

Spotlight

# SCHOOL FOOD AND NUTRITION

Comprehensive, Integrated Food and Nutrition Programs in Canadian Schools:

A Healthy and Sustainable Approach

**Scientific Co-Leads**

Jess Haines, PhD  
*University of Guelph  
Department of Family Relations  
and Applied Nutrition*

Amberley Ruetz, PhD Candidate  
*University of Guelph  
Department of Geography*

A discussion paper developed and presented by the Arrell Food Institute at the University of Guelph



<p style="text-align: center;"><b>1</b></p> <p style="text-align: center;"><b>About Arrell Food Institute</b></p>	<p style="text-align: center;"><b>13</b></p> <p style="text-align: center;"><b>Case Study: Fresh Roots – Schoolyard Market Gardens</b></p>	<p style="text-align: center;"><b>20</b></p> <p style="text-align: center;"><b>Taking Action for School Food and Nutrition</b></p>
<p style="text-align: center;"><b>2</b></p> <p style="text-align: center;"><b>The Brief</b></p>	<p style="text-align: center;"><b>14</b></p> <p style="text-align: center;"><b>Gaps and Opportunities</b></p>	<p>Key Comprehensive Food and Nutrition Program Characteristics 20</p> <p>Economic Analysis Needed 21</p> <p>Curricular Enhancements and Training; School and Community Commitment for Success 22</p> <p>Nationally Harmonized Standards 23</p> <p>Table 1 24</p> <p><b>Acknowledgements 26</b></p> <p><b>References 27</b></p>
<p style="text-align: center;"><b>7</b></p> <p style="text-align: center;"><b>Current Context</b></p> <p>Food and Nutrition in Canadian Schools 8</p> <p>Current School Food and Meal Programs and Policies 9</p>	<p>Why Doesn't a National School Food and Nutrition Program Already Exist? 14</p> <p>Food, Nutrition, and Poverty; Curriculum Funding 15</p> <p>Training and Human Resources; Infrastructure 17</p> <p>Improving Health and Reducing Health Care Costs Across Canada; Supporting Local Food Systems and Canada's Agri-Food Sector; Knowledge sharing and policy for impact 18</p> <p>Intergovernmental Collaboration for Harmonization 19</p>	
<p style="text-align: center;"><b>10</b></p> <p style="text-align: center;"><b>Case Study: Victorian Order of Nurses' Central Food Procurement Pilot</b></p>		

**INNOVATIVE.  
INTERDISCIPLINARY.  
INSIGHTFUL.**

---

# **ABOUT ARRELL FOOD INSTITUTE**

The University of Guelph is a world leader in food and agricultural innovation. Arrell Food Institute at the University of Guelph harnesses multidisciplinary expertise, convenes dialogues, and publishes papers on timely and relevant topics.

Food is intrinsic to human, economic, and planetary health; yet, it rarely comes first in conversations about how to meet today's challenges. Arrell Food Institute at the University of Guelph exists to elevate food to improve life. We bring people together to conduct research, train the next generation of food leaders, and shape social, industrial, and governmental decisions, always ensuring food is the central priority.

More information about the Arrell Food Institute can be found at:  
[\*\*arrellfoodinstitute.ca\*\*](http://arrellfoodinstitute.ca)

**OUR MISSION: ELEVATE FOOD TO IMPROVE LIFE.**

---



## — THE BRIEF

### Recommendations<sup>1</sup>

- Nutrition education should be required in K–12 curricula, with a focus on hands-on food literacy, school policies, and meal programs.
- Any development of a national level program to promote healthy eating habits among children and teens should be integrated and comprehensive, meaning:
  - healthy eating habits are included in the curricula, and also modelled and supported through policies and hands-on food skills programs in schools;
  - local communities, school administrations and indigenous communities continue to have autonomy;
  - universally-available to all students;
  - sufficiently funded and supported with the necessary physical infrastructure and human resources.
- Policy actions can contribute to this goal, including:
  - convening cross-ministry working groups to provide comprehensive support to school food programs;
  - harmonized nutrition standards that are fully implemented, monitored and regularly evaluated;
  - enhancing current curriculum and training.

Eating a healthy diet is critically important, especially for children; it leads to short- and long-term health benefits, increases academic performance, and sets up healthy habits for a lifetime. To ensure all Canadian children are receiving these benefits, a universal and comprehensive National School Food Program is a critical step in providing children with healthy, safe food, reducing child and household food insecurity, teaching food skills, and supporting local food systems.

## Why do we need a school food program?

Canada is the only G7 country without a national school food program — ranking 37th out of the world's 41 wealthiest nations for access to healthy food.

Children spend a large amount of time in school — approximately one-third of children's food intake happens during school hours — but many children go through the day undernourished. For various reasons, it is common for children come to school without having eaten breakfast or packed a lunch, and for those that have a lunch, research shows that lunches provided by schools tend to be healthier than home-packed lunches.

Overall, Canadian children have poor diets: they consume too few vegetables, fruit and milk or milk products, consume too much high-fat and high-sugar food and fast food, and frequently skip meals. The pervasiveness of diet-related diseases among children in Canada may make today's youth the first generation to have sicker, shorter lives than their parents.

Schools teach about food as part of the curriculum, sell food, and some schools offer programs like community kitchens, school gardens, and food skills courses. This makes our schools a critical place where children can access healthy, nutritious food, learn food skills, and establish healthy habits for a lifetime and why it is time to develop a universal and comprehensive National School Food Program in Canada.

## What are the benefits of a Universal and Comprehensive National School Food Program?

A universal school food program has many benefits supported by research, including:

**Health.** School food programs and policies provide healthy food — increasing fruit and vegetable consumption, averting diet-related chronic disease, and supporting children's physical and mental health and development.

**Academic Success.** Providing universal school meals has been proven to improve learning outcomes, increased attendance, and decrease tardiness and dropout rates.

**Food Insecurity.** Providing all children with healthy food at school can reduce food insecurity and social stigma.

**Family Support.** Providing all children with daily access to food at school would have a positive impact on all families and particularly [women who invest a significant amount of time preparing food for school](#).

**Food Skills.** Children can learn about healthy eating in classes, develop preferences for healthy foods, and gain relevant skills such as food preparation, gardening, and appreciating food traditions and cultural foods.

**Food Sustainability.** When designed with sustainability goals in mind, school food programs can provide a strong opportunity for students to learn, in a hands-on way, to choose local and sustainable food, minimize food waste, and compost.

**Local Food Systems and Economic Development.** School food programs have the potential to support Canadian farmers and food businesses and contribute to Canada's agri-food sector.

## What is the current system of school food in Canada?

School food programs vary significantly, but most are in elementary schools, are funded by community groups, charities, and private sector, and rely on volunteer support. Though national dietary guidelines exist, there remains wide variation in provincial and local-level school nutrition policies and guidelines, and funding and capacity for school meal programs are often limited. The current practices in schools across Canada create an inconsistent patchwork of food-related activities and understanding. While each program addresses some important food and nutrition needs of school-aged children and youth, the patchwork approach to funding leads to inconsistency in programming that fails to reach many Canadian children.

## What does a successful school food program look like?

To be successful, a national school food program must employ a *comprehensive* approach, including the combined use of curriculum, education, policy, family and community involvement, and healthy food provision. It must:

- be universally, available to all K–12 students;
- be non-stigmatizing;
- promote healthy lifestyle choices and offer nutritious food and drinks;

- respectfully include local stakeholders, ensuring the program is culturally appropriate and locally adapted;
- tap into the local food system to support the local economy and yield environmental benefits;
- incorporate hands-on food skills experiences and nutrition education, including traditional indigenous foods; and
- include regular monitoring and evaluation.

