

School Food Gardens in Ontario: Educating for Health and Sustainability

**Green Thumbs Growing Kids
July 2013**

Toronto

This report was created as a resource for the Imagine a Garden in Every School Campaign, funded in part by the Heart and Stroke Foundation.



Table of Contents

I. Introduction

II. Report Highlights

III. Educating for Health

- An epidemic of overweight and obesity
- How school gardens can help address the epidemic
- The Healthy Kids Strategy
- Healthy Schools Recognition Program

IV. Educating for Sustainability

- Acting Today, Shaping Tomorrow
- The EcoSchools certification process

V. Case Studies

- Winchester Junior and Senior Public School (Toronto, Ontario)
- Fort Albany First Nation School and Community Complex (Fort Albany, Ontario)
- Stamford Collegiate Secondary School (Niagara Falls, Ontario)
- Buckhorn Public School (Lakefield, Ontario)
- Toronto District School Board
- Vancouver School Board

Recommendations

Acknowledgements

I. INTRODUCTION

In 2012 the United Nations Special Rapporteur on the Right to Food, Olivier De Schutter, made a country visit to Canada and issued a report on his findings¹. Given that Canada is a very wealthy country, he was struck by estimates that up to 4.3 million people are food insecure, with people relying on social assistance, Aboriginal peoples and recent immigrants being the most vulnerable. Meanwhile, low-nutrient, high-calorie foods are more readily available than fresh fruits and vegetables, contributing to an epidemic of obesity and related chronic diseases.

The Special Rapporteur's first recommendation was that Canada “formulate a comprehensive rights-based national food strategy”, which would “ensure that all children, at all times, have access to healthy and nutritious food”. Among the strategies he identified for achieving that goal are school-feeding, food literacy and school garden programmes.

In this report, we identify the health benefits of school food gardens, with a secondary focus on benefits related to environmental education. We highlight supportive policies adopted at the local and provincial level. We share compelling stories about experiences of school garden practitioners and allies in towns and cities across Ontario, and in Vancouver. We conclude with recommendations for future action to support school food gardens as a tool for improving food security, nutrition and environmental education in Ontario.

¹ Report of the Special Rapporteur on the right to food, Olivier De Schutter, Mission to Canada”, Dec 24 2012, United Nations General Assembly.

II. REPORT HIGHLIGHTS

By the Numbers

- Over 60% of Ontario EcoSchools have reported a school grounds greening initiative during the certification process. In 2011-2012, 1801 schools were certified by Ontario EcoSchools.
- Within the Toronto District School Board, not more than 10% of schools have a garden.
- Within the Vancouver School Board, over half of schools have a garden or are in the process of developing a garden.

Key Benefits

- Students who engage in garden-based learning about nutrition are more likely to eat a greater variety and number of fruits and vegetables.
- School gardens provides a venue for moderate and vigorous physical activity.
- Garden-based learning promotes positive attitudes towards the environment.

Challenges

- Long-term maintenance, especially in summer.
- Underuse by teachers.

Recommendations

- Recommendation #1: That the Ministry of Education invest further into the Healthy Schools Recognition Program, to create a best practices platform and evaluation strategy, and offer prizes and increased exposure to participating schools which achieve measureable results.
- Recommendation #2: That the Healthy Schools Recognition Program recognise and highlight the health-promotion potential of school food gardens.
- Recommendation #3: That the Ministry of Education recognize school grounds as places for student instruction, and adjust the education funding formula so as to recognize the variable and place-based costs involved with establishing and/or refurbishing grounds to make outdoor instruction possible.

- Recommendation #4: That the Ministry of Education revise design standards for new and refurbished school grounds to include areas for outdoor instruction, with shade and biodiverse plantings, as well as a sunny spot with a raised garden bed large enough for an average class to gather around, and good access to water.
- Recommendation #5: That the Ministry of Education complete implementation of the *Acting Today, Shaping Tomorrow* policy framework with respect to Ontario College of Teachers qualification guidelines and an additional qualification course, related to environmental education.
- Recommendation #6: That the Ministry of Child and Youth Services expand the Student Nutrition Program to include support of community organizations working in partnership with schools to develop and maintain school gardens.

III. EDUCATING FOR HEALTH

An epidemic of overweight and obesity

Throughout the industrialized world and beyond, the combined effect of increased access to high-calorie foods and reduced levels of physical activity is creating an epidemic of unhealthy weights. Chronic illnesses associated with an unhealthy weight include hypertension, type 2 diabetes, heart disease, gallbladder disease, stroke, and breast and colon cancer. In Ontario, over 70% of adults are overweight or obese, according to the University of Ottawa Heart Institute², and one in three Ontario children today is overweight or obese. Unhealthy weights cost the Ontario economy \$4.5 billion every year³.

How school gardens can help address the epidemic

A diet high in fruits and vegetables protects against obesity, cancer, and many chronic diseases⁴. However, in Ontario, just 42% of adults reported eating five or more fruits and vegetables per day according to the 2010 Canadian Community Health Survey. This number has been declining⁵. According to the Ministry of Health and Long Term Care's *Initial Report on Public Health* (2008), the consumption of fruits and vegetables is influenced by factors including “physical access within a community; food affordability; knowledge of healthy food choices; food skills such as shopping, budgeting, preparation, and storage”⁶.

