Health promotion policies and practices in Nova Scotia schools

by

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Dedication

I dedicate my thesis to my loving, supportive husband.

Abstract

Canadian school jurisdictions have adopted health promotion policies and guidelines as part of a broader comprehensive strategy to address childhood obesity, but there is limited research that has investigated how these "naturally occurring" population level interventions have influenced changes in school environments and student behaviours. Following the dissemination of various policies and initiatives related to health promotion in schools, the Province of Nova Scotia (NS) offered a case for research inquiry to describe how recent provincial policies were implemented. **The purpose of this research was to provide contextual understanding of the adoption, implementation and impact of health promotion policies and practices in NS.** Quantitative research was employed to describe provincial trends in children's nutrition behaviour and weight status and to assess school practices across NS schools. Qualitative methods provided context on the processes that influenced implementation using a case study approach. From the quantitative analysis, although there were some improvements in diet quality, energy intake and healthy beverage consumption of children over time, there was no significant effect observed on body weight. Furthermore, schools reported greater adoption of curriculum-related practices, rather than practices that could foster comprehensive (i.e. holistic) approaches to school health. Contextual information from the qualitative case studies provided critical insight to understanding policy, organizational and individual outcomes. Schools that were stimulated by jurisdictional vision and provided with relevant resources and support exhibited processes that facilitated adoption of health promotion policies. Commitment, leadership and a supportive school culture was also found to be important to help schools overcome barriers to implementation. Overall, the contextual focus of this research provided a comprehensive account of health promotion policy implementation to advance the effectiveness and dissemination of population-level interventions in schools. Considering the multifaceted behavioural and social structural influences of obesity, illuminating

this context in population-level interventions is critical to improve implementation and the overall impact on population-level weight status. Fostering collaboration between health and education sectors and establishing a broad system for support is essential to develop an understanding of the mutual benefit between health and learning and to progress the adoption, implementation and sustainability of school health initiatives.

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Chapter 1

Introduction

Comprehensive, sustainable policy and environmental initiatives are needed to produce a population-level change in childhood weight status (1) and schools are increasingly recognized as an important intervention setting (2). Many school jurisdictions have adopted health promotion policies and guidelines as part of a broader comprehensive strategy to address childhood obesity (3–5), but there is limited research that has investigated how "naturally occurring" population level interventions have influenced changes in school environments and student behaviours. The Province of Nova Scotia (NS) offers a notable case for research inquiry as various provincial policies and initiatives related to health promotion in schools have been implemented over the past ten years (6). These initiatives provide an opportunity for a case study to understand how recent provincial policies have supported environmental changes across schools and their potential for impact on student behaviours and weight status. The purpose of this research was to provide contextual understanding of the adoption, implementation and impact of health promotion policies and practices in NS. The goal was to provide evidence to inform future directions for school-based health promotion policies in NS while also helping to inform the current population-level evidence-base for health promotion.

1.1   The determinants of childhood obesity

The prevalence of overweight and obesity has risen among children and youth over the past several decades in Canada (7,8) and a recent report estimated

that close to one third of 5 to 17 year olds were either overweight or obese (9). In 2003, the Children's Lifestyle And School-performance Study (CLASS) was conducted in the province of NS and provided a wealth of local evidence related to obesity with Grade 5 children (ages 10 and 11 years) across NS. At the time, this research estimated that 32.9% of grade 5 students were overweight and 9.9% were obese (10). Overweight and obese children are at increased risk of experiencing co-morbidities, such as cardiovascular disease, type II diabetes and hypertension, during childhood (11–13) and also maintaining unhealthy weights into adulthood and experiencing further co-morbidities (14). NS research has found that obese children have significantly higher lifetime physician costs and more physician visits than their normal weight peers (15). Considering the significant health and economic implications, it is essential to address factors that are contributing to this epidemic as to protect children from a lifetime of chronic disease and mitigate the impact on the health care system.

There are concerns that children's current behavioural patterns are contributing to the temporal rise in overweight and obesity. Overweight and obesity is a result of imbalance between energy intake and energy expenditure (16). At the behavioural level, poor nutrition and inadequate physical activity contribute to this imbalance and play a role in mediating weight gain; however, the increasing prevalence of obesity is multifactorial and related to more than just behavioural choice. For example, regional variations in prevalence have been reported, with children and youth in the Atlantic region having among the highest rates in the country (7) and similar findings have been more recently reported among the adult population (17). Furthermore, studies have shown that individuals from lower socio-economic backgrounds are more likely to be overweight or obese (10,18–21). Therefore, as well as behavioural influences, these broader social structural factors are contributing to the burden of obesity. As a result, it is critical to consider how behavioural and social structural factors

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influence obesity to fully understand the complexity of the issue and move toward a population-level solution (22).

Over the past few decades, there has been increased consumption of energy-dense and nutrient poor foods (i.e., high in sugar, fat and salt) and reduced levels of physical activity at home, school and for recreation and transport (23). In Canada, research has studied nutritional status through adherence to guidelines from *Eating Well with Canada's Food Guide;* these guidelines describe the amount (i.e. servings) and type (i.e. four food groups, including Vegetables and Fruit, Grain Products, Milk and Alternatives, and Meat and Alternatives) of food people need to eat to establish a healthy eating pattern and meet nutrient standards that define the amount of each nutrient and calories that are need for optimal health. In 2003, the CLASS study defined nutritional status behaviours among children and found that 42.3% did not meet the minimum recommendations of Canada's Food Guide (24). National guidelines for physical activity and sedentary behaviour also provide standards for duration, intensity and frequency of physical activity and boundaries for sedentary behaviour (25). The CLASS research also reported that many children were spending time participating in extensive sedentary activities. The research found that children who spent more than one hour per day in sedentary activity and those that were driven to school for longer than 30 minutes were associated with a significantly increased risk of overweight. Furthermore, frequent reported participation in physical activities (more than seven times per week) was associated with a decreased risk of overweight (10).

At a broad societal level, recent changes in the availability, accessibility and marketing of nutrient poor foods and the increased involvement of children in sedentary recreational activities, such as television, video games and computers, and their reliance on inactive modes of transportation have created an "obesogenic environment" that makes the healthy choice (i.e. a nutritious diet and regular physical activity) the abnormal choice (26–28). The social determinants of

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health (e.g., income and social status, social support and networks, education and literacy, employment/working conditions, social and physical environments) have been used to define the broader factors that influence health (29) and there is consistent evidence that describes their relationship with population weight status (20). In particular, research on food insecurity[1] provides evidence on how income may influence nutritional status. A strong positive relationship has been reported between poverty and food insecurity (31,32); although the evidence remains mixed (33), for children living in food-insecure households this can translate into low consumption of fruits, vegetables and milk and high amounts of calorically dense food, a pattern that has been shown to contribute to poor outcomes related to long-term weight status (34). Significant relationships have also been reported between physical activity and socio-economic status (35–37) and some studies have suggested that access to facilities, equipment and safe neighbourhoods are essential determinants for physical activity (38–40). The CLASS study also provided evidence regarding environmental and social determinants in NS; in particular, the research observed a socioeconomic gradient related to children's risk of being overweight (children from households and neighbourhoods with higher income and parental education levels were at a decreased risk). Associations were also observed between neighourhood characteristics, health behaviours and childhood overweight; for example, children with greater access to shops, playgrounds, parks and recreational facilities had healthier behaviours (in terms of nutrition and physical activity) and were less likely to be overweight or obese (41).

Considering the contribution of environmental and social determinants on nutritional status and physical activity and their relationship to body weight, obesity has been suggested to be a normal response in the "obesogenic" environment (16). Therefore, with acceptance of this notion it will be essential to

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[1] Food insecurity is defined as the limited or uncertain availability of nutritionally adequate and safe food (30).

target interventions that address the broader determinants to shift population body weight distribution toward healthier body weights. A population health approach offers a framework to improve the health of the entire population by focusing on a broad range of factors and conditions that have a strong influence on health (29). Ecological theory posits that individuals' behaviours are a product of the interdependence between an individual and their environment (42) and has also been used as a perspective for understanding environment interactions and interventions to address obesity at a population level (16,28,43). Various frameworks and models have been developed based on the principles of ecological theory to describe intra-individual (individual attributes, beliefs, attitudes and behaviours) and extra-individual (environment, social and cultural context and policies) factors that influence children's behaviours. Egger and Swinburn (1997) described an ecological paradigm for understanding obesity through, biological, behavioural and environmental influences, which are mediated through energy intake and energy expenditure and moderated by physiological adjustments (16). Although this paradigm provides understanding to the interactions related to obesity, from a population-health perspective, it is important to consider how ecological theory can inform potential points of intervention.

Bronfenbrenner (1977), used ecological theory to consider the immediate settings of an individual and larger social context in which settings are embedded within an ecological model that included micro (face-to-face interactions in specific settings), meso (interrelations between settings), exo (forces in large social system) and macrosystem (cultural beliefs and values) levels of influence (44). A more recent amendment added the influence of upstream social-structural conditions (i.e. culture, socioeconomic factors, politics and social change) on down-stream health behaviours (45,46). This *Social Ecological Model* (SEM) describes five different levels of interaction and intervention that have the potential to influence the adoption and maintenance of health behaviours and

provides one framework to consider intervention strategies at multiple levels of influence (46). These levels are depicted in Figure 1.1 and include **interpersonal** relationships with families and peers, **organizational** characteristics that shape the places where children spend time (e.g., schools, child care settings, recreation centres, hospitals, etc.), **community** networks and the physical aspects of the environment (e.g., walking trails, sidewalks, fast food restaurants) and **public policy** which affects virtually every facet of living, including the creation and use of goods, services, information and environments (42,46,47).
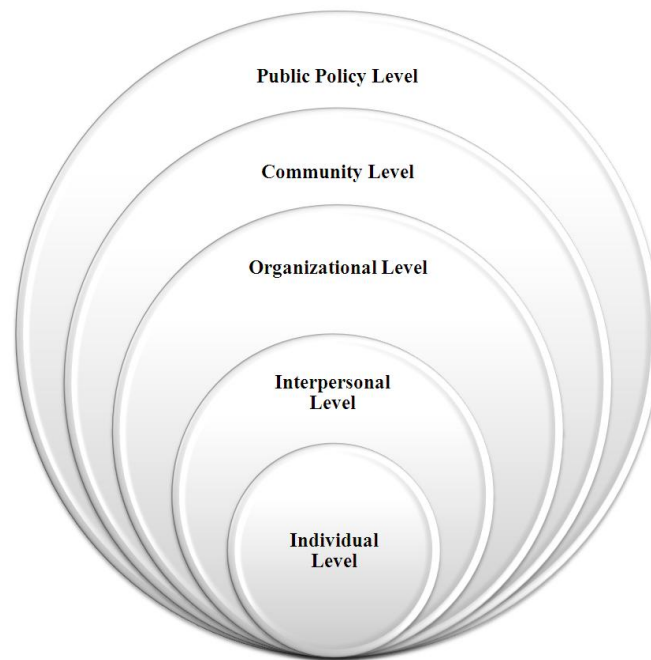
Figure 1.1: The levels of the Social Ecological Model (42,46)

Increasingly, the evidence suggests that a comprehensive, multi-level approach is needed to address the environmental and social determinants of obesity (16,20,48–52). A recent systematic review suggested that interventions implemented in multiple settings and targeting both diet and physical activity may be more effective than single-component interventions (53); therefore, interventions to prevent childhood obesity should consider multiple levels of the SEM.

1.2 Interventions to prevent childhood obesity

Population-level interventions

Policy and environmental interventions have potential for creating population-level improvements in obesity; however, they are also the least well understood (20,23,26,47,54). Population health intervention research (PHIR) offers an important framework to produce knowledge about policy and environmental interventions related to their impact toward population level trends in obesity (55). Within the context of PHIR, "natural experiments" (interventions not controlled or withheld by the researcher) have been cited as an underutilized strategy in public health (56) and offer an important opportunity to study the adoption, implementation and impact of health promotion policies and environmental strategies at the population-level (57,58). Public policies establish the range of choices made by organizations and individuals and can provide a mechanism to modify the social and physical environments by influencing social norms and improving equitable access, resources and supports for healthy eating and physical activity (26,59,60) Moreover, healthy public policies can help to support health-enhancing behaviours, while diminishing the aspects of the environment that make it easier for individuals to engage in health-compromising behaviours (28,61). Recent advancements in policy and environmental strategies related to childhood obesity provide opportunities for PHIR, however, there is a relative paucity of population-level interventions that have assessed the synergy of combining multiple approaches between and across intervention settings (51,60).

Examples of PHIR in the academic literature are limited, but emerging research has demonstrated potential for influencing population-level weight status. For example, a recent state-wide population-level strategy to prevent

childhood obesity in Delaware provided evidence pertinent to the multiple levels of the SEM. The strategy focused on changing children's behaviour using a systems approach, and focusing on the places where children spend most of their time (e.g., child care, primary care and schools) (62). At the individual level, the findings reported a potential leveling off of the increase in prevalence of obesity. At the interpersonal level, there was greater awareness of healthy behaviour messages among parents and a relationship of awareness to messages with increases in positive behaviours. At the organizational level, there was progress in school district wellness policies, legislated fitness measurements, school-based physical activity programs and policy and behavioural changes in child care settings. There was also commitment from the medical community to implement obesity-related guidelines within primary care providers and increased lifestyle counseling and participation by multidisciplinary primary care teams in an initiative on childhood overweight (62). Overall, the intervention targeted multiple levels of the ecological model and integrated multiple components to address the state-wide issue of childhood obesity.

The EPODE network is inspired by community and school interventions, including the Fleurbaix Laventie Ville Santé Study (France), and offers insight on the potential for long-term success in population health interventions (63). Following the introduction of a school-based nutrition information program, community stakeholders were mobilized in various community level initiatives that supported healthier eating among families. A repeated, cross-sectional, school based survey was conducted to measure trends in childhood obesity over a period of 12 years. Notably, after an initial increase, trends in mean body mass index and prevalence of overweight started to reverse and was lower when compared to comparison towns (with similar socio-economic characteristics but no intervention) (64). The success of this intervention helped to inform actions for EPODE, which is a program and methodology that engages local stakeholders in building a supporting environment for healthy lifestyles. Today, the program has

been expanded to other towns in France and adapted for other European countries (63).

These case studies provide examples that describe the potential of population-level interventions having a multi-level impact on the issue of childhood obesity. The multi-level approach used in Delaware and the EPODE methodology shifts the point of intervention beyond a focus on individuals to consider the conditions and environments that shape behavioural choice. Moreover, a key emphasis was to improve population-health by learning from and improving upon current policy and practice (57). There is a general consensus that both "top-down" (political support and resources) and "bottom-up" (organizational and community capacity) are needed to support the implementation of a population health intervention (65,66). A key difference between the examples from Delaware and EPODE was in their approach to build the structural conditions to support healthy behaviours. EPODE was driven by a "bottom-up" school-based nutrition program that was cultivated into community-wide approach, which in turn helped to create supportive policies and environmental conditions for healthy behaviours; the current EPODE methodology also focuses on building capacity from the "ground-up" by providing the resources needed to build sustainable community-wide change. Differently, the focus within Delaware was driven by a top-down state-wide initiative that marketed a healthy behavioural message ("5-2-1-almost none" which encouraged daily consumption of at least "5" servings of fruits and vegetables, less than "2" hours of screen time, "1" hour of physical activity and "almost no" sugar-sweetened beverages). Community and organizational interventions within the Delaware strategy focused on enabling uptake of these behaviours by making changes to the environment. Although this strategy offers potential for long-term change, further research is needed to ascertain if the structural changes to the environment and observed effects on the prevalence of obesity are maintained over time. Moreover, although both top-down and bottom-

up support is needed to sustain population-level interventions, more research is needed to understand the interactions between policy and changes to the environment according to the diverse contexts of communities. Intervention context on PHIR will provide essential information to explain how implementation influences overall outcomes and would also enable comparison across population-level interventions.