## Where can governments play a role?

**Funding.** Federal-provincial-territorial-municipal collaboration must include political commitments to ensure funding for food, curriculum development including hands-on food skills, training, infrastructure, and human resources that support new and existing school food programs.

**Intergovernmental collaboration.** Effectively implementing a comprehensive program requires commitment from a cross-section of ministries and agencies at the federal, provincial-territorial, and municipal levels, including but not limited to: Health, Social Services, Children and Youth, Education, Agriculture, Industry, Finance, and Indigenous Services. As a first step, provincial and territorial governments should convene a cross-Ministry working group to provide comprehensive support to school food programs. This could include, but is not limited to, the development of a standardized approach to food safety requirements in the school food context, food procurement policies including local food procurement targets.

**Infrastructure and Human Resources.** Trained nutrition experts and certified food preparation staff need to be hired to deliver programs. Additionally, school food infrastructure assessments will need to be conducted along with future capital planning to ensure the necessary updates are made to kitchens, cafeterias, teaching spaces and eating areas.

**Curricular Enhancements.** With recent updates to Canada's Food Guide, which is taught in Canadian schools, there is an opportunity to update and strengthen the inclusion of food education in our curriculum, specifically through the incorporation of hands-on foods literacy activities on how to choose healthy, local and sustainable foods, minimize food waste and compost.

**Nationally Harmonized Standards.** The commitment of federal funds to supporting existing and new programs through harmonized nutrition standards — including appropriate safeguards to ensure the independent oversight of food procurement — that are fully implemented, monitored and regularly evaluated.

---

//////////////////// **Definitions**

For the purpose of clarity, the following definitions are used in this paper:

---

**Food Literacy**

Set of integrated skills and attributes to support the preparation and intake of healthful foods.

---

**Comprehensive and Integrated School Food and Nutrition Program**

A school food and nutrition program that includes curriculum, hands-on food literacy activities, policies and food programs that support healthy eating among all Canadian school-aged children and youth.

---



## CURRENT CONTEXT

*Positive school nutrition environments are essential for students to achieve excellence and improve their mental and physical wellbeing, ultimately ensuring they are ready to learn.<sup>3</sup>*

Healthy living offers lifelong benefits: longer life expectancy, reduced risk of illness and chronic diseases, more physical and mental energy, and a more positive outlook.<sup>3,4</sup> It has been estimated that over 30,000 deaths per year could be prevented or delayed if Canadian diets were in line with dietary recommendations — which now emphasize that all Canadians should form a “pattern of eating” that is based primarily on vegetables, fruit, whole grain foods, protein foods, unsaturated fats, and water to drink.<sup>5,6</sup>

Many lifelong habits and practices begin during childhood; they can be influenced by geographic region, household income, education, family values, and food literacy.

Today, many children and teens have diet-related diseases and poor eating habits, including low consumption of vegetables, fruit, and milk or milk products, high consumption of fast foods and high-fat and/or high-sugar foods, and frequent skipping of meals.<sup>7,8</sup>

The pervasiveness of diet-related diseases among children in Canada may make today’s youth the first generation to have sicker, shorter lives than their parents.<sup>9</sup>

To facilitate healthy living and improve the overall health of all Canadians, we need a national-level approach that promotes healthy eating habits among school-aged children and teens — setting them up for a lifetime of healthy choices. We must look at children’s eating habits and identify how their eating behaviours are influenced by their knowledge, skills and social and physical environments. Identifying gaps in young people’s food literacy and exploring opportunities for an integrated approach is a first step toward reaching this goal.



## Eating Habits of Children and Teens in Canada

Research has found that the dietary intakes of some children and teens in Canada do not meet current nutrient recommendations by age and sex. Results of dietary surveillance with children and teens in Canada, using data from the Canadian Community Health Survey (CCHS) in 2004, revealed that:

- 65% were consuming fewer than five servings of vegetables & fruit per day
- 70% were not meeting recommendations for regular consumption of milk and milk products or milk alternatives
- one-third of children's daily calories came from foods that were not included in (an earlier version of) Canada's Food Guide
- 70% ate fast foods at least once per week
- 10%–50% (depending on age and sex) reported skipping breakfast.

## Food and Nutrition in Canadian Schools

Nearly all school-aged children in Canada spend a substantial portion of their waking hours at school. Thus, schools can be an important touchpoint on a child's healthy eating journey and can help set the foundation for a healthy lifestyle.

### ***Schools Are Eating Places***

In Canada, most children eat at least one meal per day at school — consuming roughly 33% of their daily energy intake while there.<sup>10</sup> The nutrient density of home-packed lunches at school are about 20% lower in vitamins A, D, B12 and calcium than meals eaten at home,<sup>10</sup> and some research has suggested that school-provided lunches are consistently more nutritionally dense than home-packed meals.<sup>11</sup> Additionally, school food availability is a strong predictor of dietary nutrition among children and adolescents. Schools generally have designated times and supervision for eating, which can influence children's nutritional intake (e.g., students who eat more slowly may find it difficult to eat their full lunch in the time allotted).

### ***Schools Promote Healthy Eating***

As learning environments, schools can promote healthy eating, particularly among adolescents (high school students), who reportedly have the poorest school-hour dietary practices.<sup>10</sup> Schools have the opportunity to reinforce and support student choices to sample and regularly consume healthy food options.<sup>19</sup>

### ***Schools Teach Food Skills***

When children and adolescents have the opportunity to cook and prepare foods in school (for example, during breakfast programs), it helps them develop and apply food skills.<sup>5</sup> School breakfast and lunch programs, in addition to nutrition and cooking classes, could play a role in teaching children the importance of eating properly.<sup>20</sup> Evidence shows that students who participate in school food programs have demonstrated increased nutritional knowledge, preferences for healthy foods, and a higher intake of nutrient-dense foods such as vegetables and fruit.<sup>21</sup>

Canada is the only G7 country without a national school food program — ranking 37th out of the world's 41 wealthiest nations for access to healthy food.<sup>12, 13, 14</sup>

Though national dietary guidelines exist, there remains wide variation in provincial and local-level school nutrition policies and guidelines, and funding and capacity for school meal programs is often limited.<sup>15, 16</sup> As a result, advocates are asking for a universal, federally-funded and legislated school meal program in Canada.<sup>17, 18</sup>

## **Current School Food and Meal Programs and Policies**

School food and meal programs vary by province. Many Canadian jurisdictions have school food and beverage policies that are based on the 2007 Food Guide for Healthy Eating and are in accordance with the federal-provincial-territorial endorsement of certain policies, including the Integrated Pan-Canadian Healthy Living Strategy and the Curbing Childhood Obesity program, a 2010 framework designed to promote healthy weight.<sup>9, 22, 23</sup> In some schools, students are not only learning about healthy food in the classroom, but are also growing food in a school greenhouse or garden, building food skills through courses and programs, and even collaborating with their local communities to extend the impact beyond the walls of the school.<sup>24</sup>

Some school policies include nutrition criteria for serving food and beverages in schools, while others provide direction for food and nutrition education in the curricula, or modelling through staff practices and school events. However, on a national basis school food and beverage policies, and adherence to them, vary by province because each province/territory is responsible for its own curriculum and food distribution policies and practices.