Moreover, exposure and access to a variety of fruit and vegetable choices is especially important at an early age, at the time when eating habits are established⁷. This is where we see major benefits associated with garden-based nutrition education, as is demonstrated in the following studies:

- Sixth-grade students involved in a garden-based nutrition education program

² “Overweight and obese make up majority of Ontario,” http://www.ottawaheart.ca/content_documents/ObeseandOverweightinCanadaFINAL.pdf, retrieved July 28, 2013.

³ Katzmarzyk PT. (2011). The economic costs associated with physical inactivity and obesity in Ontario, *The Health and Fitness Journal of Canada*, Vol. 4, No. 4

⁴ Hung HC, Joshipura KJ, Jiang R, et al. Fruit and vegetable intake and risk of major chronic disease. *J Natl Cancer Inst.* 2004;96(21):1577-84.

⁵ Cited by Statistics Canada, “<http://www.statcan.gc.ca/pub/82-625-x/2011001/article/11461-eng.htm>” retrieved July 28, 2013

⁶ http://www.health.gov.on.ca/en/public/publications/pubhealth/init_report/favc.html, retrieved July 28, 2013.

⁷ Kirby, S.D., Baranowski, T., Reynolds, K., Taylor, G. "Children's Fruit and Vegetable Intake: Regional, Adult-Child, Socioeconomic, and Urban-Rural Influences." *Journal of Nutrition Education*, Oct 1995.

increased their fruit and vegetable consumption by 2.5 servings per day, more than doubling their overall fruit and vegetable consumption⁸.

- Fourth-grade students who received garden-based nutrition education were more willing to try vegetables than students who received nutrition education without gardening activities. This changed behavior continued for at least six months after the nutrition education program⁹.
- Middle school students demonstrated improved recognition of, attitudes toward, preferences for, and willingness to taste vegetables. Gardening also increased the variety of vegetables eaten¹⁰.
- Fourth-grade students who received garden-based nutrition education had improved knowledge of, preferences for, and attitudes toward fresh fruits and vegetables¹¹.

In 2010 the Food and Agricultural Organization of the United Nations (FAO) published *A New Deal for School Food Gardens*, to highlight the potential benefits of school food gardens, share success stories, and suggest how governments and development partners can promote school gardens in the service of improved nutrition. According to the FAO:

“There is clear and growing evidence that:

- consuming specific vegetables can have a marked effect on children’s health;
- growing and preparing garden food at school increases children’s preferences for healthy fruit and vegetables;
- food gardening, combined with nutrition education, results in voluntary changes in diet;
- gardening activities, especially with organic approaches, improve children’s understanding of and attitudes to the natural environment; and
- hands-on learning and learning by doing induce a much higher retention rate

⁸ McAleese, Jessica D. and Linda L. Rankin. "Garden-Based Nutrition Education Affects Fruit and Vegetable Consumption in Sixth- Grade Adolescents." *Journal of the American Dietetic Association*, Volume 107, Issue 4, April 2007, pages 662-665

⁹ Morris, Jennifer et al. "Garden-Enhanced Nutrition Curriculum Improves Fourth-Grade school Children's Knowledge of Nutrition and Preferences for Some Vegetables." *Journal of the American Dietetic Association. Research and Professional Briefs*, 2002. www.adajournal.org

¹⁰ Ratcliffe, M. M., Merrigan, K.A., Rogers, B.L, Goldberg, J.P. "The Effects of School Garden Experiences on Middle School-Aged Students' Knowledge, Attitudes, and Behaviors Associated With Vegetable Consumption." *Health Promot Pract*, January 2011 vol. 12 no. 1 36-43

¹¹ Morris, Jennifer & M. Briggs, S. Zidenberg-Cherr. "Development and Evaluation of a Garden-Enhanced Nutrition Education Curriculum for Elementary School Children." *Journal of Child Nutrition & Management*. Issue 2, Fall 2002.

than ‘chalk and talk’”¹²

School food garden projects, like other school ground greening initiatives, also promote an increase in moderate and vigorous physical activity among children and youth. In its 2006 *Grounds for Action* study about school ground greening initiatives, Evergreen analyzed 35 survey responses about school gardens, from 23 different schools across Canada. According to the report: “The vast majority of participants (89%) indicated that food gardens at their schools are providing important opportunities for moderate physical activity. Preparing soil, planting, raking, weeding, watering and harvesting occur on a regular basis, throughout the growing season and from one year to the next, providing ongoing opportunities for light and moderate physical activity”¹³.

Having established that there are measureable health benefits for children who participate in garden-based nutrition education, we move next to look at health promotion policies related to Ontario schools, to see how those policies support the implementation of this powerful learning tool.