School-based research interventions

Further explication of PHIR within the ecological model can be examinedby focusing on interventions taking place at the organizational level of the SEM. In particular, schools have been recognized globally as an important organizational setting to address childhood obesity (23) as they serve a large number of students from diverse backgrounds. In recognition of the inherent opportunities to support healthier eating and physically activity in schools (67–70), various large-scale school-based interventions have targeted different components of the school environment (e.g., physical education, health curriculum, food programs, staff training) and levels of the ecological framework (e.g., partnership with parents and community). The Coordinated Approach to Child Health (CATCH) intervention was one of the first large scale school-based quasi-experimental studies in the United States that targeted the school environment in addition to student health behaviours (71). The intervention was proven effective as it was able to modify the fat content of school lunches, increase moderate-to-vigorous physical activity in physical education, and improve eating and physical activity behaviours in children during across school years (71). Similar to CATCH, the Sports, Play and Active Recreation for Kids (SPARK) (72) and Middle School Physical Activity and Nutrition (M-SPAN) (73) interventions were also tested using experimental designs that targeted multiple components of the school environment including physical education,

health curriculum, staff training and the involvement of the school community. Both interventions demonstrated positive effects on physical activity behaviours, including physical fitness, motor skill development and student enjoyment (72,74,75,75,76) and some positive effects on adiposity (77) and body mass index (73).

Action Schools! is a more recent comprehensive school-based model that utilizes a socio-ecological approach to provide children with opportunities to make healthy choices through supportive environments in British Columbia schools (78). A cluster-randomized controlled school-based trial with eight elementary schools was conducted to assess cardiovascular disease risk profile among school children; the results found that although there were no significant differences between intervention and control groups for change in body mass index, children in intervention schools had a greater increase in fitness and smaller increase in blood pressure (79). Healthy Buddies is a school-based, teacher facilitated and peer-led health promotion intervention in Canada that has shown both effectiveness in improving healthy living knowledge, and mitigating weight gain (significant decline in waist circumference and non-statistically significant decline in body mass index z-score) among children in a cluster, randomized, controlled trial (80–82). These two interventions provide insight for successful school-based obesity preventions in Canada but further research is needed to study their long-term impact and the sustainability of environmental effects over time.

Overall, the combined results from individual interventions and reviews of the literature suggest that school-based interventions can improve both physical activity and eating behaviour (83–85). Although individual interventions have had less consistent effects on overweight and obesity, a recent systematic review confirmed the potential for school-based interventions to contribute to childhood obesity prevention (51), particularly when the interventions are designed to target

multiple environmental and behavioural components and incorporate a complementary community strategy (51,53,86–89). For example, building on the success from the original CATCH trial, a study was conducted to compare the basic CATCH program with an intervention approach that was also provided with support for building school and community partnerships and local decision making and capacity building related to the physical activity and healthy eating (87). A serial cross-sectional design was used to assess physical activity, diet and body mass index and results suggested that there were greater decreases in overweight and obesity among students attending schools with the added community intervention component (87). Another multifaceted school-community intervention was *Shape Up Somerville,* which was a three-year environmental change intervention that used community-based participatory research to change the environment in an effort to prevent obesity among children (86). The intervention focused on enhancing children's access and availability of physical activity options and healthy food throughout the entire day through changes in school environments but also by promoting additional changes within the home and community. Although the effect size was modest, BMI z-score decreased in the intervention community compared with children in the control communities (after controlling for baseline covariates). Importantly, the intervention focused on creating policy changes that helped to sustain environmental effects beyond the duration of the research study (86). Finally, the HEALTHY intervention targets changes in the school nutrition and physical education environments, provides opportunities for education and behaviour change and disseminates promotional messages, events and activities. A multi-site randomized trial evaluated the effectiveness of the intervention in reducing risk factors associated with type 2 diabetes and found that although there were no greater decreases in the combined prevalence of overweight and obesity compared to control schools, the intervention did result in significantly greater reductions in indexes of adiposity (90). Altogether, these comprehensive interventions provide an important evidence-base to suggest that properly designed and implemented

school-based interventions have the potential for supporting healthier behaviours and having an impact on weight; however, similar to previous limitations that were described for PHIR, the contextual factors that influenced implementation processes require further elucidation to properly reproduce successful findings at a broader population level. Furthermore, the ongoing challenge of primary research interventions is to understand the context in which intervention components are effective so that they can be embedded and sustained within broader health and education systems (51,91–93).

School-based policy interventions

Considering the reported barriers that mitigate the institutionalization of primary research interventions, such as the low priority given to health compared with academic attainment, lack of training and financial concerns (94–96), it is essential to understand how government investment and policy can support local school health initiatives and sustain environmental changes in schools. With increasing recognition of the role of schools in obesity prevention, many school jurisdictions have adopted policies and programs to support environmental changes (68,70) which have resulted in "naturally implemented" policy interventions. In Canada, the majority of federal policy action with respect to health in schools focuses on collaboration with local (provincial/territorial) governments to improve health policy within the public education system and the ultimate responsibility and authority for school health-related regulation rests at the provincial jurisdictional level. The Pan Canadian Joint Consortium for School Health (JCSH) is a partnership between provincial, territorial and federal governments in Canada that has emerged over the past ten years to facilitate collaboration across the health and education sectors; its mission is focused on knowledge development and capacity building and provides leadership by

enhancing alignment between health and education across multiple sectors rather than creating national policy (97). Before and after the arrival of the JCSH, individual provinces/territories have developed and implemented guidelines or policies for nutrition and physical activity in schools relevant for their jurisdictional policy context (i.e. interest from government and community stakeholders); however, to date, there is limited research that has described the impact of policy interventions on behaviours and weight status.

Since there is no federal policy initiative related to school wellness, school-based health promotion initiatives have different policy context across provincial/territorial jurisdictions in Canada. Taylor, McKenna and Butler (2010) recently reviewed school nutrition and physical activity policies in Canada and commented on the dearth of national data related to school policy implementation and impact; rather, the authors described that the nature of information and the level of detail related to policy implementation varied from province to province as a result of varied provincial/territorial priorities and assessments (5). Similarly, another review of physical activity interventions in Canada found a wide variety of approaches and limited evaluations of effectiveness (98). However, across Canadian provinces, studies are starting to effects of nutrition and physical activity policy implementation. With respect to nutrition, one study in Prince Edward Island (PEI) reported that students were two times more likely to consume fewer unhealthy foods and were more likely to meet Canada's Food Guide recommendations for vegetables/fruit and milk following the implementation of provincial policy (99). Related to physical activity, daily physical activity (DPA) policies have been implemented in several provinces and Project BEAT explored the natural effects of DPA policy implementation in one school district through the use of accelerometers. The results suggested that fewer than half of the participating children were provided with DPA and no children were engaged in moderate to vigorous activity for more than 20 minutes (100).

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In the United States of America (USA), there is an increasing body of research that has studied the relationship between state-level policies on physical activity, nutrition and body weight. In particular, the USA Federal Wellness Law has catalyzed the emergence of increasing evidence to inform the overall impact of federal legislation as it requires all local education agencies participating in the National School Lunch Program to have a Local Wellness Policy (101). Furthermore, the School Health Policies and Programs Study (SHPPS), conducted by the Centers for Disease Control, has systematically assessed school health programs in the USA according to the school health program components at the state, board, school and classroom levels and provided comprehensive information on school health programs in 1994, 2000, 2006 and 2012 (102). SHPPS describes key school health policies across program components used in the coordinated school health program and provides a wealth of information for the USA on their school health policy environment.

Similar to primary school-based interventions, although there is increasing evidence from cross-sectional policy studies to support their influenced on school environments and behaviours (103–107), there is greater uncertainty of their impact on overweight and obesity (108). For example, studies have reported on positive outcomes following implementation of nutrition policies in Texas (USA), including improvements to the nutritional quality of students' lunch (109,110) and decreases in energy density (111). Other research has found reduction in consumption of sweetened beverages (112–115) and increases in fruits, vegetables and milk (116). Furthermore, studies have reported positive environmental effects of physical activity policies, including increased participation and enjoyment of physical activity and greater focus on academic studies (105) and that a greater proportion of students achieved the sufficient intensity of physical activity during physical education (107,117).

Although the overall evidence related to obesity is mixed, some studies have reported positive effects of school policies on body weight (118–122). For example, Foster et al. (2008) examined the effects of a multi-component school nutrition policy initiative that included school self-assessment (including the formation of an advisory group, completion of a school assessment called the "School Health Index" and development of a plan for change), nutrition policy, social marketing and parent outreach. After two years, the authors found that the intervention resulted in a 50% reduction in the incidence of overweight in children. Significantly fewer children in the intervention schools than in the control schools became overweight after two years. The intervention did not, however, have any impact on the incidence, prevalence or remission of obesity (122). Sanchez-Vaznaugh et al. (2010) assessed the population-level impact of nutrition policies in the city of Los Angeles (California, USA) that related to competitive food and beverages which are sold separately from federal meal programs. This research observed a significant decline in the rate of increase in overweight children (significant for fifth grade boys and seventh graders in the rest of California) after controlling for student, school and district characteristics (123).

Although overall improvements to the school environment have been reported, policies continue to encounter contextual implementation challenges (e.g., school support and sufficient funding) and inadequate monitoring and enforcement (103–107). Further research from PEI provided important context for barriers and facilitators of policy implementation (124) and the perspective of principals (125), parents and students (126). Another Canadian study reported on the challenges of physical activity policy implementation and suggested that several preconditions for the policy (e.g., the sustainability of resources, extent to which the policy is valued, and evaluation plans) required additional attention to ensure optimal implementation of policies (4). Mâsse et al. (2013) used the diffusions of innovations model (127) as an organizing framework to describe

emergent factors that impeded or facilitated the implementation of a provincially mandated physical activity and nutrition guidelines for schools. According to the key attributes of the model, implementation of the guidelines was facilitated by perceptions of school informants regarding the relative advantage (i.e., degree to which the policy was perceived as better than usual school practices), compatibility with school mandates and teaching practices and the observability of positive impacts (i.e., changes in students' behaviour) (128).

Across policy intervention studies, there are contextual differences relating to jurisdictional policies and the availability of resources that help to facilitate implementation. In NS, the *Food and Nutrition Policy for Nova Scotia Public Schools* (NS FNP) has provided standards for foods and beverages served and sold in schools, including directives for school eating practices such as pricing, programming and advertising and guidelines that encourage schools to foster community partnerships and support local food products (129). Although there is no provincial policy for physical activity, curriculum developed but the Provincial Government provides expectations for how health and physical education is delivered in schools (130). To date, there is no research or evaluation that has explored either contextual implementation or impact of these policy initiatives.

Health promoting schools: A "whole school community" approach

Health Promoting Schools (HPS) is an international framework that is increasingly adopted as a strategy to support broad health and education outcomes in schools; the framework includes a comprehensive and multifaceted approach that sustains environmental changes with school policies and with support from the whole school community (131–134). HPS is also known as Coordinated School Health in the United States and Comprehensive School Health (CSH) in

Canada, with each term used interchangeably depending on jurisdictional context[2] (135). HPS offers a more holistic approach that complements classroom curricula and requires a new way of thinking about health and the role of the school (133). For example, classroom lessons on healthy eating can be supported and reinforced by a school breakfast program and having only healthy foods available for purchase in schools and at school functions (131,132). The framework is adapted from recommendations by the World Health Organization and focuses on fostering health and learning, engaging all school partners (i.e., staff, students, parents and community), providing a healthy environment that supports health and implementing healthy policies and practices (133).

In NS, there is a rich history of HPS that began from a grassroots approach in the Annapolis Valley by parents and school staff that made changes to the school environment to make to make "the healthy choice the easy choice" for students. Community partnerships helped to introduce changes in schools that included increasing opportunities for physical activity and providing healthier food choices in the school cafeteria and vending. In 2003, the CLASS research found that students attending schools in the *Annapolis Valley HPS project* had healthier diets, were more physically active and rates of overweight and obesity were significantly lower than students from schools without nutrition programs (136). Best practices from the Annapolis Valley are currently being implemented in the APPLE Schools project in Alberta that utilizes a similar HPS approach by tailoring the intervention to the context of each school with the support a School Health Facilitator. Encouragingly, a two-year evaluation recently found that students attending APPLE Schools had healthier diets, were more physically active and were less likely to be obese compared with students from other Alberta schools (137).

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[2] HPS is the term used throughout this thesis as it is most often used by NS practitioners.

The JCSH has developed a framework with four distinct but inter-related pillars that provide a foundation for comprehensive school health in Canada; these pillars include Teaching and Learning, Healthy School Policy, Physical and Social Environments, Partnerships and Services (97). Through this partnership, various school jurisdictions in Canada, including the Province of NS, have taken important actions to support a comprehensive approach to school health through the development of relevant jurisdictional policies and guidelines (138). For example, the *Nova Scotia Health Promoting Schools* (NS HPS) initiative is a partnership that was inspired by the success of the Annapolis Valley HPS project. NS HPS is led by the Department of Education and the Department of Health and Wellness, and comprises school districts, district health authorities, and community members. Since 2005, funding for NS HPS has been provided to support the development and implementation of a HPS approach across the province. Physical activity and healthy eating were the initial focus of NS HPS, however, the intent of the partnership is for schools to take a comprehensive approach and address a range of issues based on their own unique contexts. Regional partnerships between health and education were fostered to develop a framework and plan for HPS that considered local assets and needs. Provincial funding was distributed across regions based on these plans (138).

Although HPS is a complex and developing initiative, there are promising practices to support its merit in improving health and educational outcomes in schools (83,131,139–142) and there is also recent evidence to suggest the efficacy of the approach on obesity prevention (137). Guidelines to support implementation of HPS have generally focused on establishing key processes (e.g., developing local policy, achieving administrative support, creating a small group, conducting a school audit, establishing goals and a strategy to achieve them) rather than defining required implementation activities (131,135). Recent research has attempted to clarify HPS implementation by providing theoretical and empirical evidence to describe the operational function of eight

interdependent implementation components for HPS, including: policy and institutional anchoring, leadership and management practices, preparing and planning for school development, professional developing and learning, relational and organizational context, student participation, partnerships and networking and sustainability (143,144). Rowling and Samdal (2011) suggested that attention is required to the "functioning" of components (i.e. how they are implemented) and postulate that an emphasis on function could bring about a new focus to strengthen the science base for HPS (143,144); similarly, other published research has also called for such strengthening to move HPS forward (139,142,145,146).

The adaptability of HPS is an important feature of the approach as it ensures flexibility to diverse school contexts (with respect to enrollment criteria, socio-economic factors, curricular demands due to language or religious instruction, etc.) (135). However, the adaptableness has also led to considerable uncertainty as to how HPS should be evaluated across schools (145–148). Various evaluative methods have been developed, however, the applicability of broadly developed methods and tools is not well understood across variations in jurisdictional policy contexts (5). Furthermore, current evidence suggests that there needs to be a shift to focus on measures of success at the school/operational level to move beyond short-term 'visible' changes in behaviour (65,93,145,149–151). Although this shift will allow greater recognition for a broad, multi-faceted strategy for HPS, establishing indicators to measure diverse school contexts is a recognized challenge for future research (5).

