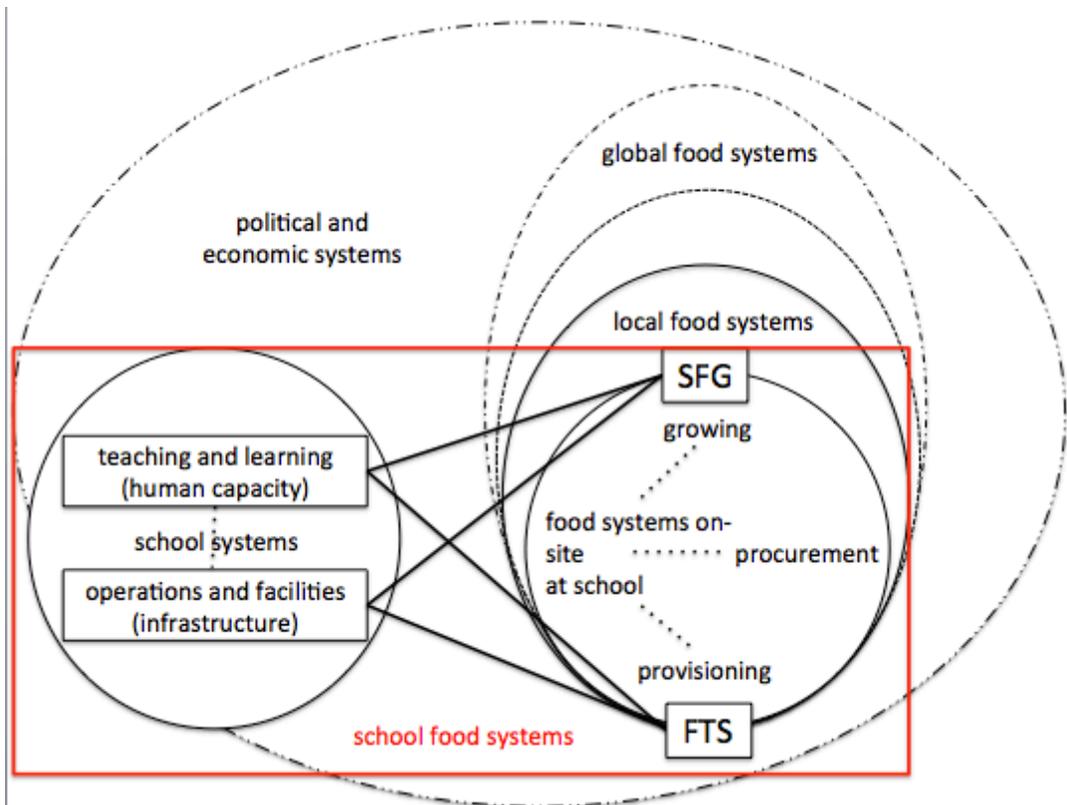
cutting strategy to “build networks and partnerships” (Moore et al., 2015, p. 77). The essential basis of the SFNs and the roles they played related to being networks of actors, both formal partnerships and more informal relationships. TEGS itself was a ‘community-university partnership’, a formal relationship between the university, school district, regional health authority and numerous of non-profit, civil society organizations. FTSGV and VSFN were also collaborations across numerous organizations and sectors. Looking again at Table 1 reveals that each SFN had consistent representation from education, health, academia and civil society organizations. The SFNs are clear examples of Renting et al.’s observations of “new forms of cooperation between different local actors ... showing the increasing importance of the role of civil society (and to some extent local and regional administrations)” (Renting et al., 2012, p. 292). By including numerous non-profit civil society organizations alongside actors from inside local institutions such as the school board, health authority and university allowed the SFNs to have a greater impact. These networks and “cross-over” partnerships facilitated a common sense of purpose and agency within civil society, focused collaboration, alignment and pooling of resources, extension of influence and increased legitimacy for SFG and FTS initiatives, and working towards school food systems change more broadly (Riddell & Moore, 2015). In each of the types of scaling the relationships and collaborations that are key aspects of networks and partnerships were critical to the impacts that were achieved. For example, the process of policy change, from piloting to policy writing to revising the process guidelines, related to SFGs came about through partnering between two schools, the school district, health authority staff, a community organization, and later the university. The Learning Lab and Test Kitchen involved not only the education, health, academic and civil society actors that were deeply involved in the SFNs, but also included engaging district-level staff and food supply chain actors. As well, the

Summer Institutes had a multi-sector planning committee and workshops were delivered by dozens of different organizations and university faculty. These examples of shifts in policy and practice that were facilitated multi-sector collaborations as a result of networked relationships reaffirm the role of networks as a cross-cutting strategy for scaling out, up and deep.