The Healthy Kids Strategy

In 2012 the Ontario government established the Healthy Kids Panel to make recommendations for actions to reduce childhood obesity by 20% within five years. The Panel released its report, *No Time to Wait: The Healthy Kids Strategy*¹⁴ in March 2013, outlining an ambitious plan to improve prenatal and infant care, to change the food environment around children, and to build healthy communities. The Ministry of Health will now have the option of responding to the recommendations and developing policy based upon them.

School-aged children spend 40% of their day in school, making schools an important site for interventions to improve children's health. Schools can also serve as hubs for services beyond the families served by the school itself. For this reason, the Panel referenced important health promotion initiatives in Ontario public schools, while recommending further enhancements.

¹² A New Deal for School Gardens: Promoting Lifelong Healthy Eating Habits (2010: Food and Agriculture Organization).

¹³ Bell, Anne C. and Dymont, Janet E., “Grounds for Action: Promoting Physical Activity through School Ground Greening in Canada (2006: Evergreen).

¹⁴ http://www.health.gov.on.ca/en/common/ministry/publications/reports/healthy_kids/healthy_kids.pdf, retrieved July 28, 2013

For example, the Healthy Food for Healthy Schools Act (2008)¹⁵ and School Food and Beverage Policy (2011)¹⁶ require that all food and beverages sold in Ontario schools for school purposes meet nutrition standards based on Canada's Food Guide. The existing Daily Physical Activity policy requires that students in grades 1 through 8 participate in a minimum of 20 minutes of physical education each day.

The Ministry of Children and Youth Services Student Nutrition Program¹⁷ enables schools and community agencies to offer healthy breakfasts, snacks and lunches at many schools. The Panel recommended that the Ontario government go beyond this and establish a universal school nutrition program for all Ontario publicly funded elementary and secondary schools, and a universal school nutrition program for First Nations communities.

The Panel recommended enhanced training for professionals involved with children, in order to increase their capacity to share knowledge about nutrition and physical activity and to serve as role models.

The Ministry of Education has established a Healthy Schools Recognition Program, which encourages schools to develop activities described in its *Foundations for a Healthy School* framework¹⁸. Between 2006 and 2012, 2,300 schools have participated in the program. The program is currently voluntary. The Panel recommended that it be required for all schools.

Healthy Schools Recognition Program

A school may apply to be recognized as a “Healthy School” by pledging to become a healthier school and undertaking one or more initiatives identified in the Ministry's *Foundation for a Healthy School* framework. The Framework defines a healthy school as one that provides the following:

- quality instruction
- a healthy physical environment
- a supportive social environment
- community partnerships

The framework identifies “starting a school garden and planting fruits and vegetables in it” as an action which develops a school's physical environment to healthy eating.

¹⁵ http://www.e-laws.gov.on.ca/html/source/statutes/english/2008/elaws_src_s08002_e.htm, retrieved July 28, 2013

¹⁶ <http://www.edu.gov.on.ca/eng/healthyschools/policy.html>, retrieved July 28, 2013

¹⁷ <http://www.children.gov.on.ca/htdocs/English/topics/schoolsnacks/index.aspx>

¹⁸ <http://www.edu.gov.on.ca/eng/healthyschools/foundations.pdf>

IV. EDUCATING FOR SUSTAINABILITY

While the health benefits associated with school gardens are undeniable, up until this point, support for school gardens in Ontario has come primarily from the environment education milieu. Here too, research confirms positive outcomes – that children and youth develop more positive attitudes about the natural environment through gardening and garden-based education. Documented examples include:

- Elementary and middle-school students from Texas and Kansas, who participated in a program called Project GREEN (Garden Resources for Environmental Education Now), had significantly more positive environmental attitudes after participating in the school garden program¹⁹.
- Results of telephone survey of over 2,000 respondents in large urban areas indicated that passive and active interactions with plants during childhood are associated with positive adult values about trees. The strong influence came from active gardening, including picking flowers and planting trees as a child²⁰.

We next turn to specific ways which school food gardens advance the established policy goals, on the provincial and local level, in the area of environmental education and how existing frameworks support their development and expansion.

Acting Today, Shaping Tomorrow

In 2007, the Ministry of Education received *Shaping our Schools, Shaping our Future: Environmental Education in Ontario Schools*, the landmark report of the Working Group on Environmental Education chaired by Dr. Roberta Bondar. The report opened with a vision for environmental education in Ontario:

“Ontario’s education system will prepare students with the knowledge, skills, perspectives, and practices they need to be environmentally responsible citizens. Students will understand our fundamental connections to each other and to the world around us through our relationship to food, water, energy, air, and land, and our interaction with all living things. The education system will provide opportunities within the classroom and the community for students to engage in actions that deepen

¹⁹ Waliczek, T.M., Zajicek, J.M. (1999). School Gardening: Improving Environmental Attitudes of Children Through Hands-On Learning. *Journal of Environmental Horticulture*. 17(4): 180-184.

²⁰ Lohr, V.I. & Pearson-Mims, C.H. (2005). Children’s Active and Passive Interactions with Plants Influence Their Attitudes and Actions toward Trees and Gardening as Adults. *HortTechnology*. 15(3): 472-476.

this understanding”²¹.