In Ontario, for example, several policies and guidelines exist, all with similar objectives: the School Food and Beverage Policy,<sup>25</sup> the Student Nutrition Program Nutrition Guidelines,<sup>26</sup> and the Ontario Food and Nutrition Strategy (OFNS).<sup>27</sup> These nutrition standards recognize the benefits of healthy eating for school-aged children and youth (see Case Study 1).<sup>28</sup> They include nutrition standards for any food or beverage sold or provided on school premises (e.g., cafeterias, vending machines, tuck shops, sports events), but do not address lunches or snacks brought from home.<sup>25, 26, 29</sup>

# VICTORIAN ORDER OF NURSES' CENTRAL FOOD PROCUREMENT PILOT

---

In 2013, the Victorian Order of Nurses' Windsor-Essex site and the Greater Essex County District School Board partnered with the Unemployed Help Centre (UHC) and the UHC-based Plentiful Harvest food Rescue program and community kitchen. The UHC offered an innovative high school co-op program for at-risk youth to learn culinary skills, access healthy food, and earn school credits or other certifications. The initial focus of the pilot project was to save money by centralizing procurement of all food purchasing for student nutrition programs, and access more local food. Under the guidance of a professional chef and teacher, students prepared items such as vegetable sushi, granola bars, and spinach muffins for as little as \$0.06/serving and provided all six schools in Windsor and Essex County with freshly prepared, value-added foods delivered directly to their doors.<sup>30</sup>

The pilot was a success based on the initial objectives, but the impact of the project went much further. Due to the success and cost efficiency, the Victorian Order of Nurses began working with the UHC to provide the meals for its Meals on Wheels mobile food bank and other community events. By switching away from a for-profit company to the UHC, not only did the Victorian Order of Nurses save money, they also created a “foundation for a budding social enterprise.” Beyond the direct impacts on the food quality, cost savings, and better use of local and seasonal food, there was also a notable decrease in absenteeism — from 30 days before the students were in the program to 12.5 days while they were in the program. In addition, the average grades of the high school co-op students went from under 60% to more than 60%.

For more information, see:

[www.osnp.ca/past-pilots](http://www.osnp.ca/past-pilots)

Today, over 10 years of experience from past pilot programs like this created the foundation for the Victorian Order of Nurses' Vegetable and Fruit Delivery Program that centrally purchases and delivers fresh produce, including a minimum of 20% local, to over 150 schools across nine counties in Southwestern Ontario. For more information, see: <https://osnp.ca/programs/osnps-vegetable-and-fruit-delivery-program/>

Other provinces have different programs. In Nova Scotia, all public school students are offered a healthy breakfast and 100 school gardens exist. In Québec, 700 schools serve breakfast to low-income preschool and elementary school children, while in Vancouver, British Columbia, the “Think&EatGreen@School” project has contributed to healthy, sustainable school food systems by providing students and teachers with hands-on food-cycle education.<sup>31</sup> The Fresh Roots program in BC has also enhanced student learning through hands-on learning (Case Study 2). Some Band Councils and First Nations education organizations — who are supported by Indigenous Services Canada (ISC) — are initiating some very innovative food programs and reintroducing children to traditional foods; however, this does not include food or nutrition standards.<sup>32</sup> Finally, the Alberta Policy Coalition for Chronic Disease Prevention (APCCP) has recommended that a comprehensive food and nutrition program should include healthy meals/snacks for all K–12 children (and eliminate unhealthy food and beverage marketing in schools), provide food education (including growing and preparing food), foster relationships between schools and local food producers, and recommend the development of local food procurement policies.<sup>33, 34, 58</sup>

While some programs are targeted to support children living in poverty and experiencing food insecurity, most programs now provide universal access (meaning that any student can participate, regardless of their family’s income), which reduces stigma for participants and addresses other reasons for missed meals, such as being too rushed for breakfast or forgetting to bring a lunch. Nevertheless, the type of program and quality of food served varies across the country, and only a small percentage of Canadian children currently have access to food provided through their school’s food, meal, or snack program.<sup>15, 35, 36</sup>

Though programs vary according to region, availability of funding, frequency, and timing of service, there are some similarities:

- most school food programs are in elementary schools;
- some provincial governments offer modest funding support, but most school food programs rely on donations from community groups, charities, and private sector donors;
- most programs rely on volunteer support;
- breakfast programs are the most common food program, often featuring foods high in refined grains such as muffins, toast, pancakes, and cereals;
- snack programs are the second most frequent, usually consisting of shelf-stable packaged foods; and
- lunch programs, where they exist, offer more opportunities for the incorporation of vegetables and fruit.

The truth is that most Canadian school systems lack the funding and infrastructure to support healthy eating in an integrated and comprehensive manner. The current practices in schools across Canada create an inconsistent patchwork of food-related activities and understanding. While each program addresses some important food and nutrition needs of school-aged children and youth, the patchwork approach to funding leads to inconsistency in programming and fails to reach many Canadian children.

Recognizing the need for — and benefits of — good school food programs, in 2018 Senator Art Eggleton made a motion to “develop an adequately funded, national, cost-shared, universal nutrition program.”<sup>37</sup> Senator Art Eggleton was not the first to have made this call. Back in 1997, the [House of Commons Standing Committee on Finance](#) made the recommendation “to create a national school nutrition program” but no action was ever taken. Similarly, in 2015 [the Standing Committee on Social Affairs Science and Technology and the Minister of Health](#) advocated “for childcare facility and school programs related to breakfast and lunch programs... and nutrition literacy courses.” In the 2019 federal budget, new ground was gained when the federal government declared its “intention to work with the provinces and territories towards the creation of a National School Food Program.” This pledge was embedded in the new national food policy, albeit without any funds committed.

# FRESH ROOTS— SCHOOLYARD MARKET GARDENS<sup>24</sup>

---

Fresh Roots “grows good food for all.” What started as an experiment to grow food for friends and neighbours blossomed into a successful school garden program that offers experiential learning, youth empowerment, and seasonal internships. In 2010, the fledgling Fresh Roots shared a fence with a neglected local elementary school garden. The school asked to work collaboratively with the organization for help in refurbishing it. Fresh Roots and the school transformed the grounds into an edible schoolyard garden. As the project grew, the benefits were immediate:

- Healthy Food for School and Community
  - Food grown in the garden was served in school cafeterias and at neighbourhood food security programs.
- Professional Development for Teachers
  - Fresh Roots hosted professional development workshops district- and province-wide, helping elementary and secondary school teachers learn how to use gardens to achieve core curricular objectives.

- Additional Fresh Roots Support in Growth and Development of Educational Programs
  - Vancouver’s David Thompson Secondary School turned the school’s greenhouse into a vibrant market garden hosting classes, farm tours, field trips, and team building programs.
  - The Coquitlam School District’s Aboriginal Education Department “re-Indigenized” the food system at Suwa’lkh School.
  - Vancouver Technical Secondary School (“VanTech”) built an outdoor classroom supported by urbanfarmers.

The Fresh Roots farms are productive, educational farms on school grounds. The food grown goes to school cafeterias and local food security initiatives. These schoolyard farms are used to foster leadership, self-confidence, and employment skills for youth.

For more information, see:  
[www.freshroots.ca](http://www.freshroots.ca)



## GAPS AND OPPORTUNITIES

*Today we have a chance to envision what our schools would look like if we respected food; if we respected our children's health and if we respected the land that provided the food our children eat.*

— Dr. Jess Haines,  
University of Guelph

### Why Doesn't a National School Food and Nutrition Program Already Exist?

School food and nutrition policies and standards are not consistent across the country, as provinces and territories have introduced and adopted different policies at different times. Further, there is very little written about food literacy and development of food skills with children in direct connection with school curriculum. The implementation and monitoring of standards also differ. Studies have found that while provinces may have nutrition standards to ensure healthful foods are available at school, compliance is a problem, as many policies are not followed, possibly due to a lack of monitoring and enforcement.<sup>43, 52, 53</sup>

In 2013, a provincial-territorial group of public health professionals released guidance for the development of nutrient criteria for foods and beverages in schools. The goal was to improve consistency of school food guidelines and enhance implementation efforts across the country — a move that would also encourage the food industry to produce products that met these guidelines. To date, however, there has been no evaluation to examine how closely the various jurisdictions' criteria align.