Scaling innovations for systemic impact requires multiple strategies and working at multiple levels of scale (Barlow & Stone, 2011; Moore et al., 2015). The SFNs worked effectively to engage primarily with teachers, schools, and sections of the school district. There was only limited ability at district-level with senior management and school board trustees, and not with decision-makers at the provincial or federal levels, nor limited regional food system engagement. This is not said to critique what was done, but to highlight the complexity of systemic change and the multiple levels and stakeholders that have a role to play. The SFNs primarily played a role supporting SFG and FTS initiatives through key niche nurturing processes such as learning and networking processes (Smith & Raven, 2012) that support scaling out and aspects of scaling deep. Strategies to scale up through influencing policy change require a different orientation and range of capabilities and skills (Moore & Westley, 2011; Westley et al., 2014). Once established, innovative initiatives often focus first on scaling out, and “scaling for systems change – seeking to impact broader institutions, or deeply held cultural beliefs and norms” (Riddell & Moore, 2015, p. 24) – requires targeting policy and cultural change. Moore et al. hypothesize that “systemic impacts involves [these] three different types of scaling” and “large systems change is likely to require a combination of these types” (Moore et al., 2015, p. 69) It is the synergistic effects of these three types of scaling that together contribute to systemic impact and systems transformation.

## **6.4 Understanding school food systems as nested systems and implications for systems change efforts**

Examining these efforts for foods systems change in Vancouver brings the reminder of the nature of school food systems as nested in broader systems, and lock-in effects of established systems (Geels, 2010; Spaargaren et al., 2012a). The same could be said for school food systems in Vancouver that was said by Barlow and Stone in regards to working in Oakland and California: "In the course of analyzing school food from a systems perspective, we were reminded that food systems are difficult to change because they are nested in larger educational, economic, and political systems that in turn reflect much bigger trends—among them centralization, industrialization, standardization, and globalization." (Barlow & Stone, 2011, p. 10). These broader systems impact the ability of both SFG and FTS initiatives to have systemic impact, but it could be argued these effects are larger for FTS initiatives, and institutional food procurement more broadly. As shown in Figure 2, the necessary involvement of a larger diversity of actors, including across the supply chain, as well as the trends and dynamics of “centralization, industrialization, standardization, and globalization” in the food system, in addition to trends in educational systems, makes shifting school meal programs arguably much more complex and challenging than shifting practices around SFGs and garden-based learning. Scaling for systems change must counter the “lock-in effects [that] prevent the switch-over to a new system, or socio-technical regime” (Spaargaren, Oosterveer, & Loeber, 2012b, p. 4). Transitioning school food systems towards sustainability doesn’t “come about easily, because existing ... agri-food systems are stabilized by lock-in mechanisms that relate to sunk investments, behavioural patterns, vested interests, infrastructure, favourable subsidies and regulations” (Geels, 2010, p. 495).



**Figure 2: School Food Systems as Nested Systems**

Figure 2 depicts the ways that school food systems are both interactions between school systems and food systems, as well as nested within broader food, education, economic and political systems. School systems, and in turn school food systems include two ‘sides of the house’ – “the business side, where school food service, maintenance and operations, personnel, and budget functions reside, and the educational (or curriculum and instruction) side, where everything that goes on inside the classroom resides” (Evans, 2005, p. 255). These two dimensions of the school system, ‘teaching and learning’ and ‘operations and facilities’ interact with the food system of the school, including school food garden and farm to school initiatives. The food system of the school is itself embedded within nested and interacting local, national and global food systems. This fact most significantly affects FTS and local food procurement initiatives in schools, which interact more significantly with these nested food systems.

## 6.5 Time needed for innovations to develop from seed to fruit

Transition scholars help remind us that systems change takes time, as they see transitions a “medium- to long-term (from about 10 up to 50 years or so) processes of change which go to the heart of the matter because they affect the regimes, e.g. the specific rules of food production, retail and consumption” (Spaargaren et al., 2012b, p. 4). This study only looked over a 5 year time horizon. Returning to the metaphor of seeds of transition, innovative practices “need *time* – just as seeds require cultivation and nourishment to germinate, grow, flower and set fruit” (van der Ploeg et al., 2004, p. 1). Part of the potential developments of transition experiments towards regime shift and system-wide change requires the evolution and maturing of the orientation of efforts, coinciding with Moore et al.’s cross-cutting strategy to “broaden the problem frame” (Moore et al., 2015, p. 77) by adopting a systems-change perspective to achieve goals of scale and impact. Put otherwise, seeds of transition need a “particular organization of *context*” as “first improvement spurs the second one, because it both requires and informs it” (van der Ploeg et al., 2004, p. 1), leading to a wider array of interrelated, and mutually reinforcing innovative practices, which over time can grow and flourish.