Can there be a better strategy for teaching children about “our relationship with food, water, energy, air, and land, and our interaction with all living things” than garden-based learning, especially in urban or near-urban settings? School food gardens can serve a powerful hands-on educational tool for achieving the vision of *Shaping our Schools, Shaping our Future*, and Green Thumbs Growing Kids was pleased to welcome Dr. Roberta Bondar as keynote speaker at the launch of the Imagine a Garden in Every School Campaign in June 2012.

In 2009, the Ministry of Education prepared *Acting Today, Shaping Tomorrow: A Policy Framework for Environmental Education in Ontario Schools* to move forward on the recommendations made in *Acting Today, Shaping Tomorrow*. The policy framework addresses three components: Teaching and Learning, Student Engagement and Environmental Leadership. Among the promising features of *Acting Today, Shaping Tomorrow*, from a school food garden practitioner perspective, are actions which advance hands-on environmental learning and engagement on school grounds. These actions include:

- “Schools will provide opportunities for students to acquire knowledge and skills related to environmental education in all subject areas, and encourage them to apply their knowledge and skills to environmental issues (e.g., loss of biodiversity, climate change, waste reduction, energy conservation) through action-based projects”²²
- “The Ministry of Education will offer professional development opportunities that develop field-based pedagogical skills”²³
- “School boards will encourage innovative interdisciplinary programs that focus on the environment and include field components engaging students in “action-based” projects”²⁴
- “School boards will share links and partnerships with community organizations (such as non-profit organizations, businesses, farms, and industries) to help extend engagement in and responsibility for environmental education to the broader community”²⁵
- “Schools will enrich and complement students’ classroom learning by organizing out-of-classroom experiences and activities (such as the

²¹ *Shaping our Schools, Shaping our Future: Environmental Education in Ontario Schools* (Province of Ontario: 2007), p4.

²² *Acting Today, Shaping Tomorrow: A Policy Framework for Environmental Education in Ontario* (Province of Ontario: 2009), p12

²³ *Ibid* p13

²⁴ *Ibid* p14

²⁵ *Ibid* p17

naturalization of the school yard), as appropriate”²⁶.

Also important are actions which have the potential to enhance the capacity of teachers to offer environmental education inside and outside the traditional classroom. According to the Policy Framework, “The Ministry of Education will:

- collaborate with the Ontario College of Teachers to ensure that appropriate attention to environmental education is reflected in the college’s qualification guidelines;
- collaborate with the Ontario College of Teachers to ensure that an additional qualification course supports environmental education”²⁷.

The EcoSchools certification process

Shaping Our Schools, Shaping our Future drew on the experience of Working Group members who had contributed to establishing the Toronto District School Board’s EcoSchools program, which inspired a province-wide corollary in 2002. The EcoSchools certification process is a practical strategy for engaging the staff and students within schools in initiatives which develop ecological literacy and reduce the ecological footprint of schools, and for recognizing local efforts.

Activities are grouped in four components: Ecological Literacy, Waste Minimization, Energy Conservation, and School Ground Greening. Gardening activities fall most naturally within the “School Ground Greening” category. The 2012-2013 Ontario EcoSchools Certification Guide asks: “How does your school actively engage students and staff in the care of the natural environment, encourage teaching and learning in the outdoors, and increase biodiversity on the school grounds?”²⁸ By demonstrating student engagement in planning and design, implementation and/or regular maintenance of gardens or trees, schools earn points towards their EcoSchools certification.

One limitation of the EcoSchools certification program is that activities requiring large investments of time and resources (like the establishment and maintenance of a school food garden) do not necessarily earn schools “points” which are proportionate to the effort expended. Also, because there is a lack of clear guidance among Ontario schools, describing the process and resources required to develop and maintain a school food garden, schools may be encouraged to start up a project which they are unable to maintain over time.

²⁶ Ibid. p17

²⁷ Ibid. p16

²⁸ Ontario EcoSchools: Certification Guide 2012-13,
http://www.ontarioecoschools.org/become_an_ecoschool/downloads/Certification_Guide_2012-13.pdf

V. CASE STUDIES

Winchester Junior and Senior Public School (Toronto, Ontario)

Source: Interview with Sunday Harrison, Founder, Program Director and Volunteer Coordinator, Green Thumbs Growing Kids; Winchester Junior and Senior Public School website²⁹

Winchester Junior and Senior Public School serves 400 students in east downtown Toronto, a culturally diverse and mixed-income neighbourhood. For 59% of students, their primary language is not English. The school is the site of an 11,000 square foot edible garden, which was first established in 2001 through a partnership with Green Thumbs Growing Kids, a neighbourhood-based program which was incorporated independently in 2007 and is now a registered charitable organization and the lead agency for the Imagine a Garden in Every School Campaign.

The garden features student art and sculptures, and an innovative rain catchment system. Garden produce is served in the school's daily hot lunch and salad program, while food waste is composted.

The school has received certification as a Silver EcoSchool, in part because the language, arts and science curriculum is enhanced through experiential learning in the garden. Open to the community in the summer, the garden is the site for youth employment and camp programs offered in partnership with neighbourhood community centres.