Recent research has considered HPS as an educational innovation that is influenced by complex interactions between organizational and innovation characteristics (152,153). An innovation is described as an idea or practice that is perceive as new by and individual or unit of adoption (i.e. a school) (127). Diffusion is the process in which an innovation is communicated though certain channels (i.e., the means by which messages get from one individual to another),

over time among members a social system (154). The rate of diffusion is dependent upon various the key elements of the innovation, communication channels, time and the social system (154) and five stages have been have been used to describe the different phases of diffusion, including innovation development, dissemination, adoption, implementation and maintenance (155). The perceived attributes of innovations described in described in Table 1.1 play a particularly important role in the rate of diffusion (154).

Table 1.1. Perceived attributes and stages of innovation diffusion adapted from Rogers (2003)

Perceived attributes	Degree to which an innovation …
Relative advantage	… is perceived to be better than the idea before
Compatibility	… is perceived as being consistent with the existing values, past experiences and needs of potential adopters
Complexity	… is perceived as difficult to understand and use
Trialability	… may be experimented with on a limited basis
Observability	… results are visible to others

Innovations that are perceived by individuals as having greater relative advantage, compatibility, trialability, observability and less complexity are thought to be adopted more rapidly (127). For HPS, research has suggested that a supportive school leadership, positive school culture/climate[3], a shared vision and involvement from families and the community plays an important role in defining the context of the social system (65,94,105,106,124,157) and the overall diffusion of the HPS innovation (158,159).

Considering the dynamic and ongoing processes of school innovations like HPS (159), the challenge for evaluators is to find appropriate methods that track the transformation of change (160), particularly one that takes into account the

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[3] School climate refers to the tone of the school that influences perceptions and emotions (156).

interaction between "top-down" institutional policies and "bottom-up" organizational capacity (66,161). It is particularly important to understand how HPS is managed within schools where institutional priorities may not be consistent with the current educational culture (159,162). As educators often seek practical solutions to meet situational needs, the contextual organizational circumstances and stages of growth are important considerations for research.

1.3   Understanding intervention context

The context of the intervention helps to understand precisely how an intervention fosters change in population health interventions and has been suggested as a key component of evaluations relating to obesity prevention (50,51), public health and health promotion programs (160,163–166) and HPS (143,159). An understanding of the context contributes to the understanding of intervention "fidelity" (i.e. if the intervention was delivered as it was designed) which helps to interpret the overall observed outcomes and impact of the or intervention (92,159,163). Durlak and DuPre (2008) identify organizational capacity and organizational functioning as two key factors that affect implementation of health promotion and prevention programs (65). Organizational capacity was described through positive school climate, leadership and shared decision-making and organizational functioning through training and technical assistance that can provide support to the prevention program. The authors also identified broader contextual factors, including characteristics that related to the community (politics, funding, and policy), provider (perceived need and benefits, self-efficacy and skill proficiency) and the innovation (compatibility with organization and adaptability to fit provider preferences) (65).

Case study research has examined how intervention context has influenced program implementation in schools and communities. For example, Clarke et al.

(2010) studied the factors that influenced implementation of an emotional wellbeing program in two schools and found that the broader community-level support was an important factor (described as having a strong sense of community) in predicting readiness for change. Furthermore, community context was found to be related to teacher-parent relationships. The authors postulated that this particular contextual factor could act as a barrier to parental involvement in schools (153). Another study examined findings from an evaluation of local implementation of a public health program to create healthy environments and found that particular characteristics of the program itself may have produced effects independent of its intended objective (165); this finding substantiates the importance of framing school interventions and innovations so as to encourage "buy-in" from school stakeholders. All school champions, including principals, teachers and parents, have the potential to influence the adoption and sustainability of a school initiative (65) and school principals can be a key force in stimulating a critical mass of individuals (124) and influencing the adoption (167–169) and quality of adherence (170) to school wellness initiatives. Bisset, Daniel and Potvin (2009 and 2013) recently assesssed the interaction between the technical aspects of an innovation (i.e. what was required) and the environmental contexts of a school-based nutrition program. The results of this case study highlighted the importance of shifting beyond the structural elements (i.e. what is being done) of a program and focusing more on the *processes* of implementation (160,163). Moreover, rather than a prescriptive process, implementation was developmental and adaptable to program context. In particular, program stakeholders played in active role in shaping program implementation; therefore, the authors suggested that unanticipated program operations or effects may occur as a result of differences in program context (163). Other studies have corroborated that importance of considering the adaptability of school health promotion interventions within the constantly shifting, and multifaceted, educational system (149,171,172); the adaptability to local context seem to be particularly relevant when broader implementation is expected (153).

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Although research is beginning to describe the effects of intervention context on intervention/program outcomes, there is a paucity of research that has described how intervention context of naturally occurring health promotion policies and HPS influences practices (i.e. what is being done), processes (i.e. how it is being done) and outcomes related to population-level weight status. Considering the ambiguity of the overall impact of policy and environmental interventions in creating population-level improvements in obesity (20,23,28,47,54), it will be essential to understand the multifaceted interactions of population-level interventions, including between characteristics of the intervention/innovations (i.e. the school policy or HPS initiative), aspects of technical/practical features (i.e. what is being done), the functional processes (i.e. how it is being done) and the community/organizational context (i.e. role of environment).

School heath promotion context in Nova Scotia

Nova Scotia (NS) is the second most densely populated province on the east coast of Canada and has many rural communities with rich histories of fishing, mining and agriculture. As previously mentioned NS is burdened with high rates of chronic disease, including a high prevalence of overweight and obesity among children, youth and adults. This affliction is complicated by the social-structural conditions, such as lower socio-economic status and food insecurity, which make it difficult for Nova Scotians to acquire nutritious foods and recommended levels of physical activity (173-175). The NS Government has demonstrated their commitment toward improving the health of children by investing significant funding for new policies and programs in the past ten years and provided a case for population-level inquiry related to school health promotion policies and environmental changes (6). A considerable amount of this investment was in response to the CLASS research, conducted in 2003, which

provided contextualized evidence of the significance of the issue for Nova Scotia children (10,136). For example, government strategies have been implemented to support healthier eating and increased activity by creating supportive environments across the province. *Healthy Eating Nova Scotia* is a strategic plan to address these and other nutrition-related health issues through four areas of emphasis: breastfeeding, children and youth, fruit and vegetable consumption and food security (173). *Active Kids, Healthy Kids* (AKHK) was a strategic and comprehensive multi-year plan, by the Department of Health and Wellness (formally the Department of Health Promotion and Protection), for improving physical activity opportunities and increasing participation rates for children in Nova Scotia. AKHK identifies the importance of both education and childhood settings, such as schools, and emphasizes the importance of research, evaluation and knowledge transfer (174). In 2012, the province introduced a cross-departmental strategy for healthier communities (*Thrive! A plan for a healthier Nova Scotia*). This focuses on upstream actions through a foundation in social policy and includes four strategic directions: 1) Support a healthy start for children and families; 2) Equip people with skills and knowledge for lifelong health; 3) Create more opportunities to eat well and be active; and 4) Plan and build healthier communities (175).

As previously mentioned, schools in NS have been an important intervention setting for recent policies and programs within government strategies as evidenced by the NS HPS and the NS FNP. However, since each school district establishes their own jurisdictional policies to guide implementation of school initiatives and curriculum (130) there is a great deal of variability in how health promotion strategies, policies and programs are implemented across the province (6). Neither evaluation nor research has examined the full extent to which these population-level policies and environmental changes have influenced school environments and their overall impact on children's health behaviours and weight status.

1.4 Research purpose

The unique jurisdictional policy circumstances of NS provide a critical opportunity to understand how population-level actions have stimulated change at multiple levels of influence. This research sought to understand how public policy had influenced the health promoting practices and processes of school communities and the potential for impact on student health behaviours and weight. **The overall purpose of this research was to provide contextual understanding of the adoption, implementation and impact of health promotion policies and practices in NS.** Moreover, I sought to respond to three main objectives in separate research papers that are included in my thesis. The objectives of my thesis were to:

1. Describe current health promotion policies in NS and their impact on children's behaviours and body weight;
2. Assess current school practices based on health promotion policies;
3. Describe the contextual processes influencing implementation.

Seven interconnected research objectives were examined through separate research papers that aligned with the research purpose. Through completing these objectives I sought to gain a greater understanding of the current context of health promotion policies and practices in NS, thereby providing evidence to inform future directions for school-based health promotion policies in NS while also helping to inform the current population-level evidence-base for HPS more broadly.

1.5 Methods

Methodology

Philosophical assumptions consist of a basic set of beliefs that guide inquiries and construct a researcher's worldview. These assumptions are important to articulate in research projects because they shape the methods used and the conclusions that may be drawn (176). Briefly, post-positivism deductively considers singular reality, examines cause and effect and objectively collects data using instruments using standardized measurements. Comparatively, constructivism inductively considers multiple realities and attempts to understand the meaning of phenomena through participants and their subjective view. Post-positivism is typically associated with quantitative research, whereas constructivism is associated with qualitative research (176). This research employed a **pragmatic worldview** that encompassed tenents of post-positivism and constructivism consistent with the methods selected to respond to the research questions. A pragmatic worldview combines deductive and inductive methodology and considers both singular and multiple realities. The primary importance of pragmatism is on the consequences of research (176). This worldview is particularly important to me as a researcher as my personal goal in research is to make results meaningful for policy action and practice change.

Mixed methods research was used in this study to integrate and triangulate the results from quantitative and qualitative research papers for the overall discussion section (Chapter 9) of this thesis (176). Proponents of mixed methods suggest that it can provide a better understanding of research problems than either approach alone, whereas skeptics argue that there are too many underlying differences in philosophical and methodological assumptions and research methods (177). Although there are various perspectives on philosophical assumptions of mixed methods (and the distinction between mixed and multiple

methods), the research objectives in this thesis justify the need for *mixed* methods research since neither quantitative nor qualitative methods alone would have provided sufficient explanation to the research questions (178). Rather, mixed methods provided a more complete picture of the phenomena being studied by describing "how" actions related to health were being implemented (149,159,176). This thesis combined and integrated quantitative methods that described the impact of health promotion policies on children's behaviours and body weight (Objective 1) and assessed the implementation of healthy school practices (Objective 2) with qualitative methods that elucidated the contextual processes that influenced implementation (Objective 3). The discussion section (Chapter 9) of this thesis presents the overall study results by triangulating the findings across individual research papers.

Research design

CLASS was a population-based research project that collected information about children's health behaviours from all Nova Scotia public school students in Grade 5 in 2003. CLASS II collected similar information from all Grade 5 students in 2011 and offered an opportunity to assess how recent health promotion policies and school practices may have affected changes in student behaviours. To understand the mechanisms through which policies and programs have produced change, an explanatory mixed methods research design was employed through the use of complementary qualitative methods to explain the contextual features influencing the implementation of school practices and the impact on student behaviour and weight status. The assumptions of this design suggest that to best understand a research problem, strengths from quantitative and qualitative methods are required through triangulation (176, 177). The first two research objectives were quantitatively driven to describe the extent to which health promotion policies influenced school practices and student behaviours and weight status. This phase assumed a post-positivist worldview as it suggested a deductive

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approach to investigate implementation according to the existing health promotion policies. Quantitative methods were used to measure students' nutrition behaviours, weight status and to describe the reported adoption of health promotion practices across schools. The second phase used qualitative methods to give contextual meaning and explanation to implementation and outcomes, allowing me to dig deeper into what factors may explain the results from the quantitative phases. This phase assumed a constructivist worldview as it suggested an inductive approach to examined school experiences according to the multiple realities of school stakeholders (176). The sequential design suggests that the sample selection, data collection protocol and analysis must occur first for the quantitative phase and subsequently for the qualitative phase. Considering the explanatory nature of the design, the results of the first (quantitative) phase helped to inform the design, data collection and analysis of the qualitative phase (177). Interpretation of results from both the quantitative and qualitative phase will inform the overall discussion and implications of this research.

Structure of thesis

This thesis uses a "paper-format" to explore seven interconnected research objectives through separate research papers that aligned with the research purpose. Papers are situated within subsequent chapters in this thesis which inform the overall discussion and conclusions (Chapter 9). The papers are organized into three sections by the main research objectives. Levels of the ecological model (42,46) provided a framework to consider the research objectives and their direction of inquiry (top-down and/or bottom up) across the research purposes (Figure 1.2).
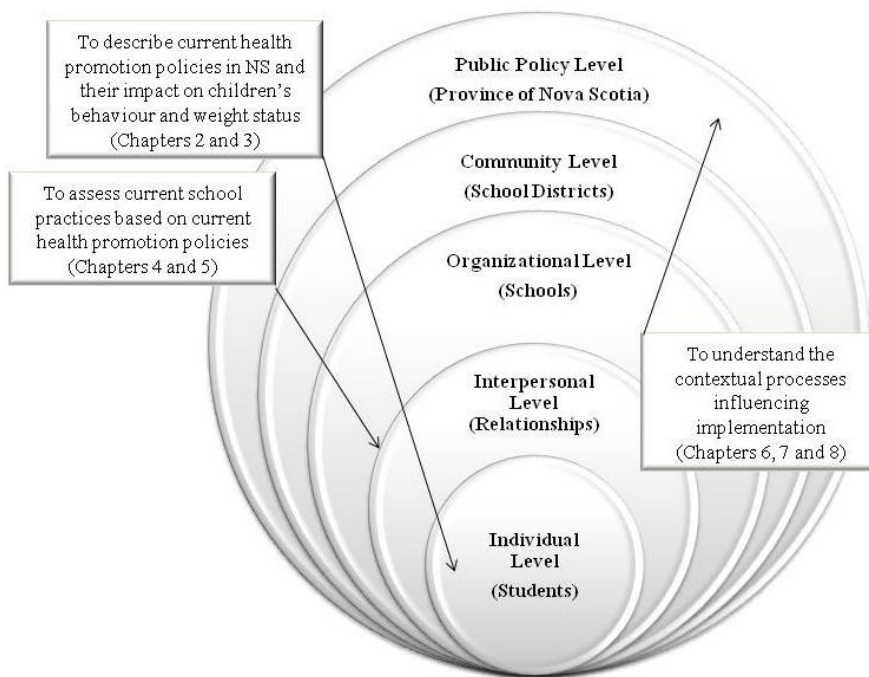
Figure 1.2. Schematic representation of the research purpose according to levels of the ecological model.

The first section of the thesis uses quantitative methods to describe current policies and initiatives at the public policy (provincial) and community (school district) levels (Chapter 2) and their overall impact on the student behaviours and weight (Chapter 3). The second section describes the use of an educational tool to plan and track implementation of school practices within one school district (Chapter 4) and the development of a provincial tool to assess school-level implementation across the province (Chapter 5). The final section provides qualitative context to organizational and interpersonal influences to understand how HPS practices were being implemented within schools (Chapter 6), processes that related to the adoption (Chapter 7) and the enduring public policy, community and school-level factors (Chapter 8) that mitigated school progress.

Ethical approval

Ethical approval for this thesis was obtained from the Health Research Ethics Board at the University of Alberta in accordance with the CLASS II project. The study also obtained permission to conduct research across participating school board as appropriate. Prior to any data being collected, principals and key informants also provided informed consent for their participation in the qualitative research phase. The approval letters from the University of Albert is provided in Appendix 1.

