

**Investigating School Food Environments within Region of Peel Following Implementation
of the Ontario School Food and Beverage Policy (P/PM 150)**

by

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Authors Declaration

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

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Abstract

Background: As childhood obesity becomes more prevalent around the globe, international, national and provincial bodies have called for policy makers to take action to improve the healthy eating environments where children live, learn, and play. In 2010, the Ontario Ministry of Education joined 10 other Canadian provinces/territories and introduced the Ontario School Food and Beverage Policy (P/PM 150), a set of nutrition standards for foods and beverages available to students. By September 2011, it was expected all publicly-funded elementary and secondary schools across the province would adopt P/PM 150 and apply its standards to foods offered for sale in school food venues (i.e., vending machines, cafeterias, tuck shops), through pay-for-service student nutrition programs (i.e., breakfast, snack, lunch, milk programs), and at school events. The Ministry called for a comprehensive approach to implementing P/PM 150, and left the process to be determined by regional school boards. In 2012, the Region of Peel Public Health partnered with the University of Waterloo to conduct a comprehensive process evaluation of the implementation of P/PM 150 in regional schools. The Comprehensive School Health (CSH) framework helped guide this evaluation, to investigate supports for healthy eating during the early years of implementation. The CSH framework is comprised of four inter-related pillars: Social and Physical Environments, Teaching and Learning, Healthy School Policy, and Partnerships and Services.

Purpose: This thesis focussed on the level of supports for healthy eating within school food environments during P/PM 150 implementation and the role public health has played in strengthening existing comprehensive initiatives to support healthy eating. Because policy implementation is not a static event, yet an on-going process, the three research studies conducted, captured data from two time period: Time I (2012/13) and Time II (2014). **Study #1:**

focussed on the CSH Physical Environment and aimed to identify, describe and categorize beverages and snacks available for sale in secondary school vending machines relative to P/PM 150 standards and compare findings from Time I and Time II. **Study #2**: focussed on all CSH pillars and aimed to classify, compare and describe school support for healthy eating during P/PM 150 implementation and compare findings from Time I and Time II. **Study #3**: focussed on the role of knowledge translation reports in supporting comprehensive strategies for promoting healthy eating in all CSH pillars and aimed to evaluate school representatives' and school public health nurses' (PHNs) perceptions and experiences interpreting recommendations from Time I knowledge translation reports and providing recommendations for Time II feedback.

Methods: A subset of elementary and secondary schools was recruited from two school boards (i.e., Catholic and Public) in the Region of Peel. Consenting school administrators were asked to elect a school representative, described as an individual knowledgeable about the school food environment to participate in Studies #1-3 during Times I and II. **Study #1**: In Times I and II, the consenting school representative accompanied a researcher to complete a Food Environmental Scan (FES) checklist, a survey composed of open and close-ended questions, which also captured the availability of foods and beverages available for sale to students in food venues through photographs. For the purposes of this study, only vending machine results are presented. Photographs underwent a nutritional content analysis, which categorized beverages and into P/PM 150 subcategories and classifications (i.e., *Sell Most*, *Sell Less*, *Not Permitted for Sale*). Inferential statistics (i.e., paired t-tests, $p < 0.05$) were conducted to determine changes in beverage and snack offerings between Times I and II. **Study #2**: In Times I and II, the consenting school representative completed a Healthy School Planner (HSP) survey, which

included a series of close-ended questions regarding the current status of healthy eating promotions, practices and policies implemented in the school. Responses to close-ended questions from the HSP and the completed FES checklist were entered into a SPSS database and descriptive statistics calculated (i.e., frequencies, percentages, means, and ranges). Responses to the HSP survey were scored using an established algorithm, which categorized schools overall as *Initiation*, *Action* or *Maintenance* along the Healthy School Continuum, and as *low/decreased* support, *moderate* support or *high/increased* support for CSH pillars. Open-ended questions from the FES checklist underwent a deductive content analysis guided by the CSH pillars. **Study #3**: Project management prepared knowledge translation (KT) feedback reports for the larger evaluation of P/PM 150 (including surveillance of student behaviours [n=2,071 from n=45 schools], qualitative input from school stakeholders, results of the HSP and FES, and evaluation of food retail density around participating regional schools [n=45]). Draft reports were prepared following Time I, refined based on feedback from a project advisory committee, and the final reports distributed to schools (n= 19 elementary, n=26 secondary). In order to evaluate the effectiveness of the reports at informing and strengthening healthy-eating related initiatives within CSH pillars, Time II representatives and affiliated school PHNs were invited to participate in a one-on-one interview. Since the author had developed all of the original reports, an arms-length researcher was trained and conducted interviews, which were audio-recorded and transcribed verbatim. Transcripts underwent a hybrid thematic analysis, in which themes were inductively identified, categorized, entered into a codebook and then deductively confirmed by a second reviewer. All aspects of Studies #1-#3 received formal approval from the University of Waterloo Office of Research Ethics, Dufferin-Peel Catholic District School Board Ethics Review Board and the Peel District School Board Ethics Review Board.

Results: Study #1 recruited 19 secondary schools to participate in an audit of school vending machines in both Time I and Time II. FES checklists recorded 75 beverages (59 varieties across schools in Time I, 45 varieties in Time II), mostly water, juices and milk-based beverages and 132 snacks (87 varieties across schools in Time I, 103 varieties in Time II), mostly grain-based snacks, vegetable/fruit chips and baked goods. A majority of schools offered one or more *Not Permitted for Sale* beverage (47% of schools in Time I, 58% of schools in Time II) or snack (74% of schools in Time I, 53% of schools Time II). Significantly more schools met P/PM 150 standards for snacks but not beverages in Time II. In **Study #2**, 25 school representatives (n=8 elementary, n=17 secondary) completed a HSP survey and FES checklist in both Times I and II. Most schools kept a rating of *Action* (n=20) along the Healthy School Continuum from Time I to Time II. The Physical Environment was the most supportive (100% of schools had *high/increased* support) due to adequate provision of spaces and time to eat and socialize with friends. The Social Environment was the least supportive (56% *low/decreased* support) due to limited consultation with school community members (24% of schools consulted parent organizations, 16% consulted parents/families, 16% consulted staff) and few healthy eating events run by students (e.g., 40% of schools had a student nutrition council). Only two schools achieved the highest overall rating (*Maintenance*) in Time II. In **Study #3**, 32 school representatives and 11 school PHNs (71% response rate) participated in a one-on-one interview. Most participants liked the knowledge translation report's format and presentation of data; however, not all information presented was found to be relevant. A third of schools (31%) used the report to increase awareness, focus planning or inform new healthy eating initiatives. Although PHNs were available to support uptake of the reports' recommendations, only 19% of schools shared their report with the PHN. PHNs identified six key steps to improve uptake of the

evaluation findings: take a strengths-based approach; focus on what can be accomplished at school; make prescriptive, individualized recommendations; distribute feedback reports during school planning Times; present information through multiple avenues; and form an inclusive and effective dissemination strategy.

Discussion: Variable supports for healthy eating were identified within each CSH pillar among the three studies. Supports can also help facilitate the implementation and sustainability of P/PM 150; however, more work is required to address issues of policy non-adherence. In the **Healthy School Policy** pillar, schools have self-governing policies to help support healthy eating in schools; however, more consideration is needed to help clarify the government-mandated P/PM 150 standards and reduce the possibility of misinterpretation and misuse. More consideration is needed on the categorization of beverages based upon sugar content and it should be made explicit that P/PM 150 standards apply to beverage container size not labels' serving size. By improving the comprehensiveness and clarity of policy standards, there will be less room for misinterpretation and improved application. The **Physical Environment** The presence of *Not Permitted for Sale* beverages and snacks in secondary school vending machines provided further evidence for the need for a formal monitoring system of P/PM 150 as requested by the Ontario Auditor General. Audit and feedback systems would provide a structured approach to consistent monitoring procedures; reporting results to the school board or Ministry of Education would enhance accountability of schools to meeting P/PM 150 regulations; and school board feedback could act as a means of enhancing the awareness of school stakeholders (i.e., staff, students, food service workers, PHNs) regarding healthy eating. The **Social Environment** was the least supported as it required voluntary dedication of time provided by school healthy eating champions. These individuals, who are personally passionate about supporting the health and

development of students, are described as leverage points within the policy implementation process, possessing the ability to both oversee top-down implementation and gather bottom-up support. Champions are repeatedly identified as agents of change in the facilitation of comprehensive approaches to school health and should be highly valued and frequently acknowledged by the school community. The **Teaching and Learning** pillar had variable support for healthy eating provided through existing curriculum and extracurricular activities. Previous research has documented that teachers and administrators perceive school nutrition policies to be of low importance, thus limiting the ability for a school to reach full policy adherence. Findings from Study #3 highlight that educators must perceive an initiative to be meaningful in order for it to be implemented; therefore, more work is needed to increase the perceived value of P/PM 150 by linking policy outcomes to academic achievements. The Ontario Ministry of Education can help reduce the burden on teachers to embed healthy eating messaging into daily classroom lessons by providing curriculum supports that increase the perceived value of P/PM 150 held by teachers and reinforce students' positive health behaviours. The **Partnerships and Services** pillar had variable levels of support for healthy eating, and Study #3 emphasized a need for schools to seek involvement from a broad array of school stakeholders in supporting healthy eating and sustaining P/PM 150. Implementation science explains policy adherence is more likely to be achieved when stakeholder groups are supportive of the organizational change. This requires garnering buy-in from all groups by showcasing the value of the policy and promoting active collaboration, which can enhance a sense of ownership and helps the policy reach its intended impact. School PHNs can function as knowledge brokers and play a role in gathering support from school stakeholders, although more work is required to promote uptake of their services by school administrators.

Conclusion: This research was one of the first to use the CSH framework to examine the extent to which healthy eating was supported during the early years of the implementation of the Ontario School Food and Beverage Policy (P/PM 150). Lessons from dissemination and implementation science added to the existing knowledge of how supports for healthy eating within each CSH pillar can further support P/PM 150 implementation and sustainability. The Ontario Ministry of Education should consider working with regional public health units, regional school boards, a representative sample of Ontario elementary and secondary schools and food service providers to work collaboratively to identify the best ways to ensure: P/PM 150 standards are comprehensive, clear and audits and feedback are conducted (Healthy School Policy); school health eating champions are identified and valued (Social Environment); foods in schools adhere to P/PM 150 (Physical Environment); P/PM 150 curriculum supports are developed for multiple classroom subjects and aligned with various school health concerns (Teaching and Learning); and processes are set in place to garner support from stakeholder groups and develop a sense of shared ownership for policy success (Partnerships and Services).

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Chapter 1: Introduction

Schools have been identified as an important setting to foster the development and maintenance of healthy living behaviours of students throughout childhood and adolescence (Aldinger & Jones, 1998; Driessen, Cameron, Thornton, Lai & Barnett, 2014; Fox, 2010; Story, Kaphingst & French, 2006). As childhood obesity and associated chronic diseases become more prominent within first-world countries, public health bodies with international, national, and local platforms have endorsed the implementation of school nutrition policies as a means to improve healthy eating behaviours of child populations (Healthy Kids Panel, 2013; Public Health Agency of Canada, 2012; Region of Peel, 2012; World Health Organization, 2014). Previous research demonstrates that school nutrition policies play a critical role in supporting the healthy eating behaviours of children, but are only one avenue of doing so (Ardzejweska, Tadros & Baxer, 2012; Driessen et al., 2014; Gleddie, 2010; Inchley, Muldoon & Currie, 2006; Kirk, 2006; Langford, Bonnell, Jones, Pouliou, Murphy, Waters et al., 2014). The Comprehensive School Health (CSH) framework identifies four inter-related pillars (i.e., Social and Physical Environments, Teaching and Learning, Healthy School Policy, Partnerships and Services), which, when united, can support the health and academic success of students (Veugelers & Schwartz, 2010). The CSH framework was informed by a Social Ecological approach, recognizing that in order to sustain positive health behaviour change, several dimensions impacting children and school environments must be considered in addition to policy (Aldinger & Jones, 1998; Allensworth & Kolbe, 1987; Deschesnes, Martin & Jomphe Hill, 2003; Gleddie & Hobin, 2011; Inchley et al., 2006; McIsaac, Sim, Penney, Kirk & Veugelers, 2012; McIsaac, Read, Veugelers & Kirk, 2013; Raspberry, Slade, Lohrmann & Valois, 2015; Roberts, McLeod, Montemurro, Veugelers, Gleddie & Storey, 2015; Senior, 2012). This thesis will use the CSH

framework to guide an evaluation and discussion regarding the extent to which student healthy eating behaviours were supported in a subset of Region of Peel elementary and secondary schools during the early years of a new Provincial school food and beverage policy.

In 2012, the Region of Peel Public Health partnered with the University of Waterloo to conduct a comprehensive process evaluation of the Ontario School Food and Beverage Policy (P/PM 150) in regional elementary and secondary schools. This project was conceived out of a need for evaluation as upon its mandate, the Ontario Ministry of Education proposed no corresponding strategies to evaluate implementation procedures, uptake and/or impact of P/PM 150. The purpose of this evaluation was to identify barriers and facilitators to policy implementation according to the perspectives of key stakeholders and within the confines of the school food environment (Orava, Valaitis & Hanning, 2015). Additionally, the initial impact of the policy was assessed with a 24-hour food recall and food behaviour survey conducted with grade 6 to 10 students in a subset of regional elementary and secondary schools (Orava et al., 2015).

The current thesis research focused on one component of the larger process evaluation and used the CSH framework to address a gap in the understanding as to policy adherence, comprehensive supports for policy implementation, and avenues to reinforce supports for healthy eating through knowledge translation activities (Figure 1.1).

To examine all aspects of the CSH framework more clearly, this research separated the Healthy Physical Environment from the Supportive Social Environment as there are several unique indicators tied to each environment type, relative to healthy eating supports. By breaking down the CSH framework, P/PM 150 can be assigned to the Healthy School

Policy pillar, and through its mandate, directly impacts the Healthy Physical Environment by determining what can and cannot be offered for sale to students in school food venues. In order to understand how P/PM 150 was

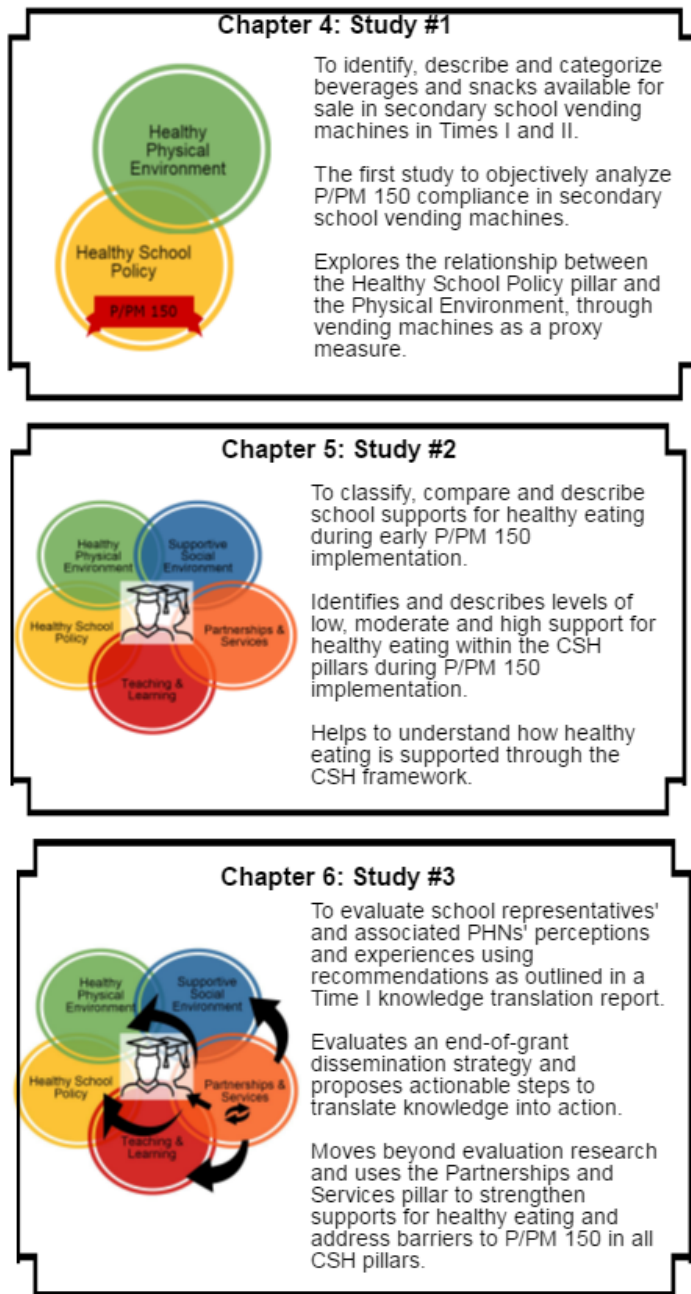


Figure 3.1: Summary of Chapters 4-6

unfolding on the ground in the Region of Peel schools, Study #1 used vending machines as a proxy to evaluate the relationship between the Healthy School Policy pillar and the Healthy Physical Environment. Further, because policy is not a static event, but a dynamic, on-going process, data collection was conducted over two time periods: Time I (2012/13) and Time II (2014). Study #1 aimed to:

- Identify, describe and categorize beverages and snacks available for purchase in school vending machines according to P/PM 150 nutritional standards; and
- Compare the number and percentage of beverages and snacks within P/PM 150 categories from two points during the early years of implementation.

The outcomes of this research helped to better understand the level of adherence achieved by a subset of secondary schools across the region.

As described in the literature review, policy is not a standalone pillar and is most effective when it is supported by all aspects of the CSH framework. Therefore, Study #2 described the various supports for healthy eating in all aspects of the CSH pillars. Similarly to Study #1, this information was collected over two time points of data collection to capture the dynamic nature of schools during the early years of P/PM 150 implementation. The objectives of Study #2 were to:

- Classify and compare the level of support for healthy eating within the CSH framework overall and for each CSH pillar across two Times during the early years of P/PM 150 implementation; and
- Identify and describe the aspects of the school environment for which high levels of support were recorded and/or for which improvements were made within CSH pillars between Times.

The outcomes of this study helped to address a gap in the understanding of to what extent healthy eating was supported in a subset of regional elementary and secondary schools.

Lastly, after examining the policy and its supports, it was important for the findings of this research to be returned to schools in order to strengthen approaches to comprehensive school health and address barriers to P/PM 150 implementation. This was done through the dissemination of KT feedback reports at the end of Time I (2012/13). Through an analysis of report impact, Study #3 was able to examine how the public health-school relationship within the Partnerships and Services pillar could help strengthen the multiple components of the CSH framework. The objectives of Study #3 were to:

- Describe school representatives' and PHNs' perspectives of the format, relevancy and importance of information included in Time I school feedback reports;
- Describe school representatives' and PHNs' experiences reviewing, sharing and using the school feedback reports to further support students' healthy eating behaviours within the school environment; and
- Evaluate the KT strategy used to disseminate school feedback reports and present recommendations to strengthen the mobilization of research into practice from the perspectives of school PHNs.

It was intended that data collected through Study #3 would inform the development and dissemination strategy following Time II data collection.

1.1 Relevance and Implications

This research within Region of Peel schools over the early years of P/PM 150 implementation (i.e., 1-3 years following policy mandate) explored adherence to the P/PM 150, the broader context of environmental supports in relation to policy implementation, and how the

response of public health nurses and school representatives to feedback reports on schools implementation of P/PM 150 and CSH supports. Conducting these three evaluations is important as: *“Evaluating nutrition and physical activity policies is critical to helping improve policy content, enhance policy support and implementation and ensure that policies are meeting their objectives and responding to the changing needs of governments and schools”* (Taylor, McKenna & Butler, 2010, page S24). This research will add to the current understanding of the extent to which Ontario schools have supported healthy eating within the CSH pillars during the early years of P/PM 150 implementation and add to the published literature describing school food policy implementation and comprehensive supports for policy implementation and healthy eating within schools. At the level of public health, research findings may be used to help drive future health promotion initiatives targeted at improving healthy eating supports within CSH pillars in hopes of complementing the intentions of P/PM 150. For educational representatives (i.e., Ministry of Education, school boards, schools) and education stakeholders (parents, advocates), the findings may contribute to identifying ways to support healthy eating across CSH pillars that may aid in strengthening the implementation and sustainability of P/PM 150.

1.2 Thesis Organization

This thesis will commence with a detailed literature review (Chapter 2), which will draw upon the best available evidence to describe: the burden of childhood obesity and its contributing factors; the Social Ecological Model and the importance of intervening at a school-level; the Ontario School Food and Beverage Policy (P/PM 150) and evaluations of the policy to date; the CSH framework and current evidence supporting comprehensive initiatives as a mechanism of improving student health; and knowledge translation strategies as applied to the realm of school health promotion.

Chapter 3 provides the context for the research, and outline the sampling and recruitment strategies, as well as data collection and analysis procedures used in each study. Thereafter, Chapters 4, 5 and 6 presents the results of each study, which have been written in the form of a publishable manuscript for submission to scientific, peer-reviewed journals. For this reason, these chapters contain some overlap from Chapters 2 and 3. Chapter 7: Discussion and Interpretations synthesizes key findings from studies #1-3 (Chapters 4-6) to highlight the extent to which healthy eating was supported in each CSH pillar, and how CSH supports can aid in the implementation, evaluation and sustainability of P/PM 150. This chapter will also provide evidence-informed recommendations to strengthen the CSH framework and apply ‘lessons learned’ to the process of school nutrition policy implementation. The thesis closes with a review of strengths, limitations and implications for the Ontario Ministry of Education, regional school boards, Ontario elementary and secondary schools, the regional public health unit and school public health nurses.

Chapter 2: Literature Review

This literature review sets the stage for the three research studies by providing: an overview of the issues of childhood obesity and diet-related chronic diseases, a description of social ecological models used to dissect the complexity of environmental influences on healthy eating, a rationale as to why the school food environment and school nutrition policies are a priority, an overview of the Ontario School Food and Beverage Policy (P/PM 150) and evaluations of the policy to date, a description of the Comprehensive School Health framework and a discussion on knowledge translation and its relevancy to supporting school health. The evidence presented in this literature review is not meant to be exhaustive, yet a breadth of topics are introduced to increase the readers knowledge of topics areas relevant to the scope of this research.

2.1 The Burden of Obesity

The World Health Organization (WHO) has deemed the childhood obesity epidemic to be the most serious of challenges faced by public health in the 21st century (World Health Organization, 2014). Obesity is essentially caused by an unequal balance between energy consumption and energy expenditure leading to excess deposits of maladaptive adipose tissue throughout the body (Blüher, 2009). Aside from 170 million children from 144 countries being categorized as overweight or obese, 44% of all cases of diabetes, 23% of ischemic heart disease and up to 41% of specific cancers have been attributed to obesity (De Onis, Blossner & Borghi, 2010; World Health Organization, 2014). The Canadian Health Measures Survey (2007-2009) classified 8.6% of Canadian children (6-17 years) as obese and the Canadian Community Health Survey (2006) classified 26% of children (2-17 years) as overweight or obese (Public Health Agency of Canada, 2011; Shields, 2006). In the province of Ontario, 25.6% of children (2-17

years) are overweight or obese, a majority of who will likely continue to grow into overweight or obese adults (Healthy Kids Panel, 2013; Singh, Mulder, Twisk, van Mechelen & Chinapaw, 2008). Unfortunately, without intervention, overweight or obese individuals become at risk for developing chronic health conditions such as cardiovascular disease, cancers, stroke, asthma, sleep apnea and depression (Freedman, Dietz, Srinivasan & Berenson; 1999; Flaherman & Rutherford, 2006; Shaw, 2007; Carter & Waterpaugh, 2008).

While obesity places a strain on the quality of life of the individual, this disease also negatively affects the Canadian healthcare system. The Public Health Agency of Canada estimates that obesity and its associated chronic diseases are accountable for \$4.6 billion of health care costs in 2008 (Janssen, 2013). An estimated \$2.63 billion stemmed from the indirect costs of obesity, which included years of life lost due to premature death or days lost due to disability and \$1.98 billion were associated with the direct costs, including prescription drugs, physician, and hospital care (Janssen, 2013). Furthermore, by linking population health survey data with physician billing in Ontario, researchers have found annual physician costs to be 18% higher in women with obesity and 15% higher in men with obesity compared to their normal weight counterparts (Janssen, Lam & Katzmarzyk 2009). Patients with obesity have hospitalization costs that are approximately 40% higher than adults of normal weight (Tarride, Haq, Taylor, Sharma, Nakhai-Pour, O-Reilly et al., 2012). Aside from higher healthcare costs, adults with obesity are more likely to select a lower rating of perceived health; 20% of adults with obesity reporting fair to poor health compared to only 10% of adults of normal weight (Tarride et al., 2012). Due to the strain obesity has placed on the health of Canadians and the Canadian healthcare system, there is a critical need for public health to take action by addressing the factors that influence the development and progression of this disease.

2.2 The Contributing Factors of Poor Diet

Obesity is defined by the overconsumption of food energy relative to energy output, yet statistics from across Canada suggest that although children may be overfed, they are undernourished. Key highlights from recent Canadian literature document:

- One in five children and one in ten adolescents have energy intakes that far exceed their energy expenditure (Health Canada, 2012).
- Children, more so girls than boys, do not meet the daily minimum recommended servings for each food group, especially vegetables and fruit and milk and alternatives (Heart and Stroke Foundation of Ontario, 2008; Storey, Forbes, Fraser, Spence, Plotnikoff, Raine et al., 2009).
- Children's diets have been reported to be low in calcium, fiber, potassium and zinc and well-over the upper limit for daily intake of sodium (Health Canada, 2012; Storey et al., 2009).

Overall, children are less likely to eat nutrient-rich foods and consume foods that are high in fats, sugar and salt, which are categorized as energy-dense, nutrient poor "other" foods (Storey et al., 2009). The consistent inclusion of "other" foods in children's diets further increases the risk of adverse health effects later in life, most notably type II diabetes and metabolic syndrome (Biro & Wien, 2010; Kaur, 2014; Wong, Mark, Henderson, O'Loughlin, Tremblay, Wortman et al., 2012).

There is a critical need to reduce the consumption of 'other' foods in children's diets at the same time as increasing the consumption of nutrient-rich foods, such as vegetables and fruit, while achieving calorie balance. There is no singular determinant of the foods individuals select for consumption; instead there is a wide breath of personal, psychosocial and environmental influential factors that guide children in their food choices. Understanding the highly complex and dynamic components of the food environment is quite difficult and has not been captured by

a single study. Instead, public health researchers often turn to social ecological models to identify and address barriers and opportunities to healthy eating.

2.3 Social Ecological Models

With the emergence of the field of health promotion, a shift occurred from victim-blaming to examining system-level change within social and physical environments in order to promote healthy living behaviours amongst groups of individuals (Davison, 2009; McLeroy, Bibeau, Steckler & Glanz, 1988). The ecological paradigm was driven by Dr. Urie Bronfenbrenner, who sought to understand child development in real-world settings, with real-life implications (Bronfenbrenner, 1994). Dr. Bronfenbrenner outlined multiple layers of influence within surrounding areas described as: microsystems (interpersonal relationships), mesosystems (linkages amongst two or more microsystems), exosystems (linkages between immediate microsystem and through association to another), macrosystems (culture of society) and chronosystems (influence of time) (Bronfenbrenner, 1994). Based upon this theory of environmental influence, researchers were able to extend the ecological foundations to public health, sociology, psychology, education, and health geography (Green, Richard & Potvin, 1996). Social ecological models have historically been used to outline the various features and relationships between a person and their physical, social, political, religious, and cultural surroundings at multiple levels, which contribute to positive or negative health behaviours (Green et al., 1996; Townsend & Foster, 2011). Social ecological models have also been helpful in disentangling the complex, multifaceted food environment, which prompts individuals to opt for “other” foods rather than healthier options (Penney, Almiron-Roig, Shearer, McIsaac & Kirk, 2014).

In 2005, Taylor and colleagues examined the determinants of healthy eating for children and adolescents using a social ecological lens (Taylor, Evers & McKenna, 2005). Through a systematic review of the most relevant data available at the time, the authors outlined both individual determinants and collective determinants influencing the selection and consumption of foods (Taylor et al., 2005). Individual determinants were identified as biological (age/sex), food preference, food skill level and nutrition knowledge (Taylor et al., 2005). Collective determinants were much more complex and layered, encompassing economic determinants (parental/maternal employment and educational status, cost of food), social determinants (cultural factors, familial factors, parenting style, food marketing) and physical determinants (food density, school food environment) (Taylor et al., 2005). The recognition of multiple influencers on personal habitual behaviours has both benefits and limitations. Through population health policies, the macro-level environment can create economic, social, and physical opportunities to guide and support the individual determinants of healthy eating throughout the lifespan (Raine, 2005). Unfortunately, it is difficult to evaluate the effectiveness of a particular population-level strategy due to the variability in confounding factors, leading those with a positivist view of health behaviour change to critique the efficacy of ecological approaches to health promotion (McLeroy et al., 1988; Raine, 2005). Risk factors of obesity, however, far surpass an individual's choice to eat less and move more (Ochner, Tsia, Kushner & Wadden, 2015). Instead, holistic approaches to behaviour change must take into account the individual and collective determinants persuading healthy eating behaviours throughout various settings (Glanz, Sallis, Saelens & Frank, 2005). Time and time again, the school food environment has been recognized as a key setting to reach children and impact healthy living behaviours.

2.4 The School Environment

Schools within Canada, as well as the United States, have an unprecedented opportunity to influence health and well-being during children's formative years of health behaviour development (Peterson & Fox, 2007). Students in Ontario spend 194 days each year from age 4 to 18 in schools (Ontario Ministry of Education, 2015a). The most recent data from a representative sub-set of schools within the Region of Peel (Ontario) indicate that just over one third of student daily intake of calories is derived from foods purchased and/or brought from home and eaten during snacks and meals at school (Orava et al., 2015).

The micro-environment of a school has been identified as an agent of change to foster the development and maintenance of healthy living behaviours of students throughout childhood and adolescence (Aldinger & Jones, 1998; Driessen et al., 2014; Fox, 2010; Story et al., 2006). The WHO has cited six key reasons for why schools are the prime location for nutrition interventions:

1. Schools offer opportunities to reach high proportions of children, equalizing opportunities in an efficient and effective manner;
2. Students learn healthy eating behaviours from social interactions;
3. Students are provided with opportunities to practice food safety and healthy eating;
4. Teachers and professional staff are able to provide guidance;
5. Nutrition education can lead to improvements in healthy eating behaviours; and
6. The various stakeholders within the school community can offer multiple avenues of influence (i.e., teachers, students, staff, parents) (Aldinger & Jones, 1998).

Through targeted interventions, schools have been able to facilitate improvements to healthy eating (Driessen et al., 2014; Peterson & Fox, 2007) as well as mitigate the social

determinants which may confound intended benefits (Longacre, Drake, Titus, Peterson, Beach, Langeloh et al., 2014; Morin, Demers, Robitaille, Lebel & Bisset, 2014). While there is heterogeneity amongst reported outcomes of interventions on body weight and body mass index (BMI) (Jamie & Lock, 2009), schools remain a micro-environment of interest to implement interventions targeted at combatting and preventing childhood obesity (Story et al., 2006). The Public Health Agency of Canada (PHAC), the WHO, and the Ontario Healthy Kids Panel have publically recognized the school environment as a priority area requiring immediate, and sustainable change, in support of promoting healthy eating behaviours to all children.

2.5 The Food Environment as a Priority in Canada

In 2010, as a result of a Federal/Territorial/Provincial collaborative call to action, the PHAC released a plan to promote healthy weights across Canada in order to curb the prevalence of obesity (Public Health Agency of Canada, 2012). Of the three strategies released, Strategy 2.1 stated, to make “*social and physical environments where children live, learn and play more supportive of physical activity and healthy eating*” (Public Health Agency of Canada, 2012 page. 3). One strategy is to reduce the prevalence of overweight and obesity through school-based health promotion initiatives. Of the many sectors listed within this document, schools were highlighted as an ideal location to promote and support healthy eating to children and adolescents (Public Health Agency of Canada, 2012). This recommendation is in agreement with the 2004 WHO publication entitled A Global Strategy on Diet, Physical Activity, and Healthy Eating, which prompted governments around the world to “*adopt policies that support healthy diets at school and limit the availability of products high in salt, sugar and fats*” (World Health Organization, 2014, page. 9).

In response, the Ontario government established the Healthy Kids Panel, a multi-sectoral group of experts responsible for developing a strategy to reduce the prevalence of childhood obesity across the Province (Healthy Kids Panel, 2013). The Panel developed a strategic plan with three priority areas:

1. Provide support to new and expecting mothers to promote infant health and wellness;
2. Change the food environment through collaboration with food retailers, implement nutrition programs in schools, and ban the marketing of energy-dense, nutrient-poor foods to children; and
3. Create healthy communities by focusing on the development of supportive, accessible, and equitable health and wellness programs to all Ontario children and their families (Healthy Kids Panel, 2013).

For priority number two, the Panel suggested that the government ensure supportive food environments¹ for healthy eating were accompanied by long-term policy commitments, the provision of teacher training, the incorporation of nutrition education into school curriculum, the promotion of leadership with students and school food service staff, the involvement of parents, and the avoidance of using unhealthy foods in school fundraising efforts whenever possible (Healthy Kids Panel, 2013).

At the regional level, stakeholders within the Region of Peel have embarked on strategies to improve the healthy eating of citizens (Region of Peel, 2012). The Supportive Environments for Healthy Living Strategy is a comprehensive framework informed by best practice research and expert opinion and addressed the concerns regarding overconsumption of energy-dense,

¹ In the context of this thesis, to term “food environment” encompasses “*the collective physical, economic, policy and sociocultural surroundings, opportunities and conditions that influence people’s food and beverage choices and nutritional status*” as outlined by Phulkherd and colleagues (2016).

nutrient-poor foods and population-wide physical inactivity levels (Region of Peel, 2012). The Region of Peel is committed to policy change at all levels of government and embedding healthy living practices in regional institutions including preschools, schools, workplaces, and the built environment (Region of Peel, 2012). Applying policy to support the environment is the driving force behind obesity prevention in the Region of Peel: *“Realistically, public health’s only hope for tackling the obesity epidemic is to invest in policies and programs that create supportive environments for healthy eating and active living. Until then, individuals’ decisions will be undermined by an environment where healthy choices are unavailable or difficult to make. Peel Public Health will therefore shift its focus from obesity and healthy weights to creating environments that support healthy eating, where the healthy choice is the easy default choice for both food and activity choices”* (page iv, Region of Peel, 2012).

Thus national, provincial, and regional governing bodies articulated the need for the implementation of formal written policies to be mandated in the school food environment. Before discussing the implementation of policy, this literature review provides an overview of policy as an effective population health and health promotion strategy.

2.6 What is Policy?

The Centers for Disease Control and Prevention in the United States formally define the term policy as *“a law, regulation, procedure, administrative action, incentive or voluntary practice of government and other institutions”* (para 1, Centers for Disease Control and Prevention, 2015). As described, there are many forms of policy, which have various objectives dependent on the context for which it is mandated. The WHO (2015a) defines health policy as *“decisions, plans, and actions that are undertaken to achieve specific health care goals within a society”* (World Health Organization, 2015a, para 1). Often times, public health officials will

turn to policy in order to promote and facilitate behaviour change by placing restrictions on personal freedoms, while assigning more responsibility to the authoritative legislating body (Nuffield Council on Bioethics, 2007). As a policy becomes more rigid and personal freedoms of citizens are reduced, the justification as to why this particular health policy was mandated needs to be ethically sound and based on high quality research evidence (Nuffield Council on Bioethics, 2007).

As schools continue to be identified as a key environment through which child health behaviours can be adapted, formed, and sustained, school nutrition policies have become increasingly popular within and external to Canada (Jamie & Lock, 2009; McKenna, 2010; Perez-Cueto, Aschemann-Witzel, Shankar, Brambila-Macias, Bech-Larsen, Mazzocchi et al., 2012). In Ontario, nutrition standards for beverages and foods offered for sale within schools are mandated by the Ontario Ministry of Education through the Ontario School Food and Beverage Policy (P/PM 150).

2.7 The Ontario School Food and Beverage Policy (P/PM 150)

In 2011, the Ontario Ministry of Education mandated the School Food and Beverage Policy (P/PM 150) for all publicly-funded elementary and secondary schools with the following objectives: to contribute to a reduction in nutrition-related chronic diseases; and to reinforce the healthy eating-related attitudes, skills, and knowledge promoted through provincial curriculum (Ontario Ministry of Education, 2010a). This set of nutritional standards is mandated in all school cafeterias, tuck shops, and vending machines, and through food-related programs and school events offering foods for sale (Ontario Ministry of Education, 2010a). The standards are based upon Canada's Food Guide's four main food groups: vegetables and fruit, grain products, meat and alternatives, and milk and alternatives (Ontario Ministry of Education, 2010a). Food

items that do not specifically fall into one distinct food group are placed within the categories of mixed dishes (e.g., sandwiches, soups, pasta), miscellaneous items (e.g., dips, sauces, condiments) and confectionary (e.g., candy, chocolate), the latter of which is not permitted for sale (Ontario Ministry of Education, 2010a). Table 2.1 outlines the three main categories for beverage and food items. *Sell Most* items are made up of the healthiest options and must comprise at least 80% of food choices within each venue: cafeteria, tuck shop, and vending machines (Ontario Ministry of Education, 2010a). *Sell Less* items are categorized by slightly elevated amounts of fat, sugar, and/or sodium compared to the *Sell Most* category (Ontario Ministry of Education, 2010a). These items must comprise no more than 20% of the food venue. Lastly, the *Not Permitted for Sale* items are generally energy-dense, nutrient-poor foods and should not be sold in schools (Ontario Ministry of Education, 2010a).

Table 2.1: Nutrition Standards set by P/PM 150

Category	Percentage of Venue	Description
<i>Sell Most</i>	$\geq 80\%$	The healthiest items, highest levels of essential nutrients and lower amounts of fat, sugar and/or sodium.
<i>Sell Less</i>	$\leq 20\%$	Products have slightly higher levels of fat, sugar and/or sodium.
<i>Not Permitted for Sale</i>	0%	Products contain very few essential nutrients and/or contain high amounts of fat, sugar, sodium or caffeine.

In addition to the nutritional quality of foods and beverages, P/PM 150 encourages food service providers to prepare foods using methods that reduce the need for added fat or sodium (Ontario Ministry of Education, 2010a). The Ministry promotes broiling, baking, grilling, microwaving, poaching, steaming, roasting, and stir-frying items (Ontario Ministry of Education, 2010a).

Each principal has permission to grant up to 10 exemption days per school year to accommodate beverages and foods sold at special events (Ontario Ministry of Education, 2010a; Ontario Ministry of Education, 2010b) and on these days, schools are allowed to forgo the nutritional guidelines; however, principals are encouraged to consider the nutritional standards and quality of foods in consultation with students, staff, and community members (Ontario Ministry of Education, 2010a; Ontario Ministry of Education, 2010b).

The Ontario School Food and Beverage Policy follows is similar to other school food policies that have been adopted by other provinces in Canada. As outlined in Table 2.2, the following provinces and territory currently have government-produced guidelines for beverages and foods sold to children in schools: British Columbia, Alberta, Saskatchewan, Manitoba, Québec, New Brunswick, Nova Scotia, Prince Edward Island, Newfoundland and Labrador, and the Yukon.

Table 2.2: Canadian School Nutrition Policies

Province - Policy Name	Ministry/Date	Purpose	Criteria
British Columbia – Guidelines for Food and Beverage Sales in BC Schools (British Columbia Ministry of Education, Ministry of Health & ActNow BC, 2007)	Ministry of Education & Ministry of Health (2005, revised 2013)	To improve the choices offered within the school setting so that is easy for students to make healthy choices on a routine basis.	Nutrition criteria: <i>Calories, fat, sodium, sugar, caffeine for specified food types.</i> 1. Not recommended; 2. Choose least; 3. Choose sometimes; 4. Choose most.
		Applies to elementary and secondary schools.	
Alberta - Alberta Nutrition Guidelines for Children and Youth (Government of Alberta, 2011)	Alberta Health and Wellness (2008)	To create a healthy environment, which provides healthy food choices and promotes healthy eating to children and youth in childcare facilities, schools, and recreation/community centers.	Food Rating System: <i>Dependent on portion size, age category and Canada’s Food Guide to Healthy Eating.</i> 1. Choose most often; 2. Choose sometimes; 3. Choose least often.
		Applies to elementary and secondary schools, as well as childcare and recreation/community centers.	
Saskatchewan – Nutrition and Food Safety Guidelines for Saskatchewan Schools (Saskatchewan Ministry of Education, 2009)	Ministry of Education (2009)	To promote the provision of high quality nutritious food and the management of efficient economical food service.	Healthy Eating Guidelines: <i>Based on Canada’s Food Guide to Healthy Eating and Healthy Foods for My School by the Saskatchewan Ministry of Health.</i> 1. Choose most often; 2. Choose sometimes.
		Applies to elementary and secondary schools.	
Manitoba – Guidelines for Foods Serves at School (Healthy Child Manitoba, 2006)	Province of Manitoba (2005)	To assist decision-makers about what foods to make available and promoted by schools.	Guidelines: <i>Based on Canada’s Food Guide to Healthy Eating, nutritional standards (including fat and sodium) and serving sizes.</i> 1. Most often; 2. Sometimes; 3. Rarely.
		Applies to elementary and secondary schools.	
Ontario – School Food and Beverage Policy (P/PM 150) (Ministry of Education,	Ministry of Education (2010)	To be applied all food and beverages sold on school premises for school purposes in all venues, through programs and at all school events.	Guidelines: <i>Based on Canada’s Food Guide to Healthy Eating and nutrition standards related to fat, sugar and sodium.</i> 1. Sell most;

2010a)		Applies to elementary and secondary schools.	<ol style="list-style-type: none"> 2. Sell less; 3. Not permitted for sale.
Québec – Going the Healthy Route at School (Éducation, Loisir et du Sport Québec, 2005)	Ministère de L'Éducation, du Loisir et du Sport (2005)	To assist schools as they create an environment that encourages the adoption and maintenance of healthy eating habits and physically active lifestyles.	Framework Policy: <i>Based on Canada's Food Guide with specific attention to the following:</i> <ul style="list-style-type: none"> • Breakfast; • Food donations; • Foods and beverages containing sweeteners; • Special events and fundraising events and activities; • Pre-fried potatoes; • Availability of chocolate in schools; • Commercially breaded foods.
		Applies to elementary and secondary schools.	
New Brunswick – Healthier Eating and Nutrition in Public Schools (Policy 711) (New Brunswick Department of Education, 2008)	Department of Education (2007)	To establish the minimum requirements for healthy foods in New Brunswick's public schools by setting standards for healthy food awareness, food option available in schools and sale of foods in and through the public school system.	<i>Based on Canada's Food Guide to Healthy Eating, portions and serving sizes, according to the categories:</i> <ul style="list-style-type: none"> • Maximum nutritional value; • Moderate nutritional value; • Minimal nutritional value.
		Applies to elementary and secondary schools.	
Nova Scotia – Food and Beverage Standards for Nova Scotia Public Schools (Nova Scotia Department of Education & Department of Health Promotion and Protection, 2006)	Ministry of Education and Department of Health Promotion and Protection (2006)	To increase access to and enjoyment of health promoting, safe, and affordable food and beverages served and sold in Nova Scotia public schools and make healthy food and beverage choices the easy choice in the school setting.	<i>Based upon Canada's Food Guide to Healthy Eating and nutrition criteria, especially limiting salt and caffeine.</i> <ul style="list-style-type: none"> • Maximum nutrition; • Moderate nutrition; • Minimum nutrition.
		Applies to elementary and secondary schools.	
Prince Edward Island – PEI School Nutrition Policy (PEI Health Alliance, 2007)	PEI Healthy Eating Alliance (2007)	To encourage and maintain supportive environments, which promote healthy food choices, both in the food and beverages available at school and through education programs.	Quality of Food and Beverages <i>Based upon Canada's Food Guide to Healthy Eating, School Milk program and nutrient values related to fat, salt, sugar and caffeine.</i> <ul style="list-style-type: none"> • Foods to serve most often;

		Applies to elementary and secondary schools.	<ul style="list-style-type: none"> • Foods to serve sometimes; • Foods to serve least often.
Newfoundland and Labrador – Provincial School Food Guidelines (Government of Newfoundland and Labrador, 2006)	Province of Newfoundland and Labrador (2006)	To ensure students are provided with healthy food choices and are given quality information to promote health and wellness.	<i>Based upon the School Milk program, Canada’s Food Guide to Healthy Eating, serving sizes, fat, sodium, and sugar.</i> <ul style="list-style-type: none"> • Serve most; • Serve moderately.
		Applies to elementary and secondary schools.	
Yukon – School Nutrition Policy (Policy 1025) (Hine, 2011)	Department of Education (2008)	To promote good nutrition and healthy food choices for students, in a safe and culturally appropriate manner.	<i>Based upon Canada’s Food Guide to Healthy Eating, First Nations, Inuit and Métis, and Food from the Land: Traditional Yukon Food guide.</i> <ul style="list-style-type: none"> • Nutrition; • First Nations culture; • Food safety; • Allergies; • Food storage.
		Applies to elementary and secondary schools.	

Although the terminology selected for defining policy guidelines differs from province to province, all guidelines are based upon Canada's Food Guide and categorize foods into recommended, sometimes recommended, and not recommended groups based upon caloric, fat, sodium, and sugar content. Across all nutrition policies, each province aims to improve the consistency of the availability of healthy foods in schools. Two provinces, Saskatchewan and Nova Scotia, also specifically outline the provision of affordable foods to keep prices close to cost. All guidelines extend to each type of food service within schools. Only eight provinces have mandated policies (British Columbia, Saskatchewan, Ontario, Manitoba, New Brunswick, Nova Scotia, Prince Edward Island, and Yukon) while Alberta, Québec, and Newfoundland and Labrador adopted voluntary guidelines. Nonetheless, all policies aim to improve the healthy eating behaviours of children in order to combat the risk of developing diet-related chronic diseases.

2.8 Preliminary Evaluations of the Ontario School Food and Beverage Policy

Coinciding with this thesis research project, several evaluations of P/PM 150 occurred in various regions across the Province. For example, in a review with York Catholic District School Board, Hamilton-Wentworth District School Board, and Trillium Lakelands School Board, the Ontario Auditor General concluded that there is no effective monitoring strategy to ensure food and beverages sold in schools are compatible with the Ontario School Food and Beverage Policy (Lysyk, 2013). An investigation of the three school boards found a significant number of cafeteria foods did not meet nutritional standards (Lysyk, 2013). The report identified that there had been a decrease in cafeteria revenues (between 25% and 45%) and vending machine revenues (70% to 85%) during the first year of P/PM 150 implementation, and school principals reported that many students were leaving their school property to eat at local fast food

restaurants (Lysyk, 2013). Intuitively, one can assume if healthy foods are neither available nor accessible, then children who choose to purchase food at schools during the school day are not consuming healthy foods (Briefel, Crepinsek, Cabili, Wilson & Gleason, 2009; Terry-McElrath, O'Malley & Johnston, 2014).

Similar barriers were reported in a qualitative research study which recruited secondary school representatives (n=14) and local agencies supporting school nutrition programming (n=9) from Hamilton, Ontario (Vine & Elliott, 2013). This research used the four environmental types of the ANGELO Framework (economic, physical, political, and sociocultural) to thematically organize feedback from stakeholders related to their perceptions of the Ontario School Food and Beverage Policy (P/PM 150) implementation and impact (Vine & Elliott, 2013). Secondary school stakeholders identified a loss of revenues following P/PM 150 implementation within school cafeterias (Vine & Elliott, 2013; Vine, Elliott & Raine, 2014). Respondents discussed how the cost of nutritious foods raised the price of cafeteria meals, which led to students being unable to afford breakfasts, snacks, and lunches and, therefore, seek off-campus low-cost, unhealthy foods (Vine & Elliott, 2013; Vine et al., 2014). School stakeholders also described how P/PM 150 (the political environment), restricted the types of foods family studies or hospitality classes could prepare and offer for sale to the larger student body (Vine & Elliott, 2013). Furthermore, stakeholders stressed the importance of role modeling and teacher buy-in to develop and maintain a supportive culture for healthy eating, strengthening the case for comprehensive approaches to policy implementation (Vine & Elliott, 2013).

Lastly, in an investigation of schools' readiness for implementing P/PM 150 conducted by Chaleunsouk and Kutsyuruba (2014), interviews revealed school administrators were unaware of P/PM 150 one year prior to its mandate (when it was announced by the Ministry) and personal

interpretations of the policy led to variances in implementation. Similarly to Lysyk (2013) and Vine and colleagues (2013; 2014), authors affirmed schools encountered several barriers to full policy implementation including: making food more appetizing and at a lower cost; a high concentration of external competitive food sources surrounding the school; and reduced profits within cafeterias that were trying to sustain a food service business (Chaleunsouk & Kutsyuruba, 2014). To date, evaluations of P/PM 150 and other Canadian school nutrition policies have called for more holistic approaches to policy implementation in order to garner support from school stakeholders and create an environment consistently supportive of healthy eating behaviours.