The Winchester site is one of four school gardens managed by Green Thumbs Growing Kids in the neighborhood; other sites are at Rose Avenue Public School, Sprucecourt Public School, and Ecole Gabrielle Roy. Green Thumbs Growing Kids also runs a school-day program at the nearby Allan Gardens Children's Conservatory during the spring, planting seeds and making cuttings in the children's greenhouse. Seedlings are later brought to school sites to be transplanted.

Strengths:

- Solid place-based partnership: "When things go wrong for either the school or the garden, there's a clear line of communication and issues are usually quickly addressed, empowering both sides to continue," says Harrison.
- Multi-school partnership: Labour is shared, creating efficiencies.
- Access to greenhouse: Schools save on the cost of seedlings for annual plants;

²⁹ <http://www.tdsb.on.ca/schools/index.asp?schno=5284>, retrieved July 28, 2013

children are involved “from seed to seed”.

- Longevity: The Winchester garden, and other Green Thumbs Growing Kids gardens, have been maintained in excellent condition for many years, much longer than the average school garden.
- Youth summer employment program: Addresses the summer care challenge.

Challenges:

- Empowering teachers, parents and students to use the garden independently: volunteers are generally not comfortable leading the educational programs without significant support; student labour not always sufficient to maintain the composting system.
- Insufficient core organizational funding for Green Thumbs Growing Kids: “This creates uneven program delivery and constant turnover of staff and volunteers,” says Harrison, “because in low-income schools the parent fundraising is not sufficient to support a garden co-ordinator like in higher-income communities.”

Lessons:

- Schools and school gardens are unique and part of complex systems: What works in one does not necessarily work in another. From weather and climate, to policy, to culturally appropriate crops, to available gardening expertise, to culinary facilities and lunch programmes. There's no one size fits all, but students universally enjoy opportunities to learn in these spaces.
- Youth and adult partnerships, with day-care and school-aged children, especially in summer, are key.

Fort Albany First Nation School and Community Complex (Fort Albany, Ontario)

Source: Interview with Gigi Veeraraghaven, Co-ordinator, Healthy Babies Healthy Children Program, Fort Albany First Nations School.

Fort Albany is a community of 700 people located on the shores of James Bay, and part of the Nishnawbe Aski Nation. This community has many food-security related challenges and there are high rates of obesity and diabetes among the people. “Harvesting naturally growing foods, for example berry picking or fishing, or hunting moose, caribou, and partridge, is very important to our culture,” says Veeraraghaven. “This can be very expensive. There are equipment needs - boats, gas, etc. - and those costs have been rising.” As consumption of traditional foods has declined, people have become dependent on store bought food, which is sold by the Northern Community Store. The store has high prices, poor quality, and doesn’t respond to the needs of the

community in terms of food choices offered for sale. Meanwhile, perceptions of gardening are connected to a time when missionaries farmed potatoes in town, and gardening and food preparation are more common among the elderly.

In this challenging context, the Fort Albany First Nations School is a food hub in the heart of the community. The school is used for community feasts and every weekend there are conferences and different events. The school operates a greenhouse that is used by the school and community to grow food. A student nutrition program serves breakfast to students and a snack in the afternoon. (Students go home for lunch.) The Healthy Babies program focuses on supporting families to raise healthy children.

The parent council, Student Nutrition Coordinator, and Veeraraghaven are also working on a school food policy that is being considered for approval by the board. Every community of the Nishnawbe Aski Nation is engaged in strategic planning on food policy. The Fort Albany school's food focus has enabled the larger community to address critical issues such as food access inequity from the community store through a Food Security Committee. They were able to politicize food and give voice to their own remote, underserved community. Furthermore, the school greenhouse and garden program has seen the full circle of children teaching their parents and families teaching their children. The garden and food education programs are facilitating autonomy and addressing food security issues for both families and the community at large.

Strengths:

- The school is a major food hub for the community.
- A greenhouse, donated by University of Waterloo, expands the growing season.
- Classes which teach about cleaning and preparing moose or fish promote cultural autonomy, and give more students the opportunity to eat wild meat.

Challenges:

- Summer garden and greenhouse maintenance is difficult in part because students are not at the school in the summer.
- School grounds are marshy and the growing season is short (often mid-June to late September).
- Younger generations are not knowledgeable about nutrition and have not developed cooking skills important for preparing non-traditional foods.
- Families are large with one income earner. Generally it is hard to feed everyone on that one income and there is a high incidence of depression among community members.
- In order to keep current initiatives in place, funding is needed to pay for a resource person focused on food education.

Lessons:

- In this community, growing one's own food means establishing identity and sense of well-being in the community. "Just to be able to fish and grow potatoes in your backyard gives you pride, to be able to produce on your own and you can feed your family," says Veeraraghaven.
- Gardening is really important. "Kids and adults do not know how the food they eat is produced. The connection is missing- what's put into food- and now people are more concerned with what's in their food."