Financial barriers have also impeded implementation of a national program. The inconsistencies within and among provincial/territorial programs highlight the need for federal intervention. These financial interventions would need a number of financial investments, including:

- industrial kitchen facilities for food preparation and service (which could be off-site, if schools opt for catered meals);
- physical space and furnishings suited to eating meals together;
- domestic kitchen facilities in a classroom for education purposes;
- raw food costs; and
- staffing for preparation, service, and cleanup.



Development and successful implementation of any national school food and nutrition program is a complex endeavor with myriad challenges. Below, we outline the gaps and opportunities, as outlined by current research from across multiple disciplines, that should be considered in the design of a national school food and nutrition program.<sup>25, 26, 38, 39, 40</sup>

## Food, Nutrition, and Poverty

Canadian health organizations recognize the significant impact of poverty on health care costs and the social determinants of health; poor nutrition in children and teens is directly related to income. Recent Canadian Community Health Surveys have indicated that one in six children and teens (under 18 years) live in households experiencing food insecurity, with two-thirds of these households experiencing moderate or severe food insecurity.<sup>41</sup> Policy experts advise that the most effective and direct solutions in response to household food insecurity are “income-based” solutions (addressing the root cause, which is inadequate income or poverty) rather than “food-based” solutions (providing food for families through charitable programs such as food banks, or breakfast/lunch programs for children in need).<sup>42</sup>

Although school-provided meals are not a direct means of addressing food insecurity, they are important in supporting families — assisting parents (e.g., by eliminating the time needed to make healthy lunches), providing students with the best opportunities for learning (e.g., proper nutrition supports learning ability), or building food skills (e.g., tying nutrition education to foods served). Research suggests that providing a school breakfast can positively impact student learning outcomes, improve attendance, tardiness, and decrease drop-out rates.<sup>13, 14</sup> It is important to note, however, that research in the U.K. found academic improvements only in the regions where the free school meals were universal and offered in a way that prevents stigma from participation based on socio-economic status (e.g., students could participate regardless of their ability to pay).<sup>38</sup>

## Curriculum

A recent systematic review synthesized academic research on Canadian elementary school nutrition programs since 1990.<sup>43</sup> The review identified that the most effective interventions for improving dietary behaviour employed a *comprehensive* approach, including a combined use of curriculum, education, policy, family and community involvement, and/or food provision. School-based interventions with an education component that supplemented the regular

curriculum (such as offering nutrition classes, cooking clubs, and healthy eating resources) were particularly effective in enhancing children's nutritional knowledge. Providing vegetables and fruit for daily consumption was a practical strategy that increased children's intake.

In many areas, the current curricula content is outdated, especially with the introduction of the new Canada Food Guide. Further, teachers need to be actively engaged and equipped to deliver food and nutrition related curricula. Within the existing curricula, nutrition education is compulsory only during elementary school. In areas where food literacy is introduced in secondary school courses (e.g., Family Studies, Health, Physical Education), the courses are elective and only reach a small group of students. Additionally, food and nutrition curricula in elementary and secondary education across the provinces and territories of Canada do not generally require educators to explore socio-cultural topics related to food — the symbolic function of foods, food marketing and advertising, or food availability and its impact on food choice. As such, curriculum development and support are needed.

## Funding

Multiple levels of government are responsible for schools and education systems across Canada. Many schools have experienced inadequate funding to support their school meal programs. To be successful, school food programs need funding from all levels of government, which would require coordination and collaboration among different authorities. For example, grants are available for different purposes from different ministries — making it difficult for schools to know where to apply for support and how they can use funding. Some schools have even accepted private sector sponsorship, with targeted marketing of foods and beverages that are not consistent with school policy, in order to provide foods for their students. Any introduction of comprehensive school food and nutrition programs would require coordination for policies and funding of programs, since each province and territory runs its education system with different priorities, practices, and models.

Implementing a levy on sugary drinks has been suggested as one way for governments to fund health programming, including in schools. In Canada, it has been estimated that a national 50 cent per litre levy on sugary drinks could generate up to \$1.8 billion in revenue each year, with a 20% decrease in consumption due to taxation.<sup>32</sup>

Regardless of where the money comes from, consistent funding is needed to offer and maintain comprehensive school food and nutrition programs.

## **Training and Human Resources**

Implementation of a school food and nutrition program requires sufficient and stable funding for human resources and physical infrastructure to procure, prepare, and serve regular meals at school. Frontline education staff — including school administrators, teachers, and assistants — are responsible for delivery of curricula; but, alignment of practices with food and nutrition policies may not be enforceable. Regardless of the many champions for nutrition and food literacy, implementing food and nutrition programs could require a significant “buy-in” from community and school leaders, educators / teachers, volunteers, parents, and indeed students themselves; indeed, in addition to training, effective implementation may require a culture shift around the value of food.

Any real or perceived addition of responsibilities to a teacher’s workload and contact time with students would need to be negotiated with unions and included in contracts. Reliance on volunteer labour to conduct a school food program with meal service may contravene existing human resources policies and/or simply not be sufficient to reliably support a daily program in schools. Therefore, trained nutrition experts and certified food preparation staff should be hired to ensure the sustainability and integrity of comprehensive local program operation that includes hands-on food literacy learning opportunities.

## **Infrastructure**

In addition to monies allocated for raw food costs and labour to prepare school meals, capital for production facilities is needed. Schools need adequate infrastructure for teaching hands-on food literacy or initiating food programs that provide meals and snacks. Most elementary schools do not have an industrial kitchen for food service or a cafeteria or designated eating area. Building these would require extensive funding and could also compete with funding for teaching spaces outfitted with domestic kitchen equipment. Some governments would need to change current capital funding policies to be able to commit to capital projects in new schools and extensive retrofits in existing schools.

Alternatively, communities might decide to implement a centralized catering model. In this case, some degree of local decision-making power must exist to design programs that work well within different communities (e.g., schools in rural areas will have more limited access to catering services nearby).<sup>44</sup> Smaller or less experienced communities may require additional help — sharing best practices, exploring opportunities for community kitchens and locally centralized catering services, and group purchasing contracts.



## Guelph — The Local Opportunity

University of Guelph (U of G), as Canada's food university, has an incredible opportunity to show leadership on this initiative. Together, Guelph's advantageous location — situated in the Toronto-Waterloo innovation corridor — and the Smart Cities Award that the City of Guelph received to focus on establishing Canada's first circular food economy, create an exciting and timely opportunity.<sup>48</sup>

Arrell Food Institute (AFI) is a convener of diverse academics and stakeholders. AFI's distinctive role in this sector uniquely positions the University of Guelph to lead further development on a proposed model and approach for the Canadian context.

With its vast network of academic, industry, and government specialists, U of G can convene the right group to create an innovative approach and use design thinking to make this vision a reality.

## Improving Health and Reducing Health Care Costs Across Canada

Comprehensive school food and nutrition programs would help increase food interest among Canadians, bolstering the overall health of Canadian children, while educating a new generation with positive, healthy food skills and practices. School food policies and initiatives, such as nutrition guidelines and vegetables and fruit subscription programs (like Farm to School<sup>45</sup>), have positively impacted students' intake of vegetables and fruit, particularly when paired with an educational component.

Further, investing in health promotion programs has been shown to make economic sense — a \$1 investment in prevention can result in a \$4–5 cost savings due to reduced direct and indirect health care expenditures.<sup>33</sup>

## Supporting Local Food Systems and Canada's Agri-Food Sector

When institutions like schools and hospitals procure food from local sources, they support local food systems and economies, and contribute to food security and health. Connecting schools to local food through initiatives like Farm to School has resulted in increased knowledge about food and agriculture; it also promotes community-building by increasing connections with local producers.<sup>46, 47</sup> There is also potential to create new, local markets for farmers, thus reducing the environmental impact of food production and transport. Furthermore, harmonization of school food policy related to food and beverage nutrition standards could promote the development of products suitable for sale or provision in schools.