2.9 The Comprehensive School Health Framework

The Joint Consortium for School Health (JCSH) was first developed in 2004 and was endorsed in 2005 by the integrated Pan-Canadian Healthy Living Strategy set by the Federal, Provincial, and Territorial (F/P/T) Ministers of Health and Ministries of Education (Pan Canadian Joint Consortium for School Health, 2010a; Public Health Agency of Canada, 2010). The Healthy Living Strategy was based upon a population health approach to improve health outcomes and reduce health disparities, with a focus on an improvement to healthy eating, physical activity, and healthy weights (Public Health Agency of Canada, 2010). This strategy recognized that multiple environmental factors must be addressed to better the health of Canadians, and the JCSH would be able to bring together stakeholders from multiple sectors to produce supportive school-based and school-linked healthy programs, policies, and practices (Public Health Agency of Canada, 2010).

Through this partnership, the Pan-Canadian JCSH commissioned the formation of the Comprehensive School Health (CSH) framework. This framework was based upon the teachings of the Bronfenbrenner Social Ecological Model (1994) and recognizes the impact of social, political, cultural, and economic influences within the micro-system of Canadian schools. The CSH framework (Figure 2.1) centres the school environment on the health and academic achievement of students, recognizing that “*healthy students learn better and achieve more*” (Murray,

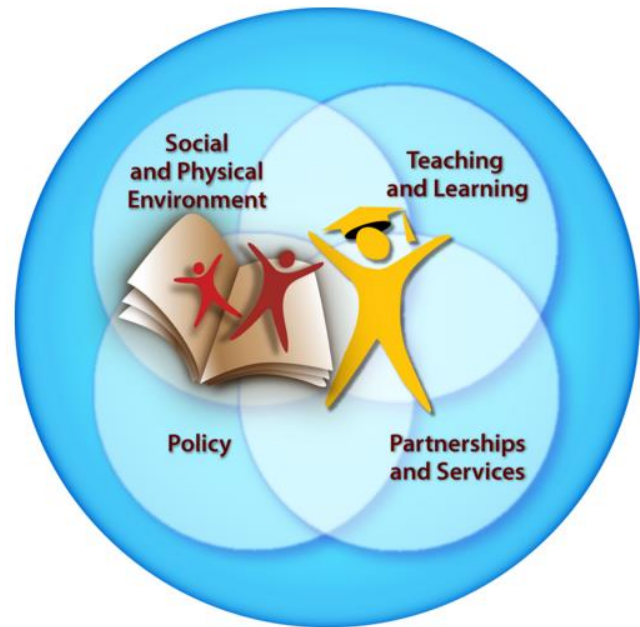


Figure 2.1: Comprehensive School Health framework (Pan-Canadian Joint Consortium for School Health, 2015)

Low, Hollis, Cross & Davis, 2007; Pan-Canadian Joint Consortium for School Health, 2015; Stewart-Brown, 2006).

The four pillars of the CSH framework include: Social and Physical Environments, Teaching and Learning, Healthy School Policy, and Partnerships and Services (Veugelers & Schwartz, 2010). Table 2.3 provides the definition for each pillar, which were first published in 2010 (Veugelers & Schwartz, 2010) and last updated in December 2015 (Pan-Canadian Joint Consortium for School Health, 2015).

Table 2.3: Definitions of the CSH Pillars

When We Say	We Mean
Social and Physical Environments	The social environment includes: <ul style="list-style-type: none"> • The quality of the relationships among and between staff and students in the school • The emotional well-being of students • Influenced by relationships with families and the wider community • Supportive of the school community in making healthy choices by building competence, autonomy and connectedness
	The physical environment includes: <ul style="list-style-type: none"> • The buildings, grounds, play space, and equipment in and surrounding the school • Basic amenities such as sanitation, air cleanliness and healthy foods • Spaces designed to promote student safety and connectedness and minimize injury • Safe, accessible and supportive of healthy choices for all members of the school community
Teaching and Learning	<ul style="list-style-type: none"> • Formal and informal provincial/territorial curriculum, resources and associated activities • Knowledge, understanding and skills for students to improve their health and well-being and enhance their learning outcomes • Professional development opportunities for staff related to health and well-being
Healthy School Policy	<ul style="list-style-type: none"> • Policies, guidelines and practices that promote and support student well-being and achievement and shape a respectful, welcoming and caring school environment for all members of the school community
Partnerships and Services	Partnerships are: <ul style="list-style-type: none"> • The connections between the school and students’ families • Supportive working relationships within schools (staff and students), between schools, and between schools and other community organizations and representative groups • Health, education and other sectors working together to advance school health
	Services are: <ul style="list-style-type: none"> • Community and school-based services that support and promote student and staff health and wellbeing

2.10 Implementation of CSH Initiatives

Previous research examining CSH (also referred to as “health promoting schools” and “coordinated school health,” internationally), has demonstrated that when all pillars are

supported, intended health behaviour change is likely to occur (Fung, Kuhle, Lu, Purcell, Schwartz, Storey et al., 2012; Fung, McIsaac, Kuhle, Kirk, & Veugelers, 2013). As displayed in Figure 2.1, the healthy policy pillar is not a standalone measure capable of enacting behaviour change on its own. Rather, policy requires support from all aspects of the school environment (i.e., from Social and Physical Environments, Teaching and Learning, and Partnerships and Services).

Many studies have demonstrated success in the improvement of student dietary behaviours when using a CSH approach to school nutrition policy implementation (Fung et al., 2012; Fung et al., 2013; McIsaac et al., 2012) including health benefits persisting into adulthood (Tran, Ohinmaa, Kuhle, Johnson & Veugelers, 2014). For example, the APPLE schools project (Alberta Project Promoting active Living and healthy Eating in schools) aimed to improve student eating behaviours by embedding wellness concepts into the school culture (Schwartz, Karunamuni & Veugelers, 2010). Staff leads were given dedicated time during the school day to meet with a school health facilitator (an external member of the school community, funded by the provincial government) to contribute to decision-making and program implementation (Roberts et al., 2015). Health and wellness initiatives were selected from staff and school community members, allowing for flexibility to select a topic that was meaningful and relevant to the needs of the school (Roberts et al., 2015). School principals played a significant role in moving APPLE Schools forward, providing navigation, advocating for school change, holding others accountable to change and providing continuous support for the sustainability of the project (Roberts et al., 2015). Projects entailed promoting healthy habits through school curriculum, extracurricular activities, health-related policies, and student nutrition programs (Fung et al., 2012). Early outcomes of this CSH initiative demonstrated improvements to the

healthy eating habits, physical activity and body weights of students compared to non-APPLE schools (Fung et al., 2012). In order to achieve outcomes such as these, previous research highlights the need for comprehensive and well-orchestrated approaches to guide policy implementation, by which multiple components of the school environment support the intended change (Allensworth & Kolbe, 1987; Durlak & DuPre, 2008; Senior, 2012).

As exemplified in the APPLE Schools program, many resources are needed to help schools facilitate and maintain environments supportive of healthy eating (Fung et al., 2012; Rogers et al., 2015). Additionally, as previously discussed, as policy restricts the personal freedoms of citizens, it must provide an ethically-sound and evidence-based rationale for policy standards (Nuffield Council on Bioethics, 2007). After examining P/PM 150 and its supports, it was important for the UW research team to move beyond exploratory research and help school strengthen their approaches to CSH through knowledge translation activities. This was done by relaying results, alongside recommendations, back to schools through a school feedback report. In relation to the CSH framework, the reports arose within the Partnerships and Services pillar and aimed to strengthen all CSH pillars to support P/PM 150 implementation and student health. A description of knowledge translation (KT), a conceptual model for moving evidence into action, and a description of the end-of-grant KT reports developed for schools follows.

2.11 Knowledge Translation

The concept of knowledge translation (KT) began early in the 20th century with Gabriel Tarde's exploration as to why certain innovations were adopted by widespread members of society, while other initiatives had less of an impact (Tarde, 1903 as reported by Grimshaw, Eccles, Lavis, Hill & Squires, 2012). Over several decades, researchers, policy-makers, and practitioners from various fields, most notably education and medicine, came to value the need

for evidence to be the driving force behind day-to-day practice and decision-making (Grimshaw et al., 2012). As the field of KT evolved, so did the terminology used to describe the process of moving evidence into action. Table 2.4 provides an overview of the terminology applied throughout the published literature.

Table 2.4: Definitions of Knowledge Translation-related Terms

Term	Definition
Knowledge translation	<p><i>“A dynamic and iterative process that includes synthesis, dissemination, exchange and ethically sound application of knowledge to improve the health of Canadians, provide more effective health services and products and strengthen the health care system. This process takes place within a complex system of interactions between researchers and knowledge users, which may vary in intensity, complexity and level of engagement depending on the nature of the research and the findings, as well as the needs of the particular knowledge user”</i> (Graham & Tetroe, 2009, page. 46).</p>
Knowledge mobilization	<p><i>“The reciprocal and complementary flow and uptake of research knowledge between researchers, knowledge brokers and knowledge users—both within and beyond academia—in such a way that may benefit users and create positive impacts within Canada and/or internationally, and, ultimately, has the potential to enhance the profile, reach and impact of social sciences and humanities research”</i> (Social Sciences and Humanities Research Council, 2015).</p>
Knowledge transfer	<p>A one-way flow of knowledge from knowledge creators (e.g., researchers) to knowledge users (e.g., general public, service providers, key decision makers). The tenets of which answer the questions posed by Lavis and colleagues (2003a):</p> <ul style="list-style-type: none"> • What is the message? • Who is the target audience? • Who is the messenger? • How should the message be communicated? • What is the outcome?
Knowledge exchange	<p><i>“Collaborative problem-solving between researchers and decision-makers that happens through linkage and exchange. Effective knowledge exchange involves interaction between decision-makers and researchers and results in mutual learning through the process of planning, producing, disseminating, and applying existing or new research in decision-making”</i> (Canadian Foundations for Health Improvement, 2016).</p>

The above definitions provide various descriptions of ultimately the same process: the dissemination of research findings that were synthesized by knowledge producers, which aim to reach a target audience through information sharing and/or collaboration in order to meet a predefined goal. For the purpose of this thesis, the term “knowledge translation” as defined by the Canadian Institutes of Health Research (CIHR) has been selected as it recognizes KT as a process rather than an action, follows knowledge from conception through to application and intends to target behaviours/practices needed to improve the health of Canadians and the Canadian healthcare system (CIHR, 2010; Graham & Tetroe, 2009; Johnson, 2005). CIHR operationalizes the definition of KT through the use of the Knowledge-to-Action (KTA) cycle (Figure 2.2).

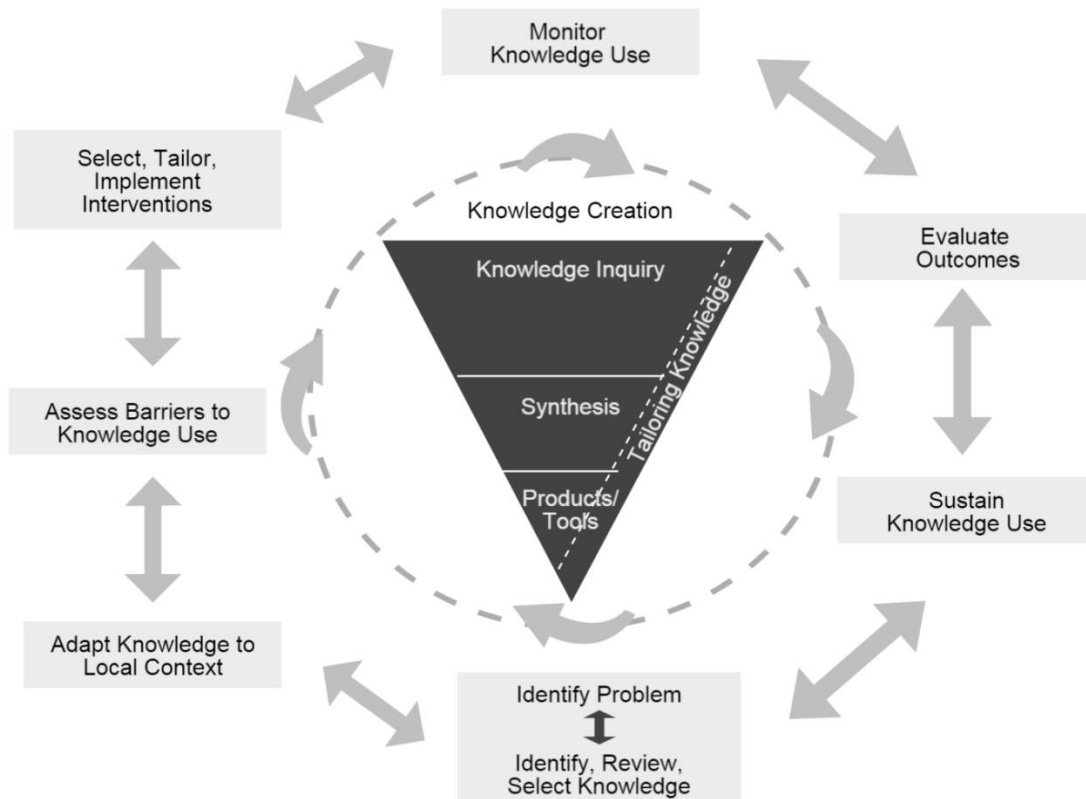


Figure 2.2: Knowledge to Action Cycle (Graham et al., 2006)

The KTA cycle is a conceptual model intended to assist knowledge producers and users through the process of knowledge creation (outlined in the centre *Knowledge Funnel*) through to knowledge application (outlined in the exterior *Action Cycle*; Graham, Logan, Harrison, Straus, Tetroe, Caswell et al., 2006). The KTA cycle is regularly used in the medical field to help hospital stakeholders implement, monitor, evaluate, and sustain the use of clinical practice guidelines (McLeod, Aarts, Chung, Eskicioglu, Forbes, Conn et al., 2015; Sibley & Salbach, 2015) and has not been broadly used in the realm of school public health or health promotion (Field, Booth, Ilott & Gerrish, 2014). The KTA cycle, however, can be used to guide the process by which evidence from public health research can be synthesized, disseminated, and implemented into the daily operations of schools.

In relation to the current thesis, Study #3 was guided by the KTA cycle; results from the comprehensive process evaluation were synthesized and tailored into individualized school feedback reports as an output of the *Knowledge Funnel*. These reports included findings from the student online food behaviour survey, results of the HSP survey and FES checklist, quotes from students, a list of recommendations to improve/strengthen comprehensive supports for healthy eating, and a list of freely available resources (Appendix F). School representatives were encouraged to contact their school PHN, to help put the recommendations into actions to address barriers to P/PM 150 implementation and further support healthy eating throughout the CSH pillars.

Diffusion, or the concept of “*letting it happen*” occurs when knowledge producers broadly communicate outcomes of the *Knowledge Funnel* to general audiences (CIHR, 2010, page. ii). This passive approach to KT is generally less effective at motivating stakeholders to continue along the KTA cycle to adopt and implement initiatives targeted at improving health

behaviour outcomes (Farmer, Legare, Turcot, Grimshaw, Harvey, McGowan et al., 2008; LaRocca, Yost, Dobbins, Ciliska & Butt, 2012; Sudsawad, 2007). Dissemination of products evolving from the *Knowledge Funnel* requires the knowledge producer to “*help it happen*” in that tailored KT messages are developed to reach specific audiences (e.g., parents, children, public health nurses) in the hope of achieving a pre-specified goal (e.g., increasing awareness, improving knowledge, strengthening beliefs towards health behaviour change) in specific contexts (e.g., schools, workplaces, hospitals) (Colley, Brownrigg, & Tremblay, 2012; CIHR, 2010, page. ii). In relation to Study #3, researchers requested school PHNs approach schools, if school representatives had not already contacted their PHN, to assist schools in moving through the *Action Cycle*. That is, PHNs were encouraged to meet with school representatives, review the outcomes of the evaluation, discuss areas of concern, and make an action plan to address barriers to P/PM 150 implementation and/or enhance supports for healthy eating within one or several CSH pillars. This public health-school collaboration throughout the *Action Cycle* would augment report dissemination and embody an integrated KT strategy.

Integrated KT strategies further the impact of dissemination strategies by encouraging and facilitating continued collaboration between knowledge producers and knowledge users throughout the KTA cycle. CIHR describes integrated “...*collaboration between researchers and research users in the research process including the shaping of research questions, deciding of methodology, involvement in the data collection and tools development, interpreting the findings and helping disseminating the research results*” (Graham & Tetroe, 2009, page. 48). Integrated KT processes have been viewed as the most successful KT strategy at *making it happen* (CIHR, 2010, page. ii) and were therefore the partnership between public health and schools was strongly encouraged throughout Time I feedback reports.

While the process of KT is important to facilitating application of research evidence, the method by which this information is shared is also critical to information interpretation and uptake. There are many forms of end-of-grant KT including education sharing sessions, media engagement, and summaries issued by research participants (CIHR, 2010). The effectiveness of each strategy is determined by its ability to meet the needs of various knowledge user groups, and one avenue of KT may not be as effective for some groups as it is for others. Each strategy may be different in scope and creativity; however, the CIHR recommend end-of-grant KT plans include five key components in order to be effective, Table 2.5 compares the recommendations set by CIHR to the Time I school feedback reports.

Table 2.5: Components of End-of-Grant Materials

Component of End-of-Grant Plan & Description (CIHR, 2010)	Study #3 School Feedback Reports
Goal – Clearly defined and justified objectives appropriate for the nature of research findings and target audience.	To raise the awareness of school representatives of the current status of healthy eating and the extent to which their environment supports student healthy eating behaviours; and to promote collaboration between schools and school PHNs to facilitate uptake of evidence-informed recommendations.
Audience – Identified and justified targeted individuals or groups.	School representatives can include principals, vice principals, department heads/curriculum leads and/or teachers.
Strategies – Diffusion, dissemination and/or application of knowledge.	Dissemination of electronic and/or paper-based individualized school feedback report.
Expertise – The goals, audience and strategies determine the level of expertise required to implement end-of-grant KT.	Reports were developed based on input from the project advisory council and disseminated with the assistance of eligible (those receiving permission from schools to review) PHNs.
Resources – Resources are dedicated in order to accomplish proposed activities.	School PHNs were made available to review feedback reports. A guide to understanding reports was disseminated to each PHN and the UW researcher was made available to answer any questions the PHN or representatives may have had.

Once disseminated, it is important for the impact of KT materials to be monitored and evaluated, as outlined in the KTA cycle (Graham et al., 2006). Evaluation of end-of-grant KT

materials are highly valued by researchers and affiliated funding bodies as understanding the conditions under which policy and practice are impacted can help better direct future public health efforts in translating knowledge into action (CIHR, 2010; Davies & Nutley, 2008; Graham & Tetroe, 2009; Smits & Denis, 2014). Therefore, Study #3 will evaluate the usefulness, uptake, and impact of end-of-grant school feedback reports from the perspectives of the school stakeholders involved in (i.e., school PHNs) and targeted by (i.e., school representatives) P/PM 150 evaluation KT dissemination strategies.

Chapter 3: Methodology

3.1 Study Context: The Region of Peel

All aspects of this study occurred in the region of Peel, Ontario's second largest municipality, located west of the provincial capital, Toronto. Three distinct municipalities comprise the region: Mississauga (population of 713,450), Brampton (population of 523,910) and Caledon (population of 59,460) (based upon 2011 census data; Government of Canada, 2012). Mississauga and Brampton are primarily classified as urban settings and each city is densely populated within the 292 km² and 266 km², respectively (Figure 3.1). Caledon is considered more rural with the population spread over 688 km², equating to 86.4 persons per square km (Government of Canada, 2012).

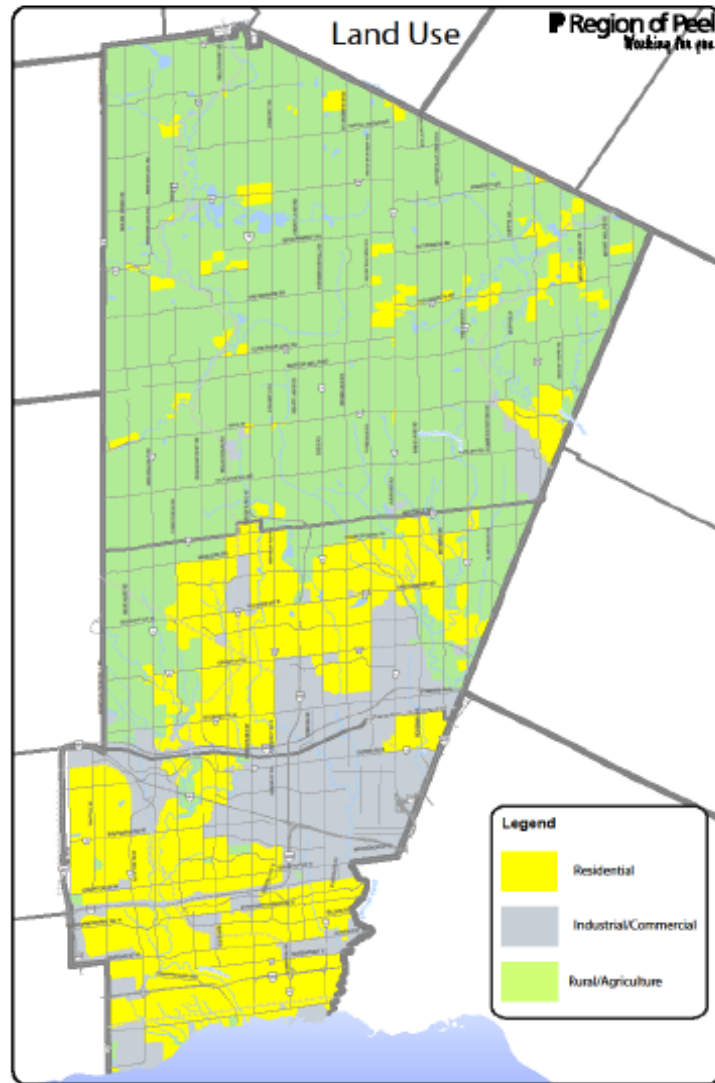


Figure 3.1: Residential, industrial/commercial, rural/agricultural map of the Region of Peel (Region of Peel, n.d.a)

Peel is a unique region in that approximately 50% of its population is made up of new Canadians (52.9% Mississauga, 50.6% Brampton, 20.8% Caledon), with over half of this population born in Asia or the Middle East (Government of

Canada, 2012). Within the region of Peel, approximately 22% of the population is represented by school-aged children (5-19 years), which is slightly above the provincial average (18%, 5-19 years, Government of Canada, 2012). During the time of study development (2011), children in Peel attended one of the 318 elementary schools (n=198 Peel District School Board, n=120 Dufferin-Peel Catholic District School Board) or 62 secondary schools (n=36 Peel District School Board, n=26 Dufferin-Peel Catholic District School Board) (Dufferin-Peel Catholic District School Board, 2011; Peel District School Board, 2011).

The public health division within the municipal government of the Region of Peel focuses on “*health protection, promotion, and disease prevention*” (Peel Region, 2015, para. 1). In the development of this project, an advisory board was formed with members of the Chronic Disease and Injury Prevention division of Peel Public Health and University of Waterloo (UW) researchers. Committee members included representation from dietetics, health promotion, school health, and public health senior management; in addition, during Time I, representatives from each school board participated in monthly advisory board meetings. The purpose of this advisory board was to provide input and recommendations for school sampling, recruitment, data collection and analysis, and knowledge translation report development and dissemination strategies. The committee met once per month to receive updates on the UW research team’s progress and address any questions or concerns. Minutes were taken by UW research assistants and disseminated each month, listing action items to keep all members accountable and to move the project forward.

3.2 Study Design

A process evaluation was selected for this project as it helped to understand ‘what worked’ and ‘what didn’t work’ during the early years of P/PM 150 implementation (Weiss, 1998). This thesis is one component of a larger two-phased process evaluation which incorporated seven methodologies as outlined in Table 3.1.

Table 3.1: Overview of the comprehensive process evaluation

	Data Collection Instrument	Time I (2012/13)	Time II (2014)
Excluded in this thesis	1. Student online food behaviours survey	X	
	2. Interviews and focus groups with key stakeholders ¹	X	
	3. Geographic Information Systems mapping	X	
Included in this thesis	4. Food environmental scan checklist	X	X
	5. Healthy School Planner survey	X	X
	6. School representative interviews		X
	7. Public health nurse interviews		X

¹Interviews took place with teachers, administrators, and food service providers; focus groups recruited parents and students; and a paper-based survey gathered data from secondary school parents

This research focuses on the use of methodologies #4-7 in Times I (2012/13) and Time II (2014).

As outlined in the time below, periods of data collection were informed by both the political climate and the time taken to develop Time I school feedback reports.

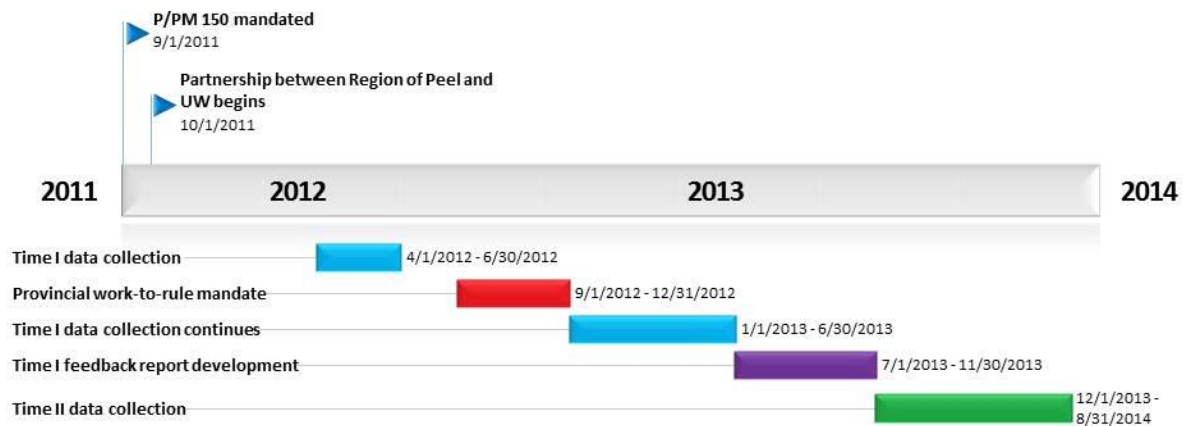


Figure 3.4: Timeline of data collection

3.3 Study Sample

A statistician from the Propel Centre for Population Health Impact (UW) conducted a randomization protocol to sample elementary and secondary schools from the Dufferin-Peel Catholic District School Board and the Peel District School Board. The random list of schools was developed based on geographic distribution across the region and a student food behaviour objective outside of the thesis research for which there was a desire to recruit a minimum of 2,000 students (500 students in each of grades 6 to 8 and 9 to 10) from each school board based on up to two classes per grade (a minimum class size of 20 students and expected active consent from $\leq 50\%$ of schools and $\leq 50\%$ of students within schools). Probability sampling utilized three strata:

1. Cities (1= Brampton; 2= Caledon; 3 = Mississauga),
2. Socioeconomic status (1= below the neighbourhood median family income after tax, 2005; 2= above or equal to neighbourhood median family income) and
3. School level (1= elementary and middle schools; 2= secondary schools).

This process identified 52 schools for the sample, from which all were approached to participate. An additional 10 secondary schools, five from each board, were later added, based on the same criteria, to accommodate for lower than anticipated recruitment success.

Randomly selected schools were recruited and invited to participate in the larger comprehensive evaluation of the Ontario School Food and Beverage Policy (P/PM 150) in the Region of Peel (Methodologies #1-7, Table 3.1). For the current thesis project randomly selected elementary schools in addition to all 62 regional secondary schools were invited to participate in Time I. All secondary schools were eligible, considering the dominance of food service vendors (i.e., offering breakfast/lunch service daily opposed to ad-hoc speciality lunch days in elementary

schools) and, therefore, increased relevancy and applicability of P/PM 150 standards. Schools that participated in Time I (N=45, 19 elementary, 26 secondary) were invited to participate in Time II. Table 3.2 provides context for the 45 schools that participated in the comprehensive process evaluation and how these schools compared to the larger context of the Region of Peel.

Table 3.2: Comparison of sample to study population

	Research Sample ¹ (frequency, percentage)	Region of Peel Population ² (frequency, percentage)
City representation	<ul style="list-style-type: none"> • Brampton (n=13, 29%) • Caledon (n=6, 14%) • Mississauga (n=25, 57%) 	<ul style="list-style-type: none"> • Brampton (n=144, 40%) • Caledon (n=21, 6%) • Mississauga (n=197, 54%)
School level	<ul style="list-style-type: none"> • Elementary (n=18, 41%) • Secondary (n=26, 59%) 	<ul style="list-style-type: none"> • Elementary (n=304, 84%) • Secondary (n=58, 16%)
School board	<ul style="list-style-type: none"> • Catholic (n=25, 57%) • Public (n=19, 43%) 	<ul style="list-style-type: none"> • Catholic (n=141, 39%) • Public (n=221, 61%)
Social economic status (median income, X ± SD)	\$90,863.52 ± \$20,062.85	\$88, 576.23 ± \$20,562.47

¹2011 Census data was not available for one school included in the research sample (i.e., N=44)

²Based upon 362 schools, inclusive of those included in the research sample

3.3.1 Participant types

Two types of participants were recruited for this thesis: school representatives and school public health nurse (PHNs).

3.3.1.1 School representatives.

School representatives from each of the participating randomly selected elementary schools and invited secondary schools were recruited in Time I and Time II. Representatives were identified (either self-identified and/or identified through the school administration) as being knowledgeable of healthy eating-related initiatives at their school. Because data collection occurred over two phases, the person fulfilling the school representative role at each school did not always stay the same.

3.3.1.2 School Public Health Nurses.

Each year, Peel PHNs are assigned to families of schools (between seven and 15 schools per portfolio), for which they are responsible for forming a relationship with school administration and assisting with the implementation of health-related initiatives. A Healthy Schools Approach is taken by PHNs to work alongside school stakeholders to create and sustain environments of healthy living and learning (Region of Peel, n.d.b). In addition to being on-call to provide resources, school PHNs also provide training and workshops to staff and student groups and help plan, implement, and evaluate healthy living initiatives (Region of Peel, n.d.b). School PHNs were recruited for Study #3 on the basis that they were provided verbal or written permission from school representatives to review Time I school feedback reports. PHNs were not directly involved in Studies #1 or #2.

3.3.2 Participant response rate

In total, 45 schools participated in Time I (55% response rate). These schools were then eligible to participate in Time II. Table 3.3 provides an overview of the response rates of participants for each study; rates are based upon Time I participation (i.e., N=45: n=19 elementary and n=26 secondary).

Table 3.3: Participant type and response rates within each study

	Study #1	Study #2	Study #3
School representatives	N=19 secondary of a possible 26 (73% response rate)	N=25 of a possible 45 (55% response rate) (n=8 elementary; n=17 secondary)	N=32 of a possible 45 (71% response rate) (n=11 elementary; n=21 secondary)
School PHNs	--	--	N=11 of a possible 17 (65% response rate)

3.4 Recruitment Strategies

Following approval by the Research Ethics Office at the University of Waterloo (Appendix A) Research Ethics Committees of both school boards, school recruitment was undertaken by three groups: UW researchers, school PHNs, and School Board representatives as outlined in Table 3.4.

Table 3.4: Recruitment strategies

Time/Component (Recruitment Period)	University of Waterloo Researchers	Regional Public Health Nurses	School Board Representatives
Time I (April 2012 – June 2013)	<ul style="list-style-type: none"> Developed recruitment materials* Attended 2 school conferences Distributed information letters to school principals (randomized elementary and all secondary schools) 	<ul style="list-style-type: none"> Presented recruitment materials to school administration of randomized elementary and all secondary schools Peel School Health Team promoted study to School Board representatives, including superintendents 	<ul style="list-style-type: none"> P/PM 150 coordinators/consultants contracted for Time I; promoted all components of the study to all schools Member of the Public School Board, Research Ethics Board sent email blasts regarding the study to all principals within the School Board
Time II (February 2014 – June 2014)	<ul style="list-style-type: none"> Developed recruitment materials* Attended 1 school conference Conducted recruitment phone calls to all Time I schools 	<ul style="list-style-type: none"> Promoted the study to Time I schools through in-person consultations 	<ul style="list-style-type: none"> Position of P/PM 150 coordinator/consultant no longer filled

*Recruitment materials provided information regarding study details, time commitments, potential benefits, and ethical considerations presented using letters, brochures, and emails (copies can be found in Appendix B).

3.4.1 Recruitment by the University of Waterloo.

To promote Time I, the UW research team (RH, TO, RV) hosted an information booth at three separate school community conferences (March, April, and November 2012). The purpose of these promotions was to inform parents, administrators, and teachers of the process evaluation

and collect contact information from interested school representatives. A similar promotion was conducted in Time II (October 2013), but with a focus on meeting, distributing, and discussing Time II recruitment materials with representatives from Time I participating schools (Appendix B). In addition to school community events, the UW research team recruited Time II schools through invitation emails, follow-up phone calls, and couriered information packages which included a formal invitation letter, a blank HSP survey, a Time I school feedback report, and a list of potential dates for Time II data collection. Recruitment for Time II continued until June 2014 with the intention to receive a response from each invited school.

The UW research team recruited school PHNs between May and August 2014 to participate in a one-on-one interview. This recruitment included an email invitation, email follow-up, and a follow-up phone call if the PHN was unresponsive. This recruitment continued until the end of August 2014 to ensure a response was provided by all invited, eligible School PHNs.

3.4.2 Recruitment by Regional PHNs.

During Time I and Time II, PHNs received recruitment materials (flyers, information letters, brochures) from the UW research team. School PHNs were asked to promote the study to a school principal or vice-principal during an in-person consultation, phone call, or over email. The active role of school PHNs during recruitment was integral to receiving a response from majority of invited schools.

3.4.3 Recruitment by Regional School Boards.

During the 2011/12 academic year, P/PM 150 Coordinators/Consultants played an important role ensuring schools met P/PM 150 guidelines with current and new food vendors. The individuals filling these roles were either previous school administrators and/or experienced

hospitality instructors in secondary schools. The role of the Coordinator/Consultant included participating in 2012/13 advisory board meetings and promoting the study to school representatives during on-site school visits. The position of P/PM 150 Coordinator/Consultant was no longer filled during the time of recruitment for Time II; additionally the Ethics Board Member who had contributed to recruitment in Time I, did not distribute Time II information as the sample was restricted to previously participating schools.

3.5 Data Sources

As outlined in Table 3.1, four methodologies were used to collect data within the three included studies. The following section provides a detailed overview of each data collection instrument, along with the procedures for data collection and analysis. Brief reports of data collection procedures are reiterated in the prepared manuscripts (i.e., Chapters 5, 6, and 7).

3.5.1 Food Environmental Scan checklist.

During a school visit in Time I and again in Time II, a member of the UW research team completed the Food Environmental Scan (FES) checklist with the assistance of the elected school representative. The FES checklist was developed by the UW research team in 2010 and was based upon a review of the literature and reviewed by an expert multi-disciplinary advisory board. The purpose of this tool was for the UW researcher to: (i) record detailed field notes regarding the current status of healthy eating promotions and programs through open and close-ended questions asked of school representatives during a physical walkabout of the school; and (ii) record an inventory of beverages and foods available for purchase in school food venues (i.e., school cafeteria, vending machines, tuck shops, elementary school speciality lunch/snack/milk services) on a regular school day through the use of photographs. The FES checklist was piloted during the evaluation of the Ontario School Food and Beverage Policy (P/PM 150) in Region of

Waterloo schools for completeness and comprehension (Habayeb, 2013). In Time I of the thesis, an electronic version of the FES checklist was created using FormConnect® for iPad. In Time II, the electronic version of the FES was amended with additional prompts to capture any changes to the school environment since Time I and to help guide in-depth data collection by a new member of the research team (SC) trained by TO.

Electronic versions of the FES were exported as PDFs and uploaded to a password protected computer. Responses to open-ended questions underwent a deductive content analysis using standard word processing software by which responses were grouped by CSH pillar (Elo & Kyngäs, 2008). FES close-ended questions were entered into a SPSS database, from which descriptive statistics were calculated (e.g., frequencies, mean, ranges).

Product photographs were exported from FormConnect® and uploaded to QSR International NVivo 10 qualitative analysis software (Burlington, MA) from which products were identified and nutrition content information sourced directly from product manufacturers. Products then underwent coding for classification and categorization guided by the P/PM 150 Resource Guide (Ontario Ministry of Education, 2010b):

Step 1: Calculate trans fat (grams) and compare to Trans Fat Standards;

Step 2: Identify PPM 150 subgroup for type of snack or beverage;

Step 3: Compare nutritional content information (appropriate to serving size) to P/PM 150 standards for the applicable subgroup and categorize as *Sell Most*, *Sell Less*, or *Not Permitted for Sale* (Ontario Ministry of Education, 2010b).

Averages and ranges across schools were calculated in order to describe the number and variety of products within food and beverage subgroups and P/PM 150 categories in Time I and Time II.

Paired t-tests were used to compare the number and percentage of products within P/PM 150 categories for beverages and snacks within schools across Times ($p \leq 0.05$).

A systematic review of measurement tools available between 1990 and 2007 revealed several environmental scan tools developed to assess the availability, accessibility, and affordability of foods and beverages sold at schools (McKinnon, Reedy, Morrissette, Lytle & Yaroch, 2009). Several of these checklists capture the availability and accessibility of competitive foods within food venues for which nutrition policies exist (Beyers, Vaillancourt, Murkin, Etches, Kroeker, Manske et al., 2006; Briefel et al., 2009; Nathan, Wolfender, Morgan, Bell, Baker & Wiggins, 2013). Pairing such lists with photographs of vending machine contents, allowed for the rich collection of detailed data related to the serving size, nutrition quality and relevancy to nutrition policies as previously documented (Noronha, Hyson, Zhong & Gojos, 2011; Stumb, 2013). A full copy of the Time I and Time II FES checklists can be found in Appendix C.

3.5.2 Healthy School Planner survey.

In Time I and Time II, consenting school representatives were issued a copy of the Healthy School Planner (HSP) survey (full-version) two to three weeks prior to the scheduled school visit and were asked to complete it to the best of their ability. The HSP is a unique survey tool, which analyzes and interprets the current status of a school's policies, practices, and programs related to healthy eating, physical activity, tobacco control, and/or positive mental health (Joint Consortium for School Health, 2013). Schools representatives are encouraged to form a team and complete one or several modules from which a feedback report is auto-generated and can be used to formulate new student-focused healthy living goals (Joint Consortium for School Health, 2013). The HSP was developed by the Propel Centre for

Population Health Impact at the UW, with support from the Pan-Canadian JCSH and the Public Health Agency of Canada (PHAC) (Healthy School Planner Survey, 2013). The HSP has been adapted from several previously validated measurements including an assessment from the School Health Action Planning and Evaluation System (SHAPES), School Smoking Policy Survey, and Michigan Healthy Schools Action Tools (Healthy School Planner Survey, 2013). The precursor to the HSP survey, which was used to assess availability and accessibility to physical activity by students in schools, has been tested for reliability and validity (Wong, Leatherdale & Manske, 2006). The HSP has been acknowledged by the expert judgement of the PHAC, the Health Council of Canada, and Health Canada as being sufficiently reliable and valid following revisions in 2009 (Health Canada, 2014; Health Council of Canada, 2014). The HSP survey was selected for this research study as it directly corresponds to the pillars of the CSH framework. Since the inception of this research study, the HSP survey has undergone reformatting and revisions to scoring procedures. To strengthen consistency and comparability of findings, this research opted to use the paper-based HSP survey, with corresponding Healthy School Continuum (HSC), for both Times (Healthy School Planner, 2013). A full copy of the HSP survey, Healthy Eating Module, can be found in Appendix C.

The healthy eating module of the HSP collected from each school underwent a series of scoring procedures, with outcomes compared across Times (Healthy School Planner, 2013; Figure 3.3).

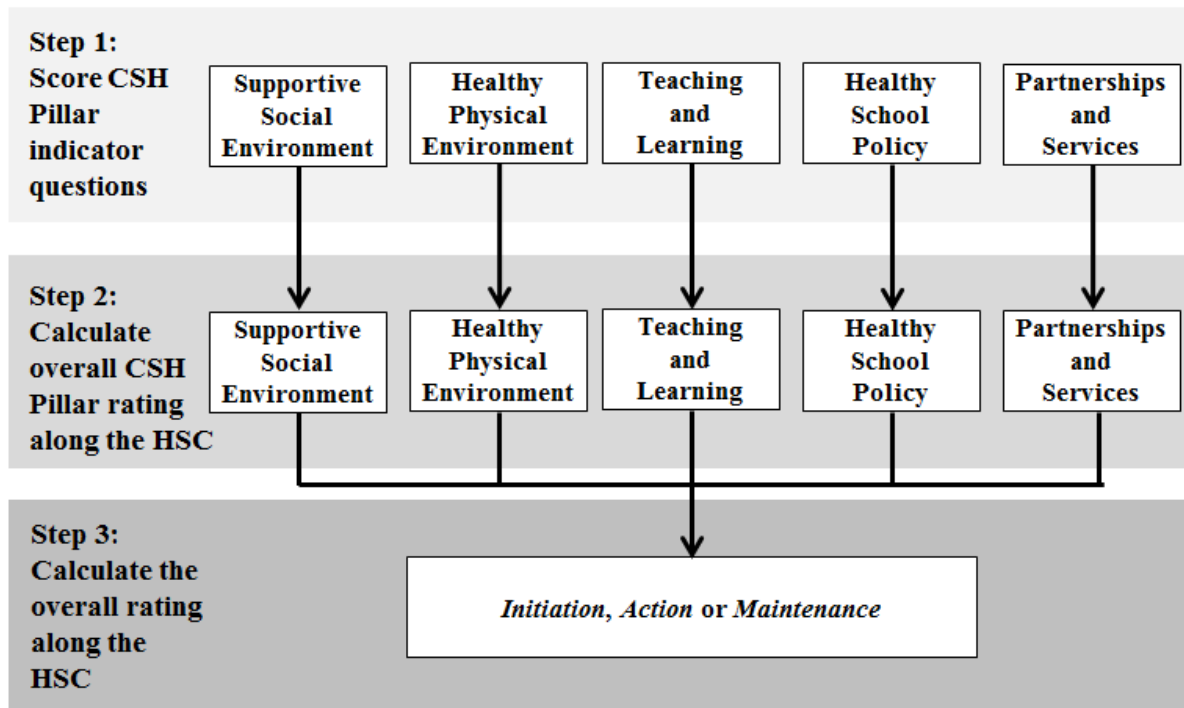


Figure 3.3: Scoring procedures of HSP surveys

Step 1: Score CSH indicator questions: Closed-ended indicator questions were independently scored based on respondent answers.

Step 2: Calculate overall CSH pillar rating along the HSC: Based upon the average scores of indicator questions, each CSH pillar was awarded an overall score along the HSC (Table 3.5). Ratings included *Initiation, Action, or Maintenance*, based upon the school’s ability to meet recommendations set by national experts (Healthy School Planner, 2013). Furthermore, a numerical score was appointed for each CSH pillar based upon overall rating (Table 3.6).

Table 3.5: Ratings along the Healthy School Continuum

	Initiation	Action	Maintenance
Meeting recommendations	Falls short of meeting recommendations	Meets some, but not all recommendations	Meets or exceeds recommendations
Recommendations for the future	Extensive room for improvement	Some room for improvement	Maintain current level of commitment to support healthy eating at school
Appointed CSH score	1.0	2.0	3.0
Overall score and rating	1.0 – 1.99	2.00 – 2.80	2.81 – 3.00

Adapted from the Healthy School Planner survey (Veugelers & Schwartz, 2010)

Step 3: Calculate the overall score along the HSC: The average of CSH pillar scores equated to the overall score along the HSC (Table 3.5).

Comparison over time: Overall CSH pillar ratings in Time I were compared to that of Time II to determine if support for healthy eating was *low/decreased*, *moderate*, or *high/increased* between Times (Table 3.6).

Table 3.6: Change in level of support within CSH pillars between Times

Low/decreased support		Moderate support		High/increased support	
Time I	Time II	Time I	Time II	Time I	Time II
Maintenance	Action	Action	Action	Initiation	Action
Maintenance	Initiation			Initiation	Maintenance
Action	Initiation			Action	Maintenance
Initiation	Initiation			Maintenance	Maintenance

Scores of the HSPs in Time I and Time II were organized using a formulated Microsoft Excel workbook, which was exported to SPSS Statistical software, so that descriptive statistics (i.e., frequencies, means, ranges) could be generated (Version 23, Armonk, NY).

3.5.3 Qualitative Interviews.

In Time II, a UW researcher (SC, TO) conducted one-on-one interviews with school representatives and school PHNs to gather input on their perspectives and use of Time I school feedback reports. Consenting school representatives participated in a brief, one-on-one interview with a representative from the UW research team (SC). This team member was not involved in data collection during Time I and did not contribute to the development of the Time I feedback reports. This approach was taken to limit bias, build rapport with the school representative, and to encourage the representative to feel comfortable providing complete assessment of the feedback report, either positive or negative (Manderson, Bennett, & Andajani-Sutjahjo, 2006). Additionally, consenting school PHNs took part in a one-on-one interview with a member of the UW research team (TO), which included questions reflective of those asked in the school representative interview, in addition to, questions related to how best to translate public health research into action in schools. The interviews with school PHNs were presented as a quality improvement initiative, in which the UW researcher (TO) was collecting positive and negative feedback directly from PHNs, in order to co-develop Time II feedback reports for the Peel Public Health. Under this pretext, it was assumed that a risk of bias or power imbalance was significantly reduced and not a concern as it was with the school representative interviews.

Two interview guides were developed (i.e., for representatives and for PHNs) following a review of the KT literature, comparison to previous KT surveys for feedback reports (Bonin, 2007; Danseco, Sundar, Kasprzak, Witteveen, Woltman & Manion, 2009) and consultations with the members of the regional public health and UW advisory boards. Interview guides underwent pre-testing with two school representatives (one secondary, one elementary) and one school PHN. The pilot testing identified ways to better structure the interview questions, which were

addressed by adding prompts prior to the data collection (Hermanovicz, 2002; Turner, 2010). A copy of each guide can be found in Appendix C.

Audio recordings of all interviews were transcribed verbatim and underwent a thematic analysis using NVivo 10 qualitative analysis software (Braun & Clarke, 2006; QSR International, 2013, Burlington, MA). Sentences and/or paragraphs within conversations were categorized through the inductive development of codes, which were catalogued and combined into meaningful themes (Aronson, 1994). As codes were identified, they were entered into a codebook and defined (Fereday & Muir-Cochrane, 2006). The codebook, containing themes, subthemes, and definitions, was given to a second reviewer, who acted as a consultant to generate consensus on classification and identification of themes (SC). A final copy of this codebook can be found in Appendix D. Final results present the frequency of themes and subthemes, and quotes from transcripts are used to exemplify the interpretation of results, conveying participants' emotions, thoughts, experiences, and perceptions (Patton, 2002).

3.6 Ethical Considerations

3.6.1 Ethics Review Boards.

Both Time I and Time II were reviewed and received ethics clearance from the UW Office of Research Ethics, Dufferin-Peel Catholic District School Board Ethics Review Board, and the Peel District School Board Ethics Review Board (Appendix C). Recruited schools received a cover letter detailing the objectives, study procedures, and clearly stated that by completing and returning the HSP survey the school representative consented to participation. The details of the study were again reviewed with the school contact person on the date of data collection and they were reminded that their participation was completely voluntary and were able to skip any open-ended question in the FES without penalty.

An amendment was submitted to the UW Office of Research Ethics for the addition of PHN interviews and audio-recording of one-on-one interviews with school representatives in Time II. This amendment received ethical clearance and also included an informed consent form (Appendix C). Each participant received an electronic and/or paper-based copy of the informed consent form at least 24-hours in advance of their interview, at which time they were also be reminded their participation was voluntary and were able to skip any questions they did not feel comfortable answering. The interview guides highlighted the review of the informed consent process and the selection of a generic pseudonym, to protect their identity throughout transcripts, publications, and presentations.

3.6.2 Data Management.

Data were stored in a confidential manner. As data were collected, identifying information was removed and the names of schools, school representatives, and PHNs were given a pseudonym or code name. All paper-based materials, including HSPs, print FES checklists, collected print materials, and consent forms were kept in a locked filing cabinet with limited access throughout the course of data collection and analysis. All electronic files, including recruitment emails, HSP results, school feedback reports, and data analysis files were kept on one computer, with an external hard drive, which was backed up continuously. The electronic devices used to collect data, including computer and iPad, were secured with robust passwords, known only to the research assistants (TO, SC).

Chapter 4: Study #1 Beverages and snacks available in vending machines from a subset of Ontario secondary schools: Do offerings align with provincial nutrition standards?

4.1 Abstract

OBJECTIVES: As part of an evaluation of Ontario's School Food and Beverage Policy (P/PM 150) in a populous Ontario region, this research aimed to: (1) identify, describe and categorize beverages and snacks available for purchase in secondary school vending machines according to P/PM 150 standards; and (2) compare the number and percentage of beverages and snacks within P/PM 150 categories (*Sell Most, Sell Less, Not Permitted*) from Time I (2012/13) to Time II (2014).

METHODS: Representatives from consenting secondary schools assisted researchers in completing a food environmental scan checklist in Times I and II. Sourced nutritional content information (calories, fats, sodium, sugars, ingredients, % daily values) was used to categorize products. The number and percentage of products in P/PM 150 categories were compared between Times by paired t-tests.

RESULTS: 19 secondary schools participating in both Time periods were included. 75 beverages were identified (59 Time I, 45 Time II), mostly water, juices and milk-based beverages. 132 snacks were identified (87 Time I, 103 Time II), mostly grain-based snacks, vegetable/fruit chips and baked goods. A majority of schools offered one or more *Not Permitted* beverages (47% Time I, 58% Time II) or snacks (74% Time I, 53% Time II). Significantly more schools met P/PM 150 standards for snacks ($p=0.02$) but not beverages in Time II.