Stamford Collegiate Secondary School (Niagara Falls, Ontario)

Source: Interview with Eli Serbina, Horticulture Teacher, Stamford Collegiate Secondary School. Over the past 10 years he helped develop the gardens at the school.

Stamford Collegiate Secondary School is in the Niagara region, a thriving region for artisanal food and wine production, and one of the most fertile areas for agricultural production in North America. The school's edible gardens are the most expansive found to date in Ontario and they serve as an exemplary testament to how school gardens can help schools build linkages with the surrounding community.

Stamford's school garden is six years old, and now contains a variety of elements such as a 50x4 embankment of strawberries, a living bean fence, a 20 square foot patch of garlic, and another 100 square foot patch of land. Cucumbers, tomatoes, garlic, beans, herbs, chili peppers, strawberries, grasses and flowers grow in the garden using companion planting methods. A breakfast program at the school feeds 105 students per day. The garden supplies tomatoes in September, and vegetables for soups cooked weekly. Surplus food goes to a local program called *Project Share*.

The garden is a foundation of the horticulture program at the school, but there is an open door policy for other teachers to use the garden for instruction. This school exemplifies how school gardens can function as a vehicle for cross-curricular instruction and how integrated school garden programs can awaken multidisciplinary learning. Thus far, the science program for the school has come to do water testing there, the construction program helped build raised beds and other garden infrastructure, the auto program donated tires for the strawberry tile wall, math classes have worked on measurement in the garden, and many students come to the garden at recess and lunch, or for reading time during English classes.

Stamford has been certified as a Gold EcoSchool, with 15 students and 2 teachers who are not in the horticulture program meeting every Friday for a club called *Ecofreaks*.

They compost all the food from the school kitchen and breakfast program, using vermicomposting, they use Tim Hortons' coffee grounds to grow oyster mushrooms, and do litter patrol on the school grounds. To maintain animal habitats and encourage pollination, there are birdhouses and beehives on the school grounds, and the school grounds are being reforested with native plants.

The school garden at Stamford Collegiate Secondary School has contributed many benefits to its stakeholders. The garden helps cultivate a sense of community and intergenerational understanding, as it provides many opportunities for the school to develop connections with community groups and families facing poverty issues, it helps connect students with different interests, and involves students with the elderly in the community. The garden also helps reinforce good nutrition among students and broadens their food preferences. Time and time again, Mr. Serbina noted that if students grow, plant, and cook their own food, they try foods they didn't previously like, and change their food preference and patterns of eating. Lastly, the school garden cultivates a sense of patience in students as they need to wait to watch things grow.

Strengths:

- Community buy-in: As the community sees students in the garden, they donate plants, trees, seeds, money.
- The school's positioning for expanding school gardens in the region: They have a relationship with the local elementary school (Simcoe Street Elementary); the Horticulture Program at Stamford is helping them initiate their own school gardens;
- The school's active community involvement: Stamford school horticultural program has a great relationship with the local community; Stamford students helped build a community garden for *Project Share*, a compost system, and helped maintain trails/paths at the local elderly home. They will be building a pizza oven for *Project Share* as well.
- Summer garden maintenance: In the summer, there is a student and volunteer list, and those who sign up maintain & water the garden during that time.

Challenges:

- Contradicting Board Policies: Board Policies guided them to remove their chickens from the horticulture program (fear of Bird Flu) and remove plants from the school rooftop (even though they were told it could bear the weight).
- Garden potential underutilized: Lack of professional development means that garden is underutilized by all subject area teachers.

Lessons:

- "Growing food is one of the things we need to start teaching, hands-on," says

Serbina. People live in townhouses and apartments and don't know about gardening, if they're not part of an immigrant family like Italians or part of a tradition of growing food in their own backyards. "We should be taught about living well."

- If kids are happy, they do better in school. Their attitude is better.
- Because of the breakfast club at the school, where kids can have a bite before, afterschool, and in between classes, there are less behavioral, nutrition, and health issues at Stamford.

Buckhorn Public School (Lakefield, Ontario)

Source: Online research³⁰.

Buckhorn Public School is located in a natural haven in the Kawartha Pine Ridge District School Board. The Buckhorn Community School and Garden Project sprouted in 2009 in a desire to reinvigorate a pre-existing extracurricular gardening program at the school. The garden has 21 plots. Every class at the school maintains, plants and harvests from their own plot. Families, community residents, master gardeners, educators, community groups, and environmentalists have been given free plots and in return agree to care for the school plots during the summer months. Parents and residents also regularly help teachers in the garden during the school year.

The garden grows food for the school breakfast and lunch program, the local food bank, and the Rural Outreach Centre and serves as a hub of information for community and family involvement around the school. The school is in the process of developing seven instructional and cultural gardens, including a sensory garden to teach curriculum based on the five senses, a worm garden with a strawbale composter, and an art garden. To reflect the First Nations students and community members, the school has also planted a sweet grass garden.

Project funding has been provided by the Buckhorn School Parent Council, Earth Day Canada Community Environment Fund, and local businesses. The City of Peterborough, which has finalized a Community Gardens Policy, has supported the project through its Public Health Unit and Social Services.