## Knowledge sharing and policy for impact

Canada has a unique opportunity to emerge as an international leader by developing and resourcing a comprehensive approach to food education and nutrition. Such a program has strong potential to promote food literacy as a life skill through comprehensive and mandatory education in elementary and secondary schools. Consistent support for provision of nutritious foods and beverages in schools would support student learning.

### **Research shows**

that the most successful school food and nutrition programs are *integrated and comprehensive*, where each component — school food policies, meal programs, and curricula — supports the development of nutrition knowledge, food literacy, positive eating choices, and access to nutritious foods.<sup>49, 50, 51</sup>

There are already numerous programs across the country seeking to improve the dietary intake of young people, many of which are reporting successes. So, the challenge isn't necessarily that there are unknown solutions, but that capacity building and connectivity are needed. If there are opportunities to network, collaborate, and share, then a national program can be developed without unnecessarily replicating work that has already been done.

### **Intergovernmental Collaboration for Harmonization**

A national school food and nutrition program requires collaboration between different orders of government. Federal-provincial-territorial-municipal collaboration must include political commitments to ensure funding for curriculum development and support, as well as program initiatives and harmonized standards for food and beverages in schools.

The need for collaboration also applies within jurisdictions. Effectively implementing a comprehensive program requires commitment from a cross-section of ministries and agencies at the federal, provincial-territorial, and municipal levels, including but not limited to: Health, Social Services, Children and Youth, Education, Agriculture, Industry, Finance, and Indigenous Services.

# TAKING ACTION FOR SCHOOL FOOD AND NUTRITION

## Key Comprehensive Food and Nutrition Program Characteristics

A review of promising practices shows that any successful program should:

- be universal and administered in a non-stigmatizing manner;
- promote healthy lifestyles and choices, offering optimally nutritious foods and beverages, especially vegetables and fruit;
- respectfully include local stakeholders, ensuring the program is culturally appropriate and locally adapted;
- draw upon local food resources, support local producers, and multiply economic benefits to keep business inside the community (e.g., local food is prepared and served locally);
- incorporate food literacy, nutrition education, and food skills through experiential learning, in order to be integrated and comprehensive; and
- include regular monitoring and evaluation for accountability, adaptability, and maintenance of funding, staffing, and training.

It will undoubtedly take coordinated effort to design and implement a successful national school food and nutrition program. An integrated, comprehensive framework could address broader policy and community issues, and go beyond simply teaching about the food guide and feeding students. The goal should be to develop skills, to model healthy eating, and create positive food environments where healthy choices are the easy choice. Table 1 (page 24) outlines important action items for each group of actors who could impact the development and success of a national school food and nutrition program.

## **Economic Analysis Needed**

While there appears to be little doubt that an investment in some form of school food and nutrition program is a worthy consideration, the economic analysis available in Canada is limited. One of the biggest obstacles in building the case for investment is the lack of cost-benefit analyses. To date, there is no comprehensive economic analysis that quantifies the potential cost and overall benefits.

The principal barriers for building a comprehensive new curriculum and programs are political will and the associated financial investment. The Coalition for Healthy School Food, a network of over 100 health- and education-focused organizations from every province and territory, was pleased to see that the March 2019 Federal Budget included a commitment to begin country-wide consultations to create a National School Food Program. They have now petitioned the federal Finance Committee to include funding in the 2020 Budget for an initial investment of \$360 million a year. This request proposes a cost-shared, universal, healthy school food program, with the eventual goal of additional funds to achieve universal coverage. This proposal for a National School Food Program is aimed at improving the health of our children, the health of our planet, and significantly reducing the \$13.8 billion in costs related to nutrition-related chronic disease in Canada.<sup>54</sup>

Funding must come from the national government to support provinces and territories in implementing this national program. The creation of harmonized nutrition guidelines, monitoring, and evaluation requires funding and leadership from all levels of government. However, it must also come with local empowerment. This means that communities (including Parent-Teacher Associations), school administration, staff, and students should have their say in decisions that impact food availability and the opportunity to improve food literacy and build food skills.

One size cannot fit all; there is evidence that rural and urban schools have different challenges with food services. As such, local communities must have the freedom to choose and direct funding from all levels of government. For example, low income school boards might choose to support food-skill development by universally providing students with meals and snacks, while others might use the funding to improve facilities for teaching (e.g., a fully-outfitted kitchen or classroom). Local empowerment also means local responsibility and accountability, made possible by the adequate investment in program oversight and monitoring to support paid staff to do this work.

## **Curricular Enhancements and Training**

Ministries of Education across Canada have used Canada's Food Guide as a foundation for teaching the basics in elementary curricula.<sup>55</sup> More support is needed to improve food literacy during school years, before young adults enter the workforce or pursue post-secondary education.<sup>56</sup> Food and nutrition messaging, role modelling, and student hands-on food-skill learning must be consistent across the curricula, policies, and programs, with alignment between what is taught in the curriculum and the foods/beverages provided or sold within the school environment. A National School Food Program would provide an excellent opportunity to implement the revised Food Guide's recommendations about "how" to eat (e.g., being mindful of eating habits and taking time to eat, cooking more often and involving others in planning, preparing, and eating meals, taking time to enjoy food, and acknowledging cultural and food traditions). Also, when designed with sustainability goals in mind, school food programs can provide a strong opportunity for students to learn, in a hands-on way, how to choose local and sustainable food, how to minimize food waste, and how to compost. Ministries of Education can renew their curricula, based on Canada's new Food Guide, by contracting experts, including dietitians, to advise on curricula, teacher training, resources, and menu planning.

## **School and Community Commitment for Success**

If funding, infrastructure, and curriculum requirements are all in place, there still remains a human element of valuing food for health and developing food skills. Everyone needs to value and commit to food literacy and an integrated approach. Curricula needs to reinforce the menu choices in a food program, standards must be followed to ensure consistency, and healthy habits must be modelled. From teachers to principals to school boards, from parents to students to local businesses, everyone needs to value and commit to food literacy and health. School communities will benefit from organized support through governance, such as Parent-Teacher Associations or food councils.



## **Nationally Harmonized Standards**

Any foods served or sold in schools must continue to meet nutrient guidelines.

It would also be helpful if Canada had *harmonized school food and beverage guidelines*, to encourage agri-food industries to make “school-ready” food and beverage products that meet the criteria. Such products could also be made available in other publicly funded institutions, furthering the policy direction provided in Canada’s Dietary Guidelines. This could include procurement guidelines mandating a certain portion of fresh, unprocessed food (e.g., fresh servings of fruits and vegetables, which could be done by running a fresh salad bar once per week).<sup>57</sup>

**TABLE 1**

Development and implementation of a national school food program will necessarily involve participation from all levels and actors.