## **Chapter 7: Conclusion**

This study set out to explore the role that school food networks in Vancouver played between 2010 and 2014 to influence policies and practices in the Vancouver School Board related to school food garden and farm to school initiatives. This included investigating whether and how the networks contributed to scaling the impact of these school food initiatives to achieve broader systemic impact on institutional practices and policies at the school district level.

I utilized a qualitative case study approach (Yin, 2014) to examine the impact of school food networks on policy and practices of the school food systems within the Vancouver School Board. The three overlapping SFNS the case looked at were Think&EatGreen@School (TEGS), Farm to School Greater Vancouver (FTSGV) and the Vancouver School Food Network (VSN). These SFNs were involved providing support to school food garden and farm to school initiatives between 2010 and 2014. Data collection was carried out through participant observation and document analysis.

SFNs influenced Vancouver School Board policy and practices around school food gardens by working at a number of levels, which saw the number of gardens increase from 27 to 84 between 2010 and 2014. School food networks facilitated niche development of SFGs at school level by building the capacity of teachers and school communities through professional development and logistical support with planning, building, planting and maintenance of SFGs. Actors involved in the SFNs also played a role in impacting policy and institutional practices that allowed SFGs to flourish across the district.

Examining farm to school initiatives in the Vancouver School Board between 2010 and 2014 more closely reveals a more limited scope of impact. The school food networks supported the development of innovative models, including the number of FTS programs in schools growing

from zero to eight during the time period. Efforts to scale up through impacting policy, particularly to influence district level policies and practices around food procurement through the Food Action Plan and the Learning Lab, had yet to be successful.

From this study it can be concluded that SFNs in Vancouver played an important role in supporting the development of innovative school food initiatives at the school level between 2010 and 2014, effectively supporting ‘niche’ development. When looking at broader institutional rules and practices at the school district and provincial levels, impacts at the regime level were limited. Impacts that were made, both at the niche and preliminarily at the institutional level, provide important progress on which future efforts for systemic impact can build, especially if SFNs choose to focus increased efforts on scaling their impact, through “making scale and impact a conscious choice” (Riddell & Moore, 2015, p. 14).

This case study provides some lessons to be drawn about efforts to change the policies and practices of school food systems that could be relevant in on-going efforts in Vancouver and other locations. The study points to insights on deliberate strategies for scaling up through impacting policy and scaling deep through impacting cultural roots and norms relevant to school food networks actors working to move beyond niche replication to impact systems change. An understanding of nested systems requires the recognition that “changing schools’ food systems require[s] moving from working with individual schools to working at the district level and then to the larger educational and economic systems in which districts are nested” (Capra, 2005, p. 24). The role and importance of building networks is also a critical lesson, as networks can be seen to be an important cross-cutting strategy for all types of scaling and achieving systemic impact (Moore et al., 2015).

My research had both strengths and limitations. The synthesis of three different yet related literatures, systems thinking, sustainability transitions and social innovation, in my conceptual framework is a strong contribution. The research provides a case that further examines the role of networks as a cross-cutting strategy for scaling out, up and deep to achieve systemic impact (Moore et al., 2015), which explores and tests some more recent thinking in the field of social innovation. Some limitations of my research related to my methods include the fact that my results and conclusions are only drawn from a single case study, meaning it is harder to generalize to other contexts, and my role as both insider and outsider. As the focus of the study was the impacts on practices and policies at the school and district levels, it didn't directly assess impacts on students involved in school food initiatives. The increase in the number of SFG and FTS initiatives doesn't translate directly into an assessment of the overall impact these school food initiatives had on the schools and students that participated in them, which would require a deeper analysis (Joshi et al., 2008; Williams & Dixon, 2013). This analysis could include impacts on student's knowledge, attitudes and behaviors related to healthy eating and food literacy, as well as influence on academic performance and mental health and well-being. I also believe that the time scale of my study is a limitation, only allowing for the snapshot of a 5 year period within a dynamic context of transition, which is often a much longer process.

This study points to the need for future research to determine the developmental and evolutionary nature of the role of networks in supporting different aspects of scaling and systems change. Future studies could have practical implications for informing the planning and strategies of SFNs in cultivating the systemic changes that are desired and will further allow for the innovative initiatives to flourish and grow. Further examination of the dynamics of scaling for systems change and associated strategies in other contexts, both in food systems change and

beyond, would help to enrich these theoretical and practical frameworks. Research in the future could further analyze how the ‘lock-in’ effect of established regimes can be unsettled by landscape level pressures, and what strategies networks might be able to facilitate that and make linkages to the process by which niche innovations can influence regime shift (Geels & Schot, 2007; Smith et al., 2010).

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