CONCLUSION: Full P/PM 150 compliance was achieved by few, indicating a need for schools, school boards, public health, and food services to continue to work together to ensure nutrient-rich products are consistently made available to students.

4.2 Background

In order to combat the rising incidence of childhood obesity, health promotion agencies at global (i.e., the World Health Organization [WHO]), national (i.e., the Public Health Agency of Canada), and provincial (i.e., the Ontario Healthy Kids Panel) levels have recommended prevention strategies within school food environments (Healthy Kids Panel, 2013; Public Health Agency of Canada, 2012; World Health Organization, 2014). A majority of children in westernized countries consume approximately one-third of their daily caloric intake while at school, some of which derives from foods and beverages purchased through school vending machines (Glickman, Parker, Sim, Valle, Cook & Miller, 2012; Woodruff, Hanning & McGoldrick, 2010). Previous research has demonstrated that the provision of energy-dense, nutrient-poor foods within vending machines may lead to increased consumption of such foods and defer consumption of nutrient-rich fruits and vegetables (Cullen & Zakeri, 2003; Kubik, Lytle, Hannan, Perry & Story, 2003; Rovner, Nansel, Wang & Iannotti, 2011; Samuels, Hutchinson, Craypo, Barry & Bullock, 2010). Data from the U.S., albeit with a subsidized national lunch program, suggest schools are highly influential on the development of health behaviours, including proper dietary habits, which may sustain into adulthood (Driessen et al., 2014; Lytle et al., 1995).

Based upon the Social Ecological Model, the Comprehensive School Health framework recognizes the school's role promoting, effecting and sustaining student health behaviour change through support of its four pillars (i.e., Social and Physical Environment, Teaching and Learning,

Partnerships and Services, Healthy School Policy) (Bronfenbrenner, 1994; Veugelers & Schwartz, 2010). The current article focuses on how the implementation of a school nutrition policy affects the quality of foods available in the school physical environment. In 2011, the Ontario Ministry of Education mandated the Ontario School Food and Beverage Policy (hereafter referred to as P/PM 150) as a set of nutritional standards for foods and beverages offered for sale in publicly-funded elementary and secondary school food venues, at events, and through snack/meal programs (Ontario Ministry of Education, 2010a). *Sell Most*, *Sell Less*, and *Not Permitted for Sale* categories differentiate the quality of foods sold according to nutritional content, specifically calories, fat, sodium, carbohydrates and, in some cases, calcium (Ontario Ministry of Education, 2010a). *Sell Most* products are considered to be of the highest nutrient quality and must make up $\geq 80\%$ of a food venue. *Sell Less* products are of modest nutrient quality and may make up $\geq 20\%$ of a food venue, while *Not Permitted for Sale* items are prohibited and should equate to 0% of a food venue (Ontario Ministry of Education, 2010a). Therefore, policy adherence is only achieved if 100% of products sold are *Sell Most* or the 80-20, *Sell Most-Sell Less* rule is applied (Ontario Ministry of Education, 2010a).

The experience of implementation and early impact of P/PM 150 within Ontario schools revealed that school stakeholders face several challenges applying P/PM 150 standards and raised concerns that not all foods available for purchase in school food venues are compliant (Vine & Elliott, 2013; Lysyk, 2013). Although valuable, these studies have not clearly identified the types of beverages or snacks that are non-compliant, nor conducted an audit of school vending machines, which are readily available in secondary schools across the province. Furthermore, these preliminary studies have not tracked compliance over time, which typically

takes years to accomplish (Pasch, Lytle, Samuelson, Farbakhsh, Kubik & Patnode, 2011; Rideout, Levy-Milne, Martin & Ostry, 2007; Samuels et al., 2010).

The public health unit of a populous region in Ontario partnered with the University of Waterloo to examine P/PM 150 implementation within regional schools. This comprehensive process evaluation included surveillance of student behaviours through an online student survey, interviews and focus groups with school stakeholders, an evaluation of food retail density around regional schools using Geographic Information Systems mapping, and an investigation of the school food environment. As part of this investigation into the school food environment, the primary objective of the current study was to identify, describe, and categorize beverages and snacks available for purchase in school vending machines according to P/PM 150 nutritional standards. The secondary objective was to compare the number and percentage of beverages and snacks within P/PM 150 categories from two points during the early years of implementation.

4.3 Methods

4.3.1 Study Design.

Aligned with the comprehensive process evaluation, researchers captured data from two time points during early P/PM 150 implementation: Time I (winter/spring 2012 and winter/spring 2013) and Time II (winter/spring 2014). The selection of two data collection Times was justified based upon research indicating it may take several months to achieve full nutrition policy adherence (Pasch et al., 2011; Rideout et al., 2007; Samuels et al., 2010). Timelines were influenced by protocols outlined by school board research ethics committees, school representative availability, and the political climate.

4.3.2 Setting.

This research took place in a large, ethnically diverse region of Ontario. Representatives from the regional public health unit, university research team, and school boards made up an advisory board to oversee all aspects of the project. Ethics approval was received from the Office of Research Ethics at the University of Waterloo and the research advisory committees of participating school boards.

4.3.3 Participants.

As part of the larger comprehensive process evaluation, randomly selected elementary schools were invited to participate in this audit; however, were later excluded due to the limited numbers of vending machines. All regional secondary schools (N=60) were eligible and invited to participate. Upon the provision of verbal consent, the administrator nominated a school representative (e.g., administrator, teacher, and/or staff member) to arrange school participation.

4.3.4 Instruments.

A Food Environmental Scan (FES) checklist facilitated systematic documentation of products offered for sale within all school food venues (i.e., vending machines, cafeterias, tuck shops). The FES was designed by the university research team following a review of the literature, underwent an expert review by the advisory board and pre-tested during a smaller scale evaluation of P/PM 150 within another region of Ontario in 2010. Two university research assistants (RA) with Master's degrees conducted the audits. The Time I RA was trained by tool developers during the initial pre-test of the FES, and the Time II RA was trained by the Time I RA in one elementary and one secondary school. The elected school representative accompanied the RA on a physical walkabout of the school to locate vending machines. Using an electronic survey platform (FormConnect® for iPad), the RA asked the school representative a series of

close-ended questions and took photographs to capture product information during a single day school visit (see Box 1). Time II procedures remained consistent with Time I; vending machine food service personnel were unaware of the site visit date.

Box 1: FES Checklist description

The Food Environmental Scan Checklist

In relation to the vending machine audit, the university RA asked elected school representative:

- Are there vending machines?
- If so, how many?
- How many vending machines sell beverages?
- How many vending machines sell snacks?
- How many vending machines sell both beverages and snacks?

The university researcher would then take photographs of each product offered for sale in all school vending machines. Products were captured once per vending machine and counted once per school. Example: If a vending machine sold exclusively water in all slots, water would be captured once, and outcomes of the audit would state the school offered 1 product for sale.

4.4.5 Data Management.

FES close-ended questions were entered into Microsoft Excel, from which descriptive statistics were calculated (e.g., vending machine number, mean, ranges). Product photographs were entered into QSR International NVivo 10 qualitative analysis software (Burlington, MA) and underwent coding for identification, classification, and categorization guided by the P/PM 150 Resource Guide (Ontario Ministry of Education, 2010b):

Step 1: Calculate trans fat (grams) and compare to Trans Fat Standards (Ontario Ministry of Education, 2010b);

Step 2: Identify PPM 150 subgroup for type of snack or beverage (Ontario Ministry of Education, 2010b);

Step 3: Compare nutritional content information (appropriate to serving size) to P/PM 150 standards for the applicable subgroup and categorize as *Sell Most*, *Sell Less*, or *Not Permitted for Sale* (Ontario Ministry of Education, 2010b).

4.4.6 Comparison of Time Periods.

Means and standard deviations across schools were calculated in order to describe the number and variety of products within food and beverage subgroups and P/PM 150 categories in Time I and Time II. Paired t-tests were used to compare the number and percentage of products within P/PM 150 categories for beverages and snacks within schools across time ($p \leq 0.05$).

4.4 Results

Although 26 secondary schools participated in total (42% response rate), only the 19 schools that participated in both Times I and II are included. These reflect the region in urban-rural distribution (93%-7% regionally; 95%-5% participating schools, respectively) and public-Catholic schools (57%-43% regionally; 58%-42% participating schools respectively). Participating school communities had an average family income of \$111,264 (min \$64,986, max \$230,210) and an average of 23% of the adult population (age 25-64 years) held a university certificate, diploma or degree (min 16%, max 31%) (Government of Canada, 2012). In Time I, 18/19 schools offered beverages and 15/19 schools offered snacks. A total of 56 vending machines were identified in Time I (31 offering beverages, 17 offering snacks, 8 offering a combination of beverages and snacks); averaging 3 vending machines per schools (range: 0-6). In Time II, 19/19 schools offered beverages and 12/19 schools offered snacks. A total of 53 vending machines were identified (35 offering beverages, 14 offering snacks, 4 offering a combination of beverages and snacks); averaging 3 vending machines per school (range:0-5).

4.4.1 Description of Beverages.

This audit identified 8 P/PM 150 beverage subgroups in both time periods (Table 4.1). A total of 75 different beverage products were recorded: 59 in Time I (mean=11, SD=6.27 beverages/school) and 45 in Time II (mean=8, SD=4.09 beverages/school).

Table 4.1: Description and P/PM 150 classification of beverages within school vending machines

P/PM 150 beverage subgroup [†] and beverage subgroup description	Time I (n=19)			Time II (n=19)		
	Number of schools offering beverage subgroup (range of products per school)			Number of schools offering beverage subgroup (range of products per school)		
	Number of <i>Sell Most</i> products across schools	Number of <i>Sell Less</i> products across schools	Number of <i>Not Permitted for Sale</i> products across schools	Number of <i>Sell Most</i> products across schools	Number of <i>Sell Less</i> products across schools	Number of <i>Not Permitted for Sale</i> products across schools
Water: Plain water with no additives	17 (1-1)			18 (1-2)		
	2	-	-	3	-	-
Milk: 2%, 1% and skim white milk	6 (1-3)			7 (1-1)		
	5	-	-	2	-	-
Milk-based beverages: Flavoured milk including milk-based sports drinks	9 (2-9)			11 (3-9)		
	4	-	6	9	-	6
Yogurt drinks: Yogurt-based beverages	3 (1-3)			2 (1-2)		
	4	-	-	3	-	-
Soy beverages: Chocolate or vanilla soy milk	3 (1-2)			3 (1-1)		
	2	-	-	2	-	-
Juice and juice blends: 100% juices and from fruit/vegetable concentrate	18 (2-9)			18 (1-6)		
	16	-	8	10	-	2
Soft drinks: Regular, diet and caffeine-free soft drinks	10 (1-4)			10 (1-2)		
	-	6	2	-	3	-
Flavoured water: Fruit-flavoured water, vitamin and carbonated waters	2 (2-3)			5 (1-3)		
	-	4	-	-	4	1
TOTAL	18 (3-28)			19 (3-14)		
	33	10	16	29	7	9

*Sub-groups determined by P/PM 150 Resource Guide15

Beverage offerings appeared to remain consistent between the two time points, with a slight increase in the number of schools offering flavoured water (2 schools in Time I versus 5 schools in Time II) and the reduction in the number of juice/juice blends offered (24 products in Time I versus 12 products in Time II). Based upon P/PM 150 standards, all water, milk, yogurt drinks and soy beverages were considered *Sell Most* due to low levels of fat (≤ 5 g) and high levels of calcium ($\geq 25\%$ daily value) per serving. Soft drinks and flavoured waters automatically fell within the *Sell Less* category as long as they were ≤ 40 calories per serving and caffeine-free. Many milk-based beverages (6 Time I, 6 Time II) and juice/juice blends (8 Time I, 2 Time II) were high in sugar (≥ 28 g per serving) and considered *Not Permitted for Sale*.

Ten schools in Time I (53%) met P/PM 150 beverage standards; 6 schools met the 80-20 guideline, 3 schools offered exclusively *Sell Most* beverages and 1 school offered no beverages. In Time II, 7 schools (42%) met P/PM 150 standards; 5 schools met the 80-20 guideline and 2 schools offered exclusively *Sell Most* beverages. One school in Time I offered more *Sell Less* products opposed to *Sell Most*. Nine schools in Time I (47%) and 11 schools in Time II (58%) included one or more *Not Permitted for Sale* beverage (most often a sugary milk-based beverage). No significant differences were identified between Time I and Time II for the number and/or percentage of *Sell Most*, *Sell Less*, or *Not Permitted* beverages.

4.4.2 Description of Snacks.

The audit identified 8 subgroups for snacks in Time I and 7 subgroups in Time II (Table 4.2). A total of 132 different snacks were recorded: 87 in Time I (mean=14, SD=9.56 snacks/school) and 103 in Time II (mean=18, SD=13.18 snacks/school).

Table 4.2: Description and P/PM 150 classification of snacks within school vending machines

P/PM 150 snack subgroup [†] and snack subgroup description	Time I (n=19)			Time II (n=19)		
	Number of schools offering snack subgroup (range of products per school)			Number of schools offering snack subgroup (range of products per school)		
	Number of <i>Sell Most</i> products across schools	Number of <i>Sell Less</i> products across schools	Number of <i>Not Permitted for Sale</i> products across schools	Number of <i>Sell Most</i> products across schools	Number of <i>Sell Less</i> products across schools	Number of <i>Not Permitted for Sale</i> products across schools
<i>Fruit snacks and leathers:</i> Made from 100% juice or concentrate, gummies and fruit leathers	6 (1-6)			9 (1-5)		
	11	-	-	8	-	1
<i>Vegetables and fruit chips:</i> Potato chips, but also chips made from other vegetables	11 (1-9)			10 (1-11)		
	3	4	6	4	4	9
<i>Baked goods</i> [‡] : Cereal bars and cookies	11 (2-10)			9 (2-20)		
	12	2	11	15	2	18
<i>Grain-based snacks</i> [‡] : Crackers, pita chips, pretzels, popcorn and other snack mixes	15 (1-7)			8 (2-7)		
	3	9	3	3	11	2
<i>Cheese:</i> Single serve cheese snacks	2 (1-1)			-		
	1	-	-	-	-	-
<i>Yogurt:</i> Variety of yogurt flavours such as blueberry, strawberry and vanilla	3 (1-5)			2 (1-2)		
	5	-	-	1	-	-
<i>Dried meat:</i> Beef jerky	3 (1-1)			4 (1-1)		
	1	-	-	1	-	-
<i>Confectionary:</i> Sugary snacks	6 (1-7)			6 (1-9)		
	-	-	16	-	-	19
TOTAL	15 (1-31)			12 (1-43)		
	36	15	36	33	17	49

[†]Sub-groups determined by P/PM 150 Resource Guide¹⁵; [‡] The P/PM 150 category could not be calculated for three baked good products and one grain-based product in Time II as the product did not have a label (i.e., homemade cookie, homemade loaf, cereal square wrapped in plastic wrap, popcorn with no label or brand name).

Subtle changes occurred between time periods for types of snacks offered within schools. For example, fewer schools offered baked goods (11 schools in Time I versus 9 schools in Time II) and grain-based snacks (15 schools in Time I versus 8 schools in Time II), yet more product varieties were offered (25 baked goods in Time I versus 38 baked goods in Time II; 15 grain-based snacks in Time I versus 17 grain-based snacks in Time II). Although few varieties, products within the categories of cheese, yogurt, dried meat, and a majority of fruit snacks/leathers were all categorized as *Sell Most*. Baked goods, grain-based snacks, and vegetable/fruit chips within *Not Permitted for Sale* categories were often categorized as such due to high contents of fat per serving (≥ 5 g for baked goods; ≥ 3 g for grain-based snacks and fruit/vegetable chips) or low levels of fiber (≤ 2 g for baked goods). Confectionaries are strictly prohibited within all provincial schools and were automatically identified as *Not Permitted for Sale*.

Four schools in Time I (21%) met P/PM 150 standards for snacks because these schools offered no snacks at all. In Time II, 9 schools (47%) met P/PM 150 standards; 2 schools offering exclusively *Sell Most* snacks and 7 schools offering no snacks. Alternatively, 1 school in Time I (5%) offered more *Sell Less* items than *Sell More*. In Time I, 14 schools (74%) and 10 schools in Time II (53%) offered *Not Permitted for Sale* snacks. No significant differences were reported between the number and/or percentage of *Sell Most*, *Sell Less*, or *Not Permitted for Sale* snacks between Times I and II.

4.4.3 Reaching Full P/PM 150 Compliance.

Only 3 schools (16%) met P/PM 150 standards for beverages and snacks in both Times I and II. One school provided exclusively *Sell Most* beverages and no snacks; the other 2 schools met the 80-20 guideline. A majority of schools (n=16, 84%) offered one or more *Not Permitted*

for Sale product in Times I and/or II, with 3 schools (16%) failing to meeting P/PM 150 standards in both Times for beverages and snacks. There was no significant difference in the number of schools meeting P/PM 150 standards for beverages between Times; however, there was evidence to suggest that significantly more schools in Time II ($p=0.02$) met P/PM 150 standards for snacks (mean=0.47, SD=0.51) compared to Time I schools (mean=0.21, SD=0.42, CI 95% -0.48 to -0.05).

4.5 Discussion

In the Comprehensive School Health framework, P/PM 150 falls within the Healthy School Policy Pillar, impacting the Social and Physical Environment, as it attempts to make healthy beverages and snacks available to students (Veugelers & Schwartz, 2010). This research identified 207 products (75 beverages, 132 snacks) with varying degrees of P/PM 150 compatibility within secondary school vending machines. General findings demonstrated that *Sell Most* products were made available to students, and full policy compliance was possible for a small percentage of schools.

Although healthy products were made available between periods of data collection, no significant differences were found between the number and/or percentage of products within the P/PM 150 categories over time. Some companies have made adaptations to their products to better meet P/PM 150 standards, including the use of alternative preparation methods (e.g., baked chips), adjusted product formulation (e.g., low fat yogurt) and altered serving sizes (e.g., 100 or fewer calories per pouch of cookies). Not all companies have made adjustments nor have all schools included healthier alternatives in vending machines; drawing attention to the need for regional public health units to continue to work alongside school stakeholders to improve the nutritional quality of products available for sale.

There were significantly more schools achieving P/PM 150 standards for snacks in Time II compared to Time I; although this change may be attributed to a decline in the number of schools offering snacks in Time II. No significant difference was identified in the number of schools meeting P/PM 150 standards for beverages, further stressing the need for continued improvement. The slow progression in reaching policy adherence is consistent with previous literature. Changes to the food environment requires time, and it can take months-to-years to improve the nutritional quality of products offering for sale in vending machines (Cullen, Watson & Ralston, 2007; Lockwood, Taylor & MacLellan, 2012; Samuels et al., 2010; Vine & Elliott, 2013). The ability to make and sustain changes also requires on-going support; a weakness identified all evaluations of P/PM 150 (Pasch et al., 2011; Rideout et al., 2007).

The Ontario Ministry of Education mandated P/PM 150, entrusted dissemination to regional school boards and left implementation to schools. This tiered structure led to confusion at the school-level as to who is responsible for the on-going monitoring of the policy. From the literature, we know that when school representatives are engaged with and concerned about the healthiness of vending machine products, their school is better able to achieve policy adherence (Ontario Ministry of Education, 2010a). If schools are held responsible for monitoring P/PM 150, regional public health units, school boards, and the Ministry should encourage routine audits and celebrate the continued efforts of school stakeholders as they commit to making school food environments healthier for students.

In future iterations of the policy and its application, the Ministry should consider the inconsistency of product categorization based upon sugar content. While P/PM 150 standards attempt to limit the amount of sugary products promoted to students, this research identified a high prevalence of sugary *Not Permitted for Sale* milk-based beverages (with up to 38 g of sugar,

not including lactose) and sugary *Sell Most* juice/juice blends (averages 31 g/container, range 14-57 g). The consumption of sugary milks or juices with 40 g of free sugar would contribute approximately 4% of daily Caloric intake for boys and 5% of daily Caloric intake for girls (Health Canada, 2012). As a means to prevent dental caries and excess body weight, the WHO has strongly advised adults and children to limit their daily intake of free sugars to less than 10%, ideally below 5%, of their total daily energy intake (World Health Organization, 2015b). Previous research has outlined that sugar intake is the highest during adolescence (9-18 years), with an estimated one quarter of total daily calories coming from products such as regular soft drinks, milk, fruit, confectionaries, and fruit juice (Langlos & Garriguet, 2011). P/PM 150 restricts beverage container sizes to ≤ 250 ml for elementary schools but places no restriction for secondary schools. While the association between consumption of sugary beverages and weight does not prove causation, the Ministry should consider limiting the volume of juice/juice blends within the *Sell Most* category across all school levels (Crowe-White, O'Neil, Parrott, Benson-Davies, Droke, Gutschall et al., 2015). Further, Canadian adolescents, both girls and boys, often do not meet the daily minimum recommended servings of vegetables and fruits and should be encouraged to do so (Storey, Forbes, Fraser, Spence, Plotnikoff, Raine et al., 2009). While juices contribute micronutrients and phytochemicals, their low fibre content and high glycemic index suggest other choices are preferred. The Ministry should encourage the provision of fresh vegetables and fruits as snacks in vending machines, for which there were none identified in the current audit, although some were identified in school cafeterias.

There is general public belief that foods sold in Ontario schools are aligned with P/PM 150 standards; however, this study has exemplified that many products offered for sale are high in fat, sodium, or sugar, and low in fiber. The inclusion of *Not Permitted for Sale* and even *Sell*

Less beverages and snacks may be misleading to students in the absence of an educational component to P/PM 150 encouraging students to select *Sell Most* items. A student may only be aware of the P/PM 150 categorization of a product once purchased, as not all food labels are visible within vending machines. In order to bring awareness of what constitutes a healthy snack, a range of stakeholders should be consulted (e.g., students, parents, educators, food service, and government): product companies should align nutrition facts tables to container size and P/PM 150 standards to allow for quick interpretation; public health officials should partner with all stakeholders to promote the sale/purchase of products with the highest nutritional value; and policy-makers should consider lower prices for healthier options to help make the healthy choice, accessible and affordable.

This study is not without limitations. Study findings are limited to the products offered on the day of site visits, which may not reflect the full range of products offered across the school year. Additionally, the presence of products within vending machines does not accurately reflect what was actually purchased by students. Research from low-bias, randomized control trials provide good evidence to support the notion that the presence of healthier options aligned with nutritional standards in vending machines has increased the sale of such items, without a loss in the volume of products sold and/or a loss of profits (Grech & Allman-Fairnelli, 2015). To add to this growing field of research, the FES checklist should be repeated at multiple times during the school year to collect data regarding the consistency of products offered and include the collection of purchase frequency and associated profits.

A strength of the FES, on the other hand, was the inclusion of variables deemed important for an accurate audit of vending machine contents (Matthews & Horacek, 2015). In a systematic review led by Matthews and Horacek (2015), authors reported variable methodologies

used to capture price, promotion, accessibility, availability, package size, and healthfulness criteria. The FES was able to capture the accessibility, availability, package size, and healthfulness criteria (according to P/PM 150) of secondary school vending machine contents; all which provide valuable information on the current status of a school's food environment. Future iterations of the FES may include price and promotion of beverages and snacks, adding to the current understanding as to how to best measure and monitor offerings within vending machines within schools and other settings in which vending machines are highly prevalent (e.g., workplaces, hospitals).

Additional strengths of this research included the consistency of product categories across two Times, having a trained research team conduct the FES and the reliability of sourced nutritional content information directly from product manufacturers. This research will help inform the larger comprehensive process evaluation to better understand: what school-based factors support healthy eating; how products sold in vending machines contribute to student intakes; and challenges faced by school stakeholders in reaching P/PM 150 compliance. Ultimately, this research will help understand how school nutrition policies can contribute to improving student health.

**Chapter 5: Study #2: Supports 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**

5.1 Abstract

BACKGROUND: School adherence to all Comprehensive School Health framework (CSH) pillars (social and physical environments; teaching and learning; healthy school policy; and partnerships and services) has been positively associated with students' health behaviours and academic achievement. This study used CSH to classify, compare and describe school support for healthy eating during early Ontario School Food and Beverage Policy implementation.

METHODS: Data were collected from consenting elementary and secondary schools in a populous region of Ontario across Time I (2012/13) and Time II (2014). Representatives completed Healthy School Planner Surveys and Food Environmental Scans. Descriptive statistics of close-ended responses and content analysis of open-ended responses are presented. Schools were classified as *Initiation*, *Action*, or *Maintenance* along the CSH Continuum in both Times and as *high/increased*, *moderate*, or *low/decreased* support within CSH pillars.

RESULTS: 25 school representatives (8 elementary, 17 secondary) participated in both Times. Most schools sustained *Action* (n=20) across Times with varying support in CSH pillars. The Physical Environment was best-supported (100% *high/increased* support) and Social Environment the least (56% *low/decreased* support). Only two schools achieved the highest rating (*Maintenance*) in Time II.

CONCLUSIONS: Ontario schools require further assistance to strengthen enablers and address barriers to comprehensively support healthy eating.

5.2 Introduction

The school environment facilitates the development of positive healthy living behaviours in children during formative years (Aldinger & Jones, 1998; Driessen et al., 2014; Fox, 2010; Lytle et al., 1995; Story et al., 2006). For this reason, school officials have been encouraged to implement nutrition policies to promote healthy eating behaviours in an effort to address the high prevalence of childhood obesity and risks of associated chronic diseases (Healthy Kids Panel, 2013; Public Health Agency of Canada, 2010; World Health Organization, 2014). In 2011, the province of Ontario mandated the School Food and Beverage Policy (P/PM 150) as a set of nutritional standards applied to foods and beverages offered for sale in school food venues, at school events and through nutrition programs (Ontario Ministry of Education, 2010a).

The policy states that any school food venue must adhere to an 80-20% rule in that the venue offer beverages complying with guidelines in the following proportions: $\geq 80\%$ *Sell Most*, $\leq 20\%$ *Sell Less*, and 0% *Not Permitted for Sale* (Ontario Ministry of Education, 2010a). Schools are responsible for the implementation and on-going monitoring of the 80-20% rule, with up to 10 possible exemption days in each school year when even *Not Permitted* foods may be offered for sale (Ontario Ministry of Education, 2010a). Preliminary studies indicate that some school stakeholders have encountered difficulties implementing P/PM 150, thereby limiting the ability of schools to reach full policy compliance (Chaleunsouk & Kutsyuruba, 2014; Lysyk, 2013; Vine & Elliot, 2013; Vine et al., 2014). These findings are consistent with the published literature, reporting the success of nutrition policy adherence typically takes years (Pasch et al., 2011; Rideout et al, 2007; Samuels et al., 2010).

School nutrition policies play a critical role in supporting the healthy eating behaviours of children (Ardzejweska et al., 2012; Gleddie, 2010; Inchley et al., 2006). However, policies can

falter when the local context is unsupportive of the change (Ardzejweska et al., 2012; Gleddie 2010; Kirk, 2006; Inchley et al., 2006). The Comprehensive School Health (CSH) framework was informed by a Social Ecological approach, recognizing that in order to sustain positive health behaviour change, several dimensions impacting children and school environments must be considered in addition to policy (Aldinger & Jones, 1998; Allensworth & Kolbe, 1987; Deschesnes et al., 2003; Gleddie & Hobin, 2011; Inchley et al., 2006; McIsaac et al., 2012; McIsaac et al., 2013; Rasberry et al., 2015; Roberts et al., 2015; Senior, 2012). Such multi-dimensional approaches, also called “health promoting schools” and “coordinated school health”, support the health and academic achievement of students (Veugelers & Schwartz, 2010). The CSH framework examines the school environment through four inter-related pillars (Table 2.3, page 24 in Literature Review). Note that Social and Physical Environments are unified within the model but are often observed and measured separately.

Previous research outlines that when each CSH pillar supports positive health behaviour change, the intention of school policies can be fulfilled (Fung et al., 2012; Fung et al., 2013). However, it is unknown how school Social and Physical Environments, Teaching and Learning, and Partnerships and Services pillars have supported healthy eating over the time of P/PM 150 implementation. Therefore, using the CSH framework as a guide, this research aimed to (i) classify and compare the level of support for healthy eating within the CSH framework overall and for each CSH pillar across two Times during the early years of P/PM 150 implementation; and (ii) identify and describe the aspects of the school environment for which high levels of support were recorded and/or for which improvements were made within CSH pillars between Times.

5.3 Methods

5.3.1 Evaluation Design.

Lessons learned from implementation science, or the study of transferring empirical evidence into everyday use, highlight the importance of measuring context throughout policy implementation, rather than assessing uptake under ideal circumstances (Landsverk, Brown, Chamberlain, Ogihara, Czaja & Goldhaber-Fiebert, 2012). Because implementation is not a static, one-time process, the impact of public health strategies often lag for several years before full policy adoption is achieved (Chan, Oldenburg & Viswanath, 2015). A process evaluation was selected for this study as it helped to understand ‘what worked’ and ‘what didn’t work’ during the early years of P/PM 150 implementation (Weiss, 1998). In the current study, the process evaluation design was used to guide measurement of the level of supports for healthy eating within the CSH framework across Times.

5.3.2 Setting.

This research was conducted in a populous region of Ontario (Canada) in partnership with the regional public health unit. Data were collected from the two school boards (public and Catholic) across two Times: Time I (2012/13) and Time II (2014). All aspects of this research received ethics approval from the university Office of Research Ethics and the scientific review committees of participating school boards.

5.3.3 Participants.

Elementary and secondary schools were recruited for this study. A random sample of 38 schools was selected from all elementary schools (N= 318) within participating school boards. Randomization was based upon geographic distribution, municipality socioeconomic status, school population size, and equal representation between school boards. All secondary schools in

Ontario have on-site food venues offering daily service, while elementary schools offer limited (e.g., vending machines) or occasional services (e.g., monthly speciality hot lunches). Therefore, secondary schools were considered more likely to be impacted by P/PM 150 standards and all regional secondary schools (N=62) were invited to participate.

A school representative from each of the participating elementary and secondary schools was recruited for this study. The representative was identified (either self-identified or selected by school administration) as being knowledgeable of healthy eating-related initiatives at their school. As this research took place over three school years, the representative was not necessarily the same person in Time I as Time II.

5.3.4 Instruments.

Consenting school representatives were asked to complete the Healthy School Planner (HSP) survey and assist a university researcher with the on-site completion of a school Food Environmental Scan (FES) checklist.

5.3.4.1 HSP Survey. The HSP is a survey tool, which analyzes and interprets the current status of a school's level of support for physical activity, healthy eating, tobacco control, and/or positive mental health through policies, practices, and programs (Joint Consortium for School Health, 2014). The HSP survey, healthy eating module, was selected for this study as it directly corresponds with the pillars of the CSH framework. Although no validation studies are available at this time, the HSP has been acknowledged by the expert judgement of the Public Health Agency of Canada, the Health Council of Canada, and Health Canada as being sufficiently reliable and valid following revisions in 2009 (Health Council of Canada, 2014). Since the inception of this research study, the HSP survey has undergone reformatting and revisions to scoring procedures. To strengthen consistency and comparability of findings, this research opted

to use the paper-based HSP survey, with corresponding Healthy School Continuum (HSC), for both Times (Healthy School Planner, 2013).

5.3.4.2 FES Checklist. The FES was developed as an addendum of the HSP to ask open and closed-ended questions related to the status of P/PM 150 implementation and healthy eating-related programs, practices, and policies within each school. The list had been pilot tested in secondary schools from a different region (Habayeb, 2013). The FES checklist was revised in Time II in order to document changes to the school food environment since Time I.

5.3.5 Scoring and Analysis.

HSP Survey: The HSPs collected from each school underwent a series of scoring procedures, with outcomes compared across Times (Healthy School Planner, 2013; see Figure 3.3).

Step 1: Score CSH indicator questions: Closed-ended indicator questions were independently scored based on respondent answers.

Step 2: Calculate overall CSH pillar rating along the HSC: Based upon the average scores of indicator questions, each CSH pillar was awarded an overall score along the HSC (Table 5.1). Ratings included *Initiation*, *Action*, or *Maintenance*, based upon the school's ability to meet recommendations set by national experts (Healthy School Planner, 2013). Furthermore, a numerical score was appointed for each CSH pillar based upon overall rating (Table 5.1).

Table 5.1: Ratings along the Healthy School Continuum

	Initiation	Action	Maintenance
Meeting recommendations	Falls short of meeting recommendations	Meets some, but not all recommendations	Meets or exceeds recommendations
Recommendations for the future	Extensive room for improvement	Some room for improvement	Maintain current level of commitment to support healthy eating at school
Appointed CSH score	1.0	2.0	3.0
Overall score and rating	1.0 – 1.99	2.00 – 2.80	2.81 – 3.00

Adapted from the Healthy School Planner survey (Veugelers & Schwartz, 2010)

Step 3: Calculate the overall score along the HSC: The average of all five CSH pillar scores equated to the overall score along the HSC (Table 5.1).

Comparison over time: Overall CSH pillar ratings in Time I were compared to that of Time II to determine if support for healthy eating was *low/decreased*, *moderate*, or *high/increased* between Times (Table 5.2).

Table 5.2: Change in level of support within CSH pillars between Times

Low/decreased support		Moderate support		High/increased support	
Time I	Time II	Time I	Time II	Time I	Time II
Maintenance	Action	Action	Action	Initiation	Action
Maintenance	Initiation			Initiation	Maintenance
Action	Initiation			Action	Maintenance
Initiation	Initiation			Maintenance	Maintenance

5.3.4.3 Data analysis. Descriptive statistics (mean, ranges) were calculated using SPSS Statistical Software (Version 23, Armonk, NY). Open-ended questions underwent a deductive content analysis using standard word processing software by which responses were grouped by CSH pillar and outcomes used to further describe ordinal responses to the HSP indicator questions (Elo & Kyngäs, 2008).

5.4 Results

5.4.1 Study Sample.

Eighty-two schools were invited to participate, 45 of which participated in either Time I or II (55% response rate). However, only the 25 schools (8 elementary, 17 secondary) that completed a HSP survey in both Times are included in the results. The HSP was completed by a combination of teachers (16 Time I, 16 Time II), principals or vice principals (11 Time I, 15 Time II), curriculum leads/department heads (3 Time I, 4 Time II), food service staff (1 Time I, 1 Time II), a school board representative (1 Time I), and/or a public health nurse (1 Time I, 1 Time II).

5.4.2 Overall rating along the HSC for Time I and Time II

Overall ratings for each school were calculated in Time I and Time II (Figure 5.1).

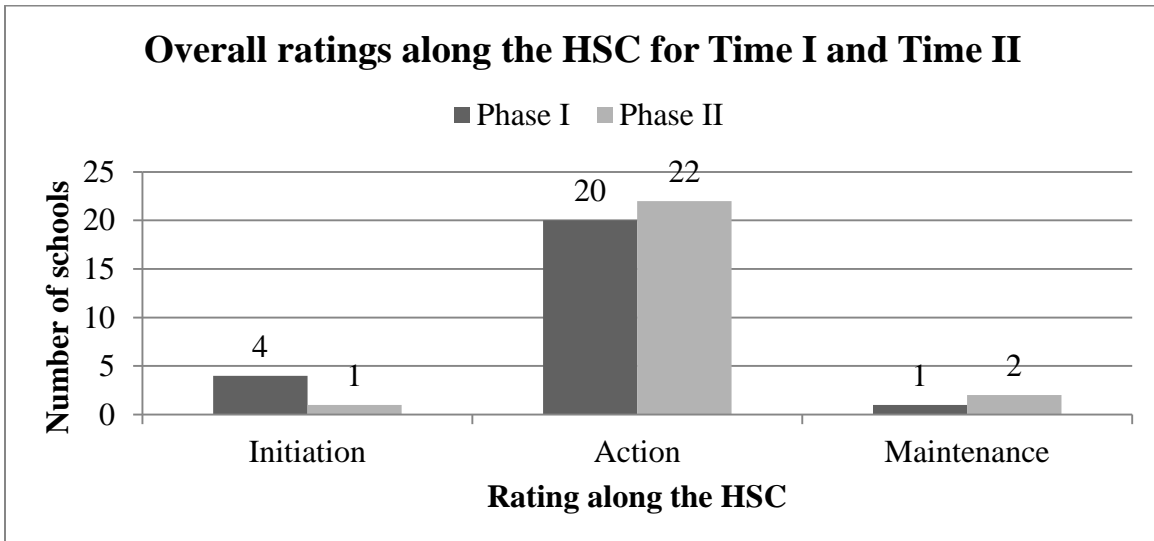


Figure 5.1: Overall ratings along the Healthy School Continuum in Time I and Time II (N=25)

A majority of schools fell into the *Action* stage along the HSC in Time I (6 elementary, 14 secondary) and Time II (6 elementary, 16 secondary), with very few achieving the high rating of *Maintenance* in either Time I (1 secondary) or Time II (2 elementary).

5.4.3 Comparison of Time I versus Time II overall ratings.

As outlined in Figure 5.2, three schools advanced (from *Initiation* to *Action*, n=2; from *Initiation* to *Maintenance*, n=1), 20 schools sustained (within *Action*) and two schools regressed (from *Maintenance* to *Action*, n=1; sustained within *Initiation*) from Time I to Time II.

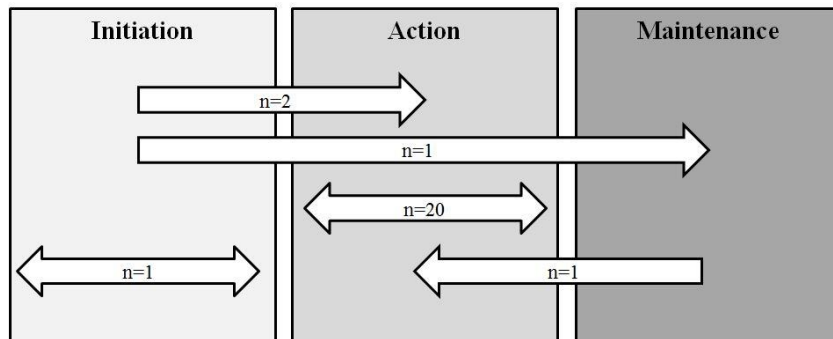


Figure 5.2: Overall movement along the HSC between Times (N=25)

The movement along the HSC was dependent on the changes in the level of support for healthy eating within CSH pillars.

6.4.3.1 Extent of healthy eating supports by CSH pillar. Table 5.3 provides an overview of the level of support for healthy eating within each of the CSH pillars. The forthcoming sections will provide in-depth details about how healthy eating was supported, as outlined by the CSH pillar indicator questions and responses to the FES.

Table 5.3: Level of support for healthy eating by CSH pillar (N=25)

CSH Pillar	Low/decreased support # of schools (%)	Moderate support # of schools (%)	High/increased support # of schools (%)
Supportive Social Environment	17 (56%)	2 (8%)	6 (24%)
Healthy Physical Environment	-	-	25 (100%)
Teaching and Learning	1 (4%)	17 (68%)	7 (28%)
Healthy School Policy	7 (28%)	2 (8%)	16 (64%)
Partnerships and Services	11 (44%)	5 (20%)	9 (36%)

5.4.3.1 Supportive Social Environment.

Although only 6 schools (24%) had overall high/increased levels of support for the Supportive Social Environment, many schools made improvements within key indicators (Appendix D). Evidence of support for healthy eating retrieved from the HSP survey included: schools that had a “high” (8%) or “very high” (16%) self-report priority for healthy eating at their school; a student food and nutrition council (40%); and/or hosting nutrition month activities (36%). To encourage families to reinforce healthy eating habits at home, schools would most often distribute healthy snack and lunch suggestions (36%) or Canada’s Food Guide (16%) to parents/families. Furthermore, to gather input on school-related healthy eating initiatives from the broader school community, schools reported collecting suggestions from students (40%), parent organizations (24%), parents/families (16%), and staff (16%).

5.4.3.2 Healthy Physical Environment.

The Healthy Physical Environment proved to be the CSH pillar of greatest support with 100% of schools (N=25) in both Times sustaining a high level of support healthy eating (Table 5.3). Support for the Healthy Physical Environment was provided by having an adequate number of tables and chairs for student meals, accessible drinking fountains, and the availability of sinks to practice proper hand-hygiene. In addition, both elementary and secondary schools allowed enough time to each lunch, socialize with friends, and clean up (i.e., 20 minutes in elementary, 60-75 minutes in secondary).

Both elementary and secondary schools promoted healthy eating to students throughout the school setting. Most often this was done through promotional posters in all schools (e.g., advertisements for local farmers’ markets, nutrition month campaigns) and/or cafeteria signage in secondary schools (e.g., provincial seasonal fruit promotion cards; regional public health

healthy eating stickers). A majority of secondary schools (n=15) across the HSC also used student-designed murals and artwork to raise awareness and promote healthy food choices in cafeterias.

All secondary schools in Time II (n=17) reported hosting activities during the lunch hour. Examples of activities included: “Fruit Ninja” to raise awareness of healthy eating and fruit and vegetable consumption; mini talent shows or open mic events; pep rallies; and competitions to win P/PM 150-compatible food prizes (i.e., minute-to-win it, rap for a wrap, sing for a salad, healthy eating quizzes). No such activities were identified in elementary schools, as representatives reported that time was dedicated to eating and socializing, followed by an outdoor recess.

5.4.3.3 Teaching and Learning.

Support for healthy eating within the Teaching and Learning pillar was exemplified in Time II through schools that offered media literacy on special topics related to healthy eating (80%), field trips to farmers’ markets (40%), and/or field trips to the local grocery store (32%). Additionally, the FES reported 80% of schools offered ad-hoc gardening opportunities to students in select gardens, such as tending to the school’s memorial or peace garden, planting an herb garden, or discussing gardening in the eco club. Support for the development of students’ food skills was also exemplified in a majority of schools (60%) through hospitality classes, participating in regional food education days, and/or participating in region-wide speciality snack days.

Many schools offered regular breakfast programs (44%), lunch programs (12%), and/or snack programs (8%) (Appendix D). A majority of breakfast programs (77%, n=10) were freely available to all students, regardless of their ability to pay and provided services an average of

three days/week (range 1-5). Lunch programs ran on one, four, or five days a week; however, only one of three lunch programs was available to students, regardless of their ability to pay. Snack programs (100%, n=2) were made freely available to all students, and ran either once or three times a week. All nutrition programs were reviewed by school officials at least once per year.

In Time II, several school representatives reported not requiring a breakfast program (32%), lunch program (48%), and/or a snack program (52%). Reasons for not requiring a nutrition program included not identifying a need (i.e., students always came to school with lunch, high socioeconomic status neighbourhood). In contrast, in schools that did not have nutrition programs, some representatives reported a breakfast program (16%), lunch program (32%), or snack program (12%) would be beneficial as these programs would help address poor dietary habits witnessed in classrooms and cafeterias. In order to initiate such a program, representatives identified a need for additional funding and volunteers.

5.4.3.4 Healthy School Policy.

This pillar was well-supported between Times by a majority of schools (64%, Table 5.3). To support healthy eating through Healthy School Policy, outside of P/PM 150, schools ensured: healthy food choices were available at reasonable/subsidized prices (24% written policies; 32% formal practices); to avoid the use of sugary treats as rewards in the classroom (8% written policies; 48% formal practices); and that foods sold through off-campus fundraisers were healthy (16% written policies; 12% formal practices). Examples retrieved from the FES of non-food fundraisers included sales of magazines, cookware, flowers and plants, as well as special events such as movie nights, student dances, skating field trips, and carwashes.

All participating elementary schools further supported healthy eating at school by enforcing a written policy to restrict students from leaving school property unless a written note from a parent/guardian was obtained. For both elementary and secondary, the FES identified the number of 10 P/PM 150 exemption days schools used. No school reported surpassing the 10 day limit (average 3, range 0-10 days/year) in both Times. Use of exemption days included school barbecues, on-site fundraisers (e.g., bake sales, candy grams) and curriculum-related events (e.g., French café, business venture competition).

5.4.3.5 Partnerships and Services.

The Partnerships and Services pillar had variable levels of support across the HSC ranked schools. According to Time II data, schools that had high/increased support for Partnerships and Services often provided school staff with in-service training on topics such as nutrition (44%), teaching healthy eating curriculum (32%), and/or the promotion of positive self-body image (28%). In Time I, when P/PM 150 was first mandated, a majority of schools (88%) sent a school representative to receive formal training provided by the regional public health unit in partnership with the affiliated school boards. Further, many schools opted for a consultation with their school public health nurse (68%) and/or school board P/PM 150 coordinator (56%) to help implement P/PM 150 in the local setting. In Time II, only 20% of schools met with a public health nurse, and the school boards' P/PM 150 coordinators no longer filled that role. Some schools received, however, P/PM 150-related resources in Time II, including relevant healthy eating/nutrition/policy written resources (24%) and/or website links (20%).

Even though a majority of school representatives did not meet to discuss P/PM 150 with their public health nurse in Time II, healthy eating was supported through a connection with the regional public health unit for which resources and information was shared (88%), programs

were developed/implemented jointly (60%), and/or problems were solved jointly (32%). In the broader community, schools reported working on healthy eating promotion and/or activities for students with community health organizations (e.g., Heart and Stroke Foundation, Canadian Cancer Society; 32%), the school board (28%), the municipal parks and recreation department (24%), a youth organization (e.g., YMCA, Boys and Girls Club; 16%), and/or a health and fitness club (12%). Over the course of Time II, four schools reported having no contact with their regional public health unit, and five other schools reported not establishing external community connections to support healthy eating promotion.

5.4.10 Overall Movement along the HSC Compared to Support for Healthy Eating with Pillars. Table 5.4 outlines the levels of support for healthy eating within each of the CSH pillars for each categorization of school: Regressed, Sustained, or Advanced.

Table 5.4: Summary of overall movement and level of support within CSH framework

Overall movement along the HSC	School Level #	Rating along the HSC		Overall level of support for each CSH pillar				
		Time I	Time II	Social	Physical	Teaching	Policy	Partnership
Regressed	Secondary 1	Initiation	Initiation	Low/decreased	High/increased	High/increased	Low/decreased	Low/decreased
	Secondary 2	Maintenance	Action	Low/decreased	High/increased	High/increased	High/increased	Low/decreased
Sustained	Secondary 3	Action	Action	Low/decreased	High/increased	Low/decreased	Moderate	Low/decreased
	Secondary 4	Action	Action	Low/decreased	High/increased	Moderate	Low/decreased	Low/decreased
	Secondary 5	Action	Action	Low/decreased	High/increased	Moderate	Low/decreased	Moderate
	Elementary 1	Action	Action	Low/decreased	High/increased	Moderate	Low/decreased	High/increased
	Elementary 2	Action	Action	Low/decreased	High/increased	Moderate	High/increased	Low/decreased
	Elementary 3	Action	Action	Low/decreased	High/increased	Moderate	High/increased	Low/decreased
	Secondary 6	Action	Action	Low/decreased	High/increased	Moderate	High/increased	Low/decreased
	Secondary 7	Action	Action	Low/decreased	High/increased	Moderate	High/increased	Low/decreased
	Secondary 8	Action	Action	Low/decreased	High/increased	Moderate	High/increased	Moderate
	Elementary 4	Action	Action	Low/decreased	High/increased	Moderate	High/increased	Moderate
	Secondary 9	Action	Action	Low/decreased	High/increased	Moderate	High/increased	High/increased
	Secondary 10	Action	Action	Low/decreased	High/increased	Moderate	High/increased	High/increased
	Secondary 11	Action	Action	Low/decreased	High/increased	High/increased	High/increased	Low/decreased
	Secondary 12	Action	Action	Low/decreased	High/increased	High/increased	High/increased	High/increased
	Elementary 5	Action	Action	Moderate	High/increased	Moderate	Low/decreased	High/increased
	Secondary 13	Action	Action	High/increased	High/increased	Moderate	Low/decreased	Low/decreased
Elementary 6	Action	Action	High/increased	High/increased	Moderate	Low/decreased	High/increased	
Secondary 14	Action	Action	High/increased	High/increased	Moderate	High/increased	Low/decreased	
Secondary 15	Action	Action	High/increased	High/increased	Moderate	High/increased	Moderate	
Secondary 16	Action	Action	High/increased	High/increased	High/increased	High/increased	Moderate	
Advanced	Elementary 7	Initiation	Maintenance	High/increased	High/increased	High/increased	High/increased	High/increased
	Elementary 8	Initiation	Maintenance	Moderate	High/increased	High/increased	High/increased	High/increased
	Secondary 17	Initiation	Action	Low/decreased	High/increased	Moderate	Moderate	High/increased

As viewed in Table 5.4, Secondary 1 sustained *initiation* and had low supports outweigh the improvements made to the school in adjacent CSH pillars and, therefore, remained at this rating. For Secondary 2, sustaining a high rating of *maintenance* was difficult as high levels of support are required in each pillar from one school year to the next. As outlined, the level of support for the Supportive Social Environment and the Partnerships and Services pillar declined between Times.

The schools that *sustained* between Times showed variable support for healthy eating within CSH pillars. Interestingly, only three groups of schools improved, sustained, or decreased the level of support in the same pillars: (i) Elementary 2, Elementary 3, Secondary 7 and Secondary 7; (ii) Secondary 8 and Elementary 4; and (iii) Secondary 9 and Secondary 10. All other schools experienced unique changes within their school environments to enhance or reduce healthy eating supports.