Quantitative methods

The first objective of the thesis was to describe current top-down policies and initiatives at the public policy (provincial) and community (school district) levels and their overall impact on the student behaviours and weight. Although the NS Government has demonstrated their commitment toward improving the health of children by developing a variety of policies and programs, little was known about the extent that these policies are implemented across school districts. A case study approach was used in Chapter 2 to describe current health promotion policies in Nova Scotia by conducting a policy scan consisting of three iterative steps (a web search, document scan and follow-up interviews with key stakeholders) to define existing health promotion policies according to policy variables and health promotion topics. Secondly, although there is increasing evidence from cross-sectional studies that school nutrition policies have the potential to improve school environments environment and behaviours; there is greater uncertainty of its impact on overweight and obesity (108). The NS FNP provided a unique opportunity to assess the relative impact of a nutrition policy on children's health behaviours and weight status over time (129). In Chapter 3, data from CLASS I and II were used to assess population-level trends in children's nutritional intake and weight status from 2003 to 2011 as they related

to the potential impact of the food and nutrition policy in NS. The surveys were similar in both cycles (some items were slightly modified or added in 2011) and included the Harvard Youth Adolescent Food Frequency Questionnaire adapted for Canadian settings (used in both 2003 and 2011) to gather information on usual dietary intake and habits pertaining to mealtime behaviours (see Appendix 2). The survey for students included mostly validated questions on physical and sedentary activities, mental health, self-efficacy and body image, and measurements of height and weight (see Appendix 3). Parents also completed a survey to collect information on socio-demographic factors and the home environment (see Appendix 4).

The second objective was to assess current school practices based on health promotion policies. Although various tools have been developed to help schools plan and monitor HPS, the long-term feasibility and practicality in schools is not well understood (5,135). Many of these tools use an audit or survey style format and have been developed from a health promotion or public health lens (159,162). Considering the variability across HPS programs there were uncertainties on how HPS should be implemented and evaluated, especially considering the unique context of education systems. Chapter 4 describes a case study of a locally developed educational assessment used to plan and track implementation of HPS within one school district in NS using Innovation Configuration theory (see Appendix 5). These results and the launch of new health promotion policies and programs in NS (described in Chapter 2) provided the opportunity to study their uptake and the extent to which they are reflected in school practices at a population level. In Chapter 5, a "school practice assessment tool" was developed based on actionable characteristics of HPS in NS (see Appendix 6 and 7). This tool was administered to all public schools in NS with Grade 5 students as part of the CLASS II study in 2011. Considering the comprehensive and holistic nature of the HPS approach, the aim was to identify

differences between the comprehensiveness of categorical practices reported by schools.

Qualitative methods

The third objective sought to examine the contextual processes influencing implementation. Case study research (179,180) was employed to provide an in-depth understanding of the specific influences and interactions at the provincial and school levels. In relation to children's health, case studies have been suggested as having the potential to provide the clearest understanding of what works, in what situation, and why (181). As schools are bounded systems with unique cultures, each school in NS could have provided a different case for investigation. In case study research, the intent is not to be representative but rather to provide an in-depth understanding of selected cases (179) and provide evidence to inform what works, in what situation, and why (181). The selection of cases was guided by the theoretical framework of the study (182); specifically, it was important to understand the experiences of school-level implementation across the school districts in relation to varying degrees of HPS implementation. Variations in school-level implementation were determined based on individual school results from Chapter 5. Size (i.e., population of students) and region of schools (i.e., urban/rural) was also considered as well as recommendations from school districts and interest from schools. Considering the provincial nature of this research a collective case study design (179) was used and one or two schools were selected across each of the seven Anglophone public school district.

According to these criteria, nine schools (n=9) across the seven (n=7) Anglophone public school districts were invited to take part as a case study school. The sample size is justified by the alignment with the theoretical framework (182) and a similar sample size has been reported in recent qualitative school-based research (183). After determining potential cases, I contacted the

school principal to inform them about the subsequent research and determine their willingness to participate. All selected school principals agreed to take part and a first meeting was scheduled (see Appendix 8 for an overview of cases). The purpose of this initial meeting was to meet with the principal or present to a school team regarding the school-specific results and discuss potential contextual factors that may have influenced the results within selected schools (see Appendix 9 and 10 for information letter, consent form and interview guide for principals). Further visits, interviews and meetings were scheduled with key school stakeholders based on the recommendations of key informants (school staff and parent/community volunteers) that were involved with health promotion activities (see Appendix 11 and 12 for information letter, consent form and interview guide for key informants).

Data collection included observational data, interviews and document analysis of relevant school. Recorded observations tracked decisions that were made, informed analysis and provided context for research discussions and included any feelings, reactions, reflections, insights and interpretation of what was observed within the school. Semi-structured interviews followed a conversational format (184) and guides were developed for each participant to understand the school-specific context and their experiences with health promotion activities; questions were asked to elicit a rich description of the strengths, limitations and areas of improvement of health-related programs and activities within the school. With permission from participants, interviews were recorded and transcribed verbatim. Observational data and documents available through school websites that related to HPS (e.g., meeting notes, grant proposals, school menus) were used to inform the researcher of past and current activities of the school guided interactions with school stakeholders and informed analysis.

The data were analyzed to respond to describe contextual processes influencing implementation in three separate papers. In Chapter 6, a mixed

methods research design was employed to understand the mechanisms related to organizational functioning that may have influenced provincial trends in HPS implementation (i.e. results from Chapter 5). The case study data was qualitatively examined for potential school contextual interactions that might be influencing the provincial trends of implementation across the four themes of the school assessment tool (health and physical education, physical activity, healthy eating and health promotion). Chapter 7 sought to describe HPS implementation in NS using interdependent implementation components described in the literature (143,144). Data were analyzed to identify patterns in the a priori implementation components using the observed data from the case studies. Finally, Chapter 8 focused on elucidating the factors preventing and facilitating school-level implementation of HPS practices across case study schools.

1.6   Statement of intellectual contributions

Since my research was situated within the larger CLASS II project, it is important to clarify my intellectual contributions to the work included in this thesis. I contributed to the development and writing of grant proposal for the CLASS II project. In particular, I had intellectual contributions to the development of the qualitative research plan as CLASS I had not included qualitative methods and as Dr. Veugelers is a quantitative research. With respect to my thesis, my intellectual contributions included the conducting of the policy scan and articulating the importance of this work for the international scientific community (Chapter 2). I had led the provincial data collection among students and their parents/guardians across NS and contributed to the interpretation of the quantitative data for the purpose of assessing population-level trends in children's nutritional intake and weight status (Chapter 3). My intellectual contributions further pertain to the development of the Innovation Configuration maps into a school assessment tool (Chapter 4) and documenting school policies and practices

using this tool (Chapter 5). These chapters shaped my understanding of current school practices and trends in children's health behaviours. This, in turn, enabled me to conceptualize and lead the studies captured in Chapters 6, 7 and 8. My intellectual contributions are further captured in the overall interpretation of the results in the discussion section (Chapter 9).

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Chapter 2

School Health Promotion Policy in Nova Scotia: A Case Study[4]

2.1   Introduction

Schools have been recognized globally as being an essential setting to support healthy behaviours (1–5). In particular, a Health Promoting Schools (HPS) approach is increasingly being adopted as a comprehensive strategy to support health in schools. HPS is also known as Comprehensive School Health or Coordinated School Health. The model of HPS is adapted from recommendations by the World Health Organization (WHO); specifically there is a focus on fostering health and learning, engaging all school partners (i.e., staff, students, parents and community), providing a healthy environment that supports health and implementing healthy policies and practices (6). Historically, health education in schools has been addressed in the classroom using a topic approach (i.e. physical activity, healthy eating and mental health) whereas HPS offers a more holistic a 'whole school' approach that complements classroom curriculum. For example, teaching and engaging students in school gardening, establishing an inclusive school food program or incorporating physical activity into classroom curriculum. This approach shifts the focus from individual student behaviours to establishing a health enhancing school environment (5). As a result of the shift in emphasis, HPS requires a new way of thinking about health and the role of the school (6).

School priorities are dependent upon direction set by policies from higher-level jurisdictions. Traditionally, the priorities of the education system are focused

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on academic excellence rather than health promotion (7–9). This emphasis on academic success can restrict political action of provincial education authorities in the domain of health (9–11). Therefore, support for HPS requires leadership and guidance from policies by governing authorities (9). There is evidence to suggest that HPS helps to support both health and educational outcomes in schools (12–16). Recent literature on educational change has suggested that supporting health and wellness could be included in educational reform. Hargreaves and Shirley suggested that reform could consider self, family, peer-related, or health-based wellbeing along with the typical educational priorities of literacy and numeracy (17).

In Canada, the majority of federal policy action with respect to health in schools focuses on collaboration with local (provincial/territorial) governments to improve health policy within the public education system. Although Canada does not have a federal school health or wellness policy, the Pan-Canadian Joint Consortium for School Health brings together key representatives from each jurisdiction's health and education ministries/departments, and supports them to work more closely together to support health promotion in schools using a comprehensive school health framework (18). However, the ultimate responsibility and authority for school health-related regulation rests at the provincial jurisdictional level. In response to the growing concern regarding children's health, several provincial and territorial governments have responded and implemented provincial-level school-based health promotion policies (18). The *Nova Scotia Health Promoting Schools (NSHPS)* initiative is a partnership led by the Department of Education and the Department of Health and Wellness (formally Department of Health Promotion and Protection), and comprises its school districts, health authorities and community members (19). Since 2005, funding for NSHPS has been provided to support the development and implementation of a HPS approach across the province. Physical activity and healthy eating were the initial focus of NSHPS, however, the intent of the

partnership is for schools to take a comprehensive approach and address a range of issues based on their own unique contexts. Regional partnerships between health and education were fostered to develop a framework and plan for HPS that considers local assets and needs. Provincial funding has been distributed across regions based on these plans (19).

Over the past five years, the Nova Scotia Government has demonstrated their commitment toward improving the health of children by developing a variety of policies and programs, which offer a unique opportunity to evaluate the impact of policies and programs. However, little is known about the extent to which these policies facilitate implementation and adoption of health promotion in schools. The purpose of this study is to explore the context and nature of policies that relate to HPS in the province of Nova Scotia. In the absence of a federal policy relating to health promotion in schools, this study focused on policies developed by the Nova Scotia Provincial Government and its eight public school districts. A better understanding of existing health promotion policies will help reveal gaps and redundancies which in turn may guide the formulation and prioritization of new policies to support improved health promotion practices in schools.

2.2   Methods

Terminology

For the purposes of this research, policies are broadly defined as courses of action endorsed, implemented and resourced by the Nova Scotia Provincial Government or by one of their eight public school districts that include a combined total of 420 schools (20). These policies could include directions for action, guidelines, strategies, strategic plans, priorities and resource allocations. A policy framework proposed by Schmid et al. (21) was used to support the further

definition of policies into four distinct categories (Table 2.1): formal policies or acts, written standards, programs and strategies (21,22).

Table 2.1. Definitions of policy categories.

Formal policy or acts: Written codes, regulations or decisions bearing legal authority
Written standards: Guidelines or standards that inform choices of activities or professional practice.
Program: Activities that have specific objectives
Strategy: A plan of action designed to achieve a particular goal

A variety of health promotion topic issues were explored in this study (Table 2.2). Although there are many different areas of health promotion relevant to schools, those used in this study are based on a background paper from the International Union for Health Promotion and Education (23).

Table 2.2. Definitions of health promotion topics.

Mental health: Initiatives in schools that seek to build the social, emotional and spiritual wellbeing of students to enable them to achieve education and health goals and to interact with others.
Substance Use and Misuse: School-based drug reduction initiatives that are interactive rather than teacher-centred and focus on life skills.
Hygiene: Initiatives that support hand washing, drinking clean water and using proper sewage systems.
Sexual health and relationships: Education programs that are conducted by trained and empathic educators and focus on the sexual health and relationships of students.
Healthy eating and nutrition: Initiatives and programs that follow evidence-based teaching practices to support healthy eating behaviours of students.
Physical activity: Initiatives that include the development of skills and knowledge, establishing and maintaining suitable physical environments and resources and upholding supportive policies to enable all students to participate throughout the school day.
Safety: Practices that are implemented and maintained to ensure the physical and emotional safety of students and staff.

Procedures

This research received ethical approval through the University of Alberta Health Research Ethics Board as part of a broader project. This policy research study sought to identify relevant policies and factors related to their implementation in schools (21) using a policy scan. Similar to other health promotion policy research, this policy scan consisted of three iterative steps: a web search, document scan and follow-up interviews with key stakeholders (24). First, the Provincial Government and school district websites were scanned for policies relating to health promotion in schools. Website search engines, policy manuals and other policy-relevant documents were searched for keywords relevant to the health promotion topics. Policies were included if they were applicable to a policy category and had a direct (facilitating behaviours) or indirect (addressing barriers to behaviour) influence on a health promotion topic. Policies were excluded if they were not adopted, revised or implemented between 2003 and 2010. This timeline was chosen because of recent policy and research activity. Information retrieved was summarized into a database according to policy-related variables. Specifically, each policy was coded by category and health promotion topic (see Table 2.1 and 2.2). Each policy was defined by one category but health promotion topics were not mutually exclusive. Instead, policies could be coded across various health promotion topics if they satisfied the definitions.

The second step of the policy scan was to consult with key stakeholders to verify information and clarify gaps following the web and document scan. A purposive, snowball sampling approach (25) was used to identify stakeholders (key informants) across the province. Identified stakeholders were asked to participate in a brief individual or partner interview to clarify policy information. Altogether, twenty-six key informants participated in the study (N=26). Specifically, six (n=6) provincial stakeholders and twenty (n=20) district stakeholders took part. The district stakeholders included twelve (n=12) across the

public school districts and eight (n=8) across the district health authorities. Individual and group interviews (determined as appropriate for the particular stakeholders) were conducted by the lead author and followed a semi-structured guide that focused on verifying the policy information. For example, stakeholders were prompted with examples of policies found in the scan and were asked to clarify aspects related to development, implementation and enforcement. Stakeholders were also asked if there any specific policies they felt helped to support the goals of HPS. With consent, interviews were audio-recorded. Interviews were transcribed and information was directly added to the policy database. The same procedures were used in the francophone school district with the assistance of a francophone research assistant.

Data Analysis

Throughout the stage of summarizing and coding, the research team worked iteratively to ensure all information was included. Two co-authors independently scanned the documents, coded the variables according to the four policy categories and health promotion topics and met to discuss differences. Agreement was achieved through consensus and verified through further discussions with key stakeholders. The descriptive analyses included frequency tables and cross tabulations (used in version SPSS 15.0) of provincial and school district policies to describe the nature of policies according to their category and their support toward health promotion topics.

2.3   Results

According to this comprehensive scan, numerous policies have been developed in Nova Scotia over the past seven years that support health promotion in schools. A total of 348 health promotion policies related to schools were in place at the provincial level (n=53) and across the eight public school districts

(n=295). At the provincial level, a range of policies was developed across the four policy categories. There were similar percentages of written standards, programs and strategies (17, 15 and 13% respectively) but formal policies (55%) were much more frequently developed (Figure 2.1).
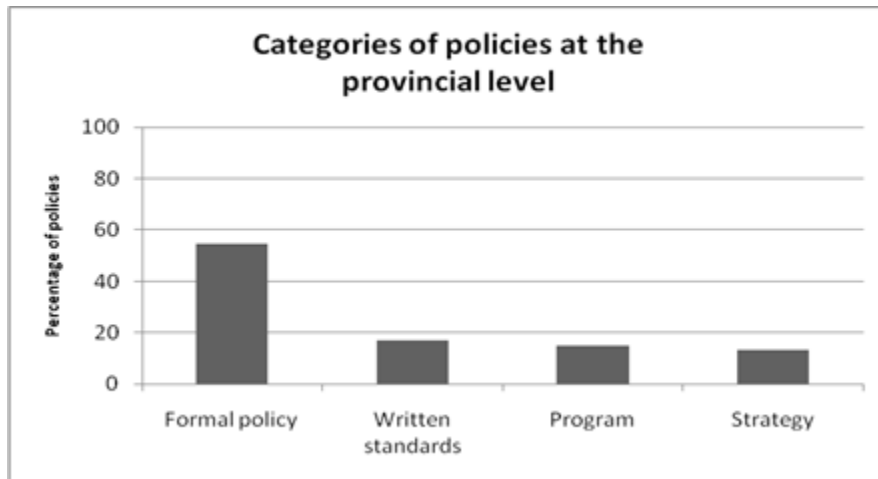
Figure 2.1. Percentages of policies coded across policy categories at the provincial level.