Strengths:

- Grade 5 mentorship program for younger children; they are called "Habitat Helpers"

³⁰ <http://www.ohcc-ccso.ca/en/students-are-blossoming-at-buckhorn-school-and-community-garden>

- Community involvement and support
- Summer maintenance of school garden comes from community members.
- City-County Community Gardens Policy establishes institutional support and leadership

Lessons:

- The energy to reinvigorate the school garden initially came from the school's participation in two curriculum projects (Green Man Project www.projectgreenman.com and Tomatosphere Project www.tomatosphere.org). These projects drew the involvement of other community partners by igniting their interest in gardening, and together a clear vision was brought forward for a larger project that brought both the school and larger community together for a common goal - a shared garden space.
- City and County involvement via a food or garden policy is helpful.
- Public Health Unit involvement can lead to farther reaching programs that are part of the whole garden web.

Toronto District School Board

Source: Interview with Bruce Day, Facility Manager, Buildings and Grounds, Toronto District School Board. Day is a 28-year School Grounds veteran.

Toronto District School Board (TDSB) is the largest school Board in Canada and the fourth largest in North America, with nearly 600 schools. Bruce Day, Facility Manager, estimates that less than 10% of the District's 600 schools have gardens. He has seen many gardens begin and fail with the average lifespan for most school gardens running two to three years.

Gardens maintained by an external organization working in partnership with the school are more successful:

- Green Thumbs Growing Kids operates four gardens in four elementary schools.
- The PACT Urban Peace Program has developed four urban agricultural gardens in high schools.
- FoodShare has a long-term partnership with two high schools offering horticulture and food & hospitality programs, and an elementary school with a rooftop garden.

Also significant are gardens maintained by highly-motivated parents in affluent neighbourhoods. For example, four gardens at Jackman Avenue Junior Public School have been running strong for 10 years with strong neighbourhood support and the gardens are integrated into the school's curriculum.

Strengths:

- EcoSchools: 440 TDSB schools are certified EcoSchools, half of which are Gold or Platinum Ecoschools. EcoSchools consultants offer assistance with planning and implementing gardens.
- Community interest: There is significant interest among schools, parents and students in greening their grounds and establishing gardens. Buildings and Grounds staff conduct up to 100 consultations per year, with schools engaged in a school ground greening process, which may include development of a garden.
- Outdoor Education: The TDSB ensures that students have the opportunity to experience learning beyond the classroom at by operating eleven programs at Overnight and Day Centres focused on outdoor education.
- Food activism at the municipal level: The City of Toronto has adopted a Food Charter which is animated by an active Food Policy Council.

Challenges:

- Contradicting Policies: The TDSB's Caring and Safe Schools Department has established guidelines to render schools safe from vandalism and damage, and to address pest management on school sites. As a result, shrubbery cannot be covering windows or fences, vines like grapes and beans cannot grow along fences, and the bottom 6-8 ft of trees such as pine, spruce, and fruit tree branches need to be clear so that teachers have an unobstructed view at all times. In an orchard, the bottom 4 feet of fruit trees need to be clean of branches. These guidelines limit the ability to maximize food production in school gardens.
- Limits on teacher participation: Collective Agreements with teachers limit the time teachers are out on the school grounds, which impacts the amount of garden maintenance and learning time teachers can have with their students in school gardens.
- Summer and Long-term maintenance: Very often schools underestimate the amount of work that is involved in garden maintenance, especially over the summer. This is typically where most school gardens fail.
- Inconsistent leadership: School principals are required to move to a different school every 4-5 years, so momentum on a new project may be lost.
- Watering: Access to a water source may be limited.
- Greenhouse disrepair: Some schools have greenhouses but when they are in disrepair teachers need to push to ask for repairs; otherwise they are unused.

Lessons:

- Establish partnerships with childcare centres, community groups or external organizations to help with maintenance, especially in the summer. All long-

running sustainable gardens have this component.

- Day would like to establish a TDSB horticulture team of 4 to 5 staff which assist schools with garden and courtyard maintenance. This would enable teachers to focus on teaching rather than spending their limited outdoor time cleaning up their gardens.

Vancouver School Board

Source: Interview with Kevin Millsip, Sustainability Coordinator, Vancouver School Board.

The Vancouver School Board adopted a school garden policy in February 2010, a beneficial chronicle for other school boards to study since the long term maintenance of school gardens and school liability issues are important considerations for administrative buy-in. The Vancouver School Board case study is an important model to show the linkage between city food policy, school district leadership, and the power of individual schools to make garden education a priority in their city. This case study also exemplifies school gardens as a means for effective cross-curricular education.

The Vancouver School Board has 109 schools in the district. 46 schools have school gardens, with an additional 15 in the application process. While there is no funding for school gardens from the school board, there is plenty of support, and there is sometimes infrastructure money for things such as water hook-up for gardens.