Elementary 7 was the only school to achieve high/increased levels of support for healthy eating in each CSH pillar and was able to attain an overall *maintenance* rating in Time II. Elementary 8 also reached *maintenance*, but required further improvements within the Supportive Social Environment. Lastly, Secondary 17 made large improvements pulling itself out of *initiation* to *action* from Time I to Time II. Achieving greater support in the Healthy Physical Environment and Partnership and Services pillars allowed for this movement.

5.5 Discussion

Having supports in place throughout CSH pillars during times of policy implementation has been shown to be effective at facilitating and maintaining student behaviour change (Driessen et al., 2014; Langford et al., 2014). This study showed variability in the levels of support for CSH during mandated School Food and Beverage Policy (P/PM 150) implementation across schools in two Times. This study identified some CSH pillars are better supported than others. For example, all schools achieved a high level of support for Physical Environments between Times because of Ontario's commitment to the provision of safe, supportive physical school environments in line with recommendations set by the WHO (Cargo, 2004). Alternatively, the Supportive Social Environment received the lowest amount of support, perhaps due to the need for extracurricular initiatives to be driven by individuals at the school-level.

According to the literature, a vital enabler to CSH implementation is the support of the school principal, who has been described as a gatekeeper with the power to facilitate or restrict the adoption, implementation, and sustainability of CSH initiatives (Fullan, 1992; Hallinger, 1996; Inchley et al., 2006; MacLellan et al., 2009; McIsaac et al., 2013; Roberts et al., 2015; Rohrbach, Graham & Hansen, 1993; Stewart-Brown, 2006; Storey, Spitters, Cunningham, Schwartz & Veugelers, 2011; Storey, 2013). Individuals with a personal passion for improving the health behaviours of students, referred to as school health champions, are often key facilitators to on-going support of CSH initiatives within and external to the classroom (Fetro, 1998; Kam, Greenberg & Walls, 2003; Lohrmann, 2008; Lohrmann, 2010; McIsaac et al., 2013; Rasberry et al., 2015; Valois & Hoyle, 2000; Valois, Slade & Ashford, 2011; Stolp, Wilkins & Raine, 2015; Valois, Lewallen, Slade & Tasco, 2015). In the current study, the concept of school champions emerged through discussions recorded through the FES as teachers dedicating their

non-classroom time (i.e., lunch breaks, after school) to running programs and supervising students in student nutrition action councils, eco clubs, and/or extracurricular food skills competitions. In open-ended responses from school representatives, champions were present during the initiatives identified in schools with high/increased support for healthy eating in the Supportive Social Environment pillar.

Facilitating ‘champions’ has been accomplished through schools that have provided staff with dedicated time or hired an external advisor to work alongside school stakeholders, (Deschesnes et al., 2003; Gleddie & Hobin, 2011; Roberts et al., 2015; Rasberry et al., 2015; Senior, 2012). When stakeholders, be they teachers, school staff, food service providers, families, community partners, health promotion officials, or students’ are engaged in the decision-making process, there is an increased sense of buy-in and ownership which leads to a personal commitment to sustain CSH initiative outcomes (Deschesnes et al., 2003; O’Hara & Dunlop, 1992; Lucarelli, Alaimo, Mang, Martin, Miles, Bailey et al., 2014; Roberts et al., 2015; Senior, 2012). In the current study, school staff members were not often consulted on discussions related to healthy eating in schools. Future work is needed to include staff in such discussions, as a means to further build buy-in for healthy eating promotion in schools and, perhaps, to help encourage the uptake of P/PM 150 standards.

There was variability across schools in the level of involvement of various stakeholder groups within CSH pillars; however, involving community members in the discussion about healthy eating and having existing partnerships with external organizations were associated with improvements within pillars. For example, a participating secondary school connected with local health-related organizations to host a week of wellness events including fitness classes, cooking lessons, and health promotion seminars. Previous studies outline that successful partnerships lead

to increased availability of supports and resources, as well as opportunities for healthy eating messages to be reinforced in public spaces (Deschesnes et al., 2003; Gleddie & Hobin, 2011; Holosko & Dunlop, 1992; McIsaac et al., 2013). The formation of partnerships can be challenging with little benefits for schools (Deschesnes et al., 2003; Inchley et al., 2006; Marshall, Sheehan, Northfield, Maher, Carlisle & St. Leger, 2000). This may explain why a majority of schools in the current study experienced low levels of support in the Partnerships and Services pillar. The literature reports some school officials may avoid involving stakeholder groups because *“it is faster to be directive than work collaboratively”* (Rowling 1996, page. 524). Sometimes approaching stakeholders can be met with resistance, as parents may not agree with the health promotion messages or may not be able to reinforce teachings at home, while food service workers may approach healthy eating strategies from a business lens, opposed to a health promotion stance (Lucarelli et al., 2014; McIsaac et al., 2013). Future qualitative research is needed to better understand the barriers to forming and sustaining community partners.

Another enabler and/or barrier to CSH implementation is the presence and/or absence of funding. Historically, when schools have been provided with external funding, representatives have been able to implement CSH components based upon the unique needs of the school community, which helped improve uptake (Inchley et al., 2006; McIsaac et al., 2013; Gleddie & Hobin, 2011). From the literature, when additional funding from targeted groups and/or community partners was lacking, there has been little support from staff to lead programs and reduced encouragement to alter school priorities to focus efforts on additional non-classroom responsibilities (Lucarelli et al., 2014; McIsaac et al., 2013; Rasberry et al., 2015; Rowling, 1996). The current study found that the availability of funds from combined government grants, external fundraising, and/or student payment made it possible for some schools to offer regular

free or subsidized breakfast, lunch, and/or snack programs, while in some cases those who wished to have such a program were limited by a lack of funds. When funds were available to a school from external non-government sources, students were able to take part in skill development, such as gardening and cooking as tools and materials (e.g., cookware, plants, ingredients) could be afforded. Two elementary schools in the current study sourced funding and food from a local grocery store, to host nutrition education sessions for students and parents. Support was further garnered from school public health nurses who are educated and willing to help with grant applications. More work is needed to raise the awareness of school officials on the current and on-going funding opportunities that may help address the unique needs of school communities.

Context plays a significant role in the successful implementation of CSH initiatives. When implementation strategies account for context, schools are able to align priorities with that of the CSH policy, which then leads to the CSH initiative being embedded in day-to-day operations and becoming sustainable entities supported by multiple players within the school (Deschesnes et al., 2003; Inchley, et al., 2006; McIsaac et al., 2013; Roberts et al., 2015; Robertson-Wilson, Dargavel, Bryden & Giles-Corti., 2012; Rowling, 1996; St. Leger, 2001). For example, the Alberta Project Promoting active Living and Healthy Eating (APPLE) in schools aimed to embed wellness into school culture by through on-going events, activities, and embedding wellness teachings into curriculum (Schwartz et al., 2010). Through allocated funding, each school was able to dedicate time for staff to connect with a school health facilitator and select key priorities for the school to improve current wellness policies and/or practices (Roberts et al., 2015). When school principals had a firm understanding of the project philosophy and recognized its alignment with the priorities of the school, APPLE schools CSH initiatives

were successfully implemented and sustained (Roberts et al., 2015). The data collected from the current study related to the dynamic context of schools, can be used to strengthen the sustainability of supports for healthy eating by emphasizing the need for multiple representatives from positions of power (i.e., Ministry of Education, school board, school principal, school champion) to work with school stakeholders to strategize ways to continue to support healthy eating in all aspects of the CSH framework.

This study is not without limitations. The low response and completion rates could be attributable to a teacher work-to-rule political action during the period of data collection, which restricted researcher contact with school administrators and/or competing priorities within schools. In an approximately five cases, school representatives shifted between Times, providing different perspectives over the course of the different data collection timeframes and there may have been self-report bias, meaning representatives closer to healthy eating practices in the school may have reported better outcomes opposed to someone less engaged. The results of this study only provide a snapshot of schools' healthy eating environments as repeated measures were not obtained across the school year and since all invited schools did not participate, there is the potential for volunteer bias. Furthermore, the CSH framework is exclusive to the school environment and does not consider the external environment, such as: the work-to-rule action undertaken by teachers during Time I (2012/13) of this study; the amount and type of external competitive foods surrounding the school; media emphasis on the importance of healthy eating; and/or other environmental influences from home or recreation centres that may have influenced student healthy eating behaviours. This is the first study; however, to measure the CSH pillars during P/PM 150 implementation and adds to the current understanding of Ontario schools'

approaches to CSH healthy eating initiatives. Additionally, this study filled a gap and provided a unique look at comprehensive school nutrition at the time of a mandated policy.

5.5.1 Future Implications for School Health.

Policy is critical to the implementation of CSH initiatives as it provides top-down support and continued reinforcement needed in order to enact and sustain behaviour change of individuals in the system (Ardzejweska et al., 2012; Gleddie, 2010; Samdal & Rowling, 2011). When mandated by an authoritative body, health policies can also help school communities set standards and priorities for their own CSH initiatives (Sabatier, 1997; Tang, Nutbeam, Aldinger, St. Leger, Bundy & Hoffman, 2009). This requires additional comprehensive, integrative bottom-up approaches to personally motivate the agents of change (i.e., principals, teachers, staff, community members, parents, students) to adopt and maintain CSH priorities (Gleddie & Melnychuck, 2010; Turunen, Tossavaninen, Jakonen, Salomaki & Vertio, 1999). These strategies must be orchestrated and coherent, with an implementation strategy that targets several dimensions of student health and well-being simultaneously (Allensworth & Kolbe, 1987). Without structured assistance throughout the implementation process, CSH initiatives will falter (Senior, 2012). Results of meta-analyses have demonstrated that effective implementation strategies lead to better outcomes (Durlak & DuPre, 2008). Therefore, schools need to develop a structured implementation plan when employing a healthy school policy; one that encompasses the unique context of the school, taking into consideration: the priorities of the school (Social Environments), the physical structure (Physical Environment), the alignment with curriculum and academic achievement goals (Teaching and Learning), support by existing written policies and informal practices (Healthy School Policy), and sustainable supports and resources that can be garnered by school and community partners (Partnerships and Services).

Chapter 6: Study #3: Perspectives and experiences of school representatives and school public health nurses on using school feedback reports

6.1 Abstract

BACKGROUND: The synthesis and transfer of research evidence can inform health promotion practice. At the end of Time I of a comprehensive process evaluation of the Ontario School Food and Beverage Policy (P/PM 150), participating schools received a school feedback report. The purpose of the end-of-grant reports was to return research findings to schools and provide evidence-informed recommendations to strengthen supports for healthy eating. This research evaluated school representatives' and associated public health nurses' (PHNs) perceptions and experiences implementing report recommendations in Time II.

METHODS: Representatives from each school receiving a Time I feedback report (N=45) and associated PHNs (N=19) were invited to participate in a one-on-one interview. Interview guides were based on a literature review, expert feedback, and were pilot tested. Interviews were audio-recorded and transcribed verbatim; transcripts were analyzed to inductively identify codes and deductively confirm themes.

RESULTS: 32 school representatives and 11 school PHNs (71% response rate) participated. Most participants liked the report format and presentation of data; however, not all information presented was found to be relevant. Of the schools, 31% used the report to increase awareness, focus planning, or inform new healthy eating initiatives in the school. Although PHNs were available to support uptake and address perceived barriers to report recommendations, only 19% of schools shared their report with the PHN. PHNs identified six key steps to improve uptake of research findings: take a strengths-based approach; focus on what can be accomplished at school; make prescriptive, individualized recommendations; distribute feedback reports during school

planning Times; present information through multiple avenues; and form an inclusive and effective dissemination strategy.

CONCLUSION: Simple report diffusion did not translate into implementation of recommendations in all schools. Future strategies should embody an integrated knowledge translation philosophy, by which research findings help inform next steps chosen by school stakeholders in collaboration with public health.

6.2 Introduction

End-of-study knowledge translation (KT) is an important component of the research process highly valued by knowledge producers, users, and funders (Canadian Institutes of Health Research (CIHR), 2010; Smits & Denis, 2014). The concept of KT in the field of public health and health promotion is recognized as “*A dynamic and iterative process that includes synthesis, dissemination, exchange and ethically sound application of knowledge to improve the health of Canadians, provide more effective health services and products and strengthen the health care system*” (Graham & Tetroe, 2009, page. 46). End-of-grant KT materials, such as lay summaries of research papers disseminated to past participants, are referred to as one-sided ‘*push*’ strategies, by which the knowledge producer collects, synthesizes, interprets, and presents key findings to knowledge users (CIHR, 2010; Lavis, Ross, McLeod, & Gildiner, 2003). The strategies used to reach target knowledge users vary in intensity (CIHR, 2010). Diffusion, or the concept of “*letting it happen*” occurs when researchers broadly communicate overall research findings to general audiences (CIHR, 2010, page. ii). This passive approach to KT is generally less effective at impacting decision-making, or in the field of public health, having little to no effect on health behaviour change compared to more active strategies (Farmer et al., 2008; LaRocca et al., 2012; Sudsawad, 2007). Dissemination of end-of-grant KT materials requires the knowledge user to “*help it happen*” in that tailored KT messages are developed to reach specific audiences (e.g., parents, children, public health nurses) in the hope of achieving a pre-specified goal (e.g., increasing awareness, improving knowledge, and strengthening beliefs towards health behaviour change) (Colley et al., 2012; CIHR, 2010, page. ii). When KT materials incorporate action-oriented recommendations for change, they promote application of research findings through strategies that ‘*make it happen*’ (CIHR, 2010, page. ii).

In the realm of school-based health promotion, many end-of-grant and post-intervention KT materials have been disseminated to teachers, parent groups, administrators, and school boards to strengthen adherence to province-wide nutrition policies and better support student dietary behaviours. Examples of such resources have included: fact sheets, implementation handbook, presentations, learning e-modules, websites, and/or activity resource guides (APPLE Schools, n.d.; Government of New Brunswick, 2008; HealthLinks BC, n.d.; Nova Scotia, n.d.; Region of Peel, n.d.b). While these resources are freely available to broad audiences, some research groups have designed individual school feedback reports to communicate school-specific findings and provide resources to help schools initiate or maintain healthy living initiatives. For example, the SHAPES initiative (School Health Action Planning and Evaluation Systems), provided participating school representatives with comprehensive feedback reports, which highlight the results of student questionnaires and environmental scans (Leatherdale, Manske, Wong & Cameron, 2009). These reports were intended to be disseminated in a timely manner to inform school community members' decisions in future health promotion planning (Leatherdale et al., 2009).

As a standalone product, school-based health promotion KT resources are not often evaluated, leaving a gap in the understanding of the impact single-item dissemination strategies have on school health promotion initiatives. Understanding the circumstances under which research has been utilized can help researchers, funders, and public health officials better direct future research efforts and more effectively support the use of research-based knowledge (Davies & Nutley, 2008). The current research evaluated a knowledge producer-push strategy (i.e., school feedback reports) used to disseminate findings and encourage comprehensive action towards school support for healthy eating during the early years of implementation of the Ontario

School Food and Beverage Policy (P/PM 150). The KT tool included a school feedback report developed by researchers and school public health nurses (PHNs), following Time I of a region-wide evaluation of P/PM 150. Specifically, this research aimed to:

- (i) Describe school representatives' and PHNs' perspectives of the format, relevancy, and importance of information included in Time I school feedback reports;
- (ii) Describe school representatives' and PHNs' experiences reviewing, sharing, and applying school feedback report recommendations to further school support of students' healthy eating; and
- (iii) Evaluate the KT strategy used to disseminate school feedback reports and present recommendations to strengthen the mobilization of research into practice from the perspectives of school PHNs.

The outcomes of this research were intended to inform the development and dissemination strategy to be used for school feedback reports issued by researchers in Time II.

6.2.1 Study Context.

After its initial release in January 2010, the Ontario Ministry of Education mandated the Ontario School Food and Beverage Policy (P/PM 150) as a set of nutritional standards applied to beverages and foods available for sale in school food venues, at school events and through nutrition programs in September 2011 (Ontario Ministry of Education, 2010a). The intention of the school food and beverage policy, hereafter referred to as P/PM 150, was to better student eating patterns by improving the quality and selection of healthy foods available to elementary and secondary students (Ontario Ministry of Education, 2010a). The public health unit of a populous region of Ontario partnered with the University of Waterloo (UW) to conduct a comprehensive process evaluation of school support for healthy eating over the time of P/PM

150 implementation. All aspects of this project were overseen by an advisory committee made up of representatives from the public health unit, the UW research team, and school board representatives (in Time I-only).

The process evaluation occurred over two Times: Time I (2012/2013) and Time II (2014). Each Time included various data collection procedures as described in Table 6.1.

Table 6.1: Data Collection during Time I (2012/13) and Time II (2014) of the P/PM 150 Process Evaluation

Data Collection Instrument	Time I	Time II
Student online food behaviours survey	X	
Interviews and focus groups with key stakeholders ¹	X	
Geographic Information Systems mapping	X	
Food environmental scan checklist	X	X
Healthy School Planner survey	X	X
School representative interviews		X
Public health nurse interviews		X

¹Interviews took place with teachers, administrators, and food service providers; focus groups recruited parents and students; and a paper-based survey gathered data from secondary school parents

To help schools recognize strengths and address barriers identified through the process evaluation, the UW issued individualized school feedback reports at the end of both Times. The current evaluation of Time I reports and their dissemination helped inform Time II reports.

6.2.2 School Feedback Reports.

Presentation of report content was influenced by best practices in data visualization (Evergreen, 2013) and finalized through an iterative process with the project advisory committee. The colourful reports, between five and ten pages long, included a summary of the evaluation purpose, methodology, and key results unique to each school. Graphs, tables, and brief paragraphs presented: student eating behaviour data, quotes from students regarding their opinions on P/PM 150, the level of support for healthy eating within the four pillars of the Comprehensive School Health framework (i.e., Social and Physical Environments, Teaching and Learning, Healthy School Policy, Partnerships and Services), recommendations as well as local,

provincial, and national resources. A generic, de-identified sample of the Time I report is available in Appendix F. A member of the UW research team (TO) emailed a copy of the school feedback report, along with a cover letter, to each school representative. Upon request by the school, a hard-copy was printed and mailed. School representatives were asked to provide permission for the UW research team to share the report with the school's PHN, who would enable support for the implementation and maintenance of healthy eating initiatives at their school.

6.2.3 Role of the School PHN.

Each year, the regional PHNs are assigned a portfolio of schools (between seven and 15 schools), for which they are responsible for forming a relationship with school administration and assisting in the implementation of health-related initiatives within the school. A Healthy Schools Approach is taken by PHNs to work alongside school stakeholders to create and sustain healthy living and learning environments (Ministry of Health and Long-Term Care, 2008). In addition to being on-call to provide resources, school PHNs also provide training and workshops to staff and student groups and help plan, implement, and evaluate healthy living initiatives.

6.3 Methods

6.3.1 Study Design.

Schools representatives received an electronic copy of their school's feedback report from the UW research team between six and 12 months following their school's participation in Time I. Within the dissemination email and/or requested printed cover letter, UW representatives asked for permission to share the report with each school's PHN (see Appendix A: Ethics). If permission was granted, a member of the research team would send an electronic copy of the report to the assigned PHN within 30 days. The evaluation of the reports coincided with Time II

data collection, and the interviews with school representatives and school PHNs took place four to 12 months after representatives had received the Time I report (Figure 6.1).

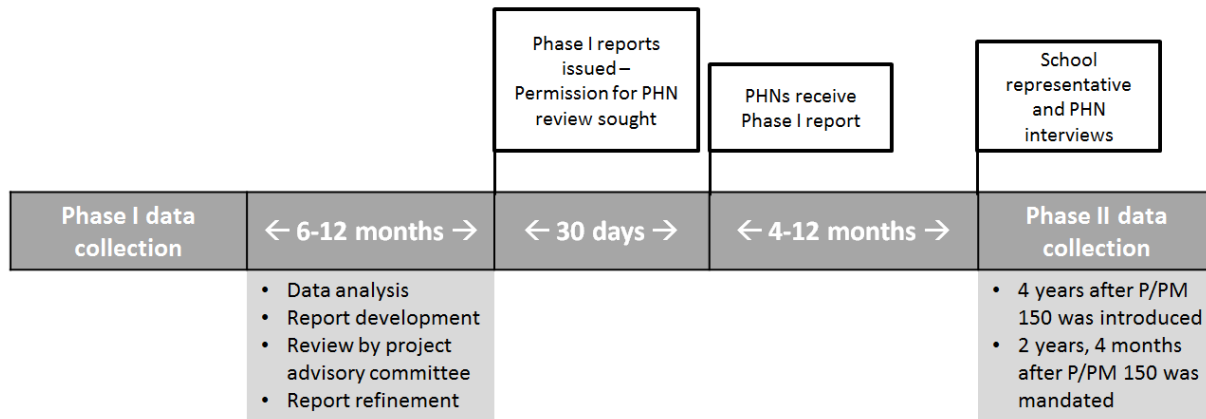


Figure 6.1: Timeline of school feedback report distribution and data collection

The research received ethics approval from the Office of Research Ethics at the UW and from the research ethics review committees of participating school boards. A copy of written informed consent forms for school representatives and PHNs are found in Appendix A: Ethics.

6.3.2 Sampling.

In Time II, all 45 schools that had participated in Time I (n=19 elementary, n=26 secondary) were invited to select a representative to participate in the school feedback report evaluation. Representatives were self-identified and/or selected by school administration as being knowledgeable about healthy eating initiatives at their school. As this study occurred over different school years, there may have been turnover in the representative between Times. It is worth noting that school representatives were participating in additional measures during Time II (i.e., Healthy School Planner survey, School Food Environmental checklist); meaning school feedback reports were not the sole focus of Time II data collection. Therefore, there was no expectation during Time II data collection that representatives be fully aware and/or familiar

with reports. All PHNs (N=19) associated with the Time I schools were invited to participate in an interview during Time II.

6.3.3 Data Collection.

Consenting school representatives participated in a brief, one-on-one interview with a representative from the UW research team (SC). This team member was not involved in data collection during Time I and did not contribute to the development of the Time I feedback reports. This approach was taken to limit bias and a potential conflict of interest between report creator (TO) and the representative providing critique (Manderson et al., 2006). Additionally, consenting school PHNs took part in a one-on-one interview with a member of the UW research team (TO).

Two interview guides were developed, one for representatives and one for PHNs, based on the KT literature regarding feedback reports (Bonin, 2007; Danseco et al., 2009) and consultations with the project advisory board and members of the student thesis research committee. Interview guides underwent pre-testing with two school representatives (one secondary, one elementary) and one school PHN. The pilot testing identified ways in which interview questions could be altered to gather more in-depth data by adding prompts prior to the remaining data collection (Hermanovicz, 2002; Turner, 2010). Each interview guide encompassed questions regarding the participant's level of familiarity with the report, likes/dislikes about report contents, relevancy and importance of information, experience sharing report findings with members of the school community, extent to which findings influenced change within the school, and preferences on how to improve the reports for Time II. Additionally, PHN interview guides encompassed questions regarding the strength of relationships between schools and the PHN, ways in which research findings can be shared with

school community members in the future and strategies to facilitate uptake of research findings to inform changes within school environments. A copy of each interview guide can be found in Appendix C: Data Collection Instruments.

6.3.4 Data Analysis.

Audio recordings of all interviews were transcribed verbatim and underwent a thematic analysis using NVivo 10 qualitative analysis software (Braun & Clarke, 2006; QSR International, 2013, Burlington, MA). Sentences and/or paragraphs within conversations were categorized through the inductive development of codes, which were catalogued and combined into meaningful themes (Aronson, 1994). As codes were identified within key interview topics (e.g., level of familiarity, perspectives of content relevancy, experience sharing the report) they were entered into a codebook and defined (Fereday & Muir-Cochrane, 2006). The codebook containing themes, subthemes, and definitions was given to a second reviewer, who deductively confirmed the classification and identification of themes (SC). A copy of this codebook is found in Appendix D. Final results present frequency for which themes and subthemes emerged, and quotes taken directly from transcripts are used to exemplify the interpretation of results using the participants' own words, containing their own emotions, and conveying their own thoughts, experiences, and perceptions (Patton, 2002).

6.4 Results

6.4.1 Participants.

45 school representatives received a school feedback report in Time I; 32 of whom participated in the interviews during Time II (n=11 elementary, n=21 secondary, 71% response rate). Nineteen teachers and 13 school administrators (principal or vice-principal) participated. A majority of Time II school representatives (n=25, 78%) gave permission for their school PHN to

review the Time I reporting, making these 17 PHNs of a possible 19 PHNs eligible to participate in a one-on-one interview. Reasons for not providing permission included being unresponsive to UW requests to share the report (n=6) or wanting to review the report independently prior to sending it to the PHN (n=1). Of the eligible 17 PHNs, 11 participated (65% response rate) with the remaining five being unresponsive to invitations to participate (n=3) or no longer working with the region (n=2). A total of 21 school representative-PHN dyads were attained, meaning the PHNs of 11 schools did not participate. Each participating PHN was asked to rate the strength of their relationship with the schools involved in this study. A quarter (24%, n=5) rated relationships as weak, 19% (n=4) as moderate, and 57% (n=12) as strong. Strength of the relationship was often explained by the level of PHN involvement with the schools: weak relationships meant that school administration was typically unresponsive to PHNs requests to meet; moderate relationships included schools that were implementing their own health promotion events and using the PHN as an ad-hoc resource; and strong relationships meant the PHN was full engaged in the preparation, implementation, and/or evaluation of health promotion activities on a regular basis.

6.4.2 Familiarity with the report.

Familiarity with feedback reports was categorized as familiar, somewhat familiar, or not familiar. Several representatives (n=16, 50%), yet few PHNs (n=2, 18%) reported they were familiar with the school feedback report. Familiarity was defined by researchers as having reviewed the report at least once prior to the interview and being able to comment on its structure, content, and experience sharing/using it. Some representatives (n=10, 31%), yet most PHNs (n=7, 64%) were “*somewhat*” familiar with the report, indicating they had read the report before, were not well-versed in all of its contents, but had been involved in sharing/using it. The

remaining representatives (n=6, 19%) and school PHNS (n=2, 18%) reported they were not familiar with the report. More secondary representatives (n=5) than elementary representatives (n=1) were unfamiliar with reports, claiming they did not spend time reviewing the report after it was received (n=4) or they had not been the primary person to receive the report at the end of Time I (n=2). If participants were not familiar with the report, the interviewer would walk them through each of the sections, highlighting main headers and findings. Familiarity with the report did not necessarily lead to use of the research data or recommendations therein.

6.4.3 Perspectives of the school feedback reports.

6.4.3.1 Overall impressions of reporting findings.

Several representatives (n=8, 25%) reported they were surprised at the results presented in the reports or that the information presented was an ‘eye opener.’ For example, one of the representatives who were surprised at the results stated: *“Well, I think, if there’s something that I find interesting is 50% of our students said that they eat breakfast, which is, that’s a low number, but I’m also surprised that that number of students actually did eat breakfast. I really didn’t expect it to be like that. It’s a terrible number, but I didn’t expect that.”* Interestingly, over half of PHNs (n=6, 55%) stated that they were not surprised at the results: *“I wasn’t surprised that there were still a lot of deficits and stuff that [the school] needed to work on for the policy piece, having gone through [P/PM 150 implementation with them].”* Four representatives identified that the information presented acted as an ‘eye opener’ regarding students’ day-to-day eating habits: *“right away when I received it, I remember being struck by the information that was presented, which was pretty disappointing in fact. And I remember talking to our principal about it and him being quite stunned, too about the information. So it was pretty eye-opening.”* Other

representatives did not provide an overall impression of the report, instead focused more on likes/dislikes of sub-sections.

6.4.3.2 Report format.

A majority of representatives (n=17, 53%) and PHNs (n=8, 73%) reported they liked the format of the report, mostly the use of graphics: *“I think it’s very colourful. The graphs were organized. It’s very clear and concise; information was presented well”* as well as the user-friendliness of the report layout: *“I like the layout. I mean it’s easy to read. It’s easy to get through.”* Alternatively, one representative did not prefer the use of a variety of colours throughout the report, and another commented that the paper-based copy was too long, making it difficult to share with colleagues: *“maybe if it came in a format that was a bit easier to share...if I could just bang off some copies to my colleagues maybe they would be interested as well.”*

6.4.2.3 Relevancy of research findings.

Some representatives (n=15, 47%) and some PHNs (n=5, 45%) thought the reports were relevant to their individual schools, because the information presented helped guide their understanding of students’ eating behaviours and the support for healthy eating within their school environments. Many representatives (n=13, 41%) and a few PHNs (n=3, 27%) specifically reported they very much liked that the school feedback reports provided new and accurate information: *“I think it’s an accurate reflection of kind of what’s going on.”* Two representatives identified that these issues raised in the reports were not just a concern for their schools, but was relevant to the broader community: *“I think this is problems that everybody’s facing probably across the province and I would say across the country that people would rather go eat at the place across the street than eat something half decent.”*

Alternatively, six representatives (19%) interpreted the presented information as not relevant to the unique context of their school. Although all information was tailored to the findings of each school, these representatives thought the data were not a true reflection of their school community. For example, one school received a recommendation to further support student healthy eating behaviours by having staff role model such behaviours. The school representative thought this recommendation was not relevant, nor feasible, as staff did not eat lunch with students.

The reports provided a snapshot of what transpired during a one-day school visit during Time I. During this time, some schools were under a work-to-rule political action, for which extracurricular activities were limited. Two representatives identified that due to this timing of data collection, the report may not be a true reflection of what services and programs were regularly offered to students. Additionally, as time had passed since Time I, one representative specifically commented that the report did not capture change over time: *“I just thought that for the most part since the implementation of P/PM 150, schools made a lot of changes in terms of vending machines and getting sweets and stuff out of schools. And I mean while I don’t necessarily agree with everything P/PM 150 does and says I think that the cafeterias have come a long way in terms of offering some healthy food choices.”*

6.4.3.3 Importance of research findings.

Interviewees were asked to identify the most and the least important aspects of school feedback reports. A majority of representatives (n=17, 53%) and some PHNs (n=3, 27%) reported learning about students’ eating habits and preference were the most important aspects of the report. This included learning about students’ irregular breakfast consumption, a lack of vegetable and fruit consumption, in addition to the reasons students left the school property to

seek out fast food at the lunch hour. Additionally, eight representatives and two PHNs identified the report contents led to the realization that a change needed to occur in their school: *“The most important information of the report is that we are in need of a big change. I think that we’re just kind of in that initiation Time. And so by having a club to introduce the idea of proper nutrition in the students’ diets, I think is one of the things that we’re leading forward.”* Five representatives commented that the ‘Supports for Schools’ resources were the most important way to facilitate change within schools.

Alternatively, when interviewees were asked to select the least important piece of information in the report, a majority of representatives (n=14, 44%) and some PHNs (n=3, 27%) were unsure, as they perceived all information to be important: *“I don’t think there’s anything that’s not important in here. I think it’s concise enough and it’s not a difficult document to read, and so it doesn’t have a lot of unrelated issues in here.”*

Others identified the least important information as: knowing students’ opinions on P/PM 150 (n=2); discussing eating behaviours that occurred outside the school (i.e., at home) (n=2); a recommendation for staff to embody positive healthy eating role modelling (n=1); the rating along the Healthy School Continuum (n=1); a recommendation to improve nutrition messaging throughout the school (n=1); and the background of the study methodology (n=1).

6.4.3.4 Meaningfulness of presented data.

The most controversial topic area included in the report was the categorization of the schools along the Healthy School Continuum, which was either found to be helpful or useless to schools. The results of the Healthy School Planner were presented along a Healthy Schools Continuum, which categorized each school into a stage, based upon its ability to meet a series of recommendations set by the Pan-Canadian Joint Consortium for School Health (Healthy School

Planner Survey, 2013). Each school was categorized as initiation (not meeting recommendations), action (meeting some recommendations), or maintenance Time (meeting most or all recommendations) (Healthy School Planner, 2013). Some respondents (n=4 representatives; n= 1 PHN) identified they were content with their school's rating along the continuum and several others (n=10 representatives; n= 2 PHNs) said they liked the provision of the 'Supports for Schools' resources that could be used to help support healthy eating promotions and practices at school. As exemplified by one of the 12 respondents: *"the tips were excellent; they really were. We didn't expect that at all. So it was one of the things that we thought, 'wow, okay, this is good because it gives us an idea of how we can move forward."*

Alternatively, some representatives (n=3, 27%) and PHNs (n=4, 36%) reported they did not find their schools' rating along the Healthy School Continuum to provide helpful information. These respondents were interested in learning more about the Continuum and would have liked to review the criteria for each rating (i.e., *initiation, action, maintenance*), which were not outlined in the report, but a reference was provided. One PHN reported this information was irrelevant because it gave little meaning to help schools make changes: *"I don't know that the [Healthy School Continuum] means anything to [school representatives]. What would they take away with them knowing they are in the initiation Time? They look at that and say 'so what? We're doing what we can do'... I don't see them putting this as a priority action for the school."* Along the same lines, representatives (n=2) and school PHNs (n=2) would have liked to receive prescriptive goals of how to advance to the next Time along the Continuum: *"We're in the initiation Time. It might be nice to have some suggestions of what you think might be good-to-go steps to go forward. Not that we'd have to take them all; but just a next step from a third party's point of view of what might be good."* Instead of prescriptive next steps, the reports included a

‘Supports for Schools’ section and encouraged representatives to seek the professional services of PHNs to help expand upon and apply report recommendations.

6.4.4 Experience Sharing and Using Feedback Reports.

Table 6.2, provides a summary of the 32 schools involved in this research.

Table 6.2: Summary of schools' experience with school feedback reports

School Level	Familiar?	Relevant?	Shared?	Shared with PHN?	Used the Report?	PHN Relationship Rating
Elementary	Yes	Yes	Yes	Yes	Yes	Strong
Elementary	Yes	Yes	Yes	Yes	Yes	PHN not interviewed
Secondary	Yes	Yes	Yes	Yes	Yes	Strong
Secondary	Yes	Yes	Yes	Yes	Yes	Weak
Elementary	Yes	Not answered	Yes	Yes	Yes	Moderate
Elementary	Somewhat	Yes	Yes	Yes	Yes	Moderate
Elementary	Somewhat	Yes	No	No	Yes	Strong
Secondary	Somewhat	Yes	No	No	Yes	Weak
Secondary	Yes	Yes	No	No	Yes	Strong
Secondary	No	Yes	No	No	Yes	PHN not interviewed
Secondary	Yes	Not answered	Yes	Yes	No	Strong
Secondary	Yes	Not answered	Yes	Yes	No	Moderate
Secondary	Yes	Not answered	Yes	Yes	No	PHN not interviewed
Secondary	No	Not answered	Yes	Yes	No	Strong
Elementary	Yes	Yes	Yes	No	No	PHN not interviewed
Elementary	Yes	Yes	No	No	No	Moderate
Secondary	Yes	Yes	No	No	No	PHN not interviewed
Secondary	Yes	Yes	No	No	No	Weak
Elementary	Yes	Not answered	No	No	No	Weak
Elementary	Yes	Not answered	No	No	No	Strong
Secondary	Yes	Not answered	No	No	No	Strong
Elementary	Somewhat	Not answered	No	No	No	Weak
Secondary	Somewhat	No	No	No	No	PHN not interviewed
Secondary	Somewhat	Yes	No	No	No	Strong
Secondary	Somewhat	No	Yes	No	No	Strong
Secondary	Somewhat	Yes	No	No	No	PHN not interviewed
Secondary	Somewhat	Not answered	No	Not answered	No	Strong
Secondary	Somewhat	Not answered	Not answered	Not answered	Not answered	PHN not interviewed
Elementary	No	No	No	No	No	PHN not interviewed
Secondary	No	Not answered	Not answered	Not answered	Not answered	PHN not interviewed
Secondary	No	Yes	No	No	No	Strong
Secondary	No	Yes	Yes	No	No	PHN not interviewed

The ultimate goals of school feedback reports were for school representatives to use the research findings, Supports for Schools and, with the assistance of the school PHN, facilitate change and/or continue to support students' healthy eating behaviours. As previously described and outlined in Table 6.2, the level of familiarity and/or perception of relevancy of research findings did not necessarily correlate with school's sharing and/or using the report. The forthcoming section explores the experience of representatives and PHNs and the barriers and enablers encountered after receiving the Time I feedback reports.

6.4.4.1 Sharing the report.

Each school representative was encouraged to share the Time I report with school stakeholders, especially their school's PHN, who had the tools and resources available to support improvements to the healthy school food environment. Just under half of the representatives shared the report (n=13, 41%), most commonly with their school PHN (n=10), with school administration (n=5), teachers (n=1), a school council (n=1), and a food service provider (n=1). In a few cases (n=2), 'sharing' of the report was described as the representative sending along an electronic copy of the report to the PHN, but in most situations (n=8) the act of 'sharing' involved a face-to-face meeting to discuss report results and implications. Most representatives reported this to be a positive experience: *"The nice thing is, because of having to then share things at the community-level, you get more in-depth in terms of taking a look at what's your community really like, what is the outcome of the survey say, but also, what are the realities that you see on a daily basis in this school."*

Eight PHNs (73%) confirmed they had received a copy of the schools' feedback reports and shared with a principal (n=4), a teacher (n=1), or both principal and teacher together (n=3). PHNs described discussions to be brief, but with actionable items emerging from conversations:

“I met with [the school administration] to discuss the results, and they liked it; they even said that they would probably use some of those main points about recommendations to put in their parent newsletters.” Sharing the report was not always as productive, as in one instance, a PHN shared the findings of the report with a school council, whose members were generally unreceptive: *“And I presented it to school council. That was the outcome. But the outcome from [that] school council was just, ‘it’s parents’ problem.’”* Sharing the report did not necessarily lead to making a change in schools”.

6.4.4.2 Reasons for not sharing the report.

Three categories exemplified why representatives did not share the report with PHNs: competing priorities, no perceived reason to share, and a lack of connection or communication with the PHN.

6.4.3.2.1 Competing priorities. School representatives (n=5) reported their school was dealing with competing priorities and there was no additional time to schedule a meeting to discuss the report. One representative mentioned the school had made mental health a key priority, outweighing concerns around healthy eating: *“Mental health outweighs it. I have had two kids just in the last week alone who were suicidal. That sort of thing where, you know, what they are eating isn’t as important as the fact that tomorrow they are going to be around to eat.”* Four PHNs reported similar time restrictions, with their own series of priorities issued from governing public health managers and projects with other goals (e.g., co-implementing a walk/bike to school campaign).

7.4.3.2.2 No perceived reason to share. While only one school representative identified there was no reason to share the report, three PHNs commented that the report was straight forward and there was no purpose of discussing study findings or recommendations with

representatives.

7.4.3.2.3 Disconnect between school and PHN. Seven representatives did not follow the recommendation to set a meeting with the PHN, with an additional representative stating they did not respond to PHN requests to host such a meeting. As PHN portfolios may shift from year to year, four representatives identified they did not know who the PHN was and/or had yet to meet with them. Lastly, one representative did not follow through with sharing the report as they did not know what the PHN could do with the information.

6.4.4.3 Future sharing of the report.

While not all representatives had yet shared their reports, some identified they would like to share with school council (n=4), teachers (n=4), the school PHN (n=4), school administration (n=2), the food service provider (n=1), parents (n=1), and a community nutritionist (n=1). Representatives mentioned that each of these stakeholder groups played an important role in facilitating healthy eating initiatives in schools.

6.4.4.4 Using the report.

As summarized in Table 6.2, 10 representatives (31%) reported using the report. Three levels of ‘use’ were thematically categorized from representatives’ interview transcripts: raised awareness, helped plan for the future, and informed healthy eating initiatives that occurred in Time II.

6.4.3.4.1 Heightened awareness. Six representatives reported sharing the report with school stakeholders (mostly teachers), and reading the results heightened the level of awareness of the current status of student dietary behaviours and the necessity of reinforcing positive messaging. For example *“I think for us, it was mainly an overall picture. There’s a lot of things we should start to try to improve as far as our students’ nutrition and health.”* Raising the

awareness also acted as a prompt for discussing healthy eating with students: *“I think it allows us time to reflect. I think for teachers, talking to students about healthy eating...[it’s a] reminder to us to remind students of what’s good and what’s not.”*

7.4.3.4.2 Helped focus planning. Six additional representatives reported that after a review of results, the information helped validate decisions for which aspects of the school food environment school community members should focus on. For example: *“It allows us to focus on the areas we need to address to maintain and encourage healthy eating and food selections.”* This focus only led to further discussions and not necessarily to actions within these six particular schools.

7.4.3.4.3 Informed healthy eating initiatives. Although there was no mention that the reports were the sole reason for change, many representatives (n=11) indicated the report informed the development of healthy eating initiatives in Time II (Table 6.3).

Table 6.3: Healthy eating initiatives

Healthy eating initiative (# of representatives reported)	Examples
Formed a new partnership (n=4)	<ul style="list-style-type: none"> • Set up a school nutrition council with parents, students, and the PHN • Facilitated dialogues between food service provider and school administration
Improved nutrition programming (n=3)	<ul style="list-style-type: none"> • Implemented a subsidized breakfast program • Enforced a ‘first snack is the healthy snack’ rule • Implemented a weekly fresh vegetable/salad bar program
Improved health promotion activities (n=2)	<ul style="list-style-type: none"> • Developed healthy eating-related content for school newsletter • Incorporated healthy eating messaging into morning announcements
Hosted PHN-led events (n=2)	<ul style="list-style-type: none"> • Hosted staff training events related to healthy eating promotion in the classroom; offered in partnership with the school PHN
Implemented extracurricular activities (n=1)	<ul style="list-style-type: none"> • Formed a student nutrition club

6.4.4.5 No change following report dissemination.

Seventeen school representatives (53%) identified they had not made a change after receiving the report, but stated they did intend to make a change in the future. Thirteen representatives, specifically, thought the reports could be used to facilitate discussions with their school's stakeholders about making a change in the future. Eight representatives commented that there was a specific change they wanted to focus on such as: making a change to improve healthy, affordable, palatable foods provided through food service (n=3); engaging students in the conversation through the formation of a student health action team (n=3); providing more opportunities for food skill development (n=1); and making a change to the promotion of healthy beverages (n=1).

6.4.4.6 Barriers to change following dissemination.

When asked why representatives had yet to make such changes, two representatives identified they had just become aware of the report, and three representatives identified they did not have the power to facilitate change within their school. School PHNs reported they could not play a role in change as no follow-up meetings were scheduled (n=4), the school didn't involve the PHN in healthy eating planning (n=3) and/or the PHN was focused on other priorities at the school unrelated to healthy eating (n=3).

6.4.4.7 Supports needed to overcome barriers.

Four key areas requiring further support were identified by representatives and PHNs in order to translate evidence within reports into action in schools: further buy-in from key stakeholders, embedment of action areas into school operations, increasing funding, and increased time.

6.4.3.7.1 Buy-in from key stakeholders. Representatives and PHNs identified the following groups of school stakeholders as each are perceived to be highly influential to the implementation and sustainability of healthy eating initiatives within schools (Table 6.4).

Table 6.4: Identified key stakeholders influential to the implementation of healthy eating initiatives in schools

Stakeholder group	# of interviewees identifying stakeholder group (# representatives; # PHNs)	Reasons interviewees required further buy-in from stakeholder group
Teachers	11 (n=8 representatives, n=3 PHNs)	Teachers often voluntarily lead healthy eating initiatives outside of the curriculum, role model changes, and educate students on the importance of healthy eating. If teachers are not engaged, they may be resistant to change and intended outcomes will not be achieved.
Students	5 (n=4 representatives, n=2 PHNs)	When students are engaged in the formation of initiatives, they may take ownership and embrace change. When encouraged to be involved, students are more likely to participate in healthy eating initiatives.
Administration	5 (n=2 representatives, n=3 PHNs)	Principals hold the power to approve or not approve the implementation of healthy eating initiatives in schools. They are seen as the key decision-makers for which initiatives get to move forward, individuals to be involved and how long programs will run.
Food service providers	4 (n=3 representatives, n=1 PHNs)	Food service personnel are directly impacted by P/PM 150 and need to be the driver behind making the healthy choice, the easy choice for students in school food venues.
Parents	3 (n=1 representatives, n=2 PHNs)	Especially for elementary schools, parents can drive change and support healthy eating initiatives by providing permission for students to participate.
School board officials	2 (n=2 PHNs)	With endorsement and approval from school boards, decisions can be made faster within schools. School boards drive the “ <i>top down approach</i> ” to change.

7.4.3.7.2 Embed action items into school operations. This theme embodied two key concepts. Firstly, the intention to support the school food environment through nutrition messaging and healthy eating initiatives would work best if embedded into classroom curriculum (n=2 representatives; n=3 PHNs). As stated by one representative “*having the policy is one*

thing, but if they're [Ontario Ministry of Education] not going to be educating kids about why it's important, they're just not making those connections." PHNs agreed stating that *"curriculum speaks very strongly to teachers."* Secondly, recommendations to make changes, such as strengthening the healthy eating curriculum, must be embedded into schools' annual plans (n=2 representatives). This also meant that recommendations for change must align with school priorities (n=2 representatives, n=3 PHNs), which is not an easy task. As outlined by one PHN: *"I think the school food environment is large. I think it changes; it's cyclical. It's very hard to get the maintenance stage when you have people moving through the system all the time. New Principals, new VPs, champion teachers, public health nurses. As different things come up in the school, what's their priority?"*

7.4.3.7.3 Increased funding. Representatives (n=6) mentioned more money was needed to purchase new materials for new programming. One representative commented that with the change to school vending machines, students were less likely to purchase new healthy snacks and beverages, which resulted in lost revenue. With limited funding, representatives outlined it was difficult to implement healthy eating initiatives, such as a culinary club, that were encouraged through the school feedback reports.

7.4.3.7.4 Increased time. One school representative and one PHN mentioned that more time was needed to bring stakeholders together and plan for healthy eating initiatives in their schools. The representative stated: *"During the day, to get this going. There's no free time to actually sit down and plan it."*

6.4.5 Informing Future Development of School Feedback Reports.

Key lessons were sought across representative and PHN transcripts to identify ways to improve school feedback reports and affiliated KT strategies. The following six key themes

emerged from discussions, which are presented in sequence for which future knowledge producers can develop and disseminate meaningful KT materials (Figure 6.2).

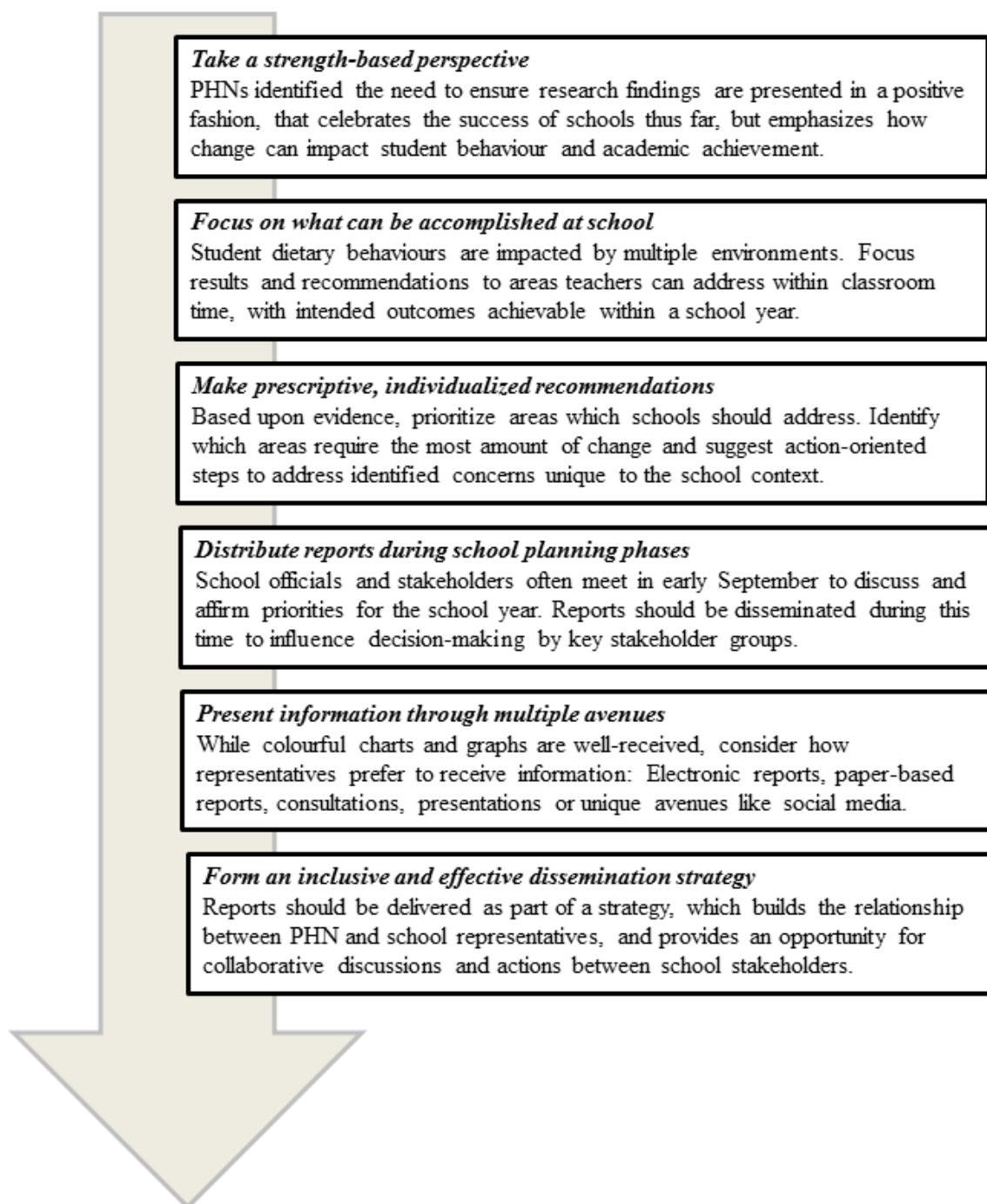


Figure 6.2: Lessons learned to be applied to Time II reports

Many school PHNs (n=5) organically commented that the reports were worthwhile and made contributions to their role in facilitating change in the schools. As stated by one PHN: *“I think the huge strength is that it is concrete evidence. It’s statistics. It’s hard numbers to say, ‘it would be great if the school does take on some interventions.’”* The information extracted from this thematic analysis, alongside expert review helped to redesign school feedback reports, which were issued at the end of Time II data collection.