There were also a range of policies across health promotion topics; safety (25%) and mental health (20%) were most frequent, followed by physical activity (13%) and healthy eating (12%). Hygiene, substance use and misuse and sexual health and relationships (11, 9, 8% respectively) were the least frequent categories (Figure 2.2).
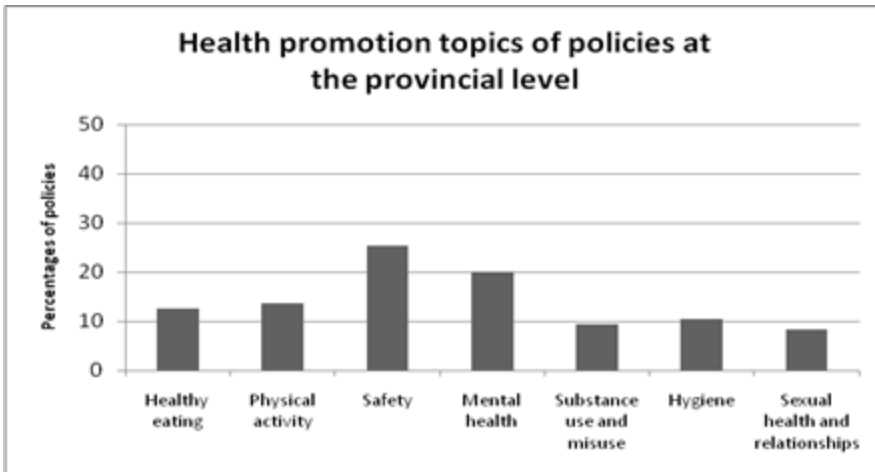
Figure 2.2. Percentages of policies coded across health promotion topics at the provincial level.

At the school district level, the vast majority of policies were formal in nature (95%) with specific criteria of how they should be implemented in schools. The remaining polices were categorized as either written standards (3%) or programs (2%) (Figure 2.3).
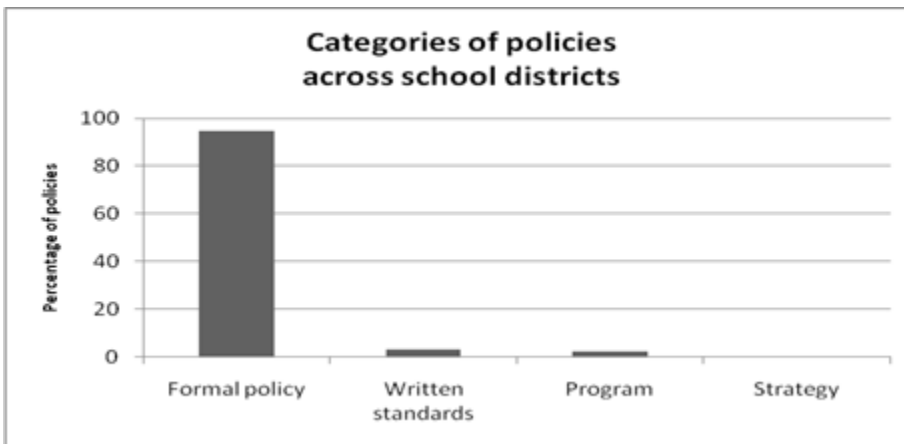
Figure 2.3. Percentages of policies coded across policy categories across school districts.

The most frequent policies at the school district level focused on the topic of safety (50%). The next frequent coded as mental health, physical activity, healthy eating and substance use and misuse (17, 11, 8, 7% respectively). Hygiene (4%)

and sexual health and relationships (2%) were the least frequently coded (Figure 2.4).
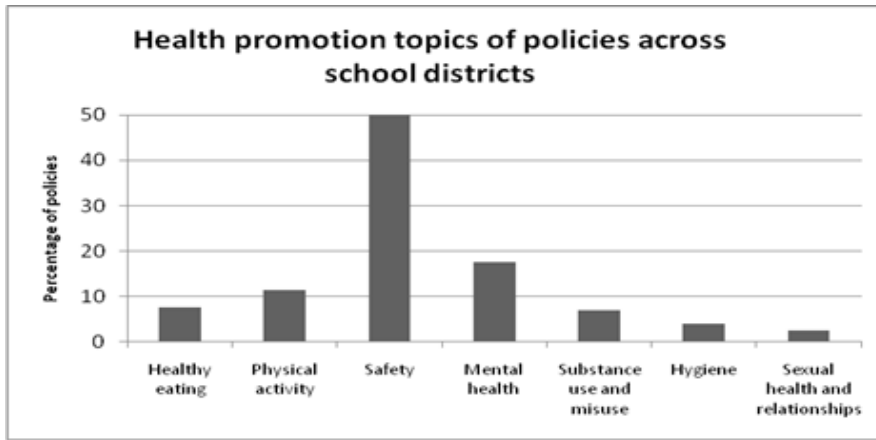
Figure 2.4. Percentages of policies coded across health promotion topics across school districts.

The stakeholder interviews provided additional context to how the policies may help to support a HPS approach. At the provincial level, there were several key strategies that both directly and indirectly supported health promotion in schools. For example, *Healthy Eating Nova Scotia* and *Active Kids, Healthy Kids* are provincial strategies to address nutrition and physical activity opportunities across multiple settings, including schools. As previously mentioned, *NSHPS* is an approach that provides direct support to enable schools to support health promotion. These strategies and approaches have resulted in the provision of various health promotion resources to enable implementation of comprehensive school-based initiatives across the Province. However, the majority of formal policies and written standards developed at the provincial level seemed to have more of an indirect influence on health promotion in schools as a result of a lack of strict criteria and monitoring. For example, the Education Act (26) is a formal written enactment of legislation that was enacted by the Province of Nova Scotia. This act provides criteria to ensure that the school system provides education programs that enable students to develop their potential and contribute to a

healthy society. Although there is a mention of health in the purpose of the Act ("to enable [students] to develop their potential and acquire the knowledge, skills and attitudes needed to contribute to a healthy society and a prosperous and sustainable economy") there are no criteria for how this should be achieved (26). Furthermore, there are written standards (i.e., curriculum documents and supplements) that guide the implementation of health and physical education curricula but no strict time requirement nor monitoring of curriculum implementation. Importantly, one example of a recent formal policy is the *Food and Nutrition Policy for Nova Scotia Public Schools* (27). This policy provides specific standards for foods and beverages served and sold in schools, directives for school eating practices such as pricing, programming and advertising and guidelines that encourage schools to foster community partnerships and support local food products. However, similar to policies relating to other health promotion topics, there is no provincial protocol in place to monitor adherence.

One key finding was that typically, the policies related to safety had more detail with respect to the expected adherence compared to other health promotion topics, especially at the school district level. For example, all school districts had a formal policy related to life-threatening allergies (or anaphylaxis); student discipline or codes of behaviour; protection of students (i.e. child abuse, harassment); and student transportation. These policies had specific criteria to guide implementation in schools; however, there was often little detail about how they would be monitored by the district. Relative to provincial direction, there were several school districts that had formal policies in place to enforce the provincial food and nutrition policy but few had a formal policy related to physical activity. At the time of data collection, only one school district had a formal policy, with specific guidelines, to support the implementation of the provincial health promoting school approach (two others were under review). The other school districts addressed the provincial approach through a program or

strategy. The content of HPS related policy documents tended to be vague with respect to it would be implemented and monitored in schools.

2.4 Discussion

This case study provides understanding around the scope and range of health promotion policies influencing schools in the province of Nova Scotia. The results demonstrated that the Provincial Government has implemented various health promotion policies across category types and health promotion topics; however, these policies were rarely enforced nor monitored in schools. Comparatively, school districts almost exclusively focused on formal policies and provided specific standards to guide implementation, especially related to the topic of safety. Although this is consistent with the provincial *Education Act*, which delineates the responsibility of local policies and procedures to local school districts, the lack of enforced formal policies (and subsequent monitoring) at the provincial level limits the impact of comprehensive health promotion initiatives on school practices and students (10,28).

Recent policy research has demonstrated the importance of high-level direction in supporting the implementation of health promotion policies in schools. In particular, McKenna et al. suggested that when implementation of a school food policy was left to the discretion of individual schools, there was a smaller and more inconsistent impact on school food (29). The stakeholder interviews in this study also corroborated the documented challenge of academic pressures weakening the impact of health promotion policies in schools (9–11). In a review of one health promotion policy, Robertson-Wilson and Lévesque (30) suggested that sustainability of resources, the extent to which the policy is valued, and evaluation plans required additional attention to ensure optimal implementation of related policies. These findings advance the school policy

discourse by suggesting that school districts were more likely to implement regulatory health promotion policies related to "safety", than other aspects of health promotion (i.e. policies that promote improved health behaviours or a comprehensive school health approach). This could be due to the legal implications associated with these types of policies, compared to policies that promote improved health behaviors and a broader HPS approach.

This study provides evidence of the existence of health promotion policies in the province of Nova Scotia and sheds light onto the large scope of health promotion policies and initiatives that schools must consider in their everyday practice. Despite a range of supportive policies at different levels of jurisdiction, there was some incongruence between the health promotion priorities of the province and school districts and differences in enforcement practices. To optimize the impact of health promotion policies, all jurisdictions need to recognize the established relationships and inherent philosophy of HPS that emphasizes the connection between health and learning . Policies also need to be harmonious and robust (i.e., monitored) across supporting health promotion topics. Finally, as provinces/territories and school districts continue to take a more comprehensive school health approach to health promotion, research will be needed to understand the determinants and outcomes of policy (21) so as to reinforce the growing knowledge-base and support implementation of supportive policies in schools (5,23,33,34).

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Chapter 3
The impact of a Population-level School Food and Nutrition Policy on Dietary Intake and Body Weights of Canadian Children[5]

3.1   Introduction

Public policy is a critical component of population health interventions (1) and offers an important opportunity to address the rising public health concerns of child and adolescent obesity (2). Rates of overweight and obesity have dramatically increased over the last two decades (3–5) and have significant health (6–9) and economic implications (10–12). Current evidence suggests the need for comprehensive, sustainable initiatives to simulate the changes necessary needed to produce a population-level change in childhood weight status; however, there is a relative paucity of population-level intervention research to help inform this important public health issue (13). Schools are an important partner in population-level obesity prevention, particularly through supporting early development of healthy behaviours, including promoting healthy eating and physical activity (14–16). Over the past ten years, many school jurisdictions have developed and implemented nutrition policies and guidelines as part of a broader strategy to address childhood obesity (17,18).

In Canada, there is no national/federal school nutrition policy or school feeding program; rather provincial/territorial jurisdictions are responsible for developing policies to regulate and manage school food. Research and policy activity in the Canadian province of Nova Scotia (NS) provides a timely opportunity to explore the relative impact of a nutrition policy on children's

health behaviours and weight status over time (19). Provincial results from the 2003 Children's Lifestyle And School-performance Study I (CLASS I) (20,21) helped to inform new policies and investments related to school health over the past decade in NS. Specifically, the *Food and Nutrition Policy for Nova Scotia Public Schools* (NSNP) was introduced in 2006, with full implementation expected in all public (state) schools by 2009. This policy included all three categories defined in an earlier systematic review, including nutritional guidelines, regulation of food and beverage available and price interventions (22). Briefly, the Nova Scotia Nutrition Policy (NSNP) is intended to increase access to and enjoyment of health-promoting, safe, and affordable food and beverages served and sold in public schools, with the objective of helping to make the healthy food and beverage choice the easy choice in the school setting. The policy mandates standards for foods and beverages served and sold in schools, provides directives for various school eating practices (including pricing, programming and advertising) and guidelines that encourage schools to foster community partnerships and support local food products (23). A summary of the policy directives and guidelines is provided in Table 3.1.

Table 3.1. Nova Scotia Nutrition Policy 2006: Summary of directives

Directives	Description
1. Food and Beverages Served and Sold in School	1.1 During the school day when students are present, food and beverages served and sold in school will be consistent with the Food and Beverage Standards for Nova Scotia Public Schools. This includes cafeterias, canteens, vending machines, and lunch, breakfast, and snack programs. 1.2 The policy and food and beverage standards are also in effect during evening programs for students provided by the school. (Refer to Directives 5 and 6 for considerations for Fundraising and Special Functions.) 1.3 Schools will ensure that the majority of choices available are from food and beverages of Maximum Nutrition, recognizing

	that they are more nutritious than those of Moderate Nutrition. 1.4 Schools will serve or sell only milk (white, chocolate, flavoured, and nutritional alternatives to milk, e.g., soy), 100% juice, and water as beverages as per the Food and Beverage Standards for Nova Scotia Public Schools. 1.5 Schools will not use deep fat fryers to prepare food.
2. Clean Drinking Water	2.1 Schools will ensure that students and staff have access to clean drinking water during the school day. 2.2 Teachers and administrators will encourage students to drink water, especially during periods of hot weather or increased physical activity. This may be facilitated by allowing water bottles into the classroom.
3. Programming	3.1 It is expected that all schools will participate in the Nova Scotia Department of Agriculture's School Milk Program.
4. Pricing	4.1 To ensure that healthy food and beverage choices are accessible to the majority of students, schools will make affordability the primary consideration when setting prices or profit margins. Meal programs, in particular, will be priced with this in mind.
5. Fundraising	5.1 Fundraising with food and beverages organized by and through schools will centre only on items of Maximum or Moderate Nutrition.
6. Special Functions	6.1 Food and beverages of Maximum and Moderate Nutrition will be offered during Special Functions. However, Special Functions may include items from the Minimum Nutrition list. Special Functions are events that may occur once or twice a month and include special occasions and in-school celebrations (e.g., parent-teacher night, Remembrance Day, school bazaar, Spring Fling, Halloween, Christmas bake sales).
7. Promotion and Advertising	Schools will work to develop a culture that promotes health by 7.1 promoting healthy food and beverage choices that emphasize and are consistent with the Maximum Nutrition and Moderate Nutrition lists. 7.2 giving priority space to healthy food and beverages as defined by the Maximum Nutrition list (e.g., counter-top

	refrigerators, placement of fruits and vegetables at student eye level).
8. Food as a Reinforcer	8.1 School staff and volunteers will not offer food as a reinforcer or withhold food from students as a consequence, except in cases where a program planning team is using applied behavioural analysis to implement an individual program plan for a student.
9. Students Who May Be Vulnerable	9.1 Schools will ensure that students and parents are aware of breakfast, lunch, and snack programs that are offered in or through the school at minimal or no cost and are accessible to all students. 9.2 Schools must ensure that any food programs are made available to students in a non-stigmatizing manner. 9.3 Schools will work with parents to ensure that staff/volunteers are aware of food allergies and guidelines for supporting children with food-related chronic diseases (e.g., diabetes, celiac disease). 9.4 Schools will ensure that any food and beverages served and sold from those listed in the Food and Beverage Standards for Nova Scotia Public Schools are in alignment with school board anaphylaxis policy, Canadian School Boards Association Anaphylaxis Guidelines, or Peanut Aware policies and guidelines.
10. Portion Sizes	10.1 Schools will serve and sell appropriate portions of food and beverages. Super-sized portions are not appropriate to serve or sell in schools. Refer to Canada's Food Guide to Healthy Eating for information related to portion sizes.
11. Food Safety	11.1 Schools are required to prepare and serve foods in accordance with food safety standards and training guidelines as outlined by the Health Protection Act of the Nova Scotia Department of Agriculture. This may require the need for a Food Establishment Permit, food safety training, and Workplace Hazardous Materials Information System (WHMIS) training. 11.2 Schools will emphasize and promote cleanliness. Placemats or disinfectant wipes are encouraged if students are to eat at their desks. 11.3 Schools will ensure that students are aware of the importance of hand washing and will provide students with the opportunity to wash their hands before consuming meals.