Group	Action Items
<p><b>Academics &amp; Dietitians</b></p>	<ul style="list-style-type: none"> <li>• Continue research on school food and nutrition programs</li> <li>• Conduct a comprehensive economic analysis of a national school food program – quantifying potential costs with perceived benefits</li> </ul>
<p><b>School Communities</b> (including teachers, principals, school boards, parents, students)</p>	<ul style="list-style-type: none"> <li>• Develop and grow an approaches to school food program delivery that values food</li> <li>• Promote healthy eating, nutrition, and food skills</li> <li>• Promote programs that aim to develop nutrition knowledge and food skills</li> </ul>
<p><b>Media &amp; Story Tellers</b></p>	<ul style="list-style-type: none"> <li>• Promote healthy eating, nutrition, and food skills</li> <li>• Promote programs that aim to develop nutrition knowledge and skills</li> </ul>
<p><b>Federal Government</b></p>	<ul style="list-style-type: none"> <li>• Conduct a comprehensive economic analysis of a national school food program – quantifying potential costs with perceived benefits</li> <li>• The commitment of federal funds to supporting existing and new programs through the development of harmonized nutrition standards – including appropriate safeguards to ensure the independent oversight of food procurement – monitoring, and evaluation of programs</li> </ul>

Group	Action Items
<p><b>Provincial and Territorial Governments</b></p>	<ul style="list-style-type: none"> <li>• Convene a cross-Ministry working group to provide comprehensive support to school food programs</li> <li>• Allocate more funding and training support</li> <li>• Rewrite curricula to include nutrition and food skills, including traditional indigenous foods</li> <li>• Develop consistent messaging, role modelling, and hands-on skill development in curricula</li> <li>• Conduct school food infrastructure assessments (of kitchens, cafeterias, eating areas, and teaching spaces) and assist school boards with capital planning</li> <li>• Develop a standardized approach to health and food safety requirements in the school food context</li> <li>• Develop food procurement policies including local food procurement targets</li> </ul>
<p><b>Educators &amp; Education Unions</b></p>	<ul style="list-style-type: none"> <li>• Advocate for financial and training support</li> <li>• Assist in rewriting curricula to include nutrition education and food skills</li> <li>• Implement training to include nutrition education and food skills in the classroom</li> <li>• Actively use the current food guide in lessons (e.g., use food labels, identify and limit foods high in sodium, sugars, or saturated fats, teach about food marketing, encourage and model consumption of healthy foods, teach how food choices impact the environment)</li> <li>• Implement healthy eating habits where food/ meal programs currently exist (e.g., mindful eating, frequent cooking, involving others in planning, preparing, and consuming meals, taking time to enjoy food, and appreciating food traditions and cultural foods)</li> </ul>

---

# ACKNOWLEDGEMENTS

## Workshop Summary

This discussion paper is part of a series of papers being produced by the Arrell Food Institute and the Research Innovation Office at the University of Guelph. Under the scientific direction of Jess Haines, PhD, Department of Family Relations and Applied Nutrition (U of Guelph) and Amberley Ruetz, PhD Candidate, Department of Geography (U of Guelph), this discussion paper was written and researched by Clarity Hub, following a series of workshops with invited experts. The interdisciplinary group of academics, professionals, and local community partners discussed what a healthy school food environment should be and what is needed to make such an environment a reality for our children. The discussions focused on principles and policy for taking a healthy, sustainable approach to comprehensive, integrated food and nutrition policy and programs in Canadian schools.

## Participants

Attendees of the two workshops, who helped form and edit the discussion paper, consisted of academics, technical experts, government, and industry. We wish to thank all participants for their insight: Paula Brauer (U of Guelph), Gwen Chapman (U of Guelph), Lisa Duizer (U of Guelph), Alison Duncan (U of Guelph), Brian Ferguson (U of Guelph), Debbie Field (Coalition for Healthy School Food), Laura Forbes (U of Guelph), Tom Graham (U of Guelph), Christa Haanstra (Clarity Hub), Yu Na Lee (U of Guelph), Leah Levec (U of Guelph), Anita Macfarlane (Food and Friends/Children's Foundation of Guelph Wellington), Bruce McAdams (U of Guelph), Genevieve Newton (U of Guelph), Kate Parizeau (U of Guelph), Michael Rogers (U of Guelph), Stephanie Segave (Ontario Student Nutrition Program—SW Region), Elizabeth Smith (Hamilton Public Health), John Smithers (U of Guelph), Hannah Tait Neufeld (U of Guelph), and Patricia Vanderkooy (Clarity Hub).

---

## Special Thanks

We would like to extend special thanks to Clarity Hub, Alice Raine, Elizabeth Shantz, Alysa JK Loring, and the University of Guelph for administrative support.

The Spotlight projects have been developed with the Research Innovation Office at the University of Guelph.

## REFERENCES

<sup>1</sup> The recommendations in this paper evolved from two workshops, where participants — from academia, industry, and government — discussed the current status of food and nutrition in Canada's schools. The content of this paper is informed by their discussions during these workshops.

<sup>2</sup> Sustain Ontario. 2014. "What is meant by Universal Student Nutrition Program?" Ontario Edible Education Network. Available at: [http://sustainontario.com/work/edibleeducation/wp-content/uploads/sites/5/2014/08/UniversalSNP\\_SayYes.pdf](http://sustainontario.com/work/edibleeducation/wp-content/uploads/sites/5/2014/08/UniversalSNP_SayYes.pdf)

<sup>3</sup> Dietitians of Canada, Manitoba Region. 2019. "Brief to Manitoba's Commission on Kindergarten to Grade 12 Education." Manitoba Government. 31 May 2019.

<sup>4</sup> Orava, T., Manske, S., and Hanning, R. 2017. "Support for Healthy Eating at Schools According to the Comprehensive School Health Framework: Evaluation During the Early Years of the Ontario School Food and Beverage Policy Implementation." *Health Promotion and Chronic Disease Prevention in Canada*, 37(9):303–12.

<sup>5</sup> Health Canada. 2019. "Canada's Dietary Guidelines for Health Professionals and Policy Makers." Section 1:5 Foundation for Healthy Eating. Health Canada: Ottawa, ON, Canada. Available at: <https://food-guide.canada.ca/static/assets/pdf/CDG-EN-2018.pdf>

<sup>6</sup> Kaczorowski, J., Campbell, N.R.C., Duhaney, T., Mang, E., and Gelfer, M. 2016. "Reducing Deaths by Diet: Call to Action for a Public Policy Agenda for Chronic Disease Prevention." *Canadian Family Physician*, 62(6): 46–470.

<sup>7</sup> Garriguet, D. 2004. "Nutrition: Findings from the Canadian Community Health Survey. Overview of Canadians' Eating Habits." Statistics Canada, Health Statistics Division. Available at: <http://publications.gc.ca/Collection/Statcan/82-620-M/82-620-MIE2006002.pdf>

<sup>8</sup> Statistics Canada. 2017. "Canadian Community Health Survey — Nutrition: Nutrient Intakes from Food and Nutritional Supplements." *The Daily*. 20 June 2017. Available at: <https://www150.statcan.gc.ca/n1/daily-quotidien/170620/dq170620b-eng.pdf>

<sup>9</sup> House of Commons Standing Committee on Health (HESA). 2007. "Healthy Weights for Healthy Kids." 39th Parliament, 1st Session. Report. Accessible at: <https://www.ourcommons.ca/DocumentViewer/en/39-1/HESA/report-7>

<sup>10</sup> Tugault-Lafleur, C.N., Black, J.L., and Barr, S.I. 2017. "Examining School-day Dietary Intakes Among Canadian Children." *Applied Physiology, Nutrition, and Metabolism*, 42(10): 1064–1072. [dx.doi.org/10.1139/apnm-2017-0125](https://doi.org/10.1139/apnm-2017-0125)

<sup>11</sup> Evans, C.E., Christian, M.S., Cleghorn, C.L., Greenwood, D.C. and Cade, J.E. 2012. "Systematic Review and Meta-analysis of School-based Interventions to Improve Daily Fruit and Vegetable Intake in Children Aged 5 to 12 y." *American Journal of Clinical Nutrition*, 96(4):889–901. Available at: <https://doi.org/10.3945/ajcn.111.030270>

<sup>12</sup> Hernandez, K., Engler-Stringer, R., Kirk, S., Wittman, H., and McNichol, S. 2018. "The Case for a Canadian National School Food Program." *Canadian Food Studies*, 5(3):208–229. Available at: <http://canadianfoodstudies.uwaterloo.ca/index.php/cfs/article/view/260>