6.5 Discussion

By evaluating the feedback reports issued to schools following participation in a process evaluation of the Ontario School Food and Beverage Policy (P/PM 150), the authors of this paper concur with the conclusions of Earl and Katz (2006) that there remains a gap between the existence of data and the use of research findings in schools. Knowledge translation is more than just an act of sharing research evidence, but is a strategy for which knowledge producers and users come together to identify areas requiring study, design of methodologies, implementation of programs, and evaluation of meaningful outputs and impacts (Davison, 2009; Davies et al., 2003; Graham et al., 2006; Grimshaw et al., 2012). Findings from the current study emphasize the need for KT to be treated as a strategy, as simple diffusion of reports was mostly ineffective at enacting change within schools (i.e., 69% of schools did not use report findings). Takeaway lessons highlight the need for KT materials to report meaningful data, with customized recommendations that align with school priorities. Furthermore, these reports should be disseminated using a planned KT strategy involving PHNs fulfilling the role as a knowledge broker to address barriers and facilitate change.

Previous evaluations of health education/communication materials have confirmed that the accurate presentation of data from reliable sources is very important to knowledge users

(Dobbins, DeCorby, & Twiddy, 2004; Farmer, 2008). When findings are not reflective of the realities of practice, knowledge users are likely to question the credibility of the evidence and consider information to be of low importance (Armstrong, Waters, Crockett & Keleher, 2007; Levin, Coopers, Arjomand & Thompson, 2011). In the current study, representatives categorizing information as irrelevant often questioned to credibility of questions within the student online survey and/or scoring procedures of the Healthy School Planner survey (i.e., the rating along the Healthy School Continuum). Areas of high importance were often selected as such, because it was new information and could be used to facilitate a change within the school. There was, however, a chasm between finding relevancy in research findings and using the report to enact change.

Throughout the health and education literature, researchers agree that change is more likely to occur, and intended outcomes achieved, when evidence-based recommendations align with organizational priorities (Archer, Scherman & Howie, 2013; Dobbins et al., 2004; Hawkins, Kreuter, Resnicow, Fishbein & Dijkstra, 2008; Kreuter & Wray, 2003). For Ontario schools, this may mean presenting research findings during times of program planning, making recommendations that can be easily embedded into existing mechanisms facilitated by teachers, policy change at the level of the school board or individual school, and being more deliberate in identifying who could take responsibility for change (and working with multiple stakeholder groups) to achieve change. From the field of medicine, the use of research findings by physicians is strongly influenced by the endorsement of clinical practice guidelines by authoritative physician organizations and/or colleges (Grimshaw et al., 2012). Repeatedly throughout school representative and PHN interviews, participants identified a need for a culture shift to occur within the school to strengthen the use of research findings to support healthy eating promotion.

Although buy-in was required by multiple stakeholder groups (i.e., parents, teachers, students, food service), the school board and the schools' administration were clearly described as the authoritative figure from whom change could be ignited or inhibited. Previous literature has demonstrated high success for the implementation of healthy eating practices when the gatekeepers of the school (i.e., school boards, administration) provide approval and support for change (McIsaac et al., 2013). As stated by Salpeter (2004): "*The most important element of an effective data-driven program is not the data, the analytic tools, or even the curriculum framework... it is the school culture in which data inquiry takes place*" (page. 4). Composite feedback reports were generated and disseminated back to participating school boards, as a means of providing evidence-based recommendations at the regional-level that could be used to help support healthy eating within individual schools.

Previous research confirms that attractiveness, mode of delivery, timing and complexity of recommendations for behaviour change all play a role in the level of uptake and impact of research findings (Farmer, 2008). Contextual factors, however, for which the external researcher cannot control may also mediate the use of research findings (Brownson, Fielding, & Maylahn, 2009; Traynor, DeCorby, & Dobbins, 2014). Even the personal characteristics of the individual receiving feedback (e.g., research background, interest level) or the process by which information flows through the school (e.g., existing knowledge mobilization procedures, decision-making processes) may impact uptake (LaRocca et al., 2012). In the current study, PHNs were identified to possess the abilities to address contextual factors and facilitate uptake of research findings, in a role that can be described as embodying a knowledge broker.

Former research has acknowledged the need for researchers to engage with community-level stakeholders to move research into practice (Green, 2006; Green & Mercer, 2001;

Leatherdale, 2009; Speller, 2001; Traynor et al., 2014). Knowledge brokers may serve several functions, including knowledge management (i.e., tailoring research evidence to meet individualized needs), liaison (i.e., facilitating collaborations between knowledge producers and users) and providing training (i.e., supporting knowledge users' capacity to apply research findings to local context), alongside community stakeholders to facilitate uptake of research findings (Dagenais, Laurendeau & Briand-Lamrache, 2015; Oldham & McLean, 1997; Ward, House, & Hamer, 2009). In the current study, PHNs ranking their relationship with their schools as 'strong,' described their role to be similar of that of a knowledge broker, working collaboratively with school stakeholders to facilitate and exchange information (Bornbaum, Kornas, Peirson & Rosella, 2015). Having a lead person, such as a school PHN, has been reported to be highly important to knowledge users, as they can assist in both the interpretation of data as well as facilitating logistical support (e.g., setting meetings, preparing meetings) and leading discussions to keep decision-making focussed and meaningful (Levin et al., 2011). Many schools reported they did not share and/or use the report because they had not been in contact with their school PHN . Furthermore, tasks needed to overcome barriers (i.e., achieving buy-in from stakeholders, embedding action into school operations, dedicating time to initiatives, applying, and/or receiving additional funding) could all be addressed through the assistance of the PHN. As reported by Jain & Langwith (2012), having a person, such as PHN in the current study, act as the dedicated lead to tackle health promotion activities is a critical component at facilitating changes to school culture and practices. This work adds to the current research that suggests that school PHNs are an overlooked and under-utilized resource for Ontario schools (Valaitis, Hanning & Hermann, 2014). Although continuous efforts are made to strengthen

relationships between school administration and public health, more work is needed to showcase PHN knowledge brokers and use their service optimally.

This study is one of the first to outline how public health end-of-grant KT materials have been perceived and used by school representatives and school PHNs. The strengths of this study include gathering detailed qualitative information from a variety of knowledge users, allowing the triangulation of data sources and providing real-world examples of research uptake in schools. This study is not without limitations; however, including that not all 45 schools participated in a one-on-one interview and that interviews took place several months following the release of the feedback report. Ensuring the timely and optimal use of research evidence in health-related settings is an on-going challenge for health promotion practitioners and decision-makers (Strauss, Tetroe, & Graham, 2009). The goal for Time II reports was to ensure information was presented in a user-friendly manner, displaying meaningful data, with action-oriented recommendations calling upon the strengths of the PHN as a knowledge broker.

6.6 Next Steps

The information presented in this paper was applied to the development of Time II school feedback reports. The reports were issued between eight to 10 months following Time II data collection and were tailored to the newly released Ontario Foundations for a Healthy School framework (Government of Ontario, 2014). Research findings were customized to meet the five areas that contribute to a healthy school: curriculum, teaching and learning; school and classroom leadership; student engagement; social and physical environments; and home, school, and community partners (Government of Ontario, 2014). Publicly-funded schools in Ontario are strongly recommended to use this framework when implementing health promotion activities, including healthy eating. Furthermore, to facilitate research uptake, an activity sheet

incorporating key aspects of integrated KT was developed. This worksheet emphasized contacting the school PHN, who would then be able to use brokering skills to help share the report with broad school stakeholders, facilitate the selection of a healthy eating-related goal aligned with school priorities, make the change using the PHN and ‘Supports for Schools’ resources provided, and predefine how progress would be evaluated using the Healthy School Planner survey. A de-identified copy of the Time II reported is available in Appendix F. Future work is required to evaluate if this newly adopted dissemination strategy was more or less impactful at facilitating research uptake in schools.

6.7 Implications for KT in Public Health

This research demonstrated that the provision of a school feedback report through a simple diffusion strategy was generally ineffective at supporting healthy eating initiatives within schools. Feedback gathered from school representatives and school PHNs revealed a need for future KT strategies to present research findings in a structured format, guided by the expertise of a knowledge broker through the stages outlined in the Knowledge to Action (KTA) cycle (Graham et al., 2010). The KTA cycle (Figure 2.2, page. 28) is a conceptual model intended to assist knowledge producers and users through the process of knowledge creation (outlined in the centre knowledge funnel) through to knowledge application (outlined in the exterior action cycle; Graham et al., 2006). The production of school feedback reports addresses knowledge creation, by which outcomes from multiple data sources are synthesized and tailored to report the status of students’ dietary behaviours and recommendations are made to strengthen supports for healthy eating in the context of each school. School PHNs as knowledge brokers can partner with school community members to identify key areas of focus that closely align with school priorities,

address barriers to change, structure and implement changes and standardize ways for the initiative outputs to be monitored, evaluated, and sustained.

This partnership would further require knowledge brokers to embrace the philosophy of integrated KT, which requires “...*collaboration between researchers and research users in the research process including the shaping of research questions, deciding of methodology, involvement in the data collection and tools development, interpreting the findings and helping disseminating the research results*” (Graham & Tetroe, 2009, page. 48). Although school stakeholders would not be facilitating a research project, an integrated KT viewpoint would ensure teachers, healthy eating champions, students, administrators and parents are all actively engaged and interested in the KTA stages. Integrated KT approaches are the strongest method of reaching application of research findings, as those involved are often excited to see outcomes that are relevant and meaningful to their local context (CIHR, 2010; Tetroe, 2011). Therefore, school PHNs should consider leading integrated KT approaches and embedding the action-oriented stages of the KTA cycle in future KT materials disseminated to schools in order to facilitate uptake and impact student healthy eating behaviours.

Chapter 7: Discussion & Interpretations

Ontario's Ministry of Education mandated the Ontario School Food and Beverage Policy (P/PM 150) with the intention to improve the nutritional quality of foods and beverages offered for sale to students in publicly-funded elementary and secondary schools, and to reinforce students' attitudes, skills, and knowledge developed through the provincial curriculum (Ontario Ministry of Education, 2010a). Regional school boards were encouraged to take a holistic approach to P/PM 150 implementation (Ontario Ministry of Education, 2010a), as previous research examining policies and interventions aiming to improve student healthy living behaviours had concluded the greatest impact to student health can be attributed to initiatives that have addressed all components of the school environment (Allensworth, 1987; Deschesnes et al., 2003; Lister-Sharp et al., 1999; Mâsse, Naiman & Naylor, 2013; Roberts et al., 2015; Stewart-Brown, 2006; St. Leger, Chapman, Stewart-Brown & Sowden, 1999). The Comprehensive School Health (CSH) framework is an internationally-recognized, whole-school model used to describe the key components of the school environment, presented as four inter-related pillars: Social and Physical Environments, Teaching and Learning, Healthy School Policy, and Partnerships and Services (Veugelers & Schwartz, 2010). While P/PM 150 is considered to play a critical role in supporting the healthy living behaviours of students, this policy only represents an element of the Healthy School Policy pillar within the broader CSH framework. At the time of an evaluation in the Region of Peel, it was uncertain how the remaining CSH pillars, and additional school-level policies, supported healthy eating and P/PM 150 implementation in elementary and secondary schools. Furthermore, there was a need to strengthen existing supports to CSH and address barriers to P/PM 150 through the application of knowledge translation (KT) activities.

The three research studies (Chapters 4-6), identified supports for healthy eating within and across the four pillars of the CSH framework and described KT mechanisms to support healthy eating initiatives in schools. The outline of the CSH framework below draws attention to the inter-related qualities of the pillars, with special attention given to the overlap between the Healthy School Policy pillar and

the Social and Physical

Environments, Partnerships and

Services, and Teaching and

Learning pillars. The relationships

between pillars are reciprocal, with

the supports for healthy eating in

one pillar complementing those in

another. This discussion chapter will draw

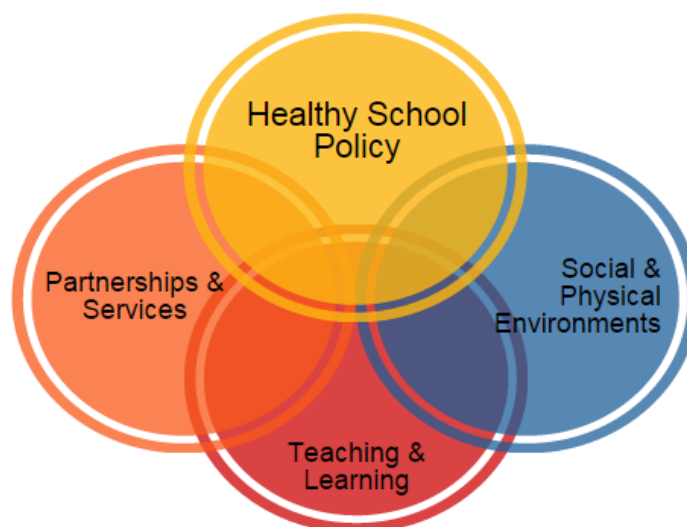


Figure 7.1: Adapted CSH framework

upon the implementation science literature to better understand how supports for healthy eating within each CSH pillar can strengthen P/PM 150 uptake and complement the support for healthy eating within adjacent pillars. Furthermore, conclusions drawn from this discussion will be incorporated into a proposed revision of the CSH framework and reflected in a new model for understanding the process by which school nutrition policies are implemented with support from the CSH pillars. The Chapter will conclude with evidence-informed recommendations to support P/PM 150 implementation and comprehensive supports for student healthy eating in Ontario schools.

7.1 Supports for Healthy Eating and Policy Implementation

The following sections focus on the four CSH pillars and describe (i) how healthy eating supports within this pillar affect the support for healthy eating in the adjacent three pillars; and (ii) how key supports for healthy eating identified in this pillar aid in the adoption, implementation, evaluation, and/or sustainability of P/PM 150 in Region of Peel schools.

7.1.1 Healthy School Policy Pillar.

7.1.1.1 Support for healthy eating. The Healthy School Policy pillar housed both P/PM 150 and site-specific policies and practices. This research demonstrated that the Physical Environment in some cases supported the policy directive to include $\geq 80\%$ of food foods offered for sale were made up of *Sell Most* and $\leq 20\%$ were made up of *Sell Less* beverages and snacks. Other school-mediated policies and practices resulted in positive changes in the Social and Physical Environment pillar, for example when school administrators mandated that healthy foods should be available at a reasonable/subsidized cost. The Teaching and Learning pillar was supportive of healthy eating when administrators and/or teachers agreed to avoid sugary treats as a reward in the classroom. Additionally, the Partnerships and Services pillar was supported when school representatives partnered with external vendors to ensure foods sold through fundraisers were met healthy fundraising practices. These examples showed the synergy possible when school policies extend mandated policy and its intent, that all students should have access to and consume healthy foods in order to achieve optimal health and academic success (Ontario Ministry of Education, 2010a).

7.1.1.2 Support for P/PM 150 implementation. Few schools had additional policies that complemented P/PM 150, but even the mandated policy was not fully supported. Study #1 identified a majority of schools offered at least one *Not Permitted for Sale* beverage or snack in

school vending machines during Time I (47%, 74%, respectively) and/or in Time II (58%, 53%, respectively) and Food Environmental Scans (FES) from Study #2 identified non-adherence choices in other food venues. This lack of adherence; however, may have been rooted in a misinterpretation of P/PM 150 nutritional standards by school administrators, school board officials and/or food service providers.

Previous research has documented that when policy guidelines are too vague or too complex, implementation and enforcement becomes very difficult (Agron, Berends, Ellis & Gonzalez, 2010; Lucarelli et al., 2015; Mâsse, Naiman & Naylor, 2013; McKenna, 2003; van Ansem, Schrijvers, Rodenburg, Schuit & van de Mheen, 2013; Watts, Mâsse & Naylor, 2014). For example, in a study led by Lucarelli and colleagues (2015) broad statements such as “*shall offer and promote healthy foods in all venues*” made implementation of the School Nutrition Advances Kids (SNAK) program very difficult to implement as *healthy foods* were not clearly defined. Authors commented that this type of ambiguous language allows for school leaders to tailor policy expectations to the needs of the community; however, provides little guidance on how to implement and maintain compliance thereafter (Lucarelli, Alaimo, Belansky, Mang, Miles, Kelleher et al., 2015). To address this concern, Lucarelli et al., recommended future policy makers provide a written handbook when mandating school nutrition policies (Lucarelli et al., 2015). In Ontario, the Ministry of Education widely distributed and made electronically available a P/PM 150 Resource Handbook to assist schools and food service providers in the accurate interpretation and application of P/PM 150 guidelines (Ontario Ministry of Education, 2010b). After speaking with elementary and secondary school principals, authors Chalensouk and Kutsyuruba (2014) concluded that the interpretation of P/PM 150 impacted the selection of foods that were made available to students in school food venues. A majority of principals reported

difficulty understanding the 80/20 rule for each food venue and were unsure how to confirm foods prepared by outsourced food vendors, such as those operating secondary school cafeterias, were P/PM 150 compliant (Chalensouk & Kutsyuruba, 2014). The misinterpretation of P/PM 150 standards led to the presence of *Not Permitted for Sale* foods being offered for sale to students (Chalensouk & Kutsyuruba, 2014). Their recommendation to provide further clarification of P/PM 150 standards, echoed here specifically, for explanation of (i) the classification process for beverages based upon sugar content and (ii) explicitly stating standards apply to beverage container size versus serving size.

Based upon findings from Study #1 there is a need for the Ontario Ministry of Education to consider the inconsistency of product categorization based upon sugar content. The amount of free sugars within *Sell Most* juice/juice blends was very similar to that recorded in *Not Permitted for Sale* milk-based beverages. Although juice may provide small amounts of micronutrients and phytochemicals, the excess of free sugars does not align with WHO's recommendations to reduce consumption of free sugars to less than 10%, ideally less than 5%, of daily caloric intake nor does it align with P/PM 150's goal to reduce the availability of unhealthy foods offered for sale to students (Ontario Ministry of Education, 2010a; WHO, 2015b). The Ministry may also be asked to remove 100% fruit juices from the *Sell Most* category based upon its high sugar content and because there have been public statements made by Health Canada representatives that these juices will soon be removed from Canada's Food Guide (<http://www.ctvnews.ca/health/will-fruit-juice-be-cut-from-canada-s-food-guide-1.2380960>). Therefore, as the policy maker, the Ministry of Education must respond to changing nutrition recommendations and embed new best-evidence into P/PM 150 iterations.

An additional concern identified in Study #1 was the potential misinterpretation of P/PM 150 standards applied to beverages if serving size and not container size was the reference. In many cases, milk-based beverages were categorized as *Not Permitted for Sale* because in 500 mL containers the product did not meet P/PM 150 standards for fat and sugar. However, when the same milk-based beverage was offered in a 250 mL container, the contents of fat and sugar were acceptable according to P/PM 150 standards. The broad availability of *Not Permitted for Sale* milk-based beverages of 500 mL may have been due to food service workers, school board officials, and/or school representatives calculating compatibility to serving size (250 mL) versus container size (500 mL). Previous research demonstrates that vended beverages and snacks should be evaluated based upon the product's package size, not to serving size, as individuals are more likely to consume the full beverage or snack in one sitting rather than just consuming the product's recommended serving size (Antonuk & Block, 2006; Matthews & Horacek, 2015). To improve the clarity of the policy and reduce the risk of misinterpretation, P/PM 150 should be modified to make explicit that the amount within any container needs to adhere to policy guidelines. This important information should be clearly stated in P/PM 150 reference tables included in the original P/PM 150 document as well as the P/PM 150 Resource Guide that is electronically accessible on the Ministry of Education website.

Policy is critical to the formation of sustainable and supportive healthy eating environments (Gleddie et al., 2010; Pan-Canadian JCSH, 2015; Lister-Sharp et al., 1999); however, implementation of a school nutrition policy is only one avenue for impacting student health and academic achievement (Pan-Canadian JCSH, 2015; Roberts et al., 2015). Therefore, the healthy eating supports identified within each CSH pillar will now be reviewed, alongside a

discussion as to how these supports can help further the implementation and impacts of P/PM 150.

7.1.2 Social and Physical Environments.

The level of support for healthy eating within the Social Environment was drastically lower compared to that within the Physical Environment during the period of data collection (i.e., Time I (2012/13) and Time II (2014)). Therefore, this section will separate the two concepts and begin by reflecting on the Physical Environment, as it was the CSH pillar with the most interplay with the Healthy School Policy pillar.

7.1.2.1 The Physical Environment.

7.1.2.1.1 Support for healthy eating. As assessed by the Healthy School Planner and reported by the school representative, the most supportive aspect of the Physical Environment was the presence of adequate spaces for students to eat (i.e., sufficient number of tables, chairs, cafeteria space) and time to do so (i.e., during lunch hours, nutrition breaks, snack times). Although outside the scope of P/PM 150, supports for healthy eating recorded in the Physical Environment complemented supports within other CSH pillars. For example, the Healthy School Policy pillar, which held P/PM 150, promoted schools to have healthy beverage and snacks available to students on regular basis. The Social Environment promoted the purchase of healthy options through student-led nutrition events (e.g., nutrition month, healthy bake sale fundraisers) and the Partnerships and Services pillar promoted healthy options through cafeteria vendor promotions and/or Peel Public Health healthy choices promotional posters. The amenities within schools' Physical Environments also allowed for healthy eating-related behaviours taught in the Teaching and Learning pillar to be practiced, including following proper hand hygiene procedures before meals, tending to school gardens, or applying food skills during cooking

classes. The Physical Environment was highly supportive in Times I and II (i.e., 100% *high/increased* support for healthy eating in participating schools), and was also very important in policy implementation.

7.1.2.1.2 Support for P/PM 150 implementation. The Physical Environment is, arguably, the most important CSH pillar in determining the implementation and adherence to P/PM 150. Figure 7.2 presents a logic model capturing the activities through to intentions of the policy.

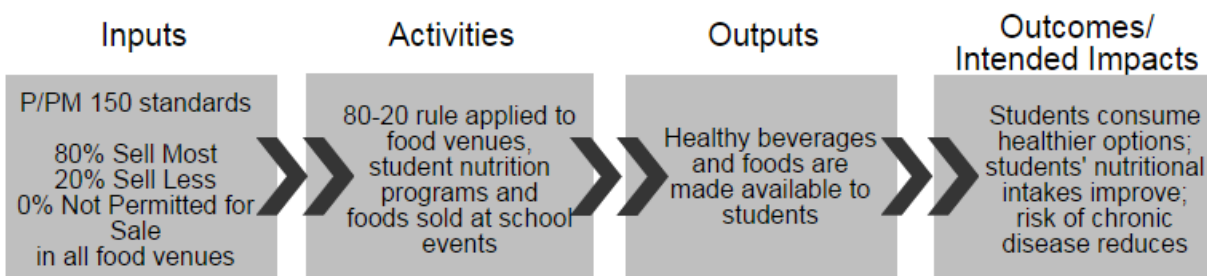


Figure 7.2: P/PM 150 logic model

A logic model is a tool frequently used by policy evaluators to visually capture the theory of change or the process by which policy will be effective in specific environmental contexts (Jordan, 2010). This logic model outlines the high-level processes by which the Healthy School Policies pillar (i.e., P/PM 150) works through the Physical Environment (i.e., school food venues and food-related activities) to impact student dietary behaviour, health, and academic achievement. Although other initiatives within other CSH pillars may facilitate or impede the implementation of P/PM 150, this logic model highlights the direct relationship between the Healthy School Policy pillar and the Physical Environment. Results from the vending machine audit in Study #1 demonstrated that not all beverages and snacks available for sale were compliant with P/PM 150 and, therefore, the Physical Environment was not yet 100% supportive of healthy eating. As previously discussed, this could have been caused by a misinterpretation of

P/PM 150 standards, but without further evaluation, the cause and consequences along the path of the logic model cannot be appraised.

Simply having a healthy school policy recorded in the school's mandate does not mean it will be enforced and/or monitored (Valleau, Almeida, Deane, Froats-Emond, Henderson, Prange et al., 2004; van Ansem et al., 2013). In 2013, the Ontario Auditor General concluded that there is no effective monitoring strategy set in place to ensure foods and beverages sold in schools are compatible with the Ontario School Food and Beverage Policy (Lysyk, 2013). As advised in the Knowledge-to-Action cycle presented in Chapter 2, monitoring knowledge use and evaluating outcomes are essential processes required before evidence is sustainably embedded into daily operation (Graham et al., 2006). Monitoring the adherence of food policies is essential to learning how policies impact the school environment and, as outlined in the logic model (Figure 6.2) and student dietary behaviours (Brownson, Allen, Jacob, Harris, Duggan, Hipp et al., 2015; McGraw, Sellers, Stone, Resnicow, Kuester, Fridinger et al., 2000; Valleau et al., 2004). Without evaluation, policy makers risk mis-implementation, categorized as the termination of a program delivering effective outcomes or continuing a program that is proven to be ineffective (Brownson et al., 2015). Consistent monitoring; however, has been deemed a significant issue for schools with limited time, staff, and/or resources (Belansky, Cutforth, Delong, Ross, Scarbro, Gilbert et al., 2009; Greves & Rivarsa; McDonnell, Probart & Weirich, 2006; Valaitis, 2015). For the schools included in this thesis, many representatives were unaware of which companies were stocking secondary school vending machines as a majority of machines were owned and operated by regional school boards. The disengagement between school administrators/representatives and vending machine vendors further added to the confusion of who was responsible for monitoring P/PM 150 compliance and how this was to be accomplished.

The official P/PM 150 document states that regional school boards and schools are responsible for monitoring the policy (Ontario Ministry of Education, 2010a); however, does not indicate how to go about monitoring adherence. Elsewhere, tools have been developed to assist schools in regular audits of the school food environment, such as FoodBEAMS (Food and Beverage Environment Analysis and Monitoring System) (Lawrence-Bullock et al., 2010). This computerized tool helps assess the level of adherence to California's school nutrition policy on the reduction of competitive foods sold in vending machines in state schools (Lawrence-Bulluck, Craypo, Clark, Barry & Samuels, 2010). In Canada, the Healthy School Planner (HSP) survey can be used to track the presence of particular foods and beverages within student cafeterias, vending machines, and tuck shops (e.g., white milk, whole wheat/grain bread, fruit, vegetables, deep-fried potatoes, chips, sweet desserts, sugary beverages, energy drinks) (Healthy School Planner Survey, 2015). The application of the FES checklist described in this thesis could provide additional valuable data by identifying the presence of *Sell Most*, *Sell Less*, and *Not Permitted for Sale* foods within schools over time. Although the Study #1 only captured data from secondary school vending machines, the protocol used to identify and classify beverages and foods according to P/PM 150 standards could be applied to the nutrition content information retrieved from recipes of foods and beverages offered for sale by food service providers through elementary school lunch services and secondary school cafeterias. As stated by the Pan-Canadian JCSH and aligned with knowledge translation best practices, it is important that policy adherence is regularly monitored and that this information is fed back to key stakeholders to increase awareness, promote accountability, and enhance compliance with P/PM 150 (Davies & Nutley, 2008; Graham & Tetroe, 2009; Healthy School Planner survey, 2013). A system of audit and

feedback could help address the current lack of monitoring of P/PM 150 in schools' Physical Environments.

Audit and feedback systems are primarily used in the medical field to provide healthcare professionals with a summary of their professional performance in meeting clinical standards (Ivers, Jamtvedt, Flottorp, Young, Odgaard-Jensen, French et al., 2012). There are variable results showing audit and feedback effectiveness at monitoring positive behaviour change; although studies demonstrating positive results have indicated feedback was effective when: (i) it was provided verbally, and in writing, more than once; (ii) baseline performance was poor; (iii) feedback was provided by an authoritative figure; and (iv) information was aligned with an action plan with measurable targets (Ivers et al., 2012). Audit and feedback has more recently been used to track compliance of school nutrition policies in Australia (Williams, Nathan, Delaney, Yoong, Wiggers, Preece et al., 2015). The Canteen Audit and Feedback Effectiveness (CAFÉ) study is the first randomized control trial to support policy implementation over a 12-month period (Williams et al., 2015). The program consists of two cafeteria audits aimed at identifying foods not permitted for sale and the presence of healthy foods compatible with a red-amber-green light nutrition policy (Williams et al., 2015). The audits are conducted by a school support person, either a dietitian or teacher trained in the policy (Williams et al., 2015). Feedback is provided in writing (in an email or letter) and followed by a phone call provided by the auditors (Williams et al., 2015). Although the trial led by Williams and colleagues is currently underway, the results of this study could shed light on a system for use in Ontario schools. Findings from Study #3 could be applied to audit and feedback systems, as this study identified the modes of delivery most preferred by schools (e.g., paper, electronic, in-person consultations)

and groups to include in the feedback process (e.g., school principals, champions, students, staff, families).

A P/PM 150 audit could take place on an annual basis, be led in collaboration by school stakeholders invested in implementation (i.e., food service providers, school public health nurses (PHNs), school administrators, parent council members) and reported to the regional school board and Ministry of Education. By enforcing an audit and feedback system, the roles and responsibilities of those implementing policy could be better defined and help resolve confusion as to how P/PM 150 is to be monitored and by whom. The outcomes of the audit are not to punish schools for their lack of compliance, but will provide an opportunity to facilitate change through structured and respectful methods. Furthermore, these audits could encompass a reflection of the comprehensive supports for healthy eating used by and/or embedded into the school culture during a full school year. This could be achieved by inserting questions relative to the CSH pillars, perhaps derived from the HSP survey. By embedding CSH questions into regular audits, the Ministry of Education will not only become more aware of policy adherence across the province, but be able to identify where supports are lacking throughout the CSH pillars and direct additional resources accordingly.

As described in Study #3, school PHNs could help facilitate audits as a knowledge broker using integrated knowledge translation (iKT) methodologies. In iKT, stakeholders work together towards a common goal, such as making healthy foods available to students while maintaining taste, satisfaction of service, and cafeteria profits (Graham & Tetroe, 2009). Like Graham and Tetroe (2009) and Tetroe (2011), the CSH framework encourages stakeholders to be actively engaged in these types of discussions, and emphasizes partnerships such as those between schools, PHNs, and food service providers must exist in order for student health to be impacted.

Although difficult, monitoring is critical as without an enforced system, policy may fail. As demonstrated in Study #1, very few schools made changes to policy adherence over time, and a majority of schools in Study #2 made little progress advancing along the Healthy School Continuum between Times I and II. As Houchin and MacLean (2005) explain, organizations are recursive, not adaptive. When monitoring is not set in place, and there are no consequences for failing to comply, organizations will revert from novelty and return to comfortable practices (Butler & Allen, 2008). As research has demonstrated, longer running school-based interventions are the most effective at impacting student dietary behaviour and therefore, P/PM 150 must be made sustainable; audit and feedback systems may be one way to ensure the Healthy School Policy pillar is continuously prompting the sale of healthy beverages and foods to students in the school's Physical Environment and comprehensive supports for student healthy eating are promoted throughout the school year, through all CSH pillars (Gonzalez-Suarez, Worley, Grimmer-Somers & Dones, 2009).

7.1.2.2 The Social Environment.

7.1.2.2.1 Support for healthy eating. The Social Environment aims to maintain meaningful relationships between school staff, teachers, families, and students to encourage the emotional well-being of students across all grades (Pan-Canadian JCSH, 2015). Study #2 concluded that the Social Environment was the least supported, with 56% (n=17) of surveyed schools having *low/decreased* support for healthy eating between Times. Only two schools (8%) demonstrated *moderate* support and six schools (24%), *high/increased* support. In these schools, the level of Social Environmental supports for healthy eating complemented other CSH pillars by: classifying healthy eating as a priority for schools, linked to valued school-specific practices in the Healthy School Policy pillar; reaching out to parent councils and families to gather

feedback on healthy eating providing in schools through the Partnerships and Services pillar; and providing opportunities for experiential learning opportunities outside of the classroom including cooking and gardening in the Teaching and Learning pillar. Where healthy eating was promoted in the Social Environment, school champions were identified as a necessary condition for these events and activities to happen.

The role of a champion is fulfilled by an individual (e.g., teacher, administrator, parent, student, school-board member, food service director, superintendent) with a personal passion for stimulating action and sustaining momentum by on-boarding other school staff to participate and believe in CSH initiatives (Durlack & Dupre, 2008; MacLellan et al., 2009; Wechsler, McKenna, Lee & Dietz, 2004). Previous research has distinctly identified school healthy eating champions as key drivers for change (Deschesnes et al., 2003; Downs, Farmer, Quintanilha, Berry, Mager, Willows et al., 2012; Greaney, Hardwick, Spadano-Gasbrarro, Mezgebu, Horan, Scholotterbeck et al., 2014; Lohrmann, 2010; Lucarelli, Alaimo, Mang, Martin, Miles, Bailey et al., 2014; MacLellan et al., 2009; McIsaac et al., 2013; Rasberry et al., 2015; Valois et al., 2015; Wechsler et al., 2004). The current thesis research provided two examples of the impact school champions have on supports for healthy eating within a region of Peel secondary school.

In the first example, the school champion was truly passionate about creating a sustainable healthy eating environment for students, and during the Food Environment Scan (FES), spoke about the changes he was supervising in the school. This champion was leading a student-run cafeteria, which relied on the food prepared in Hospitality classes to serve reduced-priced breakfast, lunch, and snacks to students and staff on a daily basis. Emphasis was placed on preparing healthful dishes, inclusive of lean meats and vegetables grown in the local region. With a successful cafeteria, the school did not offer any snacks through vending machines and only

offered P/PM 150 compatible beverages (mostly within the *Sell Most* category). Unlike several other schools, this school healthy eating champion reflected upon recommendations reported in the Time I knowledge translation school feedback reports and strengthened healthy eating supports through programs planned for Time II. While the relationship between the school and the PHN was categorized as *weak* by the PHN, the drive of a single, volunteer champion demonstrated that change can be enacted and supports sustained when an individual is truly passionate about student healthy eating behaviours.

In the second example, the school has regressed from an overall rating of *Maintenance* to *Action* along the Healthy School Continuum between Times, weakening their supports for healthy eating within the Social Environment and the Partnerships and Services pillars. This reduction in the level of healthy eating supports could be attributed to the school healthy eating champion leaving between Times I and II. During the FES walkabout in Time I, the champion spoke about policies set in place to help approve and track P/PM 150 exemption days and the role of a monitor in ensuring foods offered for sale in the cafeteria were compliant. In Time II, the administrator indicated there was no longer an individual at the school who was knowledgeable and/or passionate about the school food environment. The participating school representative in Time II did not report any monitoring practices and reported that all exemption days were left to the discretion of the cafeteria with no input from the school administration. Additionally, this school decreased the number of *Sell Most* beverages offered, but maintained the same number of *Sell Less* beverages between Times and increased the number of *Not Permitted for Sale* snacks from one in Time I to nine in Time II. Although this does not necessarily translate into the actual sales and/or consumption of such products by students, it does demonstrate that adherence was faltering. This change in level of P/PM 150 compliance

may have been attributed to the changeover in staff and the loss of the individual who had seen value of monitoring. The loss of the school healthy eating champion also meant that the Time I feedback report was not shared among the school community or the school PHN and data were not applied to Time II initiatives.

These examples clearly show how social and instrumental support, in the form of a champion, can influence policy, physical environments, teaching and learning, and community outreach. While these two situations provide real-world examples of the impact a school champion can have on the level of healthy eating supports within schools, important concepts from implementation science can explain how champions are influential to policy adoption and adherence.

7.1.2.2 Support for P/PM 150 implementation. School champions play a unique role, holding respectful relationships between school staff, parents, students, and administrators (Durlack & Dupre, 2008; MacLellan et al., 2009; McIsaac et al., 2013). Champions can be considered leverage points to policy implementation in that they can oversee implementation of top-down policies and actively recruit support for action from other ground-level stakeholders (Bunker, 1972; Butler & Allen, 2008). One could argue that the school champions have a way of mediating relationships and breaking down communication barriers between authority and worker, providing an opportunity to work together towards a common goal (Butler & Allen, 2008). In a study conducted by Downs and colleagues (2012), researchers sought to identify barriers to the adoption of the Alberta Nutrition Guidelines for Children and Youth. Through telephone surveys with representatives from 357 schools, they found that many schools encountered barriers to policy adoption, although those with a school champion showed resilience (Downs et al., 2012). This was especially true for rural schools that required additional

financial assistance, which the champion was able to address and achieve (Downs et al., 2012).

Through the Partnerships and Services pillar, early engagement of school healthy eating champions can lead to adoption of CSH initiatives and move evidence into practice. As documented in Study #3, some school representatives reported taking it upon themselves to make a change within the school based upon recommendations from the Time I feedback report. These champions were able to help facilitate the iterative process of moving from adapting knowledge to local context, through to implementing interventions, as outlined in the KTA cycle (Graham et al., 2006). As valued enablers of change, school healthy eating champions should be recognized and rewarded for their contributions towards moving CSH initiatives through the KTA cycle, especially because much of this work requires voluntary dedication of time and effort and has shown to be highly effective (Lucarelli et al., 2014; MacLellan et al., 2009). The reliance on champions to ensure P/PM 150 adherence, however, was not intended by the Ministry of Education. Therefore, additional actions must be taken to on-board all school community members to buy-in and support P/PM 150 implementation.

7.1.3 Teaching and Learning.

7.1.3.1 Supports for healthy eating

The Teaching and Learning CSH pillar encompasses both formal and informal curriculum that reinforces health-related knowledge and skills of students, with the goal of enhancing learner outcomes (Pan-Canadian JCSH, 2015). A majority of schools (68%, n=17) surveyed in Study #2 were categorized as having *moderate* support for healthy eating within this pillar. As previously mentioned, the amenities within the school's Physical Environment allowed for food and gardening skills to be practiced; the promotion of healthy eating led by student nutrition clubs further enabled learning and student connectedness in the Social Environment; Partnerships with

local organizations helped provide opportunities for field trips to local grocery stores or farms; and teaching healthy eating as part of classroom lessons reinforced messages portrayed in P/PM 150. The root of these supports required healthy eating and skill development to be embedded in classroom curriculum. An abundance of literature has demonstrated great success for the implementation, sustainability, and impact on student behaviours when CSH initiatives are incorporated into classroom lessons (Institute of Medicine, 2012; Lucarelli et al., 2014; Moore, de Silva-Saigorski & Moore, 2013; Vereecken, Bobelijn & Maes, 2005).

7.1.3.2 Supports for P/PM 150 implementation.

In Study #3, school representatives commented that they were interested in implementing healthy eating supports that were relevant to their school's population and in-line with the priorities selected by their school. Rowling (1996) recommend that the introduction of a health promotion policy or program must be done in a way that addresses an issue that is currently facing the student population. In order for a policy to be effective, it must not simply relay the best available evidence to those responsible for implementation, but must allow for context-specific choices to be made at the ground-level (Greenhalgh & Russel, 2009). Teachers and school administrators, therefore, must see value in applying P/PM 150 messages to meet their job requirements as educators.

One of the central objectives of the Ministry of Education is to have all Ontario students “...achieve high levels of academic performance, acquire valuable skills and demonstrate good citizenship” (Ontario Ministry of Education, 2015b, para. 3). Previous research has demonstrated that improvements to students' dietary intakes can result in improved cognitive functioning and academic performance, furthering the ability of schools to meet academic mandates (Hoyland, Dye & Lawton, 2009; Florence, Asbridge & Veugelers, 2008; McIsaac, Kirk & Kuhle, 2015).

This is one reason why the Ministry highly values the healthy eating behaviours of students. Schools also value student health, but in their own unique ways. Each year, Region of Peel school administrators select a health topic for which they would like to see an improvement and include this topic in their school's action plan. Examples recorded from the FES in Study #2 and through interviews in Study #3 identified eco-friendly school operations, active transportation before/after school, student mental health, bullying prevention, tobacco cessation, and healthy eating as priority areas selected for annual action plans. The selected topic is usually based upon the needs of the community and programs are run by dedicated staff (e.g., champions) alongside parent and student volunteers. The freedom to select a priority topic that reflects the school's culture, allows school stakeholders to move through the first steps of the KTA cycle and adapt knowledge to local context by selecting a topic that has meaning and relative importance to the school community (Graham et al., 2006). Furthermore, as school stakeholders want to see target outcomes achieved, the school administrator can allocate resources to overcome barriers to knowledge use, and use formal and informal structures to achieve select, tailor, and implement specific CSH interventions (Butler & Allen, 2008; Graham et al., 2006).

In a study examining the implementation of Food and Beverage Sales and Daily Physical Activity guidelines in British Columbia, Watts and colleagues (2014) identified that when school representatives perceived the policies to be valuable, compatible with the school mandate and in-line with the school's teaching philosophy, implementation was supported. Alternatively, the literature confirms when healthy eating policies are considered to be low priority, they are no longer valued and policy implementation is hindered (Levin et al., 2011; Lucarelli et al., 2014; MacLellan et al., 2009; McIsaac et al., 2013). Therefore, to support P/PM 150 implementation,

the Ministry of Education might gain traction through emphasizing the alignment of health to academic achievement outcomes.

Healthy eating is already incorporated into the Ontario Health and Physical Education elementary curriculum and in select topics in secondary curriculum (i.e., Health and Physical Education, Hospitality, Food and Nutrition, Family Studies). Students are provided with opportunities to learn about making healthy choices, reading nutrition labels and combating negative influences from the media (Government of Ontario, 2015a; Government of Ontario, 2015b). These topics are often brief units that occur once per school year and do not discuss P/PM 150. Region of Peel school healthy eating champions and school board P/PM 150 coordinators/consultants have developed curriculum supports for embedding P/PM 150 into classroom curriculum; however, these supports have not been broadly shared with the Ontario teaching community and/or Ministry of Education. Additional references, such as Nutrition Tools for Schools, were created by public health dietitians to assist schools with embedding healthy eating messaging and P/PM 150 standards into school environments (Nutrition Tools for Schools, n.d.). This provincially-funded online database includes curriculum supports and can be accessed delivered by teachers and/or school PHNs (Nutrition Tools for Schools, n.d). These types of supports can help reduce the burden on individual teachers to develop their own healthy eating curriculum and help strengthen the link between the Teaching and Learning and Partnerships and Services pillars. Further, embedding P/PM 150-related topics into classroom curriculum on regular basis may help facilitate the connection between *Sell Most* beverages and foods made available at school and student acceptance and consumption of these healthy foods.

7.1.4 Partnerships and Services.

7.1.4.1 Supports for healthy eating.

The Partnerships and Services pillar aims to advance student health and academic achievement through supportive working relationships between school stakeholder groups (Pan-Canadian JCSH, 2015). There were variable levels of support for healthy eating in the Partnerships and Services pillar identified in Study #2, with 44% of surveyed schools reporting *low/decreased* support, 20% *moderate* support, and 36% *high/increased* support. These supports were exemplified through having external organizations fund healthy eating-related events in the Social and Physical Environments; partnering with the regional school board and school PHNs to deliver P/PM 150 training in the Healthy School Policy pillar; and applying curriculum supports from other provinces and/or schools to embed healthy eating messages into the Teaching and Learning pillar. Across all pillars, Study #3 highlighted that knowledge translation strategies can help facilitate change within any pillar that may be lagging in healthy eating supports, especially when iKT strategies are used to facilitate collaborations between stakeholders. Working with stakeholders is not only necessary to achieve healthy eating supports, but as identified by this thesis research, on-going engagement of stakeholders is required to achieve P/PM 150 compliance and sustainability.

7.1.4.2 Supports for P/PM 150 implementation.

Studies #1-3 identified stakeholder groups as those that are responsible for implementation and those affected by P/PM 150 including: representatives from the Ontario Ministry of Education (i.e., policy makers), school board officials, Region of Peel school PHNs, school administrators, teachers, school healthy eating champions, parent/school councils, parents and family members, and students. Previous research concluded that seeking support from a

broad array of school community stakeholders is essential to facilitate CSH implementation and sustainability (Downs et al., 2012; Gleddie & Hobin, 2011; Greaney et al., 2014; Kam et al., 2003; Watts et al., 2014). Implementation science explains that the engagement of stakeholders in the policy development and implementation process leads to buy-in and that active collaborations amongst stakeholder groups strengthens a sense of ownership held by ground-level workers (i.e., teachers, students) and governing bodies (i.e., administrators, school board, Ministry) (O’Hara & McNamara, 2001).

Buy-in is an ambiguous term used throughout implementation science literature, with no standard definition that is universally accepted. Porter (1998) provides a definition of buy-in from the field of market research: “*the level of acceptance of project plans by individuals from participating groups*” (Porter, 1998, page. 118). Porter goes on to describe the necessity of having individuals from multiple participating (or stakeholder) groups commit to the same course of action by accepting designated responsibilities (e.g., taking on responsibility to lead a project) and non-specific, yet, essential obligations (e.g., assisting a fellow co-worker with a task). Mooss and colleagues (2015) further emphasize that targeted stakeholder groups must be aware of the intentions of the program, knowledgeable about the action plan and their role in advancing action, in order to achieve buy-in. In relation to school nutrition policies, buy-in from multiple stakeholder groups has been seen to be essential, as a lack of buy-in can significantly impede the effectiveness of policy (Agron et al., 2010; MacLellan, Holland, Taylor, Mckenna & Hernandez, 2010; Masse et al., 2013). For example, Healthy Choices was a multicomponent school-based intervention aimed at improving student dietary behaviours, physical activity, and screen time to decrease overweight and obesity (Greaney et al., 2014). This intervention incorporated two previously evaluated health promotion programs for use: Planet Health

(interdisciplinary curriculum) and Healthy Choices-After School (after-school program for physical activity and nutrition education) (Greaney et al., 2014). Greaney and colleagues (2014) identified a lack of buy-in from several stakeholders, described as: an unwillingness of teachers to use new Planet Health curriculum in addition to standard state curriculum; resistance from food service workers to implement nutrition standards due to budget constraints; and feelings of reluctance towards food service workers to make a change held by school coordinators. It is important for any resistance towards change be addressed in order for policy to be implemented in its full capacity (Sabatier & Mazmanian, 1979). One avenue to enhance buy-in for policy change is to actively involve all stakeholder groups in on-going and thoughtful collaborations.

Active collaborations entail not only frequently informing key stakeholders on the policy development and implementation, but also require stakeholders to provide feedback and contribute to decision-making processes. This active role in strategic planning and decision-making addresses a resistance to change, promotes buy-in and enhances a sense of shared ownership of the policy (Inchley et al., 2006; O'Hara & McNamara, 2001; Senior, 2012). The Pan-Canadian JCSH has called for government departments to facilitate inter-sectoral collaborations between school stakeholders, including: school personnel, students, families, health professionals, private sectors, the media, and non-government organizations (Pan-Canadian JCSH, 2010b). These collaborations can help raise the awareness of the intention of the policy, outline ways each stakeholder group can contribute to the process and emphasize ways in which each stakeholder group can benefit from policy outcomes and impacts (Pan-Canadian JCSH, 2010b). Study #3 of the current thesis demonstrated that school PHNs can fulfill the role of a knowledge brokers and can forge new connections across multiple schools stakeholder groups to enhance widespread buy-in and facilitate collaborations through iKT (Traynor et al.,

2014). In Study #3 the role of a knowledge broker was exemplified in several schools that had a ‘strong’ relationship with public health. That being said, to facilitate collaborations, a strong relationship must first be built between school stakeholders and the PHN. This would require support from the school administrator to allow school representatives to meet with the PHN on a regular basis (as principals are the gatekeepers to the school), and require interest and buy-in from the PHN. When relationships are valued mutually by all parties, PHNs can lead the actions of a knowledge broker.

A knowledge broker can lead iKT strategies and improve the collaboration between knowledge producers, decision-makers, and end-users by building rapport with each stakeholder group, identifying perceived barriers to uptake of research findings and strategizing ways all groups can work together to create solutions (Dobbins, Robeson, Ciliska, Hanna, Cameron, O’Mara et al., 2009). Knowledge brokers are highly skilled in the synthesis, interpretation, and dissemination of research evidence, and are experts at applying the highest quality evidence to meet the needs of stakeholder groups (Canadian Health Services Research Foundation, 2003). In relation to P/PM 150 implementation, a school PHN can fulfill the role of knowledge broker by raising the awareness of the policy through targeted dissemination strategies, showcasing how the policy aligns with priorities of each stakeholder group, and outlining how improved student health can benefit all members of society (Pan-Canadian JCSH, 2010b; Dobbins et al., 2009). Study #3 emphasized the role of school PHNs using knowledge brokering skills to enact iKT strategies to continuously engage all stakeholder groups in the adoption, implementation, evaluation, and sustainability of healthy eating supporting, including P/PM 150 implementation. Specific partnerships with particular stakeholder groups can amplify the supports for healthy

eating. The following are prime examples of how PHNs can facilitate important partnerships needed to assist in P/PM 150 implementation.