12. Nutrition Education	12.1 The Department of Education will work with partners to ensure continued development and currency of high-quality, evidence-based health education curriculum that includes food and nutrition outcomes.
	12.2 The Department of Education will work with partners to ensure continued development and currency of high-quality, evidence-based family studies curriculum that includes food and nutrition studies.
	12.3 When possible, schools should integrate nutrition education into other subject areas and activities beyond the classroom.
	12.4 The Department of Education will work with partners to enhance pre-service and in-service teacher education regarding nutrition.
	12.5 The Department of Education will work with partners to ensure that opportunities for ongoing professional development are made available to teachers to support food and nutrition education.
	12.6 The Department of Education will work with partners to ensure that teachers and students have access to the resources they need to address food and nutrition curriculum outcomes.

Following policy implementation, a subsequent data collection cycle in 2011 (CLASS II) provided an opportunity to explore how changes in school food practices as a result of the NSNP may have affected changes in student behaviour, if at all. The objective of this study is therefore to assess population-level trends in children's nutritional intake and weight status from 2003 to 2011 as they relate to the potential impact of the NSNP.

3.2   Methods

Study design

      CLASS is a large, cross-sectional, provincial study that has investigated the relationship between nutrition, physical activity, mental health and school performance of grade 5 students in Nova Scotia across two time points (2003 and 2011). The vast majority of the grade 5 student population in Nova Scotia attend public schools; all public schools were invited to participate in both data collection cycles. In 2003, 282 of 291 schools (96.9%) agreed to participate and 5,517 parents provided their consent, resulting in an average response rate of 51.1% per school. The 2011 cycle of data collection provides a comparable sample with 269 of 286 schools (94.1%) and informed consent from 5913 parents. The higher response rate in 2011 (67.7%) may be reflective of the support received from school jurisdictions and stakeholders interested in the CLASS research. On each occasion, trained research assistants visited the schools to administer the surveys to students and to complete anthropometric measurements. Standing height was measured to the nearest 0.1 cm after students had removed their shoes and body weight to the nearest 0.1 kg on calibrated digital scales. The surveys were similar in both cycles (some items were slightly modified or added in 2011) and included the Harvard Youth Adolescent Food Frequency Questionnaire (YAQ) adapted for Canadian settings (used in both 2003 and 2011, see Appendix 2) to gather information on usual dietary intake and habits pertaining to mealtime behaviours (24). The survey for students included mostly validated questions on physical and sedentary activities, mental health, self-efficacy and body image, and measurements of height and weight (Appendix 3). Parents also completed a survey to collect information on socio-demographic factors and the home environment (Appendix 4). Principals completed surveys that provided information on school characteristics and implementation of school policies. Ethics approval for this study was obtained from the Health Research

Ethics Boards at the University of Alberta and Dalhousie University. Permission for data collection was also granted from participating school boards.

Outcomes

1) Dietary behaviour and nutrient intake

  Eating Well with Canada's Food Guide (25) provides guidelines for healthy eating according to recommended number of servings for the four food groups: vegetables and fruit, milk and alternatives (yogurt, cheese), grain products (e.g., bread, pasta, cereal) and meat and alternatives (e.g., tofu, beans, eggs). Dietary behaviours and intakes from each of the four food groups were determined from the YAQ. Student's diet quality, nutrient intake, and caloric intake were assessed using the YAQ and Canadian Nutrient File (26). Overall diet quality was measured using the Diet Quality Index – International (DQI) score, a composite measure of diet quality ranging from 0 to 100 that includes aspects of diet adequacy, variety, balance and moderation (27). Sugar-sweetened beverages (SSB) were defined as consumption of non-diet soda, fruit drinks and sweetened iced tea drinks, based on the YAQ. Nutrient intakes were compared with the Dietary Reference Intakes (DRIs) (28) where intakes of carbohydrate, protein and fat were compared with the Acceptable Macronutrient Distribution Range (AMDR). Intake of calcium, folate, iron, zinc and vitamins A, C, and D were compared with the Estimated Average Requirement (EAR). As an EAR is not available for total fibre, comparisons were made with the Adequate Intake (AI), which is a value that is observed to be adequate in healthy populations (28). Levels of sodium intake were compared with the Upper Limit (UL). The lower range of the DRI reference values were used to determine the prevalence of nutrient inadequacy.

2) Weight status

  Measured body mass index (BMI) was used to define weight status based on the age- and gender-specific cut-off points of the International Obesity Task Force (29).

Covariates

  Parents completed home surveys that included information on parental education attainment levels (secondary or less, college, university or above) and household income levels (< \$20,000; \$20,001-\$40,000; \$40,001 - \$60,000; >\$60,001). Place of residency (urban/rural) was determined using postal codes collected from parent surveys.

Statistical analysis

  All statistical analyses were weighted for non-response bias and represent provincial estimates of the grade 5 student population in public schools across NS. Response weights were calculated based on average household incomes according to postal code data from the 2001 and 2011 census for participants and non-participants, to account for non-response bias due to lower participation rates in residential areas with lower household incomes (21). Unadjusted differences between pre- and post-policy implementation for dietary outcomes and weight status were assessed using the Rao-Scott- Chi-square (30,31) or t-test as appropriate. These changes were considered to act as proxies of policy effect.

  We applied random effects regression methods to assess the effect of the NSNP on dietary and health outcomes to account for the clustering of students within schools that are embedded within school boards. Missing values were considered as separate covariate categories but are not presented. Students from schools that did not take part in both years of the study were excluded from the regression analysis. Considering the cross-sectional study design, prevalence ratios (PR) and 95% confidence intervals (CI) were estimated from Poisson

random effects regression models with robust variance (32) for the following binary outcomes: eat breakfast, bring a prepared lunch from home, buy lunch at school, eat supper at table with others, eat supper in front of the TV, eat at fast food restaurant, overweight and obesity. Regression coefficients (β) and 95% CI were derived from linear random effects regression models for the following continuous outcomes: mean servings of fruits and vegetables per day, mean servings of grain products per day, mean servings of milk products per day, mean servings of meat and alternatives per day, mean non-diet soda intake, mean dietary energy intake, and mean DQI score. The number of servings consumed from each food group was standardized by assuming a caloric intake of 2,000 kcal per day. Furthermore, the analyses were adjusted for the potential confounding effects of gender, household income, parental education and place of residency. Dietary outcomes were further adjusted for energy intake.

3.3 Results

The characteristics of 5,215 grade 5 students attending public schools who participated in CLASS I and 5,508 students who participated in CLASS II are shown in Table 3.2.

Table 3.2. Characteristics of grade 5 students attending public schools[1] in the Canadian province of Nova Scotia in 2003 and 2011.

Independent Variable	2003	2011	P^2
Gender			0.278
Girls	51.0	52.1	
Boys	49.0	47.9	
Parental Education			<0.001
Secondary or less	30.0	19.3	
College	38.0	43.0	
University or above	32.0	37.7	
Household Income			<0.001
Less than $20,000	12.2	8.5	

	22.4	17.7	
$20,001 - $40,000	22.4	17.7	
$40,001 - $60,000	25.6	17.6	
>$60,000	39.8	56.1	
Place of residency			0.398
Urban	68.0	64.3	
Rural	32.0	35.7	
Overweight[3] (excluding obese)	23.1	22.6	0.625
Obesity[3]	9.8	10.9	0.172

Note: CLASS = Children's Lifestyle And School-performance Study; DQI = Diet Quality Index

[1] Findings based on 5,215 students from CLASS I and 5,508 students from CLASS II attending public schools in Nova Scotia, Canada. Results are adjusted for non-response and represent provincial estimates of students attending public schools.

[2] p-values derived using the Rao-Scott Chi-square which examine differences in weighted estimates by adjusting for the design effect

[3] Excludes students without height and weight measurements for BMI calculations

Parents of grade 5 students in 2011 had significantly higher levels of education and higher overall household income than parents of students in 2003. In terms of adequacy of nutritional intake, the mean percentage of total energy intake that was attributable to carbohydrate and protein increased in 2011 from 2003 and this decreased for percentage of total energy intake attributable to fat (Table 3.3).

Table 3.3. Dietary Reference Intakes (DRI) and observed nutrient intakes among grade five students attending public schools in Nova Scotia.

Nutrient	DRI Category[1]	Ref–erence Value	Mean ±SE							Effect Size[2]	Prevalence of Inadequacy	
			2003			2011			p-value		2003	2011
Carbohydrate												
(%)	AMDR	45-65	55.6	±	0.1	56.5	±	0.1	<0.001	0.11	2.5%	2.0%
(g/d)	EAR[3]	100	299.7	±	2.4	267.1	±	2.2	<0.001	-0.18	1.7%	2.3%
Protein												
(%)	AMDR	10-30	14.8	±	0.1	15.9	±	0.1	<0.001	0.22	3.4%	1.7%
(g/kg/d)	EAR	0.76	1.94	±	0.02	1.84	±	0.02	<0.001	-0.09	6.5%	7.6%
Fat												
(%)	AMDR	25-35	30.7	±	0.1	28.7	±	0.1	<0.001	-0.25	7.4%	19.6%
(g)	EAR	ND	73.4	±	0.6	60.2	±	0.5	<0.001	-0.25	-	-
Vitamin C (mg)	EAR	39	163.5	±	1.7	125.8	±	1.5	<0.001	-0.26	5.4%	11.7%
Folate	EAR	250	363.8	±	2.8	335.2	±	2.5	<0.001	-0.15	27.7%	33.5%

	Type	Ref	2003 mean	±	SD	2011 mean	±	SD	p	Effect size	2003 %	2011 %
Vitamin A (ug RAE/d)												
Males	EAR	445	918.7	±	12.6	898.5	±	10.9	0.22	-0.03	16.7%	18.9%
Females	EAR	420	901.1	±	12.7	881.8	±	10.6	0.25	-0.03	15.3%	16.0%
Iron (mg)												
Males	EAR	5.9	12.1	±	0.1	12.5	±	0.1	0.03	0.06	8.7%	8.1%
Females	EAR	5.7	11.1	±	0.1	11.5	±	0.1	0.03	0.06	10.6%	8.5%
Zinc (mg)	EAR	7	10.2	±	0.1	9.5	±	0.1	<0.001	-0.12	24.6%	30.5%
Calcium (mg)	EAR	1100	1181.9	±	9.7	1110.0	±	9.6	<0.001	-0.10	48.5%	55.3%
Vitamin D(IU)	EAR	400	251.5	±	2.7	245.2	±	2.7	0.10	-0.03	80.7%	81.4%
Total fibre (g)												
Males	AI	31	16.2	±	0.2	15.6	±	0.2	0.01	-0.08	-	-
Females	AI	26	15.6	±	0.2	15.1	±	0.2	0.03	-0.06	-	-
Sodium(mg)	UL	2200	2615.1	±	20.6	2404.8	±	18.7	<0.001	-0.14	-	-

[1] AMDR = Acceptable Macronutrient Distribution Range; EAR = Estimated Average Requirement; ND = Not Determined; AI = Adequate Intake; UL = Upper Limit

[2] Effect size is mean 2003-mean 2011/ SD

[3] EAR is the value that is estimated to meet the requirements of 50% of healthy individuals. AI is used in the absence of definitive data on which to base an EAR. The prevalence of inadequacy cannot be determined with values below an AI because lower values may be adequate. EAR is not available for total fat intake. Sodium intake levels were compared with the Upper Limit (UL) a values above which potential adverse effect may occur (i.e. high blood pressure). Only the UL was used for sodium because health concerns pertain primarily to the excess consumption of sodium and sodium deficiencies are extremely rare in Canada.

The average sodium intake significantly decreased from 2615 mg in 2003 to 2405 mg in 2011. Average intake of vitamin C, folate, vitamin A, zinc and calcium exceeded EAR values in 2003 and 2011. However, the average intake of these micronutrients decreased over the years and rates of inadequate levels among respondents increased. In particular, inadequate levels of calcium increased from 48.5% in 2003 to 55.3% in 2011. Average intake levels of vitamin D were below reference values in 2003 and 2011, with over 80% of respondents having inadequate intakes. Intake of total fibre decreased in both boys and girls and these levels were below reference values for AI. In relation to dietary behaviours and intake, in both 2003 and 2011, 95% of grade 5 students reported they usually ate breakfast either at home or at school (Table 3.4).

Table 3.4. Effect of the Nova Scotia Food and Nutrition Policy on dietary behaviours, dietary intakes, and weight status among grade 5 students attending public schools between 2003 and 2011.[1]

Outcome	2003	2011	P[2]	Unadjusted Change[3]		Adjusted Change[4]	
Dietary behaviours				PR (95% CI)		PR (95% CI)	
Eat breakfast	95.3%	94.9%	0.400	0.99	(0.99, 1.00)	**0.99**	(0.98, 1.00)
Bring a prepared lunch from home	59.1%	79.3%	<0.001	**1.35**	(1.20, 1.52)	**1.33**	(1.19, 1.50)
Buy lunch at school	17.3%	12.8%	0.003	**0.69**	(0.58, 0.82)	**0.67**	(0.48, 0.92)
Supper at table with others	72.4%	73.0%	0.618	1.00	(0.98, 1.03)	0.98	(0.96, 1.01)
Supper in front of the TV	56.1%	60.9%	<0.001	**1.10**	(1.05, 1.15)	**1.13**	(1.07, 1.18)
Eat at fast food restaurant	49.6%	40.8%	<0.001	**0.84**	(0.76, 0.91)	**0.84**	(0.77, 0.92)
Dietary intakes				β (95% CI)		β (95% CI)	
Mean servings of fruits & vegetables per day	5.20	5.23	0.596	0.01	(-0.16, 0.18)	-0.08	(-0.27, 0.19)
Mean servings of grain products per day	4.68	4.99	<0.001	**0.29**	(0.19, 0.39)	**0.26**	(0.17, 0.34)
Mean servings of milk products per day	3.23	3.54	<0.001	**0.31**	(0.25, 0.37)	**0.24**	(0.18, 0.31)
Mean servings of meat & alternatives per day	1.52	1.59	<0.001	**0.06**	(0.03, 0.09)	**0.06**	(0.03, 0.09)
Mean pop intake (cans or glasses/day)	0.44	0.27	<0.001	**-0.16**	(-0.19, -0.13)	**-0.09**	(-0.11, -0.06)
Mean sugar-sweetened beverages (non-diet pop, fruit juices, and sweetened tea cans or glasses/day)	0.99	0.62	<0.001	**-0.34**	(-0.41, -0.26)	**-0.20**	(-0.27, -0.12)
Mean dietary energy intake (kcal) per day	2151	1887	<0.001	**-267.15**	(-323.62, -210.69)	**-248.52**	(-301.21, -195.83)
Mean DQI score	62.0	63.0	<0.001	**0.71**	(0.39, 1.04)	**1.80**	(1.33, 2.27)
Weight status				PR (95% CI)		PR (95% CI)	
Overweight (excl obese)[5]	23.1	22.6	0.625	1.01	(0.92, 1.09)	1.03	(0.94, 1.12)
Obese[6]	9.8	10.9	0.020	1.15	(0.95, 1.39)	**1.26**	(1.08, 1.48)

[1] Multilevel models with clustering of students within schools within school boards.

[2] p-values derived using the Rao-Scott Chi-square or t-test where appropriate.

[3] Change in public schools over time between 2003 and 2011/ Significant results highlighted in bold font.

[4] Models adjusting for the potential confounding effects of gender, household income, parental education, and place of residency. Students from public schools that did not participate in both years of the study were excluded from the regression analysis. Dietary outcomes were further adjusted for energy intake. Prevalence ratio (PR) from Poisson random effect models with robust variance assessing the effect of FNP on binary outcomes (i.e. dietary behaviours and weight status) and β coefficients are derived from linear random effect models assessing the effect of FNP on continuous outcomes (i.e. dietary intake and DQI score).

[5] Overweight (excluding obese) compared to normal weight. Students without height and weight measurements for BMI calculations were excluded from the analysis

[6] Obese compared to normal weight. Students without height and weight measurements for BMI calculations were excluded from the analysis.

After adjusting for potential confounders, students were 33% more likely to bring a lunch prepared from home (PR = 1.33, 95% CI = 1.19, 1.50) and 33% less likely to buy lunch at school in 2011 relative to 2003 (PR = 0.67, 95% CI = 0.48, 0.92). Students in 2011 compared to students in 2003 were also 13% more likely to eat supper in front of the TV and less likely to eat supper at the table with others, although this was not significant after adjusting for confounders. Moreover, a statistically significant 16% decrease was observed in the likelihood of students reporting eating at a fast food restaurant in 2011 relative to 2003. In 2011 relative to 2003, students reported consuming 0.26 servings per day more milk products, while no difference in mean consumption of fruits and vegetables was observed in adjusted models. Adjusted regression analysis also revealed a decrease of 0.20 can or glass per day in SSB consumption, which included a 0.09 can or glass per day decrease in soda consumption. Significant decreases in dietary energy intake along with increases in diet quality as measured by the DQI were also observed over time. The prevalence of overweight (excluding obesity) remained relatively unchanged at 23.1% in 2003 compared with 22.6% in 2011, whereas the prevalence of obesity increased slightly from 9.8% to 10.9% over the same time period.

3.4   Discussion

This study involved a large population-based comparison of grade 5 students Nova Scotia in 2003 and 2011, which represents the timeframe before and after the implementation of the NSNP. This policy began influencing changes in school food in Nova Scotia from 2006 with full implementation expected by 2009. As this study observes trends from 2003 to 2011, it was possible to examine population differences before and after policy implementation, although without a comparison group, it is not possible to disentangle any effects of the policy from

wider societal changes. Nonetheless, this study provides "real world" evidence of the impact of a population-level (province-wide) intervention to promote healthy eating in schools. Thus far, the majority of research has focused on shorter term (one to three years) nutrition-related changes using an experimental or cross-section design in relation to state or district-wide implementation of a nutrition policy (22). As very few studies have assessed changes at a population level (33), this study contributes important population-level context and adds to the limited evidence of the long-term, organic changes observed following nutrition policy implementation. Similar to other studies, positive trends in diet quality (34,35) and energy intake (36) were observed following the implementation of the NSNP but no statistically significant increases in consumption of vegetables and fruit were found that have been reported by others. A decline in SSB consumption over the timeframe observed in this study is consistent with other research following the implementation of a school-based nutrition policy (37–39); however, different from earlier work, there was no differentiation between beverages consumed at home and at school.

Typically, school nutrition policies focus on foods available at school, rather than the food provided at home. The focus on improving school food is important for NS as earlier research (CLASS I) found that students who purchased lunch at school (compared to those who brought lunch from home) had poorer diets and were more likely to be overweight and obese (40). Food served during school lunch should now follow the NSNP but the frequency with which options are available varies according to the capacity and interest of the school to manage a lunch program. Notably, the results of this study found that students were more likely to bring a lunch prepared from home and less likely to buy lunch at school following the implementation of the NSNP. The decrease in school lunch participation is an important area of investigation considering unintended negative consequences following nutrition policy implementation that have been reported in other studies. For example, Cullen et al. (2006) reported that students

might compensate for lack of access to 'banned' foods by buying other processed foods (41). Although unfounded in research (42), schools often report difficult obstacles in creating healthier food options such as the fear that profits will be negatively influenced. Free fruit and vegetable programs (43,44) and price reductions in healthy food options (37–39,45) are school strategies that have also demonstrated improvements in children's diet quality and provide an opportunity to support families and strengthen school policies related to nutrition.

National surveys have suggested a leveling of childhood overweight and obesity rates. The 2004 Canadian Community Health Survey and the 2009-2011 Canadian Health Measures Survey suggest that rates of overweight (excluding obese) among children decreased from 18.1% in 2004 to 16.2% in 2010 whereas obesity remained the same at 8.2% in 2004 and 8.1% in 2010 (5,46) Compared to the leveling of national results, this study reported no change in overweight (23.1% to 22.6%) but a slight increase in obesity (9.8% to 10.9%) along a similar time period. It is important to note that lifestyle and poor health are particular challenges to residents of NS (47); these results suggest that the current conditions that make it difficult for children to acquire nutritious foods and recommended levels of physical activity might have an influence on prevalence rates over time and these factors extend beyond the school gates. Although several studies have reported an impact of nutrition policy on body weight (18,48,49), the current study did not find similar effects.

It is possible that the NSNP led to some potential positive effects on nutrition, including a reduction in percentage of energy from saturated fat and a decrease in SSB consumption. However, there was evidence of a negative trend in micronutrient and dietary fibre consumption. There are several reasons for this. First, students in 2011 were less likely to buy their lunch at school and more likely to bring a lunch from home than in 2003, as discussed above. It could also be because of increasing media attention on the healthiness (or not) of school meals internationally over the last decade (50) or because the changes brought in

by the policy itself may have been perceived more negatively by parents and students. An unintended consequence of this shift to food brought in from home might be to negatively impact overall nutritional quality, since international research comparing school meals and packed lunches in England between 1990 and 2007 showed that mandatory school food standards had widened the nutritional gap between school meals and packed lunches (51). The modest changes reported might also be reflective of the complexity of school nutrition policy implementation and the significance of obstructive community-related factors, such as the widespread availability of energy dense, nutrient poor food (51) and the increasing cost of healthy foods (52,53). Although a reported reduction in consumption of fast food was observed, this could reflect a number of contributing factors that were beyond the NSNP (e.g., increasing food prices or greater awareness of the negative effects of fast food consumption more broadly). It may also reflect social desirability bias although this is difficult to judge without further exploration. These factors may also explain the lack of change in the rates of overweight and obesity. Although weight status is an outcome, dietary changes are also the more informative measures for evaluating a policy that targets food and nutrition.

In the current study, nutrition policy implementation occurred across the province in conditions that were not controlled by research. Therefore these results provide significant insight on the potential real-world effects that result from a population-level policy intervention. Importantly, the NSNP is a comprehensive policy that includes regulations and guidelines for school food, but also encourages schools to consider broader factors that contribute to the school food environment. The importance and health benefits of applying a comprehensive approach to school nutrition is well supported in the literature (54,55) and have been found to be beneficial to diet quality, active lifestyles, and body weight (20). Future research will use a comprehensive model to study the effects of specific school policies and practices on students' health behaviours and

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body weights. Furthermore, school-level differences in the school food environment will be explored to help us understand how differences in policy implementation (i.e., with respect to reported adherence to policy directives and guidelines as well as the adoption of broader health promotion initiatives) across different schools may have influenced student behaviours. Intervention context has been reported as a key component of evaluations relating to obesity prevention (56) and further exploration of this construct through qualitative case studies will provide critical evidence to help interpret the observed outcomes across schools and improve policy and practice in Nova Scotia (1,55).

Strengths of this study include the relatively high response rates and reduction of nonresponse bias through the use of weighting. Furthermore, adjustments were made for a number of potential confounders, measured participants' height and weight, and applied consistent protocols to survey administration. A validated FFQ was also used which enables consideration of a number of important dietary factors and the broader team had considerable experience with the use of this tool for population level analyses of the type reported here (40). Most of the questions included were validated, although self-reported responses, including in the YAQ, remain subjective and hence may be prone to error. Unfortunately, this remains a limitation of population-based dietary surveys, but has been mitigated by the steps taken above to ensure consistency in data capture. The YAQ may not fully capture newer foods, e.g., energy drinks. FFQs may also overestimate intake (58) although this is less of an issue in this study which uses the same tool over two time points. Relative to 2003, parents in 2011 reportedly had higher levels of education and higher incomes. These changes paralleled economic growth but also differences in participation rates, and underline the importance that temporal comparisons are adjusted for these socioeconomic differences, as was done in the present study.

In summary, population health approaches that include a focus on healthy school policies are critical in the prevention of childhood obesity. The implementation of the NSNP provides an important opportunity to explore the relative effect of student population trends in nutritional habits and weight status observed before and after policy implementation. Although this study reports improvements in diet quality, energy intake and healthy beverage consumption, no significant effects on overweight or obesity were observed over time. It is clear that more action is needed to curb the increases in the prevalence of childhood obesity. This includes more consistent messaging and support for parents and the community to reinforce healthy school food practices.

3.5   Bibliography

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Chapter 4
Developing an educational tool to support planning and tracking of Health Promoting Schools[6]

4.1   Introduction

The school's primary mandate is to educate, but it also plays an important role for health and wellbeing. Children that are physically active (1-3) and well-nourished (4-9) have demonstrated improvements in cognition, behaviour and academic performance, thus providing a rationale for the need to support health in schools. A Health Promoting Schools (HPS) approach is being increasingly adapted as a comprehensive strategy to foster both health and learning. There is also a focus on strategies that make changes to the school environment (10) to make "the healthier choice the easy choice." Implementation of HPS requires a clear understanding of how the essential elements are coordinated and will be applied. At the same time a certain degree of flexibility is required to allow for adjustments prompted by changes in school context (11). This complexity and variability across HPS implementation make it difficult to evaluate HPS for program effectiveness (12). Mukoma and Flisher (2004) reviewed nine different evaluations of HPS programs and found that most did not allow a confident direct attribution of the observed outcomes to the interventions. The review also identified that there was a gap in the schools' understanding of the core characteristics of HPS and the development of evaluation methods. Specifically, the review identified a need to develop more clearly defined, valid, feasible and suitable indicators to evaluate process, output and outcomes in HPS (13).

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Considering the variability across HPS programs and uncertainties on how HPS should be implemented and evaluated (11), the purpose of this paper is to describe a case study of a HPS program that tailored an educational tool to assist in the planning and tracking of the implementation of HPS in schools in the Annapolis Valley Health Promoting Schools Program.

4.2   Literature Review

Over the past 10 years, there is emerging evidence that the focus of school interventions should go beyond changing individual behaviours to establishing a health enhancing school environment (14). A recent statement from international experts explained that effective practice has included approaches that combine traditional health education with more comprehensive, whole-school approaches leading to the development of a supportive physical, social and learning environment and bringing together resources of parents, local communities and organizations (15). A HPS approach is being increasingly adopted as a comprehensive strategy to support health in schools (also known as Comprehensive School Health or Coordinated School Health). The model of HPS is adapted from recommendations by the World Health Organization (WHO); specifically there is a focus on fostering health and learning, engaging all school partners (i.e., staff, students, parents and community), providing a healthy environment that supports health and implementing healthy policies and practices (16, 17). Historically, health education in schools has been addressed in the classroom using a topic approach (i.e. physical activity, healthy eating and mental health); HPS offers a more holistic approach that can complement classroom curriculum. As such, HPS requires a new way of thinking about health and the role of the school (17). For example, classroom lessons on healthy eating can be supported and reinforced by a school breakfast program and having only healthy foods available for purchase and at school functions (18).

Measuring a Health Promoting Schools Program

School climate is described as the enduring quality of a school environment that is experienced by participants, affects their behaviour and is based on the shared perceptions of behaviour (19). Characteristics of school climate include staff morale, leadership, administrative support, financial and human resources and have a significant impact on the capacity of a school to implement an initiative like HPS (20). Various measures have been used to study school climate, however, these have not been extensively described for their relevance to the implementation of health promotion programs. The Child and Adolescent Trial for Cardiovascular Health (CATCH) used both the Organizational Climate Description Questionnaire for Elementary Schools and Organizational Health Inventory for Elementary Schools (19) to determine the effect of school climate on the institutionalization of the CATCH program. The authors reported that aspects of school climate were associated with continued implementation of the CATCH classroom component but not foodservice or physical education (21). The authors also suggested that this instrument was helpful to evaluate the readiness of the school to implement and sustain an innovative program. Comparatively, Gittelsohnl et al. (2003) used a qualitative assessment (in-depth interviews) to appraise the school climate of schools related to the implementation of a comprehensive school health intervention rather than using previously developed measures for school climate. The results of this research suggested that support from teachers was an indicator of positive school climate and that positive school climate showed a significant impact on implementation of the curriculum and on student exposure in general (22). The authors commented on the limitations of their qualitative assessment as it focused specifically on the influence of school climate on the specific program, rather than the entire school environment (22). Although these studies offer important considerations for previously developed questionnaires to measure school climate, their application requires extensive support and may not be practical for naturally

occurring health promotion programs. Related to HPS, these tools do not offer an explicit mechanism to support school planning nor has research explored their relevance to a comprehensive school health approach.

Various tools have been developed to help schools plan and monitor HPS, however, the long-term feasibility and practicality in schools has not yet been well explored. Many of these tools use an audit or survey style format and have been developed from a health promotion or public health lens. For example, the School Health Index (SHI), from the Centers for Disease Control (23) is commonly used to support research activities in the United States (24). A study by Staten et al. reported that at least one immediate change was made in each school that participated in the School Health Index project, however, staff turnover, lack of time, and limited resources resulted in few schools achieving longer-term policy changes (25). In Canada, a survey format is used to generate health profiles of schools with the School Health Action, Planning, and Evaluation System (SHAPES) (26, 27). Based on initial success, additional modules have been developed and have also informed the development of a national tool endorsed by the Joint Consortium for School Health (28). Despite the promise of this tool there is little information about its long-term utility to support HPS planning. Finally, a different approach was used in developing the School Health Portfolio System (also in the United States), which provides a tool for schools in the form of a notebook that leads the school through seven separate tasks to assess, plan and monitor progress in school health (29). This tool was evaluated for its feasibility and found to be helpful for a small sample of schools but barriers, such as lack of time, money and human resources, persisted in these cases (30).

Despite the existence of some supportive tools to guide HPS planning, schools need to have the capacity to interpret and use resources that support their specific school context. Furthermore, resources developed from a health

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perspective do not always fit with typical educational priorities. Thus, the local educational contexts, and educationally developed tools, are important to consider in the development of a planning and assessment tool for school health.

Educational Assessment Tools

Innovation Configuration (IC) is an established and well-researched theory developed by experts in a national research center (University of Texas Research and Development Center in Austin) studying educational change (31). IC theory offers a diagnostic tool for change facilitators who want to monitor innovations and is specifically used to: describe a new initiative to stakeholders, set goals, establish realistic expectations and a timeline for implementation, monitor and gauge implementation in a self-assessment and gather data to diagnose emerging needs (32). IC maps are assessments that provide specificity on how standards should look in practice and direction for those involved in the implementation of an innovation (33). In order to fully implement the standards of an innovation, such as HPS, various individuals within a school system must work together to develop policies and create a system that supports the knowledge and skills of those involved. IC theory assumes that the "users" (i.e., school staff, students, parents and community) need to have a clear understanding of the innovation to be able to consistently implement. IC maps identify the major components of an innovation and describe a continuum of use, or variations, that range from "ideal implementation" to "non-use." This range allows for measurement of true program fidelity by identifying how current actions compare to the ideal level of implementation (33). To my knowledge there is no research relating to IC maps to support HPS planning. Rather, the majority of literature on IC maps has focused on traditional education programs; specifically, this theory has been used with family support, literacy and extended services in schools (12, 34, 35).

4.3 Case Study: Annapolis Valley Health Promoting Schools Program

Although Canada does not have national legislation on HPS, many provinces and school boards have created policies or procedures to guide the implementation of HPS within their jurisdictions. In Nova Scotia, the provincial government has a program that supports HPS but each regional school board must create a separate approach to determine how the program will be implemented within their region. The Annapolis Valley Health Promoting Schools Program (AVHPSP) emerged as a grassroots initiative, prior to the existence of the Provincial program, by parents and school staff who had become increasingly concerned about the poor eating habits, physical inactivity and consequent health of their children. Using an ecological approach to change the school environment, the program focused on "making the healthy choice the easy choice" for students. Environmental changes were made through the development of healthy school policies and practices and by enabling strong community leadership and partnerships with health, recreation, and food industry sectors. The program also ensured that students had the opportunity to gain personal skills through the health and physical education curriculum (36). In 2003, a provincial survey of children's body weights and healthy living behaviours identified children attending these schools had healthier diets, were more active, 59% less likely to be overweight and 72% less likely to be obese (37). As a result of the initial success of AVHPSP additional funding allowed the program to be expanded from its initial 8 schools to additional schools in the school board. Research is currently being conducted in a three-year study to investigate the impact of program expansion.

Along with the growth of the AVHPSP, program champions identified that there was a need to help "new" schools understand how to implement the best practices used by the original AVHPSP schools. The AVHPSP Project Implementation Team judged IC theory to be appropriate to support HPS

planning and tracking because it was familiar and of interest to educators in the region. For example, staff in this school board also had experience by using IC theory as teaching tools with literacy, race relations, cross-cultural understanding and human rights initiatives. Two individuals of the Team (program manager and educational consultant/former principal) led the development of the IC map.

Development of the IC Map

        Based on best practices found in the AVHPSP original eight schools, a list of core components of an HPS approach was developed. Three main categories were identified: 1) the school; 2) the food available; and 3) opportunities for physical activity. Subcategories were listed within these. Table 4.1 provides a list of categories and subcategories in the revised IC map (the complete version is in Appendix 5).

Table 4.1: List of categories and subcategories in the revised IC map.

The Health Promoting School Leader
Creates a Health Promoting School team
The Health Promoting School Team
Develop a Health Promoting School culture
Promote an inclusive Health Promoting School culture
Establish Partnerships
The people (person) responsible for providing snacks and meals in the school
Work(s) with the HPS team
Support(s) the intent of the Provincial Nutrition Policy (*Food and Nutrition Policy for Nova Scotia Public Schools)*
Promote(s) fruit and vegetable consumption
Emphasize(s) whole grains
Actively support a Health Promoting School culture
The people (person) responsible for providing breakfast
Work(s) with the HPS team
Work(s) through Breakfast for Learning "Keys to Success"
Ensure(s) food is available when students arrive at school
Ensure(s) the food available meets nutrition guidelines
Ensure(s) universal accessibility
Encourage(s) community involvement
Actively support a Health Promoting School culture

The people (person) involved in coordinating physical activity in the school
Work(s) with the HPS team
Provide(s) a range of opportunities so all students can participate in daily physical activity during the school day
Provide(s) opportunities for students to be physically active outside the school day
Actively support a Health Promoting School culture
The physical education teacher(s)
Work(s) with the HPS team
Provide(s) school wide leadership for daily physical activity with support from the administration
Actively support a Health Promoting School culture
All teachers
Actively support a Health Promoting School culture
All support staff
Actively support a Health Promoting School culture

Components of these categories were transformed into action words by stating them in behaviours or actions that described what the "school" was doing. Variations were described to clarify how the intervention would look at different stages that moved from the beginning to the ideal level of implementation. The intention was to encourage schools to move from the right (level 4 or 3, beginning stage) to the left (level 1, ideal stage). Elementary, middle and high school maps were developed to describe the different best practices expected at each school level.

The Team felt that the first draft of the IC map was appropriate and manageable for the schools. However, upon pilot testing inconsistencies were identified. With support from a public health researcher, an opportunity for funding, guidance from an expert of the original research group who developed IC maps (38) and support from other expertise in the region, the tool was adjusted in three ways. Firstly, in order to increase the knowledge and understanding of the scope of a HPS culture, school teams were introduced to the "Protocols and Guidelines for Health Promoting Schools," International Union of Health Promotion and Education (39). Local examples were included to help teams relate each guideline to the region. Secondly, IC maps were made more comprehensive by describing the specific responsibilities of various school-based personnel, each

on separate pages (i.e., the HPS Leader, the HPS Team, those responsible for providing snacks and meals in the school, those responsible for providing breakfast, those involved in coordinating physical activity in the school, the physical education teacher(s), all teachers, all support staff). This replaced the three major categories previously described. Finally, there was more detail on the variations in implementation. This helped to clarify both the level at which the schools were currently operating, as well as to provide detail on what they needed to do to move forward to the next level. See Table 4.2 for an example of the revised variations in behaviours for the "People Responsible for Coordinating Physical Activity" section.

Table 4.2: Example of variations of behaviors (1 being ideal and 4 being "beginning stage") for the "People Responsible for Coordinating Physical Activity" section.

Desired Outcome	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4
Provide(s) opportunities for students to be physically active outside the school day (before and after school)	Coordinate opportunities for an after-school program 5 days a week	Coordinate opportunities for an after-school program 4 days a week	Coordinate opportunities for an after-school program 3 days a week	Coordinate opportunities for an after-school program 1 or 2 days a week
	Emphasize sportsmanship	Emphasize sportsmanship	Emphasize sportsmanship	Emphasize sportsmanship
	Encourage all students to participate	Encourage all students to participate	Encourage all students to participate	Encourage all students to participate
	Identify barriers to student participation to the principal and/or school based HPS Team	Identify barriers to student participation to the principal and/or school based HPS Team	Identify barriers to student participation to the principal and/or school based HPS Team	Identify barriers to student participation to the principal and/or school based HPS Team
	Provide more time for a variety of non-traditional and recreational	Provide more time for a variety of non-traditional and	Provide more	

	activities which emphasize different aspects of fitness	recreational activities which emphasize different aspects of fitness	time for a variety of non-traditional and recreational activities which emphasize different aspects of fitness	
	Identify and promote opportunities for students during weekends & holidays	Identify and promote opportunities for students during weekends & holidays		
	Build links with local community (e.g. high school students)			

A document review of best practices from the original HPS schools was completed to ensure reliability in the components used in the IC maps. Focus groups were also conducted with the principals, teachers and parents from the original schools and public health staff were consulted to further ensure validity of the tool. In some cases, the IC map described best practices that were beyond the actions of the original schools to ensure the components of the IC map represented an ideal HPS framework for schools.

Although the IC map was not originally designed as an evaluation tool, the level of implementation corresponds to a numeric value (ranging from 1 to 4). These numbers provide indication of school progression with respect to implementation. For example, the average score in all schools in 2006 was 2.19, in 2007 was 1.78 and in 2008 was 1.67. These figures demonstrate a trend of improved implementation of HPS in the AVHPSP (decrease in score) during the three years of tracking. This use of the IC maps supports program-level tracking of HPS implementation for the AVHPSP and enables further analysis to determine the impact of school-level implementation on student outcomes.

4.4   Discussion

The IC maps are now typically used at a yearly school meeting that is dedicated to HPS planning. The teams attending the meetings vary in size and range but are generally comprised of a mix of school administration, teachers, support workers, parents, community members and students. The purpose of these meetings is to discuss HPS activities and reach a consensus on each component of the IC map with respect to the current level of their school. Afterward, schools identify their HPS goals for the next school year and discuss actions that are needed to achieve these goals. Substitute/supply teacher coverage, enables staff to attend meetings during school time, and facilitation support is provided through funding available from the AVHPSP. The length of team meetings varies depending on the availability and commitment by the school; generally, during a three hour meeting, the IC map component would take approximately one hour. The team process, including the self-assessment and planning used by the AVHPSP is well supported as being essential to establish and maintain HPS (16). Furthermore, the integration and coordination of the IC map into the process of HPS at the school and program level is a critical part of why this tool works for the AVHPSP.

The IC map provides a unique and practical tool for schools in the AVHPSP. The focus on the educational environment is important and different from other tools that have been developed from a "health" or "research" lens. A focus on the educational environment was facilitated in various ways. First, the emphasis on a comprehensive HPS approach offers an advantage as it emphasizes a link between health and education (17). Moreover, as development of the tool was led by educational stakeholders, developed from an educational based theory and familiar to the local education sector, it may have been perceived as more feasible for schools when it was introduced. Also, the IC maps allow for emphasis on process rather than outcomes. The descriptions of how to achieve best practice

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used in the IC map help to teach schools how to implement a HPS approach. Furthermore, there is a persistent consideration given to both academic school requirements and priorities. Program champions understand and endeavour to connect the IC map and HPS planning process to school requirements, such as school accreditation; this integration will help to maintain "buy in" from schools. The integration of the IC map process into the work of schools through the AVHPSP is also a key feature of this success. In order to receive funding for HPS programming, schools need to hold a HPS team meeting, which includes the completion or review of their IC map. Finally, the IC map has enabled feelings of ownership among school level stakeholders in the AVHPSP as they participate in discussions about how their school has been implementing the HPS framework and, based on their resources, on how they want to move forward.

Comparatively, many tools developed from a "health" or "research" lens are led by health stakeholders, focus on health outcomes and are not well integrated into the processes or priorities of schools. For example, the SHI was developed by the Centers for Disease Control (23), which is part of the United States Department of Health and Human Services, not the Department of Education. SHAPES was developed by researchers (26, 27) and although the newly developed Healthy Planner is now endorsed by the Joint Consortium for School Health (28), the tool is not integrated into the education system. Similarly although research interventions, such as CATCH and Pathways have used tools to measure school climate these have not been well integrated into the process of a school. Positively, use of SHI, SHAPES and the Healthy School Planner suggest a similar process that links self-assessment and planning. However, both of these tools assess how well best practices are in place in a school (23, 26, 27), rather than describing how a school might move forward with further implementing particular components. Furthermore, these tools do not seem to consider education requirements and priorities and are not well integrated into educational jurisdictions.

The Program Implementation Team and schools have identified many positive experiences of working with the IC map. At a program level, it provides a mechanism to track implementation of HPS across schools. Each year, schools complete and submit their yearly IC map, develop school goals and request HPS related funding. This tool provides a means of tracking the level of implementation across schools; together with their priority goals for the year, the IC map provides some consideration for distributing HPS related funding. The IC map also provides a common vocabulary for the AVHPSP, clarifies roles of stakeholders and sets specific expectations for implementation of HPS. With descriptions of how to achieve best practice and by indentifying resources and support available through AVHPSP, schools are able to envision how they can achieve change. This is particularly helpful for schools that are at the beginning stage of implementing HPS. Having leadership within a school, often referred to as a "champion", is consistently reported as an enabling factor for coordinating and implementing HPS (17, 39, 40). In this case study, stakeholders also reported that having a champion helps to facilitate the use of the IC map. The direct support of a facilitator also ensures that the IC maps are more consistently implemented, thereby increasing the validity and reliability of the IC maps and trustworthiness of the score. The facilitator also encourages participation from all HPS team members and helps to balance disproportionate opinions from individuals on the team. Similarly, an evaluation of the SHI also reported that external facilitators were essential for implementation success (Staten et al., 2005). Best practices from HPS also recommend engaging diverse stakeholders, including principals, teachers, staff, parents, community members and students, in planning, implementation and evaluation (16, 17, 23, 26, 27, 29, 39, 41). In this case, diversity in the IC map meetings seemed to increase the richness of discussion and also ensured all voices were heard.

Similar to other barriers identified with other tools (25, 30), an ongoing challenge for the AVHPSP is to ensure the IC map is user-friendly and integrated into the dynamic educational requirements and priorities of schools and is adequately and appropriately resourced. The AVHPSP team has identified that the IC map needs to be revised as the initiative evolves. Specifically, the team has acknowledged that the IC should include aspects of HPS beyond the topics of healthy eating and physical activity (for example, mental and sexual health). Furthermore, schools have identified that the focus on "individuals" in the revised IC map can create some discomfort among the team. As the IC map evolves in the AVHPSP, it will be important to document changes and impact on school use. Sustained funding for substitute coverage and support from a facilitator through the AVHPSP will also be important as these factors were reported as being critical to the school process. Furthermore, continued integration into the educational priorities of the school board will be an important part of ensuring ongoing use by schools.

This paper focuses on the development and use of the IC map for planning and tracking implementation of HPS in the case of the AVHPSP. The case suggests that the critical aspects of a useful tool for HPS practice requires descriptions for implementing best practice at different stages of readiness and integration into the school system. Although this tool was adapted for the context of the AVHPSP, components were based on best practices and could be adapted and applied in other HPS programs. For example, the use of the IC maps with the AVHPSP was recently highlighted as an example of a useful planning tool for comprehensive school health in an article in a supplementary issue of the Canadian Journal of Public Health (42). Future research could explore the effectiveness of the IC map to monitor changes in school level practices and relate these changes to improvements in students' health behaviours and health status. It will also be important to explore the relevance of this tool in different school environments and the capacity of the tool to reliably evaluate improvements in

school level implementation of HPS programs. Future analysis will be conducted to analyze the extent of implementation at different levels as well as relating this to the health behaviours of students.

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Chapter 5
Health Promoting Schools Practices: A Canadian Provincial Case Study[7]

5.1   Introduction

Establishing healthy physical activity and eating behaviours among children is important to their development and to the prevention of chronic diseases later in life. Schools have been recognized globally as an essential point of intervention to support healthy behaviours as they have inherent opportunities to foster and maintain active lifestyles and proper nutrition (Story, 1999; Tang et al., 2009; Waters et al., 2011; Wechsler et al., 2000; World Health Organization, 2012a). Research has suggested that school-based health promotion initiatives are most likely to be successful if they are comprehensive and multifaceted (Leger, Kolbe, Lee, McCall, & Young, 2007; Lister-Sharp et al., 1999; Stewart-Brown, 2006). Health promoting schools (HPS) offers such a comprehensive framework to support health in schools by connecting health and education in a planned, integrated and holistic way by providing supportive policies and environments, alignment between curriculum and involvement from the community (8–12). HPS is also known as Comprehensive School Health or Coordinated School Health, with each term used interchangeably depending on jurisdictional context (13). Healthy public policies and government initiatives can help to establish commitment and identify priorities for comprehensive action within schools (Denman, 1999; Sabatier, 1997) and although various jurisdictions have started to endorse HPS there is limited research that has investigated what key practices have been implemented by schools to support a HPS approach. Lessons learned

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about implementation are important for schools to advance practice, especially for schools that are new to the HPS approach (14).

Background

The 'holistic' HPS approach is based on four distinct but interrelated principles