<sup>13</sup> UNICEF. 2019. "UNICEF Canada Supports Calls for a National School Food Program." 7 May 2019. UNICEF Canada, Toronto. Available at: <https://www.unicef.ca/en/press-release/unicef-canada-supports-calls-national-school-food-program>

<sup>14</sup> UNICEF. 2017. "Oh Canada! Our Kids Deserve Better." *UNICEF Report Card 14, Canadian Companion*. UNICEF Canada, Toronto. Available at: [https://www.unicef.ca/sites/default/files/2017-06/RC14%20Canadian%20Companion\\_0.pdf](https://www.unicef.ca/sites/default/files/2017-06/RC14%20Canadian%20Companion_0.pdf)

<sup>15</sup> Godin, K.M., Kirkpatrick, S.I., Hanning, R.M., Stapleton, J., and Leatherdale, S.T. 2017. "Examining Guidelines for School-based Breakfast Programs in Canada: A Systematic Review of the Grey Literature." *Canadian Journal of Dietetic Practice and Research*, 78(2): 92–100. Available at: <http://dcjournal.ca/doi/10.3148/cjdp-2016-037>

<sup>16</sup> Jeffery, B. and Leo, A. 2007. "School Nutrition Policies Across Canada: Are Schools Making the Grade?" Centre for Science in the Public Interest. Available at: [https://www.ctf-fce.ca/Research-Library/Issue5\\_Article4\\_EN.pdf](https://www.ctf-fce.ca/Research-Library/Issue5_Article4_EN.pdf)

<sup>17</sup> Collier, R. 2015. "Free lunch is a good thing for children." *Canadian Medical Association Journal*, 187(1): E11.

<sup>18</sup> McKenna, M.L. 2010. "Policy Options to Support Healthy Eating in Schools." *Canadian Journal of Public Health*, 101(S2): S14–S17.

<sup>19</sup> Mâsse, L.C., and de Niet, J.E. 2013. "School Nutritional Capacity, Resources, and Practices are Associated with Availability of Food/ Beverage Items in Schools." *International Journal of Behavioral Nutrition and Physical Activity*, 10(1):26.

<sup>20</sup> Standing Senate Committee on Social Affairs, Science, and Technology. 2016. "Obesity in Canada—A Whole-of-Society Approach for a Healthier Canada." Senate Canada. Available at: [https://sencanada.ca/content/sen/committee/421/SOCI/Reports/2016-02-25\\_Revised\\_report\\_Obesity\\_in\\_Canada\\_e.pdf](https://sencanada.ca/content/sen/committee/421/SOCI/Reports/2016-02-25_Revised_report_Obesity_in_Canada_e.pdf)

<sup>21</sup> He, M., Beynon, C., Sangster Bouck, M., St. Onge, R., Stewart, S., Khoshaba, L., Horbul, B.A., and Chircoski, B. 2009. "Impact Evaluation of the Northern Fruit and Vegetable Pilot Programme—A Cluster-randomised Controlled Trial." *Public Health and Nutrition*, 12(11):2199–208.

<sup>22</sup> Minister of Health. 2005. "Integrated Pan-Canadian Healthy Living Strategy." Prepared by: The Secretariat for the Intersectoral Healthy Living Network in partnership with the F/P/T Healthy Living Task Group and the F/P/T Advisory Committee on Population Health and Health Security (ACPHHS). Her Majesty the Queen in Right of Canada. Available at: <https://www.canada.ca/content/dam/phac-aspc/migration/phac-aspc/hp-ps/hl-mvs/ipchls-spimmvs/pdf/ipchls-spimmvs-eng.pdf>

<sup>23</sup> Government of Canada. 2012. "Curbing Childhood Obesity: A Federal, Provincial, and Territorial Framework for Action to Promote Healthy Weights." Available at: <https://www.canada.ca/en/public-health/services/health-promotion/healthy-living/curbing-childhood-obesity-federal-provincial-territorial-framework.html>

<sup>24</sup> Fresh Roots. n.d. "Fresh Roots Grows More than Gardens — We Grow Communities." Website. Available at: <https://www.freshroots.ca>

<sup>25</sup> Government of Canada. 2010. "School Food and Beverage Policy: Resource Guide." Ministry of Education. Available at: [http://edu.gov.on.ca/eng/healthyschools/PPM150\\_Resource\\_Guide\\_2010.pdf](http://edu.gov.on.ca/eng/healthyschools/PPM150_Resource_Guide_2010.pdf)

<sup>26</sup> Ministry of Children and Youth Services. 2016. "Student Nutrition Program Nutrition Guidelines." Government of Canada. Nutrition Resource Centre and the Ontario Society of Nutrition Professionals in Public Health. Available at: <https://studentnutritionontario.ca/wp-content/uploads/2017/04/SNP-nutrition-guidelines-2016-.pdf>

<sup>27</sup> Ontario Food and Nutrition Strategy Group. 2017. "Ontario Food and Nutrition Strategy: A Comprehensive Evidence Informed Plan for Healthy Food and Food Systems in Ontario." Toronto: Ontario Food and Nutrition Strategy Group. Available at: [https://sustainontario.com/custom/uploads/2017/01/PCC\\_1939\\_OFNS\\_Draft\\_WEB\\_AODA.pdf](https://sustainontario.com/custom/uploads/2017/01/PCC_1939_OFNS_Draft_WEB_AODA.pdf)

<sup>28</sup> Healthy Kids Panel for Ontario Ministry of Health and Long-term Care. 2013. "No Time to Wait: The Healthy Kids Strategy." Toronto: Queen's Printer for Ontario. Available at: [http://www.health.gov.on.ca/en/common/ministry/publications/reports/healthy\\_kids/healthy\\_kids.pdf](http://www.health.gov.on.ca/en/common/ministry/publications/reports/healthy_kids/healthy_kids.pdf)

<sup>29</sup> Ontario Society of Nutrition Professionals in Public Health (OSNPPH). 2004. "Call to Action: Creating a Healthy School Nutrition Environment." OSNPPH School Nutrition Workgroup Steering Committee. Available at: <https://www.odph.ca/upload/membership/document/call-to-action.pdf>

<sup>30</sup> Nelson, E. 2014. "Opportunities for Innovation: A Student Nutrition Program Pilot Project in Windsor-Essex." VON Canada, Erie St. Clair District. Available at: <https://foodsecurecanada.org/resources-news/resources-research/opportunities-innovation-student-nutrition-program-pilot-project>

<sup>31</sup> Rojas, A., Black, J.L., Orrego, E., Chapman, G., and Valley, W. 2017. "Insights from the Think&EatGreen@School Project: How a Community-based Action Research Project Contributed to Healthy and Sustainable School Food Systems in Vancouver." *Canadian Food Studies*, 4(2):25-46.<sup>32</sup> Indigenous Services Canada. 2018. "Elementary and Secondary Education Program." Government Canada. Available at: <https://www.sac-isc.gc.ca/eng/1450708959037/1531319458607>

<sup>33</sup> Alberta Policy Coalition for Chronic Disease Prevention (APCCP). 2016a. "Promoting Healthy School Food Environments: A Universal School Food Strategy for Alberta." Available at: [https://www.foodsecurityalberta.org/sites/foodsecurityalberta.org/files/final-issue-brief-universal-school-food-strategy\\_march2016-8.pdf](https://www.foodsecurityalberta.org/sites/foodsecurityalberta.org/files/final-issue-brief-universal-school-food-strategy_march2016-8.pdf)

<sup>34</sup> Alberta Policy Coalition for Chronic Disease Prevention (APCCP). 2016b. "Alberta's 2016 Nutrition Report Card on Food Environments for Children and Youth." Available at: [https://drive.google.com/file/d/1aJ0elzuOYzGkib1ycaDmSz\\_YGjqc9aa3/view](https://drive.google.com/file/d/1aJ0elzuOYzGkib1ycaDmSz_YGjqc9aa3/view)