7.1.4.2.1 PHNs and the School Principal. The school PHN must first form a partnership with the school principal. As reiterated from Studies #2 and #3, the school principal is the gatekeeper allowing or prohibiting the implementation of health promotion policies, practices, and programs in their school (Fullan, 1992; Hallinger, 1996; Inchley et al., 2006; MacLellan et al., 2009; McIsaac et al., 2013; Roberts et al., 2015; Rohrbach et al., 1993, Stewart-Brown, 2006; Storey et al., 2011; Storey, 2013). With support from the principal, P/PM 150 can be integrated into annual action plans as a high priority; a school representative in charge of monitoring P/PM 150 compliance and/or conducting structured audits may be appointed; a formal policy to ensure schools do not exceed the 10 P/PM 150 exemption days can be enforced; and the principal can use school media platforms such as newsletters, websites, and knowledge translation reports to promote healthy eating messages to students, parents, and families. Another aspect, which has been yet to be discussed, is the approval from principals to allow a formal partnership with public health.

Study #2 outcomes identified an inconsistency of P/PM 150 training received by school representatives from Time I to Time II. In Time I, a majority of schools had a least one person attend a training session co-led by their regional school board and the regional public health unit. In Time II, the training at this level was not offered, and so responsibility for P/PM 150 knowledge sharing was left in the hands of independent school administrators. Considering that there is often turnover with school administrators and school staff, training must be embedded into annual professional development. The Ontario Ministry of Education has created online modules to help facilitate teacher and food service worker training; however, there is no

requirement for their application. Without continued commitment by principals to annually train school staff on P/PM 150 standards, the level of awareness will decrease, perceived value in the policy will diminish and buy-in for change will weaken. Therefore, a strong relationship between school PHN and principal can not only help with the implementation of P/PM 150, but help support sustainability of the policy. Note, for the remaining PHN-mediated relationships, it is recommended the school principal continues to be involved, as they ultimately have a say in whether strategies are advanced or concluded.

7.1.4.2.2 PHNs and Healthy Eating Champions. Although school principals may have the final approval, champions are the individuals who make it happen on the ground. Therefore, it is very important for school PHNs to form working relationships with existing healthy eating champions and/or motivate others to become champions by providing social and instrumental support to have these individuals lead changes in their schools. By meeting and collaborating with champions and teachers, the school PHN can learn of the highest priorities facing the student population and facilitate transition through the steps of the Knowledge-to-Action cycle (Graham et al., 2006). PHNs can support healthy eating champions to lead the change they and other school community members want to make in the local context of the school. This support may require PHNs to access additional resources including financial (e.g., helping to apply to community funding opportunities), instrumental (e.g., providing workshops for students), community-based (e.g., linking school with a local health organization), and informational (e.g., providing materials to be embedded into classroom curriculum). By helping to address the needs of the school staff and linking to external organizations, PHNs can assist the champion(s) in strengthening buy-in and raising the perceived value of P/PM 150 held by teachers. Teachers then may be more inclined to incorporate P/PM 150-related healthy eating messaging into

classroom curriculum and gather the support they need to offer extracurricular activities to strengthen students' nutrition knowledge and skills.

7.1.4.2.3 PHNs and Food Service Providers. Upon release of P/PM 150 in 2010, Peel Public Health contacted each food service provider that offered services to publicly-funded schools within both school boards to assist with meeting policy standards. One requirement issued by regional schools boards was for food service providers to provide a formal letter certifying their compliance with P/PM 150. Through the partnership with Peel Public Health, all food service providers were able to formulate dietitian-approved letters of compliance that were distributed to each school board and serviced school. Since this time, there has been changeover in food vendors in a majority of secondary schools. One wonders if this may have contributed to the observed decline in adherence to P/PM 150 standards in some schools between Times I and II of the current research. .

School PHNs can mediate between food service providers and school administrators to ensure that P/PM 150 standards are being consistently met by food service providers and monitored by school administrators. PHNs are uniquely positioned to act as the mediator as they see value in both services without being heavily invested. PHNs do not audit school food service vendors, but work with them to achieve a sustainable business at the same time as offering healthy foods to students. Additionally, PHNs work with schools to promote healthy eating behaviours in students, including promoting students to choose healthy foods offered in the cafeteria, tuck shop, or vending machines. PHNs are well-connected and can advocate for both sides of the partnership.

7.1.4.2.4 PHNs and Parents. Parents participating in elementary school parent councils play a vital role in selecting the foods available for sale to students through hot lunch programs

and specialty snacks. School PHNs can act as a knowledge broker in this sense and clearly present P/PM 150 expectations to parent organizations to ensure selected snacks are compliant with the policy. Otherwise, parents and families who are not part of these committees have very little say in what is offered for sale to both elementary and secondary school students. Study #2 reported very few schools gathered feedback from to parents on their opinions regarding what is made available to students, yet previous research highlight students' families significantly influence what a student eats for lunch (Townsend & Foster, 2011). Buy-in from parent groups regarding P/PM 150 can enhance policy implementation by placing additional pressure on implementers to be compliant with the policy, and also helps facilitate consistency of messaging between what is taught in school and practiced at home (Aldinger & Jones, 1998; Allensworth & Kolbe, 1987; Deschesnes et al., 2003; Senior, 2012). Furthermore, parents of elementary school students provide the money for their children to purchase beverages and foods offered through school lunch programs; hence supporting the transition from school environment to student behaviour.

Peel Public Health is currently working on a model to better engage parents in the CSH approaches for topics such as P/PM 150 and healthy eating supports. PHNs involved in Study #3 reported the parents of elementary school students are more actively engaged compared to parents of secondary school students. Different strategies, therefore, are needed to recruit and consult families to accommodate their own busy schedules and levels of interest in school CSH initiatives. As this parent-focused strategy evolves, it will be implemented across the region and may help bridge the gap between what is learned at school and the behaviours reinforced at home.

7.1.4.2.5 PHNs and students. P/PM 150 was mandated with hopes of improving diet-related chronic disease risk in Ontario students; therefore, students should be amongst the stakeholder groups consulted when identifying and adopting effective policy implementation and CSH initiatives. As indicated in Study #1, P/PM 150 lacks an educational component, and therefore students may not be aware of P/PM 150 standards and/or how to decipher what are the healthiest products available in their school's food venues. School PHNs can work alongside a representative group of students within each of their schools to strategize ways in which this gap in supporting the policy can be addressed. Students should also be consulted when administrators, teachers, and other key stakeholder groups select school health priorities, including priorities in resource allocation aligned with aspects of the CSH framework. As described in Study #3, if priorities are not meaningful to knowledge users, uptake and/or adoption of the initiative will dwindle. Moreover, students have the ability to drive change in their schools and in their community as a whole. When students feel engaged, valued, and respected as an equal partner in policy adoption or initiative creation, they can take on the role of school healthy eating champions and drive change from the bottom-up.

7.2 Implications for Comprehensive School Health

Two broad sets of implications for CSH and policy implementation can be drawn from the current thesis. The first implication applies to strengthening the CSH framework to capture all important factors contributing to school environments supportive of student dietary behaviours. The second implication pertains to the implementation of school nutrition policies, such as P/PM 150, and mobilizes what is known about the supports for healthy eating within CSH pillars and applies lessons learned to the policy implementation process. Together, these implications emphasize that Healthy School Policy is only one contributing factor to achieving

optimal student health and academic achievement, and that the surrounding CSH pillars must be addressed in order to facilitate student health behaviour change.

7.2.1 Strengthening the Comprehensive School Health Framework.

The CSH framework provides guidance for school stakeholders, policy makers and researchers to understand the key environmental factors that a school community must target in order to support the development and maintenance of students' healthy living behaviours.

Findings from this thesis have led to the formation of four recommendations to further strengthen the CSH framework to better support policy implementation. These recommendations apply to the visualization of the model and descriptions of pillars laid out by the Pan-Canadian JCSH. The recommendations include: separation of the Social and Physical Environments pillar; acknowledgment that policy evaluation is critical and an expectation to achieve sustainable comprehensive approaches to school health; acknowledgment of the need for dedicated engagement of school stakeholders to support healthy eating within and across CSH pillars; and recognition for the unique context of the student population. Figure 7.3 provides a proposed visualization of the CSH framework, reflecting these new recommendations and Table 7.1 highlights changes made to CSH pillar definitions/descriptions.

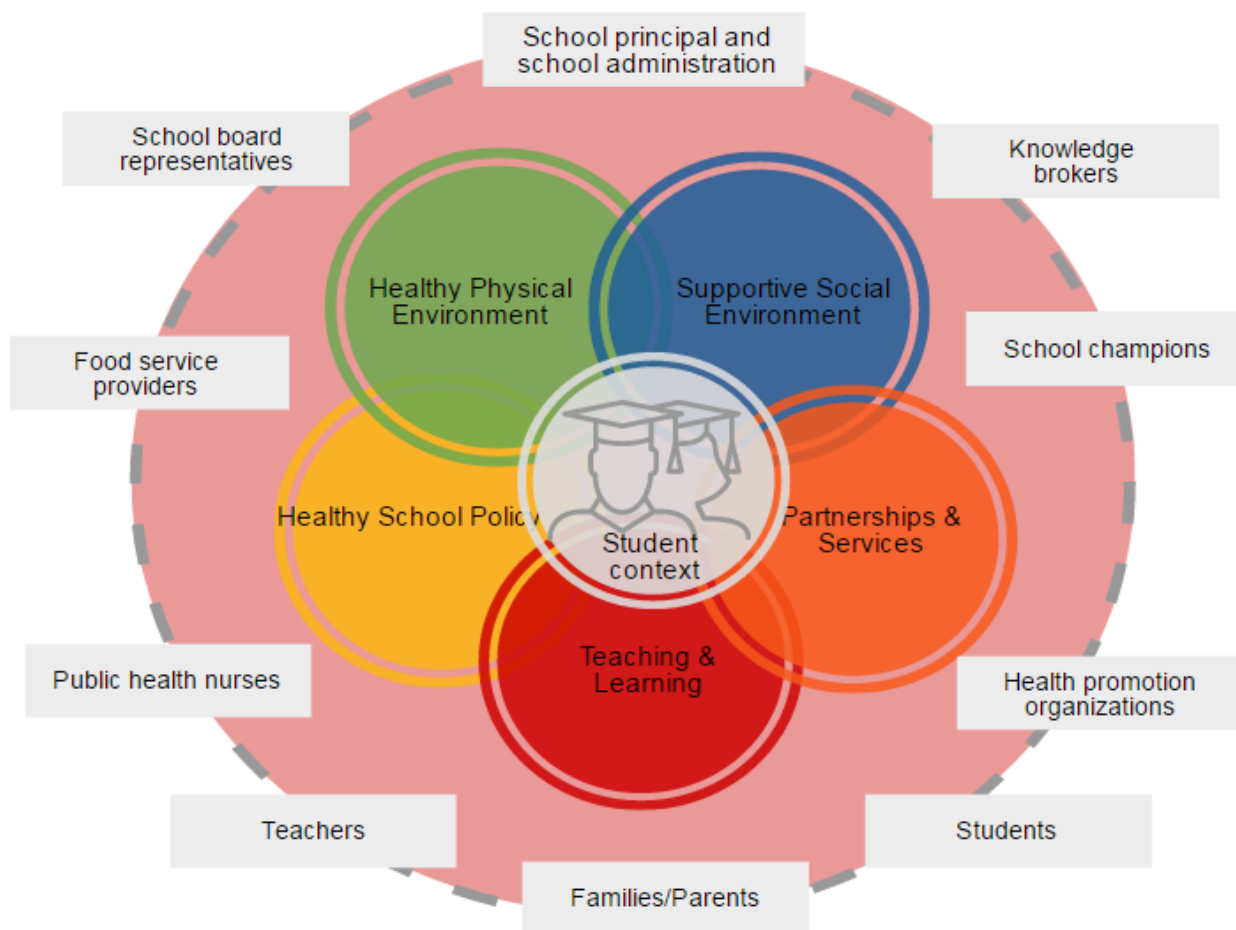


Figure 7.3: Proposed updated CSH Framework

Table 7.1: Proposed update to CSH pillars definitions with changes noted in bold

When We Say	We Mean
Social Environment	<ul style="list-style-type: none"> • The quality of the relationships among and between staff and students in the school • The emotional well-being of students • Influenced by relationships with families and the wider community • Supportive of the school community in making healthy choices by building competence, autonomy and connectedness
Physical Environment	<ul style="list-style-type: none"> • The buildings, grounds, play space, and equipment in and surrounding the school • Basic amenities such as sanitation, air cleanliness and healthy foods • Spaces designed to promote student safety and connectedness and minimize injury • Safe, accessible and supportive of healthy choices for all members of the school community
Teaching and Learning	<ul style="list-style-type: none"> • Formal and informal provincial/territorial curriculum, resources and associated activities • Knowledge, understanding and skills for students to improve their health and well-being and enhance their learning outcomes • Professional development opportunities for staff related to health and well-being
Healthy School Policy	<ul style="list-style-type: none"> • Policies, guidelines and practices that promote and support student well-being and achievement and shape a respectful, welcoming and caring school environment for all members of the school community • Policies, guidelines and practices have sufficient flexibility and support to stimulate a high level of priority • Policy impact is annually reviewed and results are shared broadly with all school stakeholder groups
Partnerships and Services	<p>Partnerships are:</p> <ul style="list-style-type: none"> • The connections between the school and students’ families • Supportive working relationships within schools (staff and students), between schools, and between schools and other community organizations and representative groups • Health, education and other sectors working together to advance school health
	<p>Services are:</p> <ul style="list-style-type: none"> • Community and school-based services that support and promote student and staff health and wellbeing
Student Context	<ul style="list-style-type: none"> • Supports for healthy living behaviours are tailored to meet the specific needs of the student population • Respectful consideration is given to family socioeconomic status, current healthy living behaviours, religious, ethnic and cultural needs

Adapted from the Pan-Canadian JCSH (2015)

7.2.1.1 Separate the Social and Physical Environments.

The Pan-Canadian JCSH includes the Social Environment with the Physical Environment, as the two are seen to be highly interactive. The Physical Environment; however, is defined much differently than the Social Environment, with its own set of key indicators and unique requirements to meet P/PM 150 guidelines. The Healthy School Planner (HSP) survey currently separates the Social from the Physical Environment through its measurements, as the subjective nature of social relationships are much different than the objective measures of the school's physical space (Healthy School Planner, 2013; Healthy School Planner 2015). By visually separating these two pillars, it is anticipated schools will recognize the amount of time, resources, and human-power needed to ensure the school's physical setting is adherent to P/PM 150 and that there are a number of opportunities to support healthy eating and build a sense of school connectedness in the Social Environment. Further, this separation may help schools select an annual priority area within each domain, as the results from the current thesis demonstrated high levels of support for healthy eating within the Physical Environment, but very low support in the Social Environment. The school can then use this information to prioritize where their annual focus should lie, and dedicate additional supports and resources to strengthen the Social Environment to help improve student health outcomes.

7.2.1.2 Recognition of the importance of policy and evaluation as an on-going expectation.

The Pan-Canadian JCSH definition of the Healthy School Policy pillar simply calls attention to the presence of having a written policy or informal practice to help support healthy eating in the school environment. As this thesis stressed; however, the presence of a policy does

not equate to action. From this research, two characteristics have been added to the current Healthy School Policy definition (Table 7.1).

The first outlines that adopted policies and practices must be highly valued by the school administrators (i.e., school principals) who have the power to endorse or diminish the level of importance of policy and facilitate or hinder its implementation. Furthermore, the school community members must recognize the policy as a high priority, with significant value to themselves and the students in order to garner buy-in and a sense of ownership. The addition of these characteristics in writing will not solely lead to value being perceived in all healthy school policies, but will draw attention to the importance key stakeholder groups play in advancing policy implementation and supporting healthy eating across CSH pillars.

The second characteristic draws attention to the importance of policy evaluation; in that stakeholders must annually review the impact of policy and broadly disseminate findings to all implementing and impacted parties. This recommendation is aligned with that made by the Roundtable on Comprehensive School Health as detailed in a concept paper from April 2012 (Bassett-Gunter, Yessis, Manske & Stockton, 2012). Bassett-Gunter and colleagues (2012) recommend routine assessment of: *“a) existing resources including their current healthy school community actions, policies, goals, structures and resources; and b) needs of the students and staff”* in order to achieve and sustain comprehensive supports for positive student health behaviours (page17-18). The outcomes of such evaluations will help guide periods of reflection, by which school community members can identify priority areas and develop strategies to reach meaningful impacts (Bassett-Gunter et al., 2012). This thesis further advocates for evaluation is through an annual review, schools will help avoid mis-implementation and ensure the policy is contributing to positive behaviours. Additionally, by broadly sharing results and identifying areas

for improvement, schools can facilitate partnerships and, through iKT strategies, collectively agree upon policy maintenance procedures.

7.2.1.3 Identifying and engaging school stakeholders.

Throughout the CSH literature, school stakeholders are repeatedly identified as important facilitators to ensure the success of an implemented school nutrition policy or health promotion program (Aldinger & Jones, 1998; Chaleunsouk & Kutsyuruba, 2014; Clarke et al., 2013; Deschesnes et al., 2003; Rasberry et al., 2015; Roberts et al., 2015; van Ansem et al., 2013; Watts et al., 2014). While the definition of ‘Partnerships’ captures ‘stakeholders’ in the broad sense of within schools, between schools, and with schools and external organizations, it is proposed the CSH framework name the key stakeholder groups known to influence the support for healthy eating and policy implementation in schools. Therefore Figure 7.3 has included several stakeholder groups identified through this thesis as important to ensure consistency of healthy eating promotion across all CSH pillars and who may influence the adherence and sustainability of P/PM 150. By specifically naming these stakeholder groups, schools will be able to recognize the importance of each group and their contributions to CSH and policy implementation. A summary of key stakeholder groups that are needed to support multiple CSH pillars are outlined in Table 7.2.

Table 7.2: Stakeholder groups to acknowledge in the CSH framework

Stakeholder/ Stakeholder group	Role in supporting healthy eating and P/PM 150 implementation
School principal	<ul style="list-style-type: none"> • The gatekeeper to the school. • Has the final say for approval or dismissal for school-led CSH initiatives, including policy implementation.
School PHN	<ul style="list-style-type: none"> • The knowledge broker. • Has the ability to mediate and bring together stakeholder groups and connect to health-related resources to support CSH initiatives and policy implementation.
School board representatives	<ul style="list-style-type: none"> • The authoritative figure. • Have the power to persuade school principals to consider healthy eating a high priority, can support policy implementation through the provision of resources, and can enforce a policy monitoring system.
Teachers	<ul style="list-style-type: none"> • The supports for change. • Have the power to reinforce positive healthy eating messaging promoted through CSH initiatives and mandated policies through role modeling and embedding messages into classroom curriculum.
Food service providers	<ul style="list-style-type: none"> • The vested partners. • Have the power to adhere to policy standards and further promote healthy eating options by partnering with other stakeholders to encourage consumption of healthy beverages and foods available for sale in school food venues.
Families/parents	<ul style="list-style-type: none"> • The external influencers. • Have the ability to reinforce what is taught and encouraged at school through behaviours practices at home.
Students	<ul style="list-style-type: none"> • The target and co-partner. • Have the power to participate or ignore CSH initiatives and policy intentions by choosing to alter their eating behaviours or not.

7.2.1.4 Acknowledge the unique context of the student population.

As outlined in the KTA cycle, the context for which a policy or program is implemented is subject to change over time, therefore, implementers must be willing to adapt to local settings in order to move through the cyclical process of policy adherence (Graham et al., 2006). The student population may shift from year-to-year, as freshmen enter and seniors graduate. Previous literature has acknowledged key characteristics of students that may influence their interaction with the school food environment including: age, sex, food preference, food skill level, and

nutrition knowledge (Taylor et al., 2005). Other intrapersonal and interpersonal factors such as a family's socioeconomic status, religion, culture, and ethnicity may influence the foods students select to consume, the level of food insecurity within a school, and the susceptibility of a population to disordered eating habits and/or obesity (Janssen, Boyce, Simpson & Pickett, 2006; Neumark-Sztainer, Story, Perry & Casey, 1999; Sealy, 2010).

In the current process evaluation, the 45 schools included in the study sample were somewhat representative of regional schools. The ratio of rural-urban schools was higher for the schools included in the sample compared to the general population, which may have altered the responses to the HSP survey as rural schools quite often have access to gardening facilities compared to schools located in major city centres. The invitation of all secondary schools to participate in this evaluation skewed the ratio of secondary-elementary in the sample compared to the population, which may have also biased responses to the HSP survey, but also the relationship between school stakeholders. Elementary schools more frequently than secondary schools had parent organizations with active memberships, while secondary schools reported more difficulties garnering support and/or buy-in from parents. The median household income in the sample was similar to the median household income of the great Region of Peel population (i.e., , \$90,863.52 \pm \$20,062.85 sample versus \$88, 576.23 \pm \$20,562.47 population) indicating that perspectives of school healthy eating and P/PM 150 implementation was reflective of the economic diversity within the region. This information, however, is only relevant to the time of data collection and may have since changed. Schools must acknowledge that as their student body changes, so will their school community, and initiatives that may have worked previous may not work in the future.

Study #2 revealed that student nutrition programs were not required in some schools due to a high-income area, while others identified students would benefit from a subsidized/free breakfast program. The student population, therefore, must be annually assessed, perhaps through a needs assessment and/or by involving students in discussions regarding the school's approach to better support healthy eating in the school food environment. Once more, school PHNs can assist in gathering this information from students and reporting findings to key decision-makers (e.g., school administrators) as described in the engagement of stakeholder section above. To act as a reminder that the focus of the school is to meet the needs of the student population, the words "student context" has been added to Figure 7.3 and a description has been inserted into the definitions presented in Table 7.1.

7.2.2 Applying CSH supports for healthy eating to policy implementation.

To summarize the key takeaway lessons from this chapter and exemplify how supports for healthy eating within the CSH pillars can contribute to policy implementation, the author has suggested enhancements to the previously presented P/PM 150 implementation logic model to demonstrate that multiple environmental factors contribute to impacting student health behaviours (Figure 7.4). Through the description of inputs, activities, outputs, outcomes and impacts hereafter described, future school stakeholders, PHNs, and researchers can use this logic model to help guide nutrition policy implementation in schools.

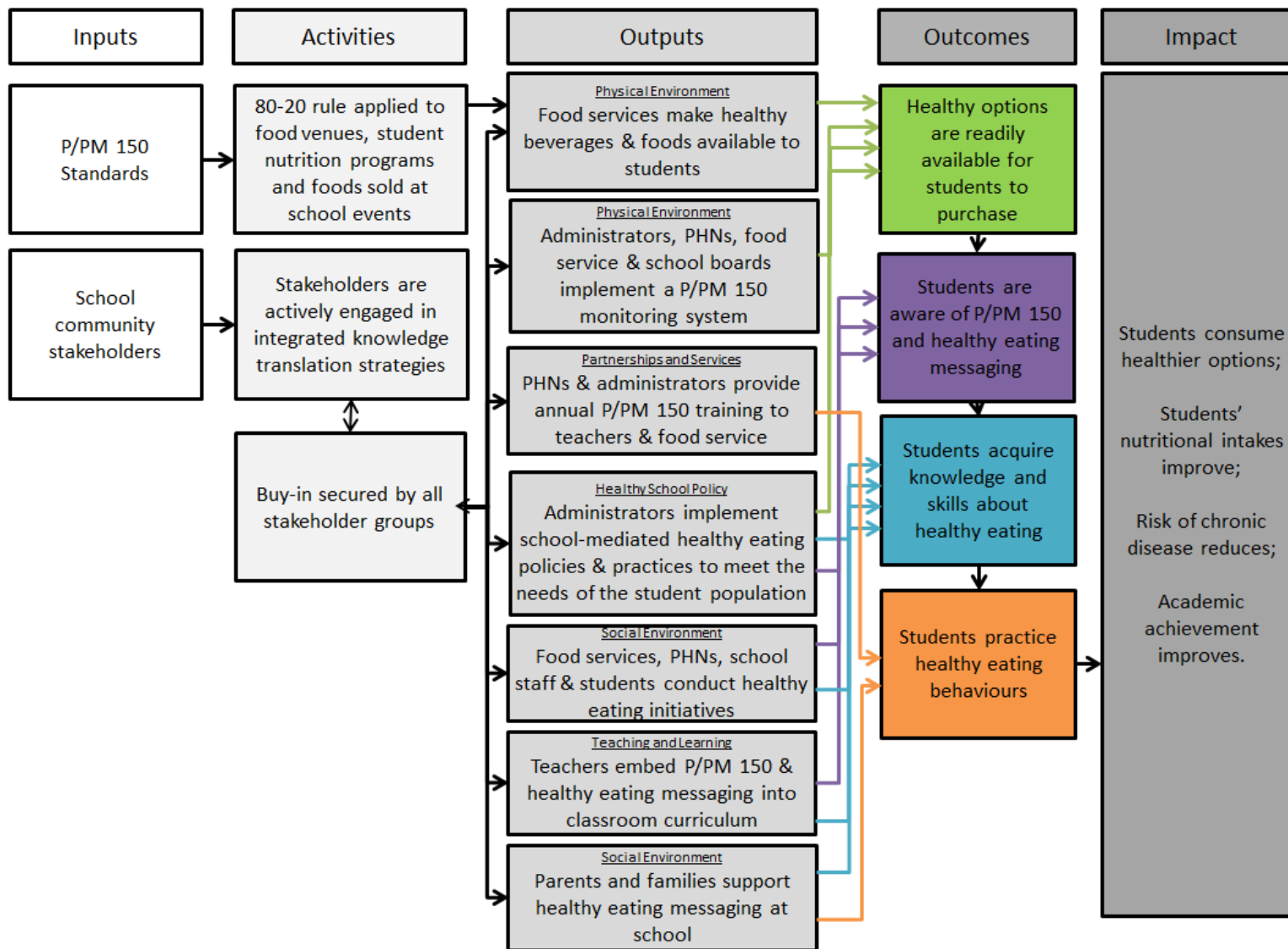


Figure 7.4: CSH supports for healthy eating during school nutrition policy implementation

7.2.2.1 Inputs.

When a school nutrition policy is mandated, schools may have existing supports for healthy eating embedded into their school culture. However, the two basic necessities essential to policy implementation include (i) policy standards; and (ii) school stakeholders. Policy documents should provide clear and concise standards and a resource guide may be appended to help guide the implementation, monitoring, and evaluation procedures. The stakeholders should include those listed in the newly revised CSH framework (e.g., school administrators and staff, PHNs, school board officials, students, families, and food service workers), as well as others groups perceived to be important.

7.2.2.2 Activities.

Activities include the application of policy standards, such as meeting P/PM 150's 80-20 rule in all school food venues, through student pay-for-service meal/snack programs, and foods offered for sale at school events. This is the basis of P/PM 150 implementation, but in order for the policy to be successful many other contributing factors must be addressed. Therefore, a crucial activity is the engagement of school stakeholders, who, through iKT strategies, will work together to identify why policy and healthy eating is a high priority, how it adds value to their school culture and how each stakeholder group can buy-in and accept ownership for contributing to policy success.

7.2.2.3 Outputs.

The outputs in the Figure 7.4 logic model are linked to CSH pillars to exemplify how all aspects of the school environment can contribute to supportive healthy eating behaviours and policy implementation. Although the outputs are labeled with specific pillars, they contribute to intermediate outcomes and overall impact, and require buy-in from a range of different stakeholder groups. Some schools may have established school-mediated healthy eating policies, healthy eating initiatives, healthy eating curriculum supports, P/PM 150 training for teachers and food service providers, methods of

engaging families, and/or a P/PM 150 monitoring system; but, in order to maintain these initiatives, stakeholders must be continuously engaged and provide support. Therefore, a reciprocal relationship between outputs and stakeholder engagement is highlighted in this logic model as an on-going process required to achieve intended outcomes and impacts.

7.2.2.4 Outcomes.

By following the top line of the logic model, the reader can see that P/PM 150 implementation leads to healthy beverages and foods being made available for students in school food venues; but does not directly influence students' consumption of such foods, their nutritional intakes, their risk of disease, and/or level of academic achievement. P/PM 150 calls for a comprehensive approach to policy implementation because the additional outputs provided by all CSH pillars can reinforce students' attitudes (or awareness), knowledge, and skills related to healthy eating. Through comprehensive approaches to policy implementation, three additional outcomes have been identified: (i) to raise the awareness of healthy eating messages targeted at students; (ii) to provide students with the knowledge and skills required to make independent, healthful choices; and (iii) to provide opportunities for students to practice healthy eating behaviours. Without this reinforcement, the school environment may provide healthy options available, but students may choose not to select them.

7.2.2.5 Impact.

Based upon the socioecological model, when all aspects of an individual's environment are supportive of healthy eating, the individual is able to practice positive health behaviours, thereby impacting their health and well-being (Bronfenbrenner, 1994). Therefore, the logic model concludes with the overarching objectives of CSH initiatives and school nutrition policy implementation: (i) to have students consume healthier options; (ii) to improve students' nutritional intakes; (iii) to decrease the risk of developing nutrition-related chronic diseases; and (iv) improve academic achievement of all students, across all grades. The current thesis did not evaluate these impacts directly and so more work is

required to test this policy implementation process to identify if the policy is affecting student health and academic achievement and identify if some outputs are more influential than others.

7.3 Recommendations to Policy Makers and Adopters

7.3.1 Ontario Ministry of Education.

As the P/PM 150 policy maker, there a number of recommendations for the Ontario Ministry of Education that can be drawn from this research. The first is that the Ministry must provide additional clarification to P/PM 150 standards (i.e., considerations for sugar content and beverage container size) to reduce the risk of future misinterpretation and the allowance of unhealthy *Not Permitted for Sale* beverages and foods to be sold to students. The second is to adopt, enforce, resource, and utilize a formal monitoring strategy, such as audit and feedback system, to ensure P/PM 150 is both fully adopted across the province and effective at contributing to better student dietary intakes. The third is to develop additional curriculum supports for implementing healthy eating and P/PM 150 messaging into existing classroom lessons outside of Health and Physical Education. This will reduce the burden of individual teachers to develop their own lesson plans for every class subject and help support the consistency of positive healthy eating messages within the curriculum to match that in the school's Physical Environment. This is especially important at the secondary level where health and food-related courses are elective, including Physical Education and Health, which is optional past grade 9. The fourth implication for the Ministry is to broadly communicate any updates to the policy to all stakeholder groups, with a detailed summary of how each group's support can assist with policy adherence and help meet the goal of improving students' healthy eating and academic achievement. These targeted communications will help enhance the perceived value of P/PM 150 and in doing so, improve the likelihood of stakeholder buy-in. The final implication is to apply key learnings from this thesis and apply to the newly adopted Foundations for a Healthy School (2014) framework, which all Ontario

schools are encouraged to use when implementing healthy living initiatives (Ontario Ministry of Education, 2014).

The five priority areas of this framework include: Curriculum, Teaching and Learning, School and Classroom Leadership, Student Engagement, Social and Physical Environments, and Home, School and Community Partnerships (Ontario Ministry of Education, 2014). Each area has its own corresponding definition and descriptions of how healthy eating, physical activity, , personal safety and injury prevention, growth and development, mental health, and/or substance use, addictions and related behaviours can be embedded into school culture (Ontario Ministry of Education, 2014). Key messages from this thesis including, development of clear, concise policies, recognition of school champions, importance of buy-in and perceived value, engagement of a broad array of school stakeholders, and forming a relationship with public health can all be applied to this model.

7.3.2 Regional School Boards.

Regional school board across the province can work with the Ministry to take ownership of P/PM 150 and provide adequate time and resources for designated school administrators and/or healthy eating champions to conduct regular P/PM 150 audits. This can be done in collaboration with the school PHN who have all been formally trained in P/PM 150 standards and are able to broker relationships between schools and food service providers. Forming a strong relationship between school, PHN, and food service providers can lead to all partners working together to select P/PM 150 compatible foods that meet the taste preferences of students, promote consumption of healthy options, increase sales of food services, and support the health and development of students.

7.3.3 Ontario Elementary and Secondary Schools.

The main differences between elementary and secondary schools in this research were contextually-based, in that secondary schools had cafeterias, which offered daily food service, and elementary schools provided more extracurricular activities such as food skills and gardening. There

were no identified differences; however, between the levels of support for healthy eating and/or the key factors supporting policy implementation between elementary and secondary schools. The discussion above outlining implications for the Ministry of Education also requires commitment from school principals and teachers at the ground-level. These recommendations would include: participating in regular audits of P/PM 150 compatible beverages and foods in school food venues (i.e., vending machines, tuck shops, cafeterias, and speciality lunch/snack programs) alongside status of comprehensive supports for healthy eating, and reporting findings to school communities and the governing school board or Ministry of Education; embedding P/PM 150 discussions into annual teacher training, and/or professional development opportunities to strengthen buy-in from teachers; and working with the school PHN to engage all stakeholder groups to raise awareness, buy-in and support for P/PM 150. In addition to P/PM 150 standards, schools can create their own policies and practices to support healthy eating and ensure consistency of messaging across all CSH pillars. To do so, schools and/or the Ministry may turn to the school nutrition policies implemented in other provinces, which incorporate CSH into policy standards. This information could also be used to then help inform future iterations of P/PM 150.

7.3.4 Peel Public Health and School PHNS.

The findings from this research can be embedded into the multi-component *Supportive Environments for Healthy Living Strategy* currently being implemented within the Region of Peel (Region of Peel, 2012). This Region-led policy attempts to make healthy foods available to all Peel citizens throughout municipality buildings (e.g., schools, recreation centres, arenas, libraries) and highlights healthy eating as a major priority for the Region (Region of Peel, 2012). Many schools involved in Study #1 held a close relationship with other municipal services and were sometimes physically attached to municipal buildings. While schools are attempting to implement P/PM 150 standards, these municipal buildings housed canteens with high fat, high sugar foods to which students

have regular access. As a knowledge broker, school PHNs are recommended to work alongside school officials to bridge the “know-do-gap” and apply what is known about supporting healthy eating in schools to policies implemented in municipal buildings, which provide regular services to students. This partnership will help ensure children have access to healthy foods in all public places where they live, learn, and play.

7.3.5 Next Steps.

This research was part of a larger comprehensive process evaluation of P/PM 150 taking place in the Region of Peel from 2012-2014. It is, therefore, recommended that the results of this thesis are triangulated with the other components of the process evaluation: results from the student online food behaviour survey; identified barriers and enablers of P/PM 150 implementation held by school stakeholders; and GIS mapping of the density of food outlets that surrounded the schools. Outcomes are predicted to lead to a better understanding of the ability of schools to support student healthy eating behaviours.

7.4 Strengths

The outcomes of this thesis added to the existing knowledge regarding P/PM 150 implementation and the extent to which healthy eating is supported in Ontario schools. Much of the existing CSH literature is from British Columbia, Alberta, New Brunswick, Prince Edward Island, and Nova Scotia. Therefore, this research adds to the Canadian CSH literature and sheds light on the implementation of a school nutrition policy in the context of Ontario; a concept that has not been widely explored. Furthermore, this research advanced the application of supports for healthy eating within CSH pillars to the policy implementation process, allowing for policy makers and implementers to better grasp the potential benefits of comprehensive approaches.

All aspects of this research were overseen by a Project Advisory Team and consistently received feedback from end knowledge users (i.e., Peel Public Health), making it more likely that outcomes

would be embedded into future planning of school health promotion practices and programs. In both Times I and II, a group of highly educated and trained researchers carried out data collection methods using consistent methodologies in a cross-sectional sample of elementary (except for Study #1) and secondary schools in both urban (Mississauga, Brampton) and rural (Caledon) municipalities. The pilot testing of tools within the Region of Waterloo prior to the beginning of this project and the pilot testing of interview guides prior to full data collection in Time II, allowed for researchers to confirm face validity and make changes to tools in order to gather the most meaningful data possible.

7.5 Limitations

This thesis is not without limitations, as there was a moderate response rate from randomly selected elementary schools and invited secondary schools in Time I. Although data were collected from a cross-sectional sample of schools, results do not encapsulate all perspectives across the region. The political climate was a major barrier for schools' ability to participate in the research, as school representatives were under a strict work-to-rule action and were prohibited from participating in any non-curriculum based extracurricular activities. Further, as this research occurred over two phases of data collection, the school representatives changed in five cases. This may have impacted the scores of the HSP survey and outcomes of the FES checklist, as some responses were subjective in nature. This might also speak to the reality of implementing school-based policy as turnover of key factors within the system is likely. Moreover, this research was always considered to be a snapshot in time and provided a description of the extent to which healthy eating was supported in schools in Times I and II and authors acknowledge supports may have shifted over time.

7.6 Plans for Knowledge Translation

The findings of this research have been shared with multiple audiences, most importantly, the funding partners at the Region of Peel Public Health. Two comprehensive reports were developed: Time I results and a composite final report including Time I and II results. While the Time I report shared work-to-date, the composite final report provided final detailed results from all evaluation components and made pragmatic recommendations to the Region of Peel to enhance their support of P/PM 150. This report was shared amongst the advisory board and with senior managers and the Regional Medical Director of Health.

Between 2012 and 2016 methodologies and outcomes of this study have been presented through oral (n=3) and poster (n=2) presentations at provincial (e.g., The Ontario Public Health Association, Nutrition Resource Centre) and national (e.g., The Canadian Obesity Summit) scientific conferences. In April 2016, results of Study #3 were shared during a 90-minute interactive workshop for public health practitioners and researchers at the Ontario Public Health Convention in partnership with the COMPASS study (Leatherdale, Brown, Carson, Childs, Dubin, Elliott et al., 2014). Study #1 has been submitted to the *Canadian Journal of Public Health* (January 17, 2016), Study #2 will be reformatted for word count and submitted to the *Journal of School Health* and Study #3 will be submitted to an open-access journal such as *Implementation Science*. To stimulate uptake of research findings to the public health audience, KT materials will also be developed for the Ontario Nutrition Resource Centre online database (e.g., “how to” information on the preparation and dissemination of school KT reports) and be broadly promoted through social media. Presentations and/or written summaries will also be developed to provide a summary of key findings and recommendations for revisions to the CSH framework and presented to the members of the Pan-Canadian JCSH.

7.7 Conclusion

This thesis was one of the first to provide insight into the level of support for healthy eating within Ontario schools during the implementation of a provincially-mandated school nutrition policy. It was also the first to link the supports for healthy eating within CSH framework pillars to the process of policy implementation and make evidence-based recommendations for policy support and adherence. Stakeholders engaged in school health, including government bodies that can apply “lessons learned” from this thesis to enhance comprehensive supports for students’ healthy eating. Ultimately, the goal of this work is to contribute to the promotion of healthy eating and prevention of disease risk in Ontario’s youth.

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Appendix A: Ethics Approval Information Letters and Informed Consents

Phase II Information Letter and Informed Consent Form – School Representative

SCHOOL OF PUBLIC HEALTH AND HEALTH SYSTEMS

UNIVERSITY OF WATERLOO

September 2013

Dear _____,

This letter is an invitation to consider participating in a study I am conducting as part of my PhD thesis research in the School of Public Health and Health Systems at the University of Waterloo under the supervision of Professor Dr. Rhona Hanning. I would like to provide you with more information about this project and what your involvement would entail if you decide to take part.

During Phase I of the Evaluation of the Ontario School Food and Beverage Policy (P/PM150), 45 schools from the Dufferin-Peel Catholic District School Board and Peel District School Board participated in the Food Environmental Scan. Each school received a feedback report outlining the results of the Healthy School Planner survey and physical walk-about of the school food environment. The purpose of conducting interviews with Peel Public Health Nurses is to collect expert feedback (both positive and negative) regarding the school feedback reports and their use/application within schools.

Participation in this study is voluntary. It will involve an interview of approximately 60 minutes in length to take place at Peel Public Health (7120 Hurontario Street, Mississauga, ON). You may decline to answer any of the interview questions if you so wish. Further, you may decide to withdraw from this study at any time without any negative consequences by advising the researcher. With your permission, the interview will be audio recorded to facilitate collection of information, and later transcribed for analysis. Shortly after the interview has been completed, I will send you a copy of the transcript to give you an opportunity to confirm the accuracy of our conversation and to add or clarify any points that you wish. All information you provide is considered completely confidential. Your name will not appear in any thesis or report resulting from this study; however, with your permission anonymous quotations may be used. Data collected during this study will be retained for seven years in a locked office in my supervisor's office. Only researchers associated with this project will have access. There are no known or anticipated risks to you as a participant in this study.

If you have any questions regarding this study, or would like additional information to assist you in reaching a decision about participation, please contact me at 289-221-1814 or by email at taorava@uwaterloo.ca. You can also contact my supervisor, Professor Dr. Rhona Hanning at 519-888-4567 ext. 35685 or rhanning@uwaterloo.ca.

I would like to assure you that this study has been reviewed and received ethics clearance through a University of Waterloo Research Ethics Committee. However, the final decision

about participation is yours. If you have any comments or concerns resulting from your participation in this study, please contact Dr. Maureen Nummelin in the Office of Research Ethics at 1-519-888-4567, Ext. 36005 or maureen.nummelin@uwaterloo.ca.

I hope that the results of my study will be of benefit to understanding and strengthening the knowledge translation process between scientific research and public health policy and practice within the Region of Peel and throughout Ontario. I very much look forward to speaking with you and thank you in advance for your assistance in this project.

Yours Sincerely,

Taryn Orava

CONSENT
FORM

By signing this consent form, you are not waiving your legal rights or releasing the investigator(s) or involved institution(s) from their legal and professional responsibilities.

I have read the information presented in the information letter about a study being conducted by Taryn Orava of the School of Public Health and Health Systems at the University of Waterloo. I have had the opportunity to ask any questions related to this study, to receive satisfactory answers to my questions, and any additional details I wanted.

I am aware that I have the option of allowing my interview to be audio recorded to ensure an accurate recording of my responses.

I am also aware that excerpts from the interview may be included in the thesis and/or publications to come from this research, with the understanding that the quotations will be anonymous.

I was informed that I may withdraw my consent at any time without penalty by advising the researcher.

This project has been reviewed by, and received ethics clearance through a University of Waterloo Research Ethics Committee. I was informed that if I have any comments or concerns resulting from my participation in this study, I may contact the Director, Office of Research Ethics at 519-888-4567 ext. 36005.

With full knowledge of all foregoing, I agree, of my own free will, to participate in this study.

YES NO

I agree to have my interview audio recorded.

YES NO

I agree to the use of anonymous quotations in any thesis or publication that comes of this research.

YES NO

Participant Name: _____ (Please print)

Participant Signature: _____

Date: _____

Phase II Informed Consent Form – School PHNs

Phase II School PHN Recruitment Letter

SCHOOL OF PUBLIC HEALTH AND HEALTH SYSTEMS

UNIVERSITY OF WATERLOO

September 2013

Dear _____,

This letter is an invitation to consider participating in a study I am conducting as part of my PhD thesis research in the School of Public Health and Health Systems at the University of Waterloo under the supervision of Professor Dr. Rhona Hanning. I would like to provide you with more information about this project and what your involvement would entail if you decide to take part.

During Phase I of the Evaluation of the Ontario School Food and Beverage Policy (P/PM150), 45 schools from the Dufferin-Peel Catholic District School Board and Peel District School Board participated in the Food Environmental Scan. Each school received a feedback report outlining the results of the Healthy School Planner survey and physical walk-about of the school food environment. The purpose of conducting interviews with Peel Public Health Nurses is to collect expert feedback (both positive and negative) regarding the school feedback reports and their use/application within schools.

Participation in this study is voluntary. It will involve an interview of approximately 60 minutes in length to take place at Peel Public Health (7120 Hurontario Street, Mississauga, ON). You may decline to answer any of the interview questions if you so wish. Further, you may decide to withdraw from this study at any time without any negative consequences by advising the researcher. With your permission, the interview will be audio recorded to facilitate collection of information, and later transcribed for analysis. Shortly after the interview has been completed, I will send you a copy of the transcript to give you an opportunity to confirm the accuracy of our conversation and to add or clarify any points that you wish. All information you provide is considered completely confidential. Your name will not appear in any thesis or report resulting from this study; however, with your permission anonymous quotations may be used. Data collected during this study will be retained for seven years in a locked office in my supervisor's office. Only researchers associated with this project will have access. There are no known or anticipated risks to you as a participant in this study.

If you have any questions regarding this study, or would like additional information to assist you in reaching a decision about participation, please contact me at 289-221-1814 or by email at taorava@uwaterloo.ca. You can also contact my supervisor, Professor Dr. Rhona Hanning at 519-888-4567 ext. 35685 or rhanning@uwaterloo.ca.

I would like to assure you that this study has been reviewed and received ethics clearance through a University of Waterloo Research Ethics Committee. However, the final decision about participation is yours. If you have any comments or concerns resulting from your participation in this study, please contact Dr. Maureen Nummelin in the Office of Research Ethics at 1-519-888-4567, Ext. 36005 or maureen.nummelin@uwaterloo.ca.

I hope that the results of my study will be of benefit to understanding and strengthening the knowledge translation process between scientific research and public health policy and practice within the Region of Peel and throughout Ontario. I very much look forward to speaking with you and thank you in advance for your assistance in this project.

Yours Sincerely,

Taryn Orava

CONSENT FORM

By signing this consent form, you are not waiving your legal rights or releasing the investigator(s) or involved institution(s) from their legal and professional responsibilities.

I have read the information presented in the information letter about a study being conducted by Taryn Orava of the School of Public Health and Health Systems at the University of Waterloo. I have had the opportunity to ask any questions related to this study, to receive satisfactory answers to my questions, and any additional details I wanted.

I am aware that I have the option of allowing my interview to be audio recorded to ensure an accurate recording of my responses.

I am also aware that excerpts from the interview may be included in the thesis and/or publications to come from this research, with the understanding that the quotations will be anonymous.

I was informed that I may withdraw my consent at any time without penalty by advising the researcher.

This project has been reviewed by, and received ethics clearance through a University of Waterloo Research Ethics Committee. I was informed that if I have any comments or concerns resulting from my participation in this study, I may contact the Director, Office of Research Ethics at 519-888-4567 ext. 36005.

With full knowledge of all foregoing, I agree, of my own free will, to participate in this study.

YES NO

I agree to have my interview audio recorded.

YES NO

I agree to the use of anonymous quotations in any thesis or publication that comes of this research.

YES NO

Participant Name: _____ (Please

print)

Participant Signature: _____

Date: _____

Appendix B: Recruitment Materials

The Evaluation of the Ontario School Food and Beverage Policy (P/PM150) in Region of Peel Schools: Invitation to Participate

[Date]

Dear Mr./Mrs./Group Name,

Peel Public Health and the University of Waterloo formally invite students in grades 6-8/9 and 10 from [your school] to participate in the evaluation of the Ontario School Food and Beverage Policy (P/PM150) in the Region of Peel. This project has received ethics approval from the University of Waterloo and [School Board] Research Ethics Boards. The purpose of this project is to better understand the food behaviours of students and to assess the impact of P/PM150 in Region of Peel schools.

How will your school benefit?

Participating schools will receive an individualized school feedback report (see a mock sample attached) that includes an assessment of students' diets, eating behaviours and the school food environment. The report will highlight areas that need improvement and offer supports to address challenges. Together with your Public Health Nurse, this report can be used to improve healthy eating practices, programs and policies at your school.

What is involved for your school?

The University of Waterloo research team will come to your school (at your convenience) to complete:

1. An online 24-hour dietary recall survey for students in grades 6-10 (to be complete over a regular classroom period).
2. Qualitative focus groups with students and parents (during the lunch hour with students and after school with parents).
3. A physical walkabout of the school food environment and a Healthy School Planner questionnaire (a school representative will accompany a University of Waterloo researcher around the school during the lunch hour).

We understand that school groups, administration and staff are very busy and we wish to provide support in anyway possible to assist your school's participation in this project. For any questions or to set up a date for participation, please contact Taryn Orava (University of Waterloo) at Taryn.Orava@gmail.com or 289-22-1814 or Catherine Brown (Peel Public Health) at Catherine.Brown@peelregion.ca or 905-791-7800 x 2081.

Sincerely,

Peel Public Health & the University of Waterloo



[Date]

Dear Mr./Ms (*School Principal's Name*):

Drs. Rhona Hanning, Steve Manske and Renata Valaitis of the Propel Centre for Population Health Impact have received approval from the Waterloo Catholic District School Board to conduct a study entitled, "Ontario School Food and Beverage Policy: Process and Impact Evaluation".

This project will help schools within the Region of Waterloo to share 'lessons learned' over the course of the implementation of school nutrition policies, including the recent Ontario School Food and Beverage Policy (P/PM 150). Educators, families, students and public health workers will gain access to accurate measures of student food intake and body mass index over the 2011-2012 years. The impact of foods provided at school will be assessed. In addition, participating schools will benefit of an appraisal of their school food environment in relation to composite information from schools within the school board and region.

What is involved for your school?

- Schools may choose to be represented on the Project Advisory Committee.
- Schools will be asked to help identify an individual or individuals to participate in an interview regarding their experience with school food policy (Spring 2011). The interview would take place at school at a convenient time between January and March 2011.
- Schools will be asked to distribute information to parents and students who may choose to participate in a focus group session about the school food environment (Spring 2011).
- Physical Education teachers (grades 6 – 10) will be asked to distribute permission materials to parents for student participation in a web-based survey of food behaviours and will collect returned forms. They will assist in booking a computer lab for a convenient day for the survey and a nearby space for confidential measurement of student heights and weights. The measurements will be conducted by trained UW graduate students. **(Spring 2011, 2012)**.
- Physical education teachers will allow students to participate in the ~ 45 minute survey which will be administered to students with parental consent and the student's assent on the scheduled date by UW research assistants.
- School principals will identify an individual to complete and assessment of the school food environment with a researcher. They will allow the researcher access to school food services for a single day environmental scan **(Spring 2011, 2012)**



PROPEL
CENTRE FOR
POPULATION
HEALTH IMPACT

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Waterloo, ON N2L 3G1

tel. 519 888 4520
ext 519 746 8171
propel@uwaterloo.ca
www.propel.uwaterloo.ca

What are the benefits to your school?

- "Lessons learned" regarding the implementation of school food policy will be shared among schools within the region of Waterloo (as well as community groups, e.g., Nutrition for Learning, Public Health) using a variety of strategies (presentations, web site, resources) , that may help schools to implement the policy and support healthy eating for students.
- Your school will receive an individualized School Feedback Report that includes assessment of student diets by grade and gender and assessment of the school environment. Comparisons with data for all participants in the school board will be provided.
- Teachers may choose to have students use their individual feedback on their diets in relation to Canada's Food Guide to support classroom teaching.
- A member of the research team would be happy to give presentations to staff and/ or parent council groups.

The web-based food behaviour survey may be viewed using www.uwfbq.ca with demo and demo123 as user name and password. We have enclosed a copy of the volunteer and parent permission materials.

Ethics Information

This research has been reviewed and ethics clearance has been granted from **the Waterloo Catholic District School Board** and the Office of Research Ethics at the University of Waterloo. If you have any comments or concerns resulting from your school's participation in this project, contact (*insert contact information for local REBs*) or Dr. Susan Sykes, Director of Research Ethics at the University of Waterloo, at (519) 888-4567 ext. 36005 or ssykes@uwaterloo.ca.

We understand that school administrators and staff are busy and we wish to provide support in any way possible to assist your school's participation in this project. One of our staff members will call you within the next two weeks to provide you with more information about the project and to discuss your school's participation. We look forward to collaborating with you on this exciting project.

Sincerely,

Rhona Hanning PhD RD
Associate Professor
Department of Health Studies and
Propel Institute for Population Health Impact
University of Waterloo
(519) 888-4567 x 35685
rhanning@uwaterloo.ca

In partnership with:



UNIVERSITY OF
WATERLOO

The Study

The University of Waterloo, in partnership with Peel Public Health, is conducting an evaluation of the Ontario School Food and Beverage Policy (P/PM150) in Region of Peel elementary, middle and secondary schools. This project aims to explore the impacts of the School Food and Beverage Policy on youth eating habits, food-related behaviours, attitudes and their food sources. Ultimately, the goal of this research is to support healthy eating for all students in the Region of Peel.



Contact Us

To set a date and time for data collection in your school or for any questions regarding the Healthy School Planner please contact:

Taryn Orava
Project Lead
Taryn.Orava@gmail.com
289-221-1814

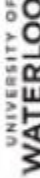
For any questions/comments regarding the project at large, contact either:

Dr. Rhona Hanning
Principal Researcher
Rhanning@uwaterloo.ca
519-888-4567 ext 35685

OR

Catherine Brown
Region of Peel Public Health Dietitian
Catherine.Brown@peelregion.ca
905-791-7800 ext 2081

 **Region of Peel**
Working for you.
Public Health

 UNIVERSITY OF
WATERLOO SCHOOL OF PUBLIC HEALTH
AND HEALTH SYSTEMS



THE EVALUATION OF
THE ONTARIO SCHOOL FOOD
AND BEVERAGE POLICY (P/PM150)

**ENVIRONMENTAL
SCAN**

SCHOOL BENEFITS

What are the benefits to your school?

- "Lessons learned" regarding the implementation of school food policy will be shared among schools within the Region of Peel (as well as community groups, e.g. Public Health) using a variety of strategies (presentations, websites, resources), that may help schools to sustain the policy and support healthy eating for students.
- Your school will receive an individual School Feedback Report that includes the outcomes of the Healthy School Planner, assessment of the school food environment and a list of supports for schools.
- A member of the research team would be happy to give presentations of results to your staff and/or parent council groups.

Ethics Information

This research has been reviewed by, and received ethics clearance through, the Office of Research Ethics at the University of Waterloo. Approval for this project has been granted through Dufferin–Peel Catholic District School Board and Peel District School Board Research Committees. If you have any comments or concerns resulting from your school's participation in this project, contact Dr. Susan Sykes, Director of Research Ethics at the University of Waterloo at (519) 888-4567 ext. 36005 or ssykes@uwaterloo.ca.

What Is Involved?

Step 1: Healthy School Planner

School Principals will identify an individual from the school community who is knowledgeable about the school food environment. This individual will complete the Healthy School Planner survey, which will take approximately 45 minutes to complete.

Step 2: Environmental Scan

The contact person from your school will assist a representative from the University of Waterloo with the completion of a School Food Environment Checklist, which includes a physical walk-about of the school to take place during a lunch period. This checklist takes approximately 30 minutes to complete.

Phase II Recruitment Email – Assistance of School PHNs

Dear Public Health Nurses,

From April 2012 until June 2013, 45 schools and 2100 students from the Dufferin-Peel Catholic District School Board and Peel District School Board have participated in the Evaluation of the Ontario School Food and Beverage Policy (P/PM150) conducted by Peel Public Health and the University of Waterloo. Phase I of the study has come to an end and researchers Taryn Orava (PhD candidate, University of Waterloo) and Dr. Rhona Hanning (University of Waterloo) will be returning to schools to recruit for Phase II of study. Phase II will include:

- € Only schools that participated in Phase I;
- € A discussion with school representatives regarding the use and practicality of individualized School Feedback Reports;
- € The completion of the Healthy School Planner, Healthy Eating Module; and
- € A repeat environmental scan of the school food environment.

Recruitment with schools will begin in November 2013 and Phase II data collection will begin mid-November 2013. If able, please circulate the attached flyer to participating schools. Please note, the below recruitment schedule:

Initial Data Collection (Phase I)	Follow-up Data Collection (Phase II)
April ! June 2013	October ! December 2013
January ! June 2013	January ! June 2014

Phase II will also involve interviews with Peel Public Health Nurses in order to collect expert feedback (both positive and negative) on the School Feedback Reports and their use/application in schools. In order to be eligible for an interview, Public Health Nurses must:

1. Have had a school participate in Phase I;
2. Have received and reviewed a School Feedback report;
3. Must provide written consent according to the University of Waterloo Research Ethics Board; and
4. Must be available between November ! December, 2013 for an audio-recorded one-on- one interview.

Interviews will take place at Peel Public Health (7120 Hurontario Street, Mississauga, ON) and will last no more than 60 minutes. If you are interested, please contact Taryn Orava at taorava@uwaterloo.ca or 289-221-1814.

Thank you for your time and consideration, Taryn

Orava

AN EVALUATION OF THE ONTARIO SCHOOL FOOD AND BEVERAGE POLICY PHASE II



Between April 2012 and June 2013, the University of Waterloo, in partnership with Peel Public Health, conducted an evaluation of the Ontario School Food and Beverage Policy (P/PM150). Over 2100 students from 45 schools participated in this research study designed to examine the impact of P/PM150 on youth eating habits and document changes to the school food environment and healthy eating practices. Phase II has since received full ethics approval from the Research Ethics Boards of the University of Waterloo and Peel District School Board.

Your school is invited to participate in Phase II of this evaluation. Your school is eligible to participate if:

- Your school participated in Phase I (between April 2012 – June 2013); and
- Your school has received a School Feedback Report.

The Phase II evaluation will involve one lunch hour of participation for:

- The completion of the Healthy School Planner, Healthy Eating Module;
- A physical walkabout of the school;
- A one-on-one interview with a University of Waterloo researcher.

*Please note, student or parent participation is NOT required for Phase II.

Your school will receive a second school feedback report, which will highlight changes made to your school from Phase I and Phase II as well as provide more supports for your school and school community.

School visits will begin in February 2014 and continue until June 2014.

If interested in participating, please contact:

Taryn Orava

PhD Candidate

School of Public Health and Health Systems

University of Waterloo

Taorava@uwaterloo.ca

289-221-1814

Phase II School Representative Recruitment Letter Template

An Evaluation of the Ontario School Food and Beverage Policy (P/PM150) in Region of Peel Schools:
School Feedback Reports

November #, 2014

Contact Name
Street Address
City, Province
Postal Code
Phone Number:
Email:

Dear Contact Name(s),

Between 2012 and 2014, School Name participated in an Evaluation of the *Ontario School Food and Beverage Policy (P/PM150)*. This study was conducted by Peel Public Health in partnership with the University of Waterloo and was made up of two phases. Phase I included: Phase I Components. Phase II included: Phase II Components.

The attached school feedback reports highlight results from Phase I (Phase I date) and Phase II (Phase II date) for School Name. The reports highlight areas of strength and those that need improvement and provide supports to address any challenges your school may face in implementing and maintaining *P/PM150*. Your school Public Health Nurse, PHN Name, will follow up with you to schedule a meeting to discuss the Phase II report. Together with your Public Health Nurse, use this report to strengthen healthy eating practices, programs and policies at School Name.

For any questions regarding the content of the Phase I or Phase II reports, please contact Taryn Orava (University of Waterloo) at taorava@uwaterloo.ca or 289-221-1814.

Thank you for time and participation.

Sincerely,

Taryn Orava
PhD Candidate
School of Public Health and Health Systems
University of Waterloo

Appendix C: Data Collection Instruments

Healthy School Planner Survey

Appendix E

HEALTHY EATING MODULE

Please note, this paper version of this module contains a complete set of questions for all grades. Certain questions may not appear or may be slightly different when you go to complete the online version of this assessment simply based on school grade levels.

*Indicates that this question will only appear for schools registered with any grades 1 through 8
 ** Indicates that this question will only appear for schools registered with any grades 9 through 12

Important survey definition: The term "food" refers to both food and beverages

HEALTHY PHYSICAL ENVIRONMENT

H1. Do all students at your school have access to the following in the *student* eating areas?

	Yes	No
a. An adequate number of tables and chairs	<input type="radio"/>	<input type="radio"/>
*b. Tables and chairs of appropriate height	<input type="radio"/>	<input type="radio"/>
c. Drinking fountains	<input type="radio"/>	<input type="radio"/>
d. Microwave	<input type="radio"/>	<input type="radio"/>

***H2. Is student hand washing included in the daily routine before lunch/snacks?**

	Always	Most of the time	Sometimes	Rarely	Never	N/A
a. Kindergarten	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Grades 1-3	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Grades 4-6	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Grades 7-8	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

***H3. How long do students usually have to eat during scheduled opportunities, including travel time to eating area?**

	20 minutes or more	15-19 minutes	10-14 minutes	5-9 minutes	less than 5 minutes	N/A
a. Breakfast	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Snacks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Lunch	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

***H4. On average, how many days per week does your school offer *special food day(s)* (e.g., pizza day)?**

5
 4
 3
 2
 1
 Less than 1
 Never

If "Never", go to H6

***H5. What type of *special food days* does your school have? (Check all that apply)**

Hot Dog
 Pizza
 Submarine sandwich

H6. Does your school have a ...

	Yes	No
a. Cafeteria	<input type="radio"/>	<input type="radio"/>
b. Snack bar/Tuck shop	<input type="radio"/>	<input type="radio"/>
c. Vending machine(s)	<input type="radio"/>	<input type="radio"/>

If yes, how many _____

If "No", skip the appropriate row(s) or column(s) for H7 to H9

H7. Who operates the ... (Check all that apply)

	School	School Council (i.e., parent council)	Food service company	Non-profit organization	Students/student council	Other
a. Cafeteria	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Snack bar/Tuck shop	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Vending machine(s)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

H8. Does your school provide any of the following to promote the sale of healthy food? (Check all that apply)

	Cafeteria	Snack bar/Tuck shop	Vending machine(s)
a. Healthy food choices at a reasonable/subsidized price	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Healthy eating promotional materials (e.g., posters)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Daily healthy eating specials	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Healthy eating cafeteria program (e.g., Eat Smart or independent program)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. Healthy vending program	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

H9. What type of profit sharing arrangement was made with the operator?

	Flat percentage of sales	Fluctuating percentage of profits, depending on sales	Cost recovery system	Other	None	Don't know	N/A
a. Cafeteria	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Snack bar/Tuck shop	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Vending machine(s)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

H10. Which best describes how lunch is offered at your school?

Our students receive a common lunch period (i.e., all students eat at the same time)

Our students receive lunch over multiple periods (i.e., there is no common lunch time for all students)

TEACHING AND LEARNING

H11. Does your school have a school nutrition program for ...

	Yes	No
a. Breakfast	<input type="radio"/>	<input type="radio"/>
b. Lunch	<input type="radio"/>	<input type="radio"/>
c. Snack	<input type="radio"/>	<input type="radio"/>
d. Milk	<input type="radio"/>	<input type="radio"/>

If "No", skip the appropriate row(s) or column(s) below for H12 to H17

H12. How many times is the program offered per week?

	1 day per week	2 days per week	3 days per week	4 days per week	5 days per week
a. Breakfast program	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Lunch program	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Snack program	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Milk program	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

H13. Who funds the program? (Check all that apply)

	Breakfast program	Lunch program	Snack program	Milk program
a. Provincial/territorial government ministry	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. School	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Donors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Parents/families/guardians	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. Community group(s)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. Food service company	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g. School council (i.e., parent council)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

H14. Who runs the program? (Check all that apply)

	Breakfast program	Lunch program	Snack program	Milk program
a. Teacher(s) or other school staff	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Volunteers (e.g., parents/families/guardians)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Paid supervisor	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Community group(s)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. Food service company staff	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

H15. Is the program available to all students regardless of ability to pay?

	Yes	No
a. Breakfast program	<input type="radio"/>	<input type="radio"/>
b. Lunch program	<input type="radio"/>	<input type="radio"/>
c. Snack program	<input type="radio"/>	<input type="radio"/>
d. Milk program	<input type="radio"/>	<input type="radio"/>

H16. How frequently is the program reviewed to ensure that healthy food choices are offered?

	At least once per year	Less than once per year	Never	N/A
a. Breakfast program	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Lunch program	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Snack program	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Milk program	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

H17. To the best of your knowledge, on an average day, what percentage of students in your school participate?

- a. Breakfast program _____ %
- b. Lunch program _____ %
- c. Snack program _____ %
- d. Milk program _____ %

H18. Does your school ensure that all students, regardless of ability to pay, have access to fruits and vegetables?

- Yes, entire school year
- Yes, occasional/short term
- No

H19. Does your school promote locally grown fruit and vegetables?

- Yes No

H20. Does your school experience any of the following barriers to providing students with locally grown fruit/vegetables? (Check all that apply)

- Not available locally
- Too expensive
- Not enough demand from students
- Current arrangement with food service provider or funder does not allow for provision of local fruit/vegetables

H21. To the best of your knowledge, how well do each of the following statements characterize healthy eating education at your school?

	A lot	Some	Very little	Not at all	Don't know
a. Teachers use Canada's Food Guide materials to support the healthy eating curriculum	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Healthy eating education is integrated into other curriculum areas (e.g., food labels addressed in science or math class)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Teachers act as role models for what is taught in the healthy eating curriculum	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

H22. Does your school offer any of the following? (Check all that apply)

- Cooking classes
- Gardening (e.g., growing produce)
- Field trips to farms/farmers' markets
- Media literacy on special topics related to healthy eating (e.g., body image, eating disorders)
- Field trips to the local grocery store

SUPPORTIVE SOCIAL ENVIRONMENT

H23. In general, what priority is given to healthy eating in your school?

- Very high High Low Very low

H24. Does your school have any of the following written policies or practices that support healthy eating?

	Yes, through existing written policies	Yes, through written policies still under development	Yes, through practices	No	N/A
a. Healthy food offered in cafeteria(s)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Healthy food offered in snack/tuck shop(s)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Healthy food offered in vending machine(s)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Healthy food offered in a lunch program	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. Healthy food choices at reasonable/subsidized prices	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. Hours that food services are accessible meet student needs for healthy eating	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g. Healthy food offered during special events, field trips and classroom celebrations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h. Healthy beverages (e.g., water) allowed in the classroom during instructional time	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
i. Avoid use of 'junk food' (e.g., sugary treats) as a reward	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
j. Ban 'junk food' advertising at school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
k. Food sold as fundraising activity is healthy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

If "Yes, through existing written policies", go to H25 and consider these existing policies when selecting your responses

Go to H27

H25. How are your school's *written policies* on healthy eating communicated throughout the school community (i.e., staff, parents/families and students)? (Check all that apply)

- Written in a school/board/division/district handbook
- Written in a school/board/division/district newsletter
- Written in a student agenda provided by the school/board/division/district
- Discussed at meetings (e.g., staff meetings, professional development days, assemblies, school council)
- Posted on school/board/division/district website(s)
- Posted at school
- Email distribution

H26. How frequently are your *school-specific* written policies* related to healthy eating reviewed?

**School-specific refers to policies that were developed or adopted at the discretion of your school administration, and were not necessarily mandated by your school board/division/district or other organization.*

- At least once per year
- Less than once per year
- Never
- N/A (our school does not have any school-specific policies related to healthy eating)

H27. During the past 12 months, did your school initiate/continue any of the following activities/programs at your school?	Yes	No	N/A
a. Offered healthy food choices during breakfast program	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Offered healthy food choices during lunch program	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Offered healthy food choices during snack program	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Offered healthy food choices in the cafeteria(s)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. Offered healthy food choices in the snack bar/tuck shop(s)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. Offered healthy food choices in the vending machine(s)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g. Organized Nutrition Month activities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h. Formed a school committee that deals with nutrition and food (e.g., School Nutrition Action Committee)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
i. Stopped the sale of junk food	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
j. Held junk food free days	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

H28. Does your school sell food as a fundraising activity through ...	Yes	No
a. Students soliciting/filling bulk orders (e.g., chocolate bar, cheese block, fruit sales)	<input type="radio"/>	<input type="radio"/>
b. Special events (e.g., track and field BBQ, sports team bake sale)	<input type="radio"/>	<input type="radio"/>

H29. During the past 12 months, has your school sent home <i>educational material*</i> to provide opportunities for parents/families/guardians to learn about the following topics? <i>*Educational materials include brochures, newsletter articles, websites, introductions to curriculum, and homework assignments that encourage family participation to adopt or practice healthy behaviour.</i>	Yes	No	Don't know
a. Canada's Food Guide	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Culturally diverse food	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Healthy snacks and lunch suggestions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Influence of screen time on child's health (e.g., TV, computer and video games)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. Promotion of positive self-body image	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

H30. During the past 12 months, has your school ...	Yes	No	Don't know
a. Met with parents' organization (e.g., school council) to discuss healthy eating activities at school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Formally collected suggestions from parents/families/guardians about planning for healthy food choices available at school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Formally collected suggestions from students about planning for healthy food choices available at school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Formally collected suggestions from school staff about planning for healthy food choices available at school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

H31. To the best of your knowledge, to what extent do students at your school face the following issues?	A lot	Some	Very little	Not at all	Don't know
a. Overweight or obesity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Dieting or eating disorders	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Family financial concerns	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Skipping breakfast	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. Lack of time for lunch	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. Inadequate space for lunch	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g. Lack of healthy choices available at your school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h. More information needed for parents/families/guardians about healthy food choices	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
i. Lack of healthy eating education for students	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
j. Close proximity of local fast food outlets	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

COMMUNITY PARTNERSHIPS AND SERVICES

H32. During the past 12 months, have school staff who are involved with healthy eating received ...	Yes, all staff	Yes, some staff	No	Don't know
a. In-service training (on nutrition) by Registered Dietitians (e.g., public/regional health, Dairy Farmers of Canada)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. In-service training related to teaching the healthy eating curriculum	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Sensitivity training to promote positive self-body image	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

H33. Do school staff have clear guidelines to refer students with suspected eating disorders to the appropriate health professional or community agency?

- Yes No Don't know

H34. During the past 12 months, what role did your regional health authority/local public health unit play when working with your school on healthy eating promotion and/or activities for students? (Check all that apply)

- Provide information/resources/programs (e.g., posters, toolkits)
- Solved problems jointly
- Developed/implemented program activities jointly
- No contact with regional health authority/local health unit/department regarding healthy eating promotion and/or activities

H35. During the past 12 months, has your school worked on healthy eating promotion and/or activities for students with a ... (Check all that apply)

- Health organization (e.g., Heart and Stroke Foundation, Canadian Cancer Society, Canadian Diabetes Association)
- Parks or Recreation department
- Youth organization (e.g., YMCA/YWCA, Boys/Girls Clubs, Boy Scouts/Girl Guides)
- Health or fitness club
- Board/division/district itinerant teacher (e.g., consultant, specialist)

YOUR SCHOOL: HEALTHY EATING

H36. Does your school's improvement plan for the current school year contain any items related to healthy eating?

- Yes No Don't know

H37. In your opinion, what is the single most important change that would help your school improve access to healthy eating for your students?

H38. In the next 1-2 school years, how likely is your school to work on the change you listed in H37?

- Very likely Not likely Not sure
 Likely Not very likely

H39. How confident are you that the responses in the Healthy Eating section of this survey accurately reflect your school's healthy eating environment?

- A lot Some Very little Not at all

H40. Who was involved in completing the healthy eating section of this survey? (Check all that apply)

- Principal/Vice principal
- Curriculum leader/Department head/Program head
- Teachers
- School council (i.e., parent council)
- Parents/families/guardians
- Food service staff
- Representative from the school board/division/district (e.g., Superintendent of curriculum, Board/division/district itinerant teacher)
- Public health unit/department/regional health authority (e.g., Nurse, Health Educator, Nutritionist)
- Representation from community organization (e.g., Heart and Stroke Foundation, Canadian Cancer Society)

H41. Are there any other comments you would like to offer regarding your school's healthy eating environment?

GENERAL QUESTIONS

Regardless of the topic selected, your school will be required to complete a short set of general questions - questions that apply to the school's health environment as a whole and/or are relevant to more than one topic area.

1. Our school's Healthy School Team that oversees school health policies and programs

- has been in place for more than 2 years
- has been in place for 1-2 years
- has been in place for less than one year
- is having its first meeting today
- is not yet in place

2. Not including today, our Healthy School Team has met the following number of times during the past 12 months.

- None
- 1 to 3 times
- 4 to 6 times
- 7 or more times

3. Our Healthy School Team:

	Yes	No
Has accessed and read our school health policies (board/division/district & school specific).	<input type="radio"/>	<input type="radio"/>
Works in conjunction with board/division/district level health committees.	<input type="radio"/>	<input type="radio"/>
Has a designated Healthy School Team leader	<input type="radio"/>	<input type="radio"/>

4. Who is represented on your Healthy School Team? (Check all that apply)

- Principal(s)/Vice Principal(s)
- Curriculum leader(s)/Department head(s)/Program head(s)
- Teachers
- School council (i.e., parent council)
- Parents/families/guardians
- Students
- Food service staff
- Representative(s) from the school board/division/district (e.g., Superintendent of curriculum, Board/division/district itinerant teacher)
- Regional Health Authority/Public health unit/department (e.g., Nurse, Health Educator, Nutritionist)
- Representative(s) from a community organization (e.g., Heart and Stroke Foundation, Canadian Cancer Society)

5. How often does your Healthy School Team share information with Board/Division/District Administration on team progress?

- Never
- Once per year
- Twice per year
- Three or more times per year

6. Our Healthy School Team informs key constituencies of current developments (plans and activities)
"Inform" includes, but is not limited to, school newsletter, newspaper articles, bulletin board, website, email communication, reporting out at meetings.

	Never	Once per year	Twice per	Three or more times per year
a) School staff	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) Parents or guardians	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c) Community members	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d) School board/division/district	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

7. Our school and/or board/division/district provides sufficient resources to support Healthy School Team efforts.
"Sufficient staff time" could include any of the following: time within the school day to attend professional development, monitor policy compliance, develop or implement "Healthy School" plans, etc.

	Yes	No
a) Sufficient funds	<input type="radio"/>	<input type="radio"/>
i) Annual budget less than \$100	<input type="radio"/>	<input type="radio"/>
ii) Annual budget \$100 - \$499	<input type="radio"/>	<input type="radio"/>
iii) Annual budget \$500 - \$999	<input type="radio"/>	<input type="radio"/>
iv) Annual budget greater than \$1000	<input type="radio"/>	<input type="radio"/>
b) Sufficient staff time	<input type="radio"/>	<input type="radio"/>
c) Sufficient space	<input type="radio"/>	<input type="radio"/>

8. During this school year, our school has reported our successes by submitting one or more success stories for publication in a local, provincial/territorial or national web-based or paper-based publication.

Yes
 No

9. Our school uses formal or standardized student health assessment(s) to determine the student's attitudes, knowledge, beliefs and behaviours on the following topics:
Examples of formal or standardized student assessments are: SHAPES student survey, Youth Smoking Survey, Youth Health Survey (MB), NB Wellness Survey, PEI Wellness Survey

	At least every 2 years	Less than every 2 years	Irregularly	Never
a) Healthy Eating	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) Physical Activity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c) Tobacco Use	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

10. Our school has used data from a student health assessment at least once in the past two years to help in planning actions that will improve our school's environment and/or to help determine the impact of changes that we have made on student attitudes and behaviours.

- Yes
- No

11. Our school routinely uses an action planning tool or formalized method to prioritize changes/actions and to monitor progress on our healthy school initiatives.

By completing at least one module of this self-assessment, you have access to the online Healthy School Planner. It is one example of an action planning tool.

- Our school uses the Healthy School Planner online action planning tool and we have updated it at least twice in the past year
- Our school uses another form of action planning and we have updated it at least twice in the past year
- Our school uses a combination of the Healthy School Planner online action plan and another method and we have made updates at least twice in the last year
- Our school uses either the Healthy School Planner online action plan or another tool and we update it less than twice a year
- Our school does not have an action plan

12. Our school has taken action on a policy regarding Comprehensive Approaches to School Health.

- No action taken
- Reviewed but not yet adopted
- Adopted policy (or similar) but not fully implemented
- Adopted policy (or similar) and is fully implemented

13. How are your school's *written policies* communicated throughout the school community (*i.e., staff, parents/families and students*)? (Check all that apply)

- Written in a school and/or board/division/district handbook
- Written in a school and/or board/division/district newsletter
- Written in a student agenda provided by the school and/or board/division/district
- Discussed at meetings (e.g., staff meetings, professional development days, assemblies, school council)
- Posted on school and/or board/division/district website(s)
- Posted at school
- Email distribution

14. Our school has a written policy for creating an effective school environment that includes the following elements:

	No Written policy	Written policy, but not fully implemented	Written policy, and is fully implemented
a) Provides for the annual assessment of the school environment and implements strategies to strengthen and maintain a positive learning climate	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) Assists students and families in making good health choices for lifelong benefits	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c) Promotes safe school environments by ensuring that appropriate behaviours are modeled by staff and practiced by students	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Yes	No
15. In the past year, our school has taken steps to improve the following elements of school climate:		
a) Sense of belonging	<input type="radio"/>	<input type="radio"/>
b) Students feel they belong to the school community	<input type="radio"/>	<input type="radio"/>
c) Respect for diversity and differences	<input type="radio"/>	<input type="radio"/>
d) Independence and control	<input type="radio"/>	<input type="radio"/>
e) Closeness and good relationships between students	<input type="radio"/>	<input type="radio"/>
f) Closeness and good relationships between staff members	<input type="radio"/>	<input type="radio"/>
g) Closeness and good relationships between staff and students	<input type="radio"/>	<input type="radio"/>
h) Closeness and good relationships between the school and the community	<input type="radio"/>	<input type="radio"/>
i) Positive school environment	<input type="radio"/>	<input type="radio"/>
j) Positive attitude and culture	<input type="radio"/>	<input type="radio"/>
k) Students have some say in policy development, etc.	<input type="radio"/>	<input type="radio"/>
l) Rules and regulations in place to create a disciplined environment (including the relationship between staff members and students)	<input type="radio"/>	<input type="radio"/>
m) Quality of leadership/Decision making	<input type="radio"/>	<input type="radio"/>
n) Effective instruction	<input type="radio"/>	<input type="radio"/>
o) Appearance and physical aspects of school; that is, the school has a welcoming appearance	<input type="radio"/>	<input type="radio"/>
p) Safety and structure; that is, the school is physically safe	<input type="radio"/>	<input type="radio"/>

16. Our school offers a broad variety of student enrichment experiences.
(e.g., community service, student advocacy, student clubs, field trips, athletics, drama, art, music, vocational education, technology training, etc. These can take place during and after school hours.)

- A variety are offered and they are accessible to all students
- A variety are offered, but not all are accessible to all students
- Few or no enrichment experiences are provided

17. Teachers in our school have received professional development in management techniques to create engaged, purposeful learning.
(e.g., cooperative learning methods, social skills training, promotin interactive learning, classroom and environmental modification, conflict resolution and mediation, and behaviour management)

- None
- Some
- Most
- All

18. Teachers in our school use management techniques to create calm, orderly classrooms.

- None
- Some
- Most
- All

Phase II Food Environmental Scan

School Name:

School Code:

Completed by:

Date:

HSP Collected

Researcher note: in secondary schools, take photographs of cafeteria and conduct physical walkabout first.

Q1. Does your school provide any of the following to encourage students to eat lunch in the cafeteria?

- 1a. Cafeteria enhancement? Prompt: Games, activities, specialty food days, posters or murals?
- 1b. Off campus policies? Prompt: Are students allowed to leave at lunch?
- 1c. Lunch time activities? Prompt: Clubs, organizations, teams, societies etc?

Q2. During the past 12 months, has your school worked on healthy eating promotion and/or activities with...

2a. PHN or dietitian? Comment: if yes, what did you work on? Please describe your experience working with your public health nurse.

Q3. During the past 12 months, has your school staff or students participated in any of the following?

- 3a. Workshop or training on P/PM150 standards? Comment: if yes, who delivered the training? Who was involved? What did the participants learn?
- 3b. Consult from PHN or dietitian? Comment: if yes, what happened during the consultation? How many consults? Was the consult helpful? Why or why not?
- 3c. Brochures, handouts or other written materials to support school food and beverage efforts? Comment: if yes, what did you receive? How have you used these resources?
- 3d. Information or resources from your PHN website or your school board's internal website/email? Comment: if yes, what was retrieved from each website? How is this information used?

Q4. Did a representative from your school receive P/PM150 training? If so, who? How have they used this training in the past year?

Researcher note: if the representative is unsure, ask for the contact information from the representative who was trained to ask directly.

Q5. In the past school year, how many times would you have needed an exception to p/PM150? Comment: what were the days used for?

Q6. What opportunities do students have at school for food skill development? Comment: if there is no program, what would be required in order for a food skills program to be implemented at your school?

Q7. Are there school or community gardens that students are involved with? Comment: if there is no program, what would be required in order for a community garden to be implemented at your school?

Food Services Offered

Prior to beginning our physical walk about of the school, I have some general questions about the school food environment and services offered.

Breakfast Program

Q8. Does your school have:

Q8a. Breakfast program?

Q8b. Run by:

Q8c. Menu available?

Q8d. Number of students:

Q8e. What is offered?

Q8f. Has there been any changes made to this program over the past school year? Please describe.

Q8g. If no program, is there a need for a breakfast program?

Yes

No

Q8h. What would be required in order for a subsidized breakfast program to be implemented at your school?

Lunch Program

Q9. Does your school have:

Q9a. Lunch program?

Q9b. Run by:

Q9c. Menu available?

Q9d. Number of students:

Q9e. What is offered?

Q9f. Has there been any changes made to this program over the past school year? Please describe.

Q9g. If no program, is there a need for a lunch program?

Yes

- No
- Q9h. What would be required in order for a subsidized lunch program to be implemented at your school?

Snack Program

Q10. Does your school have:

- Q10a. Snack program?

Q10b. Run by:

- Q10c. Menu available?

Q10d. Number of students:

Q10e. What is offered?

Q10f. Has there been any changes made to this program over the past school year? Please describe.

Q10g. If no program, is there a need for a subsidized snack program?

- Yes

- No

- Q10h. What would be required in order for a snack program to be implemented at your school?

Checklist for the School Food Scan: Cafeteria

Q11. Is there a cafeteria?

- Yes

- No

Q11a. Who runs it?:

Q11a1. Is this the same vendor as last year?

- Yes

- No

Q11a2. If not, how does this vendor differ from last year's vendor?

Q11b. Is the menu available?

Q11c. How many days do they rotate?

Q11d. Were 80% of foods from the sell most category? Researcher note: Take photographs

Q11e. Were <20% of foods from the sell less category? Researcher note: Take photographs

Q11f. Were any of the foods for sale in the cafeteria in the not permitted category?

offered for sale? (Specify)

Q11g. Does there appear to be any pricing in favour for the sell most foods? Researcher note: Take photographs

Checklist for the School Food Scan: Vending Machines

Q13. Are there vending machines?:

- Yes
- No

Q13a. If so, how many?

Q13-1. Is this the same vendor as last year?

- Yes
- No

Q13-2. If not, how does this vendor differ from last year's vendor?

Q13b. Were 80% of foods from the sell most category? Researcher note: Take photographs

Q13c. Were <20% of foods from the sell less category? Researcher note: Take photographs

Q13d. Were any of the foods for sale in the not permitted category offered for sale? (specify)

Checklist for the School Food Scan: Tuck Shop

Q16. Is there a tuck shop?

- Yes
- No

Q16-1. Is this the same group as last year?:

- Yes
- No

Q16-2. If not, how does this group differ from the former?:

Q16b. Were 80% of foods from the sell most category? Researcher note: Take photographs

Q16c. Were <20% of foods from the sell less category? Researcher note: Take photographs

Q16d. Were any foods in the tuck shop in the not permitted category?

Q19. Did you observe messaging in the schools related to foods, nutrition, retail? Q20.

Did you observe messaging from Peel Public Health, specifically?

Research signature:

Phase II School Representative Interview Guide

As part of the FES Checklist

Researcher note: Please refer to the hard copy of the school feedback report.

Script: During Phase I of this study, researchers provided you with a school feedback report. I've brought along a copy and I have some questions about it.

Q20. Please describe your level of familiarity with this school feedback report. Q20a. How much time have you spent reviewing the report?

Researcher note: Please have the school representative circle what they did and didn't like on the hard copy.

Q21. What do you like about the feedback report?

Q21a. What did you like about the report?

Q21b. What didn't you like about the report?

Q22. How is this information relevant to your school?

Q22a. What is the most important piece of information in the report?

Q22b. What is the least important piece of information in the report?

Q23. Please describe your experience using this report.

Q23a. Did the information in the report facilitate any changes to your school's approach to healthy eating?

Q23b. If so, how did you go about making those changes?

Q23c. If not, what is required in order for changes to be made?

Q24. Did you share this report with your school's public health nurse?

Q24a. If so, please describe your experience.

Q24b. If not, what prevented you from sharing this report?

Q25. In your opinion, how would you prefer to receive research findings?

*Prompt: Written or presentation? Paper or electronic? Long or short? Pictures or text?
How can we improve this feedback report?*

Phase II PHN Interview Guide

Evaluation of the Ontario School Food and Beverage Policy (P/PM150)

Knowledge Translation Piece

Peel Public Health Nurse – Interview Guide

PHN Pseudonym: _____ Date: _____

Interviewer script: *Thank you for agreeing to participate in this interview. Before we begin, I would like to say again that your participation is completely voluntary. If you do not feel comfortable answering any question, simply tell me, and we will skip it. Note that you may choose to withdraw from the study at any time without bias. I will be audio recording this interview and later transcribe our conversation word-by-word. With your permission, researchers may select quotes from your transcript to represent key themes within publications and presentations. Instead of your name, a general pseudonym will be used, for example Public Health Nurse 1. Lastly, all identifying information regarding your name, place of work, and affiliate schools will be removed from the transcript and any reports, publications and presentations. Would you allow the use of your quotes in publications and presentations?*

× YES × NO

Before we begin, do you have any questions for me?

School Relationship Questions:

I have some questions intended to help me understand your work and background.

1. How long have you worked as a public health nurse?
2. How many schools do you currently work with? Elementary/Secondary?
 - a. I have the spring 2014 PHN assignment list, let's confirm which schools you have worked with over the past year. *The school names will be removed from the transcript; however, it will help me understand if you work with schools that have participated in the full study or the food environmental scan only.*

Let's review each school on this list:

- b. How long have you worked with this group of schools?
 - i. *Prompts:* School A, School B, School C, etc.
- c. On a scale from one to five, one being weak and five being strong, how would you rate your relationship with each school?
 - i. *Prompts:* School A, School B, School C, etc.
- d. You have selected (*list schools*) as weak. What makes this relationship weak?

- e. You have selected (*list schools*) as strong. What makes this relationship strong?
- f. You have selected (*list schools*) as being somewhere in the middle. Please describe your relationship with these schools?
- g. From this list I have highlighted the schools that have participated in this and those that have granted permission for you to review their school feedback report. (*See Appendix A*)

School Feedback Reports:

Interviewer Note: Specific school feedback reports for schools that granted public health nurses' permission will be used as a reference for the following questions.

Thank you. This next section of questions ask about the school feedback reports prepared using each school's data. Please remember that your candid responses will be most valuable to learning how to improve our products and processes.

3. Please describe your level of familiarity with the individual school feedback reports.
 - a. *Probes:* How much time have you spent reviewing the report(s)?
4. What do you think of the school feedback reports?
 - b. Was the information in the report easy to understand?
 - c. *Prompt:* What do you like about the reports?
 - d. *Prompt:* What don't you like about the reports?
5. What do you think is the most important piece of information in the reports? *May ask questions for full-study reports and FES-only reports.*
 - e. Why does this information seem important to you?
 - f. Does this information have value to healthy eating promotions at your schools?
 - g. *If PHN has been granted more than one school feedback report:* How does the area of importance change for the other school feedback reports you've been granted?
6. What do you think is the least important piece of information in the reports? *May ask questions for full-study reports and FES-only reports.*
 - h. Why does this information seem unimportant to you?
 - i. Does this information have value to healthy eating promotions at your schools?
 - j. *If PHN has been granted more than one school feedback report:* How does the area of unimportance change for the other school feedback reports you've been granted?
7. How well do you think the feedback reports reflect the current level of healthy eating promotion in your schools?

- k. Do the schools have a healthy schools action plan related to healthy eating?
 - i. Does this report reflect the school's goals?
- l. What other information related to healthy eating would you like to see represented in these reports?
8. Taking a look at the list we created earlier, have you had the opportunity to discuss this report with any of these schools? (*List consenting schools*)
 - m. *Prompts*: Consenting school 1? Consenting school 2? Etc.
 - n. **If yes**, please share your experience of reviewing the report with school personnel?
 - i. Who were the school personnel involved in the review of the report?
 - ii. How familiar were the school personnel with their report?
 - iii. Did you receive any initial feedback about the report? If so, what was the feedback?
 - o. Have you or the school personnel shared the feedback report with any of the following groups?
 - School principals/vice principals;
 - Teachers;
 - Food service workers;
 - Parent council;
 - Students;
 - Parents;
 - School Board or superintendents;
 - Other community members?
 - ii. What was your experience sharing the report with the (*different groups*)?
 - iii. Did (*the groups*) provide feedback about the report? If so, what was the feedback?
- b. Has this report had an effect on healthy eating promotion at your schools?
 - i. **If yes**, has the information presented in the report prompted changes to healthy eating programs, policies or practices?
 - Did the report provide support in reaching action plan goals related to healthy eating? If so, how was this information used?

- Did the report offer any new information? If so, what kind of information was new for schools?
 - Has this information justified healthy eating programs that already exist at your schools?
 - Has this information been used to develop new healthy eating initiatives at your schools?
 - How do you perceive schools will be able to use this information in the future?
 - How will this feedback report change your thinking or approach to healthy eating initiatives at your schools?
- ii. **If no changes made:** what do you perceive as the barriers to making changes to healthy eating promotion at your schools?
- What types of supports are needed to overcome these barriers?
- a. **If not,** what do you feel prevented you from reviewing the school feedback report with (*school names*)?
- i. *Prompts:* Consenting school 1? Consenting school 2? Etc.
 - ii. How interested were schools in the feedback reports?
 - iii. What are some barriers or challenges that may prevent public health from sharing the report with schools?
 - iv. What supports are needed to address these barriers or challenges?
9. Please describe what you see as strengths of having a report like this in your role as a school public health nurse?
- c. Please describe the limitations of a report like this in your role as a school public health nurse?

Knowledge to Action:

Thanks for your responses. I'd like to now move into a series of questions that ask about the process of informing schools of research findings to better school policies and programs.

10. In your experience as a public health nurse, what do you think is the best way to transform evidence into plans or priorities around health issues for a school community?
- a. What do you think is the best way to use the research findings found in the school feedback reports?
 - i. How much time is needed for schools to review the feedback report and make changes to their school food environments?

- ii. What time of year is best for schools to receive evidence that can inform programs or policies? What things influence their ability to engage with new evidence?
 - iii. In your opinion as a public health nurse, are there other forms of communication that schools prefer to receive information from?
 - b. In your experience, what are the most effective ways to inform the larger school community (parents, teachers, students) as well as the Peel Region community (public health, school boards) about evidence like the school feedback reports?
 - i. Do you think schools are open to sharing their research findings with the larger community?
 - Why/why not?
 - ii. What are the barriers or challenges of communicating research findings to a school community?
 - iii. What supports are needed to overcome these barriers or challenges?
11. If this evaluation of the Ontario School Food and Beverage Policy and school feedback report were to be designed and conducted again, what would you like to see done differently?
- a. Let's talk about the study itself first. (Full study: *student online survey, environmental scan and healthy school planner survey OR FES-only: environmental scan and healthy school planner survey*).
 - i. Why?
 - b. Next let's talk about the school feedback report. What would you have changed?
 - i. Why?

That concludes the list of questions I have for you. Thank you for your time and participation. Are there any questions you had in mind that I did not ask? Would you like to add anything? Do you have any questions for me? Thank you again.

Appendix D: Study #3 Codebook

Theme	Related interview question	Subthemes	Definition
Familiarity with the report	Please describe your level of familiarity with this school feedback report.	Familiar with report	The interviewee knows about the report, has read or reviewed it prior to the interview.
		Somewhat familiar	The interviewee remembers receiving the report, but doesn't know everything about it OR has seen the report before and describes familiarity as 'somewhat.'
		Not familiar	The interviewee has not seen or read the feedback report prior to the interview.
Format	What did you like about the report?	Graphics	The interviewee comments that they liked the colour, graphs, and charts of the report.
		User-friendly	The interviewee comments that the report was easy to read, user-friendly, or that the information was presented well.
	What didn't you like about the report?	Format wasn't easy to share	The interviewee comments that the way the information was received did not make it easy to share the information with colleagues or the community.
		Too much colour	The interviewee did not like the range of colours used.
Contents	What did you like about the report?	Continuum	The interviewee liked that they knew where their school stood along the Healthy School Continuum.
		Provided new information	The interviewee liked that the report provided new information about their school food environment. This also includes the codes of: accuracy of information (liked that it was a true reflection of their school)
		Student responses	The interviewee liked that there was a section dedicated to reporting what students thought about the policy.
		Tips and tools	The interviewee liked that last page of the report, which was a list of local, provincial, and national supports available to their school.
	What didn't you like about the report?	A lot of information	The interviewee didn't like that there was a lot of information presented in the report.
		Error in data	The interviewee didn't like that there was an error in the data

			(the data did not reflect their school).	
		Question credibility of evidence	The interviewee was unsure about the credibility of the evidence, that there were some odd questions (questions that may not be appropriate or reflective of elementary school students' diets) or they were unsure of how the sample size/grouping was selected. Interviewees may have commented this methodology may have limited study outcomes.	
		Continuum	The interviewee did not like the Healthy School Continuum or the rating their school received.	
		Wanted more prescriptive goals	The interviewee didn't like that there wasn't an exact list or action plan that their school could follow in order to enact change.	
		Nothing	The interviewee could not identify anything they disliked about the report.	
	<i>Discussed through the interview</i> Overall impression	Surprised at results	In relation to being <i>provided with new information</i> , interviewee was surprised or shocked at results.	
		Not surprised at results	In relation to the overall presentation of results, interviewees were not surprised at the current status of healthy eating behaviours/environment in the school.	
		Eye Opener	The report contents were a reminder of the current state of healthy eating in the school.	
Relevance	<i>Discussed throughout the interview</i>	Relevant to school, province, Canada	The interviewee comments that the information is relevant to the school, but also to the situation occurring across the province and Canada.	
		Information is relevant	To know where we stand	The interviewee reports that information in the report is a reflection of the school food environment, and reflects the current situation.
	<i>Discussed throughout the interview</i>	But have made a lot of change that weren't reflected	The interviewee notes that a lot of change has occurred within the school food environment since the release of the report; which was therefore not reflected in the report.	
		Not all information is relevant	Not relevant to our school	The interviewee did not believe the information was relevant to their school or school community.
		Relevant only at the	The interviewee commented that information presented did not	

		time	reflect the current status of healthy eating promotion at the school and really only identified the environment the year prior.
		Relevant to class, maybe not whole school	The interviewee commented that because it was only a subset of grades sampled, the information was not relevant to the whole school.
		School has competing priorities	The interviewee commented that healthy eating is important but not realistic, because there are bigger, more important priorities the school needs to focus on.
		Only by chance	Interviewee reports if the information presented in the report is relevant, its only by chance.
Importance	<i>Discussed throughout the interview</i>	Don't know	The interviewee didn't know what the most important piece of information was.
		How we can make improvements	The interviewee commented the most important piece of information was how the school can make changes to their school food environment.
		Opportunities and challenges	The interviewee commented the most important piece of information was knowing what the opportunities and challenges were in their school related to the promotion of healthy eating.
		Positive role modelling	The interviewee commented the most important piece of information was having to make a change to ensure teachers were positive role models
		Student eating habits	The interviewee commented the most important piece of information was knowing what student dietary habits were.
		Supports for schools	The interviewee commented the most important piece of information was learning where to gather support in order to make changes and/or reinforce changes already made.
		The Continuum	The interviewee commented the most important piece of information was knowing where the school stood along the Healthy School Continuum.
	<i>Discussed throughout the interview</i>	Don't know	The interviewee didn't know what the least important piece of information was within the report.
	Least important	Canada's Food Guide	The interviewee comments that teachers/staff know where to get Canada's Food Guide from and so this information is not

			useful.
		Eating behaviours outside of the school	The interviewee commented the least important piece of information was knowing what students were eating outside of the school. Focus here was on parental responsibility and a feeling that the school could not impact home life.
		Nutrition messaging	The interviewee commented the least important piece of information was the recommendation to bolster nutrition messaging in the school.
		Rating on Continuum	The interviewee commented the least important piece of information was knowing their school's rating along the Healthy School Continuum.
		Role modelling	The interviewee commented the least important piece of information was the recommendation for teachers to be role models for healthy eating.
		Student opinion	The interviewee commented the least important piece of information was knowing what the students thought of the policy.
		Study methodology	The interviewee commented the least important piece of information was the background information about the study methodology (background, purpose, sampling, etc.).
		Nothing	The interviewee commented that nothing was the least important; that all information presented was important.
Sharing the report	Did you share the school feedback report?	Shared with...	The interviewee reported sharing the report with...[child codes] <ul style="list-style-type: none"> • Food service provider • Healthy school committee • Principal • Teachers • PHN
	<i>Or discussed throughout</i>	Not shared...	The interviewee reported they had not shared the report with the school PHN because...[child codes] <ul style="list-style-type: none"> • Change over with PHN staff person: <ul style="list-style-type: none"> • Had no PHN assigned to their school • There was turnover with the PHN

			<ul style="list-style-type: none"> • The time of the year the report was received, they were not connected to a PHN • Poor communication between school and PHN: <ul style="list-style-type: none"> • Did not connect with the PHN • Did not respond to the PHN who requested a meeting • There was poor communication with the PHN • No Time <ul style="list-style-type: none"> • There was no time to connect with the PHN • No need to share <ul style="list-style-type: none"> • Didn't think the PHN could help (questioned competency) • There was no need to share, because the report was straight forward • Only shared with certain parent groups • PHN Priorities <ul style="list-style-type: none"> • The PHN did not share the report because they had their own competing priorities (e.g., other pilot projects to work on)
		Future sharing...	<p>The Interviewee reported it was important to share the report, and would, in the future, share the report with:</p> <ul style="list-style-type: none"> • Administration • Hospital teacher • Nutritionist • PHN • Teachers • School council • Food service provider • Parents
Use of the report	<i>Described throughout the interview</i> Did the information in	Heightened Awareness	The interviewee described the information was used to heighten the awareness of teachers, staff, and administrators related to healthy eating behaviours of their students. The information was used as a reminder of the importance of healthy eating.

	the report facilitate any changes to the school's approach to healthy eating?	Informed initiatives	The interviewee reported the information was used to inform the development and/or reinforcement of healthy eating practices, promotions, and programs at their school. This included: informing the newsletter/website, the formation of a club, the formation of new partnerships, or the formation of a nutrition program.
		Helped focus planning	The interviewee described the information helped decided what changes were going to be made to the school food environment in the next few months/years.
		No changes, but...	The interviewee described that the information was not used to make any changes at their school, but would like to use the report in the future to make a change.
		No change	The interviewee described reasons for why changes weren't made. These included: <ul style="list-style-type: none"> • Being a new school and focussing on other priorities • It was not the responsibility of the school to make changes to student dietary behaviours but that of parents and/or the school board • Had just received the report • The interviewee was not in charge and did not have the power to make a change • There was no follow-up by the school or the PHN to facilitate a change • The PHN was excluded or not involved in healthy eating initiatives • The PHN thought the report could be used in a better manner
In order to make changes	<i>Discussed throughout</i>	Buy-in from stakeholders	Interviewees discussed the need for buy-in by specific stakeholder groups including [child codes]: <ul style="list-style-type: none"> • Administration • Cafeteria • Parents • Staff

			<ul style="list-style-type: none"> • Students • School board • Nursing
		Change in the education system	The interviewee described a need to embed policy learnings into the curriculum so students were consistently aware of P/PM 150 teachings
		Change to school culture	<p>The interviewee commented on a need to change the way the school operated including:</p> <ul style="list-style-type: none"> • Addressing competing priorities (that would outweigh or dismiss healthy eating) • Embed healthy eating into the school action plan
		Consider context	In order to make change the interviewee described unique aspects of the school environment that must be taken into consideration related to the school context.
		Funding	Interviewees reported that in order for a change to occur more funding was needed.
		Have a key contact person	Related to discussions regarding champions and school principals as the gatekeeper, important to have one person that remains consistent form year to year who is dedicated to healthy eating.
		More time	In order to make a chance, school representatives required more time.
Information and resources to include in the future	<i>Discussed throughout</i>	Examples from other schools	Interviewees commented that they would like to see ideas or examples from other schools who were in the Maintenance stage, or ideas on how they incorporate healthy eating into the school day.
		Focus on what can be done at school	While out-of-school healthy eating behaviours are important, interviewees commented that the reports should focus on the behaviours that schools can actually have an impact on (i.e., lunch and breakfast)
		Funding opportunities	Interviewees wanted to learn where they could get funding from
		Improved timing	Interviewees commented they would like to have a better idea

			of when feedback reports would be received
		Include stakeholders	Interviewees wanted to include stakeholders in the development and review of the report.
		Like to see study repeated	Interviewees described which components of the study they would like to see repeated and which new aspects they would like to see added.
		More detailed information	Interviewees wanted to see more information particularly linked to their school.
		More prescriptive recommendations	Interviewees wanted more supports and/or more prescriptive goals for their school to work towards.
		Nutrition program information	Interviewees wanted to know more information about school nutrition programs.
Preference on how to receive reports	In your opinion, how would you prefer to receive the research findings?	Consultation	Interviewees wanted to sit down one-on-one with the researcher and/or PHN to review the results of the report.
		Electronic	Interviewees preferred to receive an electronic version of the report.
		Electronic and hard-copy	Interviewees wanted both an electronic copy and a paper copy of the feedback report.
		Paper	Interviewees preferred to receive a paper copy of the report.
		Presentation	Interviewees wanted a formal presentation provided to them and specific stakeholder groups.
Lessons Learned	<i>Discussed mostly in PHN interviews</i> How to make changes for the future?	Build a relationship	PHNs commented that they required a strong relationship between themselves and the school contact person in order to approach with an action plan for change.
		Work collaboratively	PHNs commented that this was not a one-sided conversation, but change needed to happen through collaboration.
		Make results personable	PHNs discussed making the results appealing to schools; that results could not be negative.
		Benefits as a PHN Tool	PHNS commented on how these feedback reports are helpful in their line of work.

Appendix E: CSH Pillars and Key Indicators

Level of Support for CSH Pillar Indicators

CSH Pillar		Low/decreased support # of schools (%)	Moderate support # of schools (%)	High/increased support # of schools (%)
Supportive Social Environment Overall		17 (56%)	2 (8%)	6 (24%)
Supportive Social Environment indicators	Priority for healthy eating within the school ¹	10 (48%)	5 (24%)	6 (29%)
	Initiatives that promote the availability of healthy food choices ²	14 (58%)	-	10 (42%)
	Encouragement for family members to support and reinforce healthy eating education at home	20 (80%)	-	5 (20%)
	Collection of formal suggestions from school community members about healthy eating at the school ²	14 (58%)	1 (4%)	9 (38%)
Healthy Physical Environment		-	-	25 (100%)
Healthy Physical Environment indicators	Student access to a pleasant and safe eating area	-	-	25 (100%)
	Sufficient time allocated for eating, including time for travel, clean-up and socializing	-	-	25 (100%)
	Promotion of healthy foods available in school food venues (i.e., cafeteria, vending machines, tuck shops)	-	-	25 (100%)
Teaching and Learning		1 (4%)	17 (68%)	7 (28%)
Teaching and Learning indicators	Diverse, inclusive approaches to implementing healthy eating within the educational curriculum	2 (8%)	17 (68%)	6 (24%)
	Incorporating healthy eating into other school subjects	8 (32%)	8 (32%)	9 (36%)
Healthy School Policy		7 (28%)	2 (8%)	16 (64%)
Healthy School Policy Indicators	Presence of written policies or formal practices that support healthy eating	7 (28%)	2 (8%)	16 (64%)
Partnerships and Services		11 (44%)	5 (20%)	9 (36%)
Partnerships and Services Indicators	Support and resources are available for school staff	15 (60%)	-	10 (40%)
	The school is connected to community resources	12 (48%)	-	13 (54%)

¹ 4 schools did not answer this indicator question in either Phase I or Phase II

² 1 school did not answer this question in Phase II

School Nutrition Programs

Nutrition Program Indicator	Number of Schools (%)
Breakfast programs	
¹ Presence of a school nutrition program in both phases	9 (36%)
¹ Started a school nutrition program in Phase II	2 (8%)
If applicable, availability of school nutrition programs (days)	1, 2 or 5
If applicable, accessibility of school nutrition programs	10 (40%)
If applicable, frequency of school nutrition program review	11 (44%)
Lunch Programs	
¹ Presence of a school nutrition program in both phases	1 (4%)
¹ Started a school nutrition program in Phase II	2 (8%)
If applicable, availability of school nutrition programs (days)	1, 4 or 5
If applicable, accessibility of school nutrition programs	1 (4%)
If applicable, frequency of school nutrition program review	3 (12%)
Snack Programs	
¹ Presence of a school nutrition program in both phases	1 (4%)
¹ Started a school nutrition program in Phase II	1 (4%)
If applicable, availability of school nutrition programs (days)	1 or 3
If applicable, accessibility of school nutrition programs	2 (8%)
If applicable, frequency of school nutrition program review	2 (8%)

¹Not a key indicator, but required to document applicability of remaining three Teaching and Learning indicators

Appendix F: School Feedback Reports

Phase I Cover Letter

Phase I School Feedback Report Cover Letter to School Representative

The Evaluation of the Ontario School Food and Beverage Policy (P/PM150) in Region of Peel Schools: School Feedback Report

Date,

Dear *School Contact Person,*

In *Month of Year*, *School Name* participated in the evaluation of the Ontario School Food and Beverage Policy (P/PM150) study conducted by Peel Public Health and University of Waterloo.

Number of Students from *School Name* returned parental consent forms and agreed to participate in an online 24-hour dietary recall survey. In addition, a representative from your school completed a Healthy School Planner Survey and assisted a University of Waterloo researcher in completing an environmental scan of the school. The attached report outlines the results from these study components.

The report highlights areas of strength and those that need improvement and provides a list of supports to address any challenges your school may face in implementing and maintaining P/PM150. With your permission, we would like to have your school's Public Health Nurse, *PHN Name*, discuss the report to a school representative, administration personnel, wellness committee and/or parent-teacher council. With the help of your Public Health Nurse, this report can be used to improve healthy eating practices, programs and policies at *School Name*.

For any questions regarding the content of the report and/or to grant permission for your Public Health Nurse to view the report, please contact Taryn Orava (University of Waterloo) at taorava@uwaterloo.ca or 289-221-1814 or Catherine Brown (Peel Public Health) at Catherine.Brown@peelregion.ca or 905-791-7800 x 2081.

Thank you for time and participation.

Sincerely,

Peel Public Health & the University of Waterloo

Secondary School Report

Results from the Evaluation of P/PM150 with a Secondary School in 2013

**100 students participated
in this study (pg 1)**

**Most participants did not
meet minimum Food
Guide recommendations
for Vegetables and Fruit
(50%) or Milk and
Alternatives (50%)
(pg 2)**

**10% of participants
reported eating salty
snacks at least once a day
(pg 3)**

**Pizza was the most
popular choice of food
purchased at school (50%)
(pg 4)**

**Only 50% of participants
reported eating breakfast
every day
(pg 6)**

**Supports for School
Nutrition
(pg 10)**

THE STUDY:

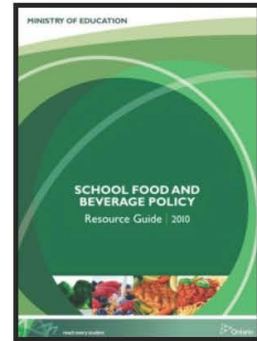
In spring 2012, Peel Public Health in collaboration with the University of Waterloo, initiated an evaluation of the Ontario School Food and Beverage Policy, P/PM 150. The study received ethics approval from the University of Waterloo, the Dufferin–Peel Catholic District School Board and the Peel District School Board.

To date over 2000 students and 31 schools from Mississauga, Brampton and Caledon have participated in this study. This study aims to better understand the eating behaviours of students and to assess the impact of the policy in Region of Peel schools.

Research components consist of:

- 1) an online food behaviour survey with a sample of grade 6–10 students;
- 2) a scan of the school food environment;
- 3) qualitative focus groups and interviews with key informants.

Work together with your Public Health Nurse to apply the results within your school community. All results will be collated into a final report to help inform Peel Public Health, the school board and the community about healthy eating and the impact of the policy. Visit edu.gov.on.ca/eng/healthyschools/policy.html for more information on the policy.



WEB-BASED SURVEY PARTICIPANT CHARACTERISTICS:

Grade	
9	50 (50%)
10	50 (50%)
Sex	
Female	50 (50%)
Male	50 (50%)
Average Age	
	15 ± 0.5 years
Total Participants	
	100

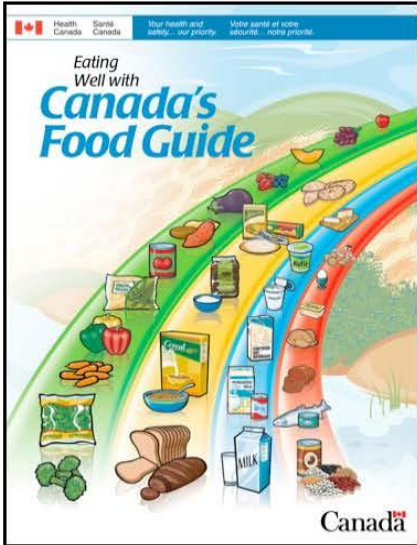
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**SCHOOL OF PUBLIC HEALTH
AND HEALTH SYSTEMS**

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Working for you
Public Health

DIET RECALL

Canada's Food Guide recommends the number of food group servings that Canadians need daily.



“How much do youth need everyday?”

	AGES 9 - 13	AGES 14 -18	
	Males & Females	Males	Females
Vegetables and Fruit	6	8	7
Grain Products	6	7	6
Milk and Alternatives	3-4	3-4	3-4
Meat and Alternatives	1-2	3	2

To order copies of Canada's Food Guide for your school visit:
hc-sc.gc.ca/fn-an/food-guide-aliment/index-eng.php

Failing to Meet Minimum Recommendations

Participants were asked to complete a recall of foods and beverages eaten the previous day.

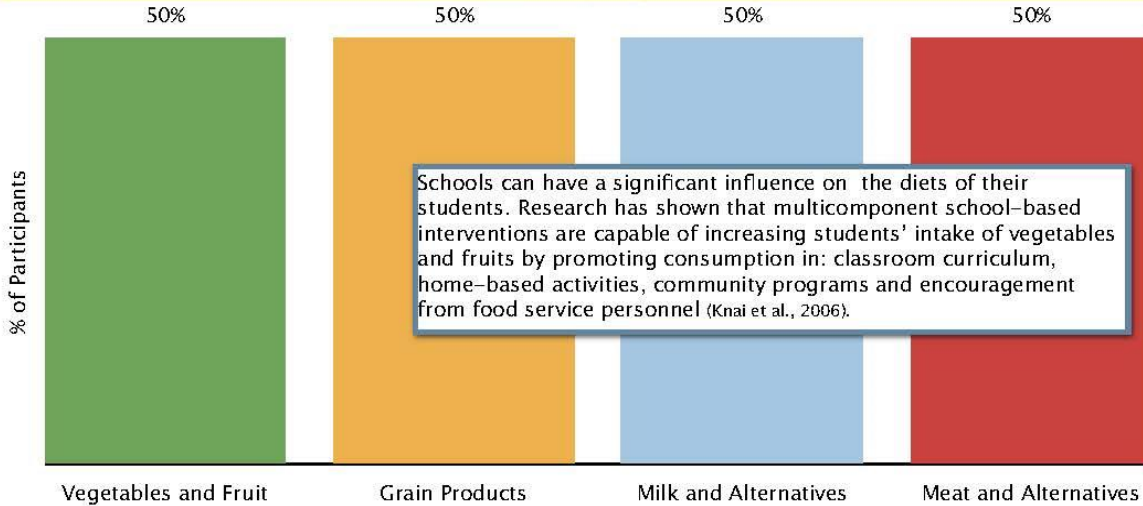


Figure 1: Percentage of participants who reported eating less than the minimum recommendations for each food group (N=100)

FOOD FREQUENCY

Participants were asked to record how often they ate or drank specific foods and beverages.

How often do you eat...?

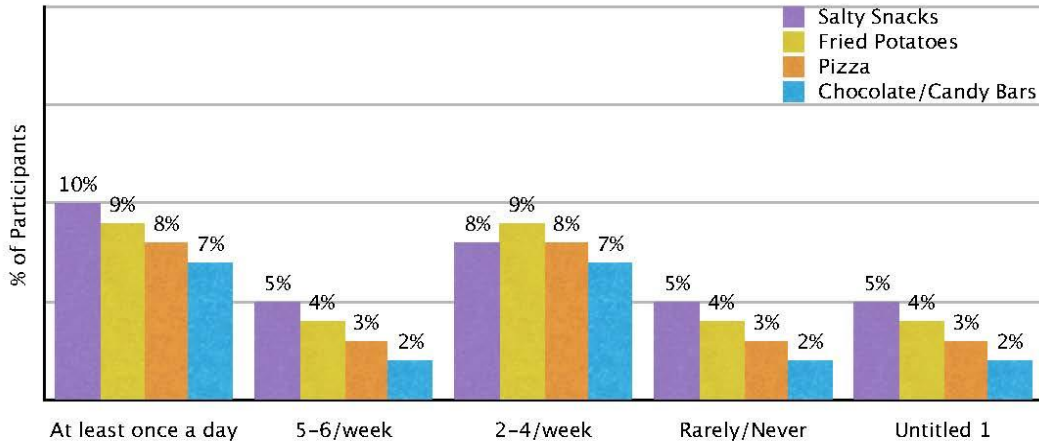


Figure 2: Frequency of consumption: salty snacks, fried potatoes, pizza or chocolate/candy bars (N=100)
Excluded from the above figure are the percent of participants consuming foods 2-4/month.

How often do you drink...?

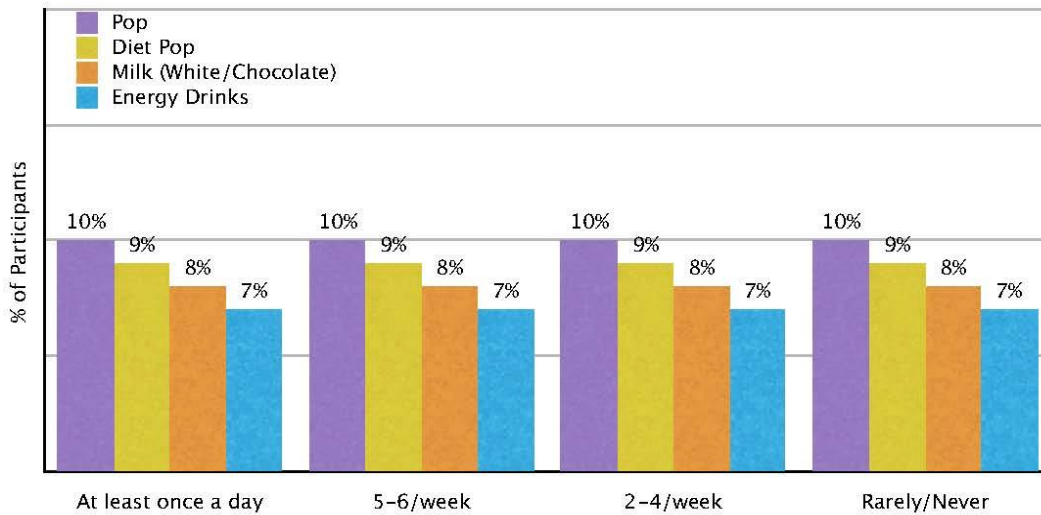
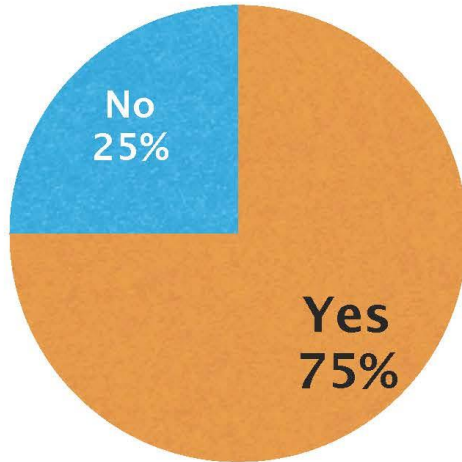


Figure 3: Frequency of consumption: pop, diet pop, milk (white/chocolate) or energy drinks (N=100)
Excluded from the above figure are the percent of participants consuming beverages 2-4/month.

FOODS AT SCHOOL

Participants were asked a series of questions related to buying foods during and after school.

Do you buy food at school?

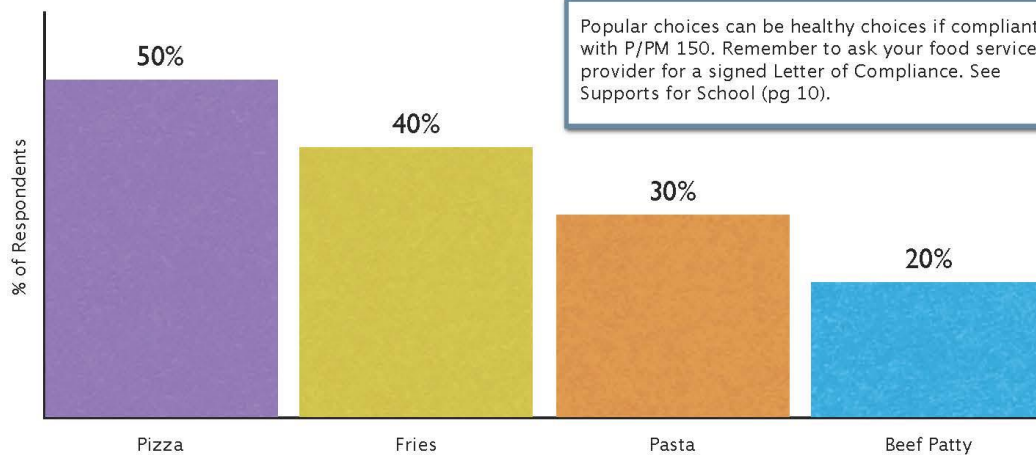


Most participants ate lunch at school (80%) or at home (20%).

Most participants ate lunch with friends (80%) or with their parents/guardians (20%).

Figure 4: Percentage of participants who reported purchasing foods at school (N=100).

If you buy food at school, what do you buy?

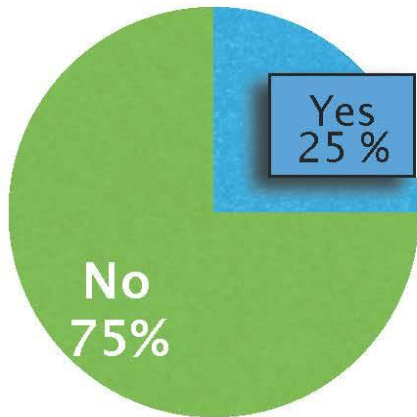


Popular choices can be healthy choices if compliant with P/PM 150. Remember to ask your food service provider for a signed Letter of Compliance. See Supports for School (pg 10).

Figure 5 : Popular choices of the 75 participants (75%) who said they purchased food at school

FOODS AT SCHOOL CONTINUED

Do you ever buy food during the school day at a restaurant or take-out?

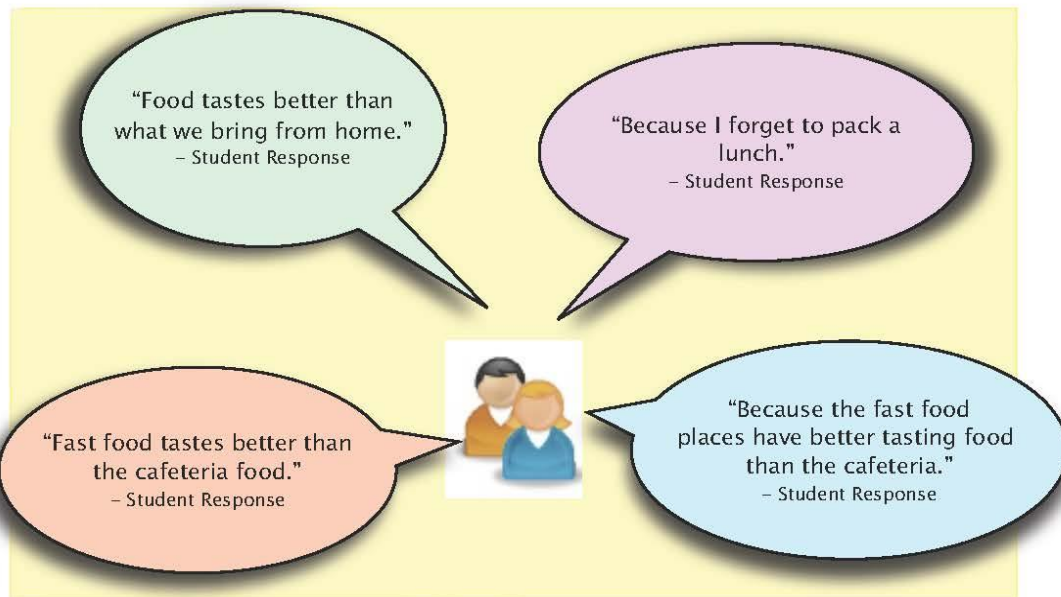


25 students reported they purchased foods off school property:

12 students said they purchased food at least once a week.

Figure 6: Percentage of participants who reported purchasing foods off school property (N=100)

Why do you choose to buy food or drinks at a restaurant or take-out during the school day?



EATING BEHAVIOURS

Students were asked a series of questions related to their typical eating habits and behaviours.

How many days per week do you eat dinner with at least one parent?

Research has found that children who share family meals at least three times a week are more likely to be in a healthy weight range, have a healthier diet and are less likely to have disordered eating compared to those who share less than three family meals a week (Hammons & Fiese, 2011). Visit Peel-Obesity.ca for information on healthy family meals.



Figure 6: Average number of days participants reported eating with at least one parent (N=100)

Most participants ate dinner at home (80%) or at a restaurant (20%) and with their parents (40%), siblings (35%) or own their own (25%).

BREAKFAST

Only 50% of participants ate breakfast everyday.

Research has linked regular, versus infrequent, breakfast consumption in children and teens with healthier body weight and better academic performance (Rampersaud et al., 2005).

Breakfast for Kids serves over 13,000 children across Peel Region. Visit breakfastforkids.ca for more info.

How often do you eat breakfast?

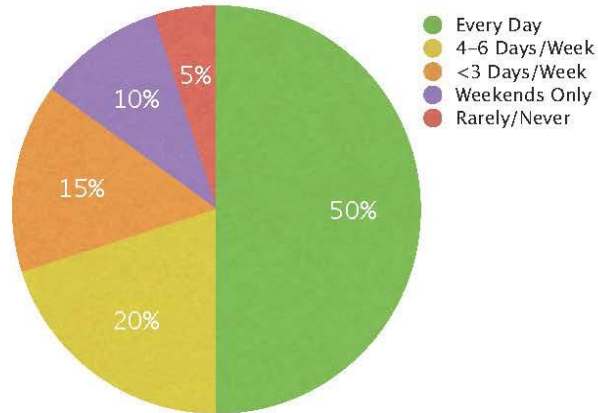


Figure 7: Frequency of breakfast consumption among participants (N=100)

EATING BEHAVIOURS CONTINUED

Students were asked where their food was prepared.

How often do you eat meals or snacks prepared away from home?

Of the participants who ate foods prepared away from home at least once a week: fast food (30%), cafeteria (30%) and other restaurants (30%) were used by a greater percentage compared to tuck shops (30%), convenience stores (30%) and vending machines (30%).

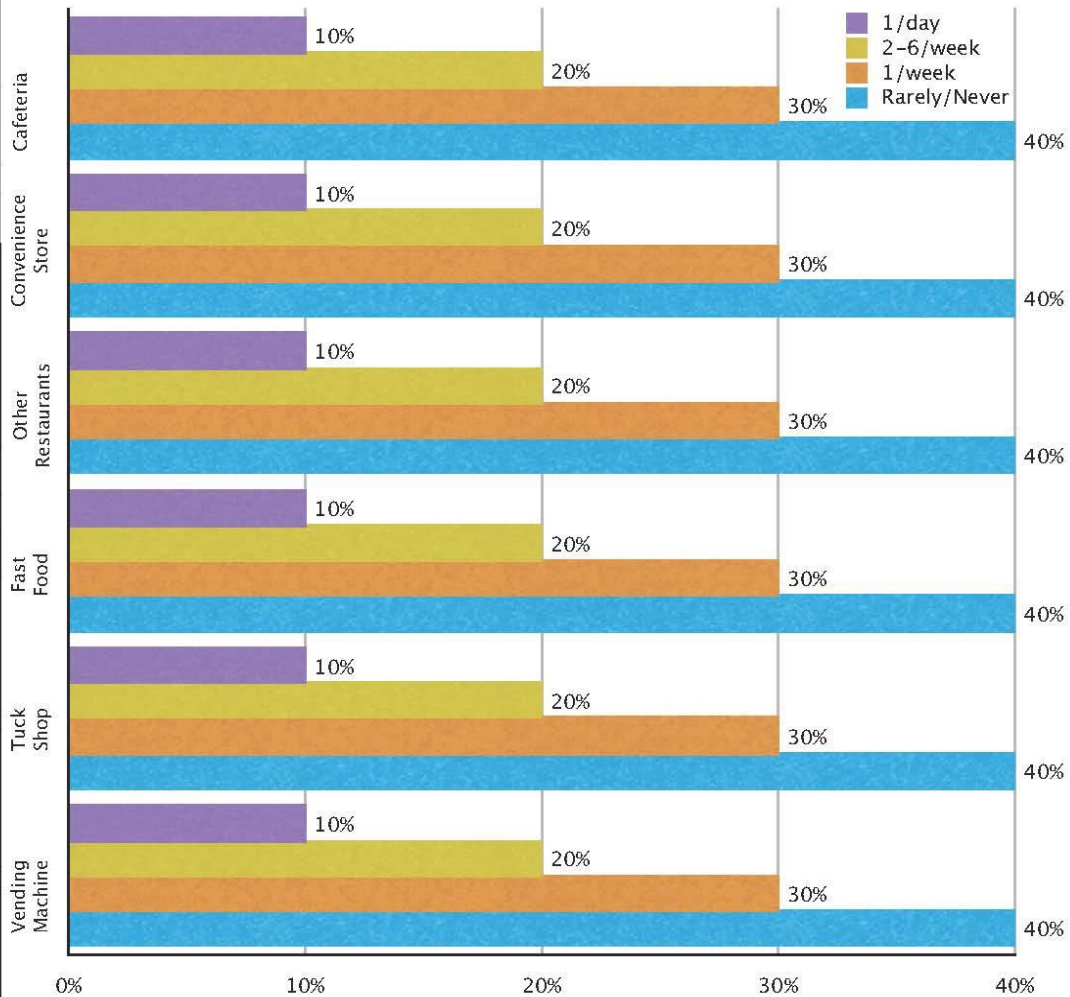


Figure 8: Frequency and percentage of participants eating foods prepared away from home (N=100). Excluded from the above figure are the percent of participants consuming foods 1/month.

SCHOOL FOOD ENVIRONMENT

HEALTHY SCHOOL PLANNER:

A representative from your Secondary School completed the Healthy School Planner, a tool to assess the inclusion of healthy eating in the school's social and physical environments. Figure 9 depicts where your school fits along the Healthy School Continuum based on your results. This Continuum reflects the dynamic nature of schools and emphasizes the importance of ongoing reassessment and programming to meet the school community's changing needs. Contact your Public Health Nurse to work together to move your school's healthy eating programs and policies into the maintenance phase on the Healthy School Continuum.

The school's phase on the Healthy School Continuum with respect to healthy eating is...

ACTION

Healthy School Continuum

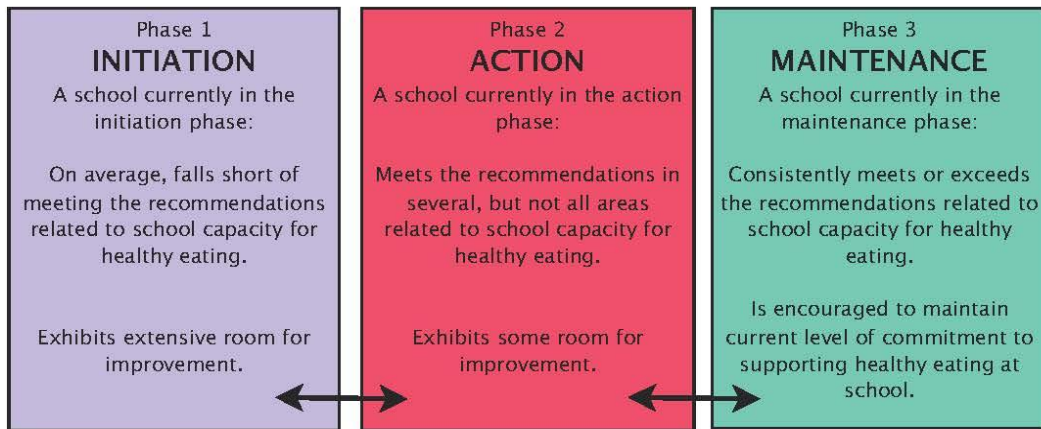


Figure 9: Your Secondary School falls within the ACTION phase on the Healthy School Continuum.

Using the Foundations for a Healthy School Approach can have a positive influence on learning and classroom behaviour as well as decrease the risk of students developing nutrition-related diseases (Veugelaers & Schwartz, 2010).

Visit edu.gov.on.ca/eng/healthyschools/foundations.html for more information on Foundations for a Healthy School.

TIPS FROM THE HEALTHY SCHOOL PLANNER

Based on the results from the school environmental scan, below are tips and tools that can assist your school in moving to the maintenance phase on the Healthy School Continuum.

OPPORTUNITIES AND CHALLENGES	TIPS AND TOOLS
Nutrition Messaging:	To promote healthy eating throughout your school, visit peelregion.ca/health/shp/nutrition-campaign/ to find resources from the Great Lunches for Schools nutrition campaign.
Professional Development:	In the new school year, take the opportunity to share details of P/PM150 through Ministry of Education's six video module available at hs.curriculum.org/sb/ . This is a great resource for professional development and staff meetings.
Student Health Action Team:	Encourage your Health Action Team to visit the Peel Public Health Website for ideas on healthy eating assemblies, contests, announcements and newsletter inserts. peelregion.ca/health/baew/help-your-school/promoting/index.htm
Student Nutrition Programs:	Students need to eat well to learn well; however, many do not come to school well-nourished. Use the Student Nutrition Program Action Guide assist you as d'Youville CSS starts a healthy breakfast program. nutritiontoolsforschools.ca
Healthy Tuck Shop:	A healthy tuck shop lets students enjoy nutritious snacks as well as their lunch – and can make money for your school! For more guidelines on healthy tuck shops use the Healthy Tuck Shops Action Guide available at nutritiontoolsforschools.ca

STUDENTS' OPINIONS OF P/PM150

Participants were given the opportunity to voice their opinions of the School Food and Beverage Policy.

Fifty participants (50%) wrote down their thoughts on the new policy.

20% (n=20) had mixed feelings of the policy.

"It's a good thing, but there should be some junk food."

30% (n=30) were in favour of the policy.

"I feel confident about their decision because they're thinking about our health."

50% (n=50) were not in favour of the policy.

"It shouldn't be there because if students are worried about their health, they would take matters into their own hands."

SUPPORTS FOR SCHOOLS

Nutrition Tools for Schools

Nutrition Tools for Schools® (NTS) is an online community and an interactive, web-based resource for Ontario schools. Register for free to get tips, tools and ideas to create a healthy nutrition environment in your school! Visit nutritiontoolsforschools.ca today!

School Food and Beverage Policy Resources

Peel Public Health offers:

- Fundraising fact sheet
- Bake It Up! (pdf) booklet – recipes for baked goods that comply with the policy
- Nutrition Standards Tool – to help assess school food and beverages
- Creating Healthy Menus Tool – to help develop menus from “scratch” using individual ingredients or pre-made foods
- Videos and Modules – to guide you through the policy

schoolhealth101.ca/action

EatRight Ontario

Find resources and information about healthy eating in schools. Phone 1-877-510-5102 or visit Eatrightontario.ca

OPHEA

OPHEA provides schools with quality program supports to enable children and youth to lead healthy active lives.

ophea.net

School Board Supports

Consult your board website for more links and supports.

dpcdsb.org/cec/Programs/Healthy+Food

Being Active and Eating Well – Food and Beverages (Peel Public Health)

Information and tips on how you can promote healthy eating in the classroom, school environment and to parents through words and actions. schoolhealth101.ca/action

School Health 101 – A Teacher's Resource

A portal for elementary and secondary school educators to access Peel Health resources and information in order to support teaching, school wide activities and outreach to the larger school community. schoolhealth101.ca

Your school Public Health Nurse is your best resource...

Your school Public Health Nurse follows the Healthy Schools Approach and works with staff, students, parents and the community to create supportive environments for healthy living. Your school Public Health Nurse can help you form a committee to plan, implement and evaluate activities that create supportive environments for healthy living. Call 905-791-7800 or visit SchoolHealth101.ca

References

Hammons & Fiese, 2011, Pediatrics: 127(6):e1565–e1574.
Knai, Pomerleau, Lock & McKee, 2006. Preventive Medicine, 42:85–95.
Rampersaud et al., 2005, Journal of the American Dietetic Association 105(5):743–760.
Veugelers & Schwartz, 2010, Canadian Public Health Association, Volume 101(8):S5–S8.

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Phase II Cover Letter

An Evaluation of the Ontario School Food and Beverage Policy (P/PM150) in Region of
Peel Schools: School Feedback Reports

November #, 2014

Contact
Name Street
Address City,
Province
Postal Code
Phone
Number:
Email:

Dear Contact Name(s),

Between 2012 and 2014, **School Name** participated in an Evaluation of the *Ontario School Food and Beverage Policy (P/PM150)*. This study was conducted by Peel Public Health in partnership with the University of Waterloo and was made up of two phases. Phase I included: **Phase I Components**. Phase II included: **Phase II Components**.

The attached school feedback reports highlight results from Phase I (**Phase I date**) and Phase II (**Phase II date**) for **School Name**. The reports highlight areas of strength and those that need improvement and provide supports to address any challenges your school may face in implementing and maintaining *P/PM150*. Your school Public Health Nurse, **PHN Name**, will follow up with you to schedule a meeting to discuss the Phase II report. Together with your Public Health Nurse, use this report to strengthen healthy eating practices, programs and policies at **School Name**.

For any questions regarding the content of the Phase I or Phase II reports, please contact Taryn Orava (University of Waterloo) at taorava@uwaterloo.ca or 289-221-1814.

Thank you for time and

participation. Sincerely,

Taryn Orava
PhD
Candidate
School of Public Health and Health
Systems University of Waterloo

Full Name of School

An evaluation of the Ontario School Food and Beverage Policy (P/PM 150)

In 2012, the University of Waterloo partnered with the Peel Public Health to conduct the evaluation of the Ontario School Food and Beverage Policy (P/PM 150) and healthy eating supports in regional schools.

The purpose of this study was to identify and assess the barriers and opportunities faced by schools when implementing P/PM 150. Table I outlines your school's participation in Phase I and Phase II. The responses provided by students and school representatives shaped the contents of this report.

Table I: Participation in Phase I and Phase II

	Student online food behaviour survey	Food Environmental Scan	Healthy School Planner Survey	Interview with school representative
Phase I (Month, year)	✓	✓	✓	Not Offered
Phase II (Month, year)	Not Offered	✓	✓	✓

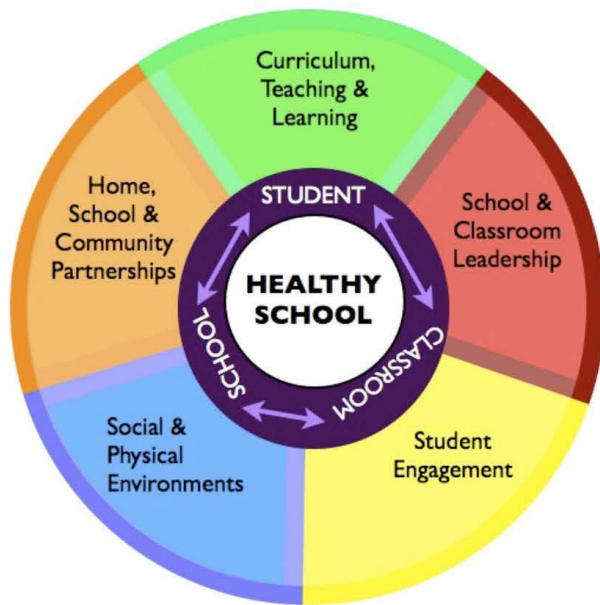


Figure 1: Adapted from the Ontario Ministry of Education's Foundations for a Healthy School framework (2014)¹

The Foundations for a Healthy School Framework

This report presents the overall results of the evaluation for your school. The study findings are guided and presented by the five areas of the Ontario Ministry of Education's Foundations for a Healthy School framework (Figure 1).¹ The framework encourages an integrated approach to healthy eating promotion, incorporating participation at the school, classroom and student levels.

Consider sharing this report with your school public health nurse (PHN) who is available to answer any questions and assist with future planning.

Curriculum, Teaching & Learning

The Curriculum, Teaching & Learning action area ensures your school “offers a wide range of opportunities for students to learn, practice and promote positive and healthy behaviours and to practice how to lead healthy, active lives.”¹(Pg.3)

School Level

The Student Online Survey asked about...

Breakfast at Full School Name

Research has linked regular, versus infrequent, breakfast consumption in children and teens with healthier body weight and better academic performance.³ In 2012, only 65% of students from School Name reported eating breakfast every day (n=49). A comment related to school nutrition programs will be inserted here for each school.

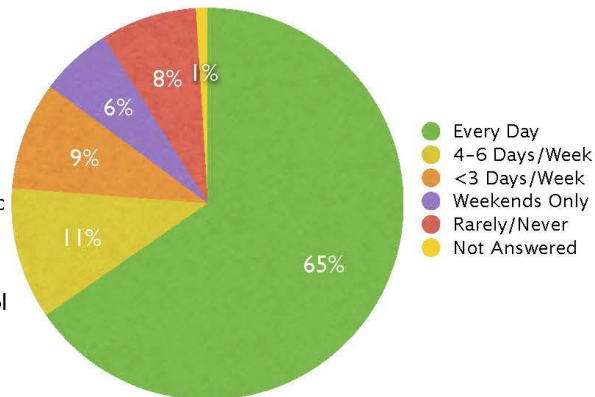


Figure 2: Breakfast consumption for elementary students in School Board Name (692 respondents).

Classroom Level

The Healthy School Planner survey asked...

Does your school offer any of the following?

- Cooking classes
- Gardening (e.g., growing produce)
- Field trips to farms/farmers' markets
- Media literacy on special topics related to healthy eating
- Field trips to the local grocery store
- Canada's Food Guide materials support the healthy eating curriculum
- Healthy eating education integrated into other curriculum areas (e.g., food labels addressed in science)
- Teachers who act as role models for what is taught in the healthy eating curriculum

Student Level

The Food Environmental Scan asked...

Are there opportunities for students to develop food skills or gardening?

Details pertaining food skill and/or gardening at each school will be outlined here.

School & Classroom Leadership

The School & Classroom Leadership area ensures your school “focuses on creating a positive classroom and social environment by identifying shared goals and priorities that are responsive to the needs of the school community.”^(pg. 4) In Phase II (month, year), healthy eating was reported to have a very high priority at Full School Name.

School Level

The Food Environmental Scan asked...

During Phase I and Phase II, what kind of P/PM 150-related training and/or resources did school staff receive and/or use?

Partnerships	Phase I (year)	Phase II (year)	Examples from Your School
A school representative participated in a consult with a school public health nurse or dietitian.	✓		In 2012, the PHN worked alongside the student group to facilitate healthy eating promotions and events (e.g., the Big Crunch).
A school representative attended a workshop or training related to P/PM 150.	✓		In 2012, a teacher and principal attended P/PM 150 training at School Board Name.
A school representative referenced P/PM 150 resources to keep up-to-date.	✓	✓	In 2012, the Ministry of Education provided written materials and in 2014, staff referenced the OPHEA and Dietitians of Canada websites.

The Food Environmental Scan asked...

How many exemption days were used in Phase II?

8

Each school is allotted 10 exemption days from P/PM 150 within the year. Your school used exemption days in Phase II for events such as: the Halloween dance, charity bake sale and school open house.

The Healthy School Planner survey asked...

How are P/PM 150 standards shared with the school community?

- Written in the school handbook
- Written in the school newsletter
- Written in the student agenda
- Discussed at meetings (e.g., staff meetings, professional development days, assemblies, school council)
- Posted on school website
- Posted in the school
- Distributed via email

Did you know that your school public health nurse can help you set school-wide SMART goals for healthy eating priorities? (See pg. 9)

Student Engagement

The Ontario Ministry of Education refers to Student Engagement as "...the extent to which students identify with and value their learning; feel a sense of belonging at school; and are informed about, engaged with and empowered to participate in and lead academic non-academic activities." ¹(pg. 4) In Phase II (Month, year), your school reported having a Student Health Action Team, which the Joint Consortium for School Health indicates, is a strong basis for instigating and sustaining a shift in healthy eating behaviours.²

School Level

Senior Students Promoting Healthy Eating

In 2012, a group of grade seven and eight students came together to introduce younger students to a variety of fruits and vegetables. The members of this group developed posters, made announcements and held speciality fruit days. For example, each student was asked to bring a banana for "Banana Day." The group explained the health benefits and fun facts about bananas. Students really liked it and were engaged in learning about bananas. Way-to-go Full School Name students!



Student Level

The Student Online Survey asked...

What do you think of a policy that only allows schools to sell healthy food?

In 2012, ### students from School Name/
School Board provided their opinion on
PPM 150 standards at their school.

% (n=) reported they agreed with the
policy.

Examples from their school/school board/
school level will be included.

% (n=) reported they had mixed
feelings towards the policy.

Examples from their school/school board/
school level will be included.

% (n=) reported they disagreed with the
policy.

Examples from their school/school board/
school level will be included.

Social & Physical Environments

The Ontario Ministry of Education encourages your school to "...support learning and contribute to the positive cognitive, emotional, social and physical development of students."¹(pg.4) The University of Waterloo researchers examined both the internal (e.g., classroom, school food venues) and external (e.g., fast food restaurants, convenience stores) environments of your school.

School Level

The Food Environmental Scan asked...

What does P/PM 150 look like at Full School Name?

The photos below show: "Ticker," a heart mascot who reminds students to be active and eat well; and P/PM 150-compatible pizza that is enjoyed by several students at Full School Name.



Community Level*

According to 2012 Geographic Information Systems (GIS) mapping information, there was one convenience store and three fast food locations where students can purchase food within a 500 m radius of the school. Within a 1000 m radius, there were four convenience stores and four fast food locations, and within 1500 m of the school, there were 12 convenience stores and 17 fast food locations.

*The number of food outlets surrounding the school are outside the scope of the Foundations for a Healthy School framework, but education and school policy can influence student access.

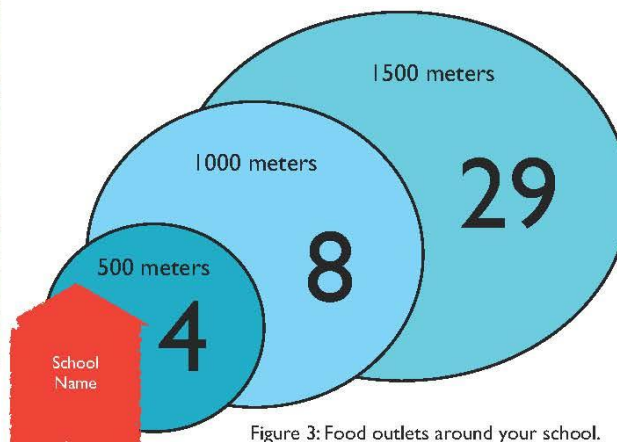


Figure 3: Food outlets around your school.

Home, School & Community Partnerships

The Ontario Ministry of Education encourages your school to ...“engage parents, extended family, school staff, child care and family support programs and community groups in a mutually beneficial way to support, enhance and promote opportunities for learning and well-being.”¹(pg. 4)

School Level

The Healthy School Planner survey asked...

Has your school sent home any educational materials to provide the opportunity for parents/families/guardians to learn about any of the following healthy eating topics?

- Eating Well with Canada's Food Guide
- Culturally diverse food
- Healthy snacks and lunch suggestions
- Influence of screen time on child's health (e.g., TV, computer and video games)
- Promotion of positive self-body image

The Healthy School Planner survey asked...

In Phase II, did your school meet with and/or discuss healthy eating promotion with any of the following groups?

- Parents' organizations (e.g., school council)
- Families/parents/guardians
- Students
- School staff

The Role of Your School Public Health Nurse

Your school public health nurse (PHN) can play a significant role in the formation of community partnerships.



Supports for Full School Name

Peel Public Health

schoolhealth101.ca
(905) 799 - 7700

OPHEA

Ontario Physical Education and Health Education Association (OPHEA) provides schools with quality program supports to enable children and youth to lead healthy active lives. ophea.net

School Board Supports

Consult your board website for more links and supports. (WILL DEPENDENT ON SCHOOL BOARD)

Bake It Up!

EatRight Ontario's Bake It Up! cookbook provides over twenty P/PM 150-compliant recipes for classroom celebrations, school events or fundraisers. Download your free copy at [eatrightontario.ca/ today](http://eatrightontario.ca/today)

Serve It Up!

This interactive website helps students, teachers, staff and parents select foods that are compliant with P/PM 150. From entrees, baked goods, side dishes and sauces, Serve It Up! provides healthy, delicious recipes alongside quick nutritional facts. Check it out at edu.gov.on.ca/eng/healthyschools/recipes/recipes.asp

Fundraising Fact Sheet

Peel Public Health offers a Fundraising and Event Planning Form to help your school organize healthy fundraising. Find the resource, alongside other healthy eating supports at peelregion.ca/health/baew/index.htm

EatRight Ontario

Find resources and information about healthy eating in schools. Phone 1-877-510-5102 or visit eatrightontario.ca

Professional Development

As new teachers join your school community, ensure each is knowledgeable of P/PM 150. The Ontario Ministry of Education website offers online modules to help train principals, teachers and staff on P/PM 150 standards. Visit hs.curriculum.org/ for more information.

Nutrition Tools for Schools

Nutrition Tools for Schools© (NTS) is an online community and an interactive, web-based resource for Ontario schools. Register for free to get tips, tools and ideas to create a healthy nutrition environment in your school. Visit nutritiontoolsforschools.ca today!

References

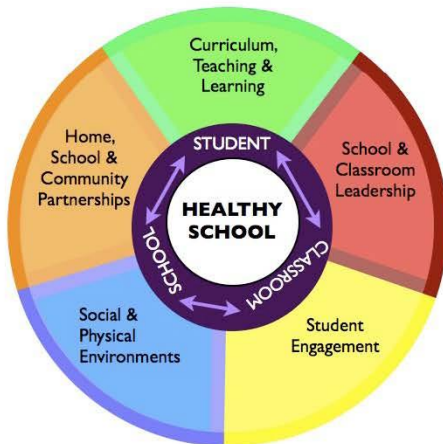
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2. Joint Consortium for School Health. (2014). The Healthy School Planner survey. Retrieved from jcs-h-cces.ca/index.php/about/comprehensive-school-health
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Print this page and bring to your next staff meeting.

What's Next?

Here are the steps your school can take to sustain a healthy eating environment for students.

1	<p>Contact your school's public health nurse. Public Health Nurse: NAME PROVIDED Email: EMAIL PROVIDED</p>
2	<p>Share this report. Be sure to share this report with your: school's staff, PHN, parents, community partners and of course, students (e.g., Student Health Action Team, Wellness Committee, Eco Team).</p>
3	<p>Set a goal. In consultation with your school community members and school public health nurse, select one pillar or indicator to improve or sustain. For example:</p> <ul style="list-style-type: none"> - Improve the supportive Social Environment pillar by seeking input from families using a parent-survey in the monthly newsletter. Get feedback from >10 parents each semester.
4	<p>Make the change. Working with your public health nurse, choose from the supports for School Name to move your goal into action.</p>
5	<p>Track the changes from 2015 and beyond. Track your school's progress using the Healthy School Planner survey available, free of charge, from http://www.healthyschoolplanner.uwaterloo.ca/</p>



Remember...

The Ontario *School Food and Beverage Policy* (P/PM 150) standards are embedded within each area of the Foundations for a Healthy School framework. This framework encourages schools to collaborate with students, teachers, parents, community members and public health to promote healthy eating directly to the student, in the classroom and throughout the school food environment. Work with your school PHN to learn which areas to focus on in 2015 and beyond.