Strengths:

- **School Food Garden Policy:** Policy demonstrates School Board support. School board connects schools with funding sources and provides curricular guidance for teachers.
- **Clear process for establishing school food gardens:** Guidance documents help school sites with establishing gardens. A streamlined process makes more efficient use of grounds supervisor's time. Schools are aware of effort required and must demonstrate commitment before receiving approval.
- **Community partnerships for summer maintenance:** Many of the schools have daycares on site, which have committed to taking over summer maintenance of gardens. Local churches and Community Centre youth groups have also been engaged as partners with schools in some instances, to help maintain school gardens over summer months.
- **Curricular expertise:** *SPEC (Society Promoting Environmental Conservation)* and *Growing Kids* are very active in providing food and garden education classes in Vancouver schools.
- **Local food activism:** The City of Vancouver passed a Food Charter in February

2007. “The Charter is an ambitious, forward-thinking document that promotes education, celebration and real projects for a healthy economy, a healthy ecology, and a healthy society”³¹. It supports many initiatives including the *Grow a Row, Share a Row* program that invite local gardeners to grow extra vegetables for the city Food Bank Society. There are more than 74 gardens with 3,260 garden plots throughout the city, including plots on City, Parks, School, and private lands.

- Provincial support: British Columbia Ministry of Education published a *Best Practices Document for Sustainable Schools* that reinforces similar goals at the city and local school board level.

Challenges:

- A lot of trees seem to be dying in school gardens, because school sites are not thinking through watering during the first few years that it takes for them to get established.

Lessons:

- There are many benefits of School Food Garden Policy.

³¹ Vancouver Food Charter (City of Vancouver: 2007). <http://vancouver.ca/people-programs/vancouver-food-charter.aspx>

VI. RECOMMENDATIONS

This report represents an initial effort to document the existing and potential impact for school food gardens in Ontario. Through documented research and the case studies we have presented, we see that school food gardens can improve nutrition among children and youth, and increase opportunities for healthy physical activity during the regular school day. We also see that they require significant investments of time and other resources in order to be successful. While many community organizations, students and committed teachers are willing to commit to school food gardens, more resources are required in order to see the full potential of this powerful learning tool.

The release of the *No Time to Wait: Healthy Kids Strategy*, reinforcing the *Foundation for a Healthy School Framework*, creates new momentum for innovative health promotion strategies.

Recommendation #1: That the Ministry of Education invest further into the Healthy Schools Recognition Program, to create a best practices platform and evaluation strategy, and offer prizes and increased exposure to participating schools which achieve measureable results.

Recommendation #2: That the Healthy Schools Recognition Program recognise and highlight the health-promotion potential of school food gardens.

The potential of school grounds to serve as vital spaces for both health promotion and environmental education is acknowledged in *No Time to Wait: The Healthy Kids Strategy*, and in the Ministry of Education's *Acting Today, Shaping Tomorrow: A Policy Framework for Environmental Education in Ontario Schools*. Both the *Foundation for Healthy Schools Framework*, and the EcoSchools certification program, recognize individual schools for efforts made to make use of and make improvements to their grounds. Those efforts should be matched on an institutional level.

Recommendation #3: That the Ministry of Education recognize school grounds as places for student instruction, and adjust the education funding formula so as to recognize the variable and place-based costs involved with establishing and/or refurbishing grounds to make outdoor instruction possible.

Recommendation #4: That the Ministry of Education revise design standards for new and refurbished school grounds to include areas for outdoor instruction, with shade and biodiverse plantings, as well as a sunny spot with a raised garden bed large enough for an average class to gather around, and good access to water.

Recommendation #5: That the Ministry of Education complete implementation of the Acting Today, Shaping Tomorrow policy framework with respect to Ontario College of Teachers qualification guidelines and an additional qualification course, related to environmental education.

Our final recommendation concerns the role of community partners. Partnerships are highlighted as essential components of a “healthy school” in the *Foundation for a Healthy School* framework, while *No Time to Wait: The Healthy Kids Strategy* envisions schools as community hubs offering services and support to entire neighbourhoods. Our case studies demonstrate the essential role of community partners in establishing and maintaining school food gardens over the long term. However, community partners, especially smaller neighbourhood-based groups, often struggle with inconsistent funding.

Recommendation #6: That the Ministry of Child and Youth Services expand the Student Nutrition Program to include support of community organizations working in partnership with schools to develop and maintain school gardens.

For our part, Green Thumbs Growing Kids and the Imagine a Garden in Every School campaign have committed to researching policies and best practices in other jurisdictions in order to explore how best to work with the Ministry of Education, school boards and individual schools in Ontario. We are seeking out resources and support for a complete survey of all school garden programs in Ontario, in order to fully understand the barriers and opportunities associated with this important tool for health promotion and environmental education.

Acknowledgements

This report was written by Giovanna Capuani and Kristin Schwartz for Green Thumbs Growing Kids.

Research was contributed by Sunday Harrison and Indira Dutt.

The Imagine a Garden in Every School Campaign is co-ordinated by Cassie Scott.

We acknowledge the California School Garden Network and Cornell University Garden-Based Learning Program for their work in compiling research studies to support the ongoing development and propagation of garden-based learning:

- www.csgn.org/research.php
- <http://blogs.cornell.edu/garden/grow-your-program/research-that-supports-our-work/>