<sup>35</sup> McIsaac, J.L.D., Kontak, J.C.H., and Kirk, S.F.L. 2018. "Moving from Policy to Practice: A Report of School Nutrition Policy Adherence in Nova Scotia." *Canadian Journal of Dietetic Practice and Research*, 79(4): 196–199. Available at: <https://doi.org/10.3148/cjdp-2018-017>

<sup>36</sup> Food Secure Canada. 2019. "A National Healthy School Food Program: All Kids in Canada deserve Healthy Food Every Day in School." News Media. Available at: <https://foodsecurecanada.org/resources-news/news-media/we-want-national-healthy-school-food-program>

<sup>37</sup> Eggleton, A. 2018. "Motion to Urge the Government to Initiate Consultations with Various Groups to Develop an Adequately Funded National Cost-shared Universal Nutrition Program." The Progressive Senate Group. Available at: <http://liberalsenateforum.ca/hansard/motion-urge-government-initiate-consultations-various-groups-develop-adequately-funded-national-cost-shared-universal-nutrition-program/>

<sup>38</sup> Kitchen, S., Tanner, E., Brown, V., Payne, C., Crawford, C., Dearden, L., Greaves, E., and Purdon, S. 2010. "Evaluation of the Free School Meals Pilot: Impact Report." Department for Education, UK.

<sup>39</sup> Truman, E. and Elliott, C. 2019. "Barriers to Food Literacy: A Conceptual Model to Explore Factors Inhibiting Proficiency." *Journal of Nutrition Education and Behavior*, 51(1): 107–111. Available at: <https://www.sciencedirect.com/science/article/pii/S1499404618307425>

<sup>40</sup> Nutrition Resource Centre. 2019. "Food Literacy Strategies and Interventions: What are the Barriers to Implementation?" Ontario Public Health Association. Webinar. 7 March 2019. Available at: <https://opha.on.ca/Nutrition-Resource-Centre/Events/Events/2019/NRC-Webinar-Food-Literacy-Strategies-and-Intervent.aspx>

<sup>41</sup> Tarasuk, V., Mitchell, A., and Dachner, N. 2016. "Household Food Insecurity in Canada, 2014." *PROOF*. Toronto: Research to Identify Policy Options to Reduce Food Insecurity. Available at: <https://proof.utoronto.ca/resources/proof-annual-reports/annual-report-2014/>

<sup>42</sup> Dietitians of Canada. 2016. "Addressing Household Food Insecurity in Canada: Position Statement and Recommendations from Dietitians of Canada."

<sup>43</sup> Colley, P., Myer, B., Seabrook, J., and Gilliland, J. 2019. "The Impact of Canadian School Food Programs on Children's Nutrition and Health: A Systematic Review." *Canadian Journal of Dietetic Practice and Research*, 80(2): 79–86. Available at: <http://dcjournal.ca/doi/pdf/10.3148/cjdp-2018-037>

<sup>44</sup> Levay, A.V., Chapman, G.E., Seed, B., and Wittman, H. 2019. "District-level Implementation of British Columbia's School Food and Beverage Sales Policy: A Realist Evaluation Exploring Intervention Mechanisms in Urban and Rural Contexts." *Canadian Journal of Public Health*, 110(1): 21–30. Available at: <https://doi.org/10.17269/s41997-018-0159-x>

<sup>45</sup> Farm to School. Website. Available at: <https://www.farmtoschool.ca/>

<sup>46</sup> Ministry of Agriculture, Food, and Rural Affairs. 2019. "The Faces of Ontario Local Food: 2018–2019 Local Food Report." Government of Ontario. Available at: [http://www.omafr.gov.on.ca/english/about/local\\_food\\_rpt18.htm](http://www.omafr.gov.on.ca/english/about/local_food_rpt18.htm)

<sup>47</sup> Sustain Ontario. 2016. "Local Food Procurement." The Alliance for Healthy Food and Farming. Available at: <https://sustainontario.com/initiatives/local-food-procurement/>

<sup>48</sup> City of Guelph. 2019. "Guelph-Wellington Awarded Smart Cities Challenge Prize." Website. Available at: <https://guelph.ca/2019/05/guelph-wellington-awarded-smart-cities-challenge-prize/>

<sup>49</sup> Alberta Health Services. 2018. "Nutrition-related Chronic Disease Prevention Interventions: A Review of the Effectiveness of Various Universal Population Health Promotion Nutrition Interventions for Adults." Full report. Nutrition Services, Population, and Public Health. Calgary, Alberta, Canada. Available at: <https://www.albertahealthservices.ca/assets/info/cdp/if-cdp-ns-cdp-lit-review-full-report.pdf>

<sup>50</sup> Joint Consortium for School Health. 2019. Website. Available at: <http://www.jcsh-cces.ca/>

<sup>51</sup> Government Canada. 2015. "Health Behaviour in School-aged Children in Canada: Focus on Relationships." Public Health Agency of Canada. Available at: <http://healthycanadians.gc.ca/publications/science-research-sciences-recherches/health-behaviour-children-canada-2015-comportements-sante-jeunes/index-eng.php#x>

<sup>52</sup> Vine, M., Harrington, D.W., Butler, A., Patte, K., Godin, K., and Leatherdale, S.T. 2017. "Compliance with School Nutrition Policies in Ontario and Alberta: An Assessment of Secondary School Vending Machine Data from the COMPASS study." *Canadian Journal of Public Health*, 108(1): e43–e48.

<sup>53</sup> Vine, M.M., Elliott, S.J., and Raine, K.D. 2014. "Exploring Implementation of the Ontario School Food and Beverage Policy at the Secondary-school Level: A Qualitative Study." *Canadian Journal of Dietetic Practice and Research*, 75(3): 118–24.

<sup>54</sup> Coalition for Healthy School Food. 2018. "Written Submission for the Pre-Budget Consultations in Advance of the 2019 Budget." 2 August 2018. Available at: <https://www.ourcommons.ca/Content/Committee/421/FINA/Brief/BR10006613/br-external/CoalitionForHealthySchoolFood-e.pdf>

<sup>55</sup> Government of Ontario. 2019. "The Ontario Curriculum, Grades 1–8: Health and Physical Education." Queen's Printer for Ontario. Available at: <http://www.edu.gov.on.ca/eng/curriculum/elementary/2019-health-physical-education-grades-1to8.pdf>

<sup>56</sup> Government Canada. 2010. "Improving Cooking and Food Preparation Skills: A Synthesis of the Evidence to Inform Program and Policy Development." Report. Available at: [https://www.canada.ca/content/dam/hc-sc/migration/hc-sc/fn-an/alt\\_formats/pdf/nutrition/child-enfant/cfps-acc-synthes-eng.pdf](https://www.canada.ca/content/dam/hc-sc/migration/hc-sc/fn-an/alt_formats/pdf/nutrition/child-enfant/cfps-acc-synthes-eng.pdf)

<sup>57</sup> Public Health Association of BC. 2018. "Raise the Salad Bar in British Columbia Schools. Call for Projects." Available at: <https://phabc.org/farm-cafeteria-canada-raise-salad-bar-bc-schools-call-projects/>

<sup>58</sup> Aldana SG. Financial impact of health promotion programs: a comprehensive review of the literature. *American Journal of Health Promotion*. 2001;15(5):296-320.

**Arrell Food Institute**  
**at the University of Guelph**  
50 Stone Road East  
Guelph, Ontario, Canada  
N1G 2W1

arrellfoodinstitute.ca  
afiadmin@uoguelph.ca  
519-824-4120 x56857

Twitter: @ArrellFoodInst  
Instagram: @arrellfoodinstitute

**arrellfoodinstitute.ca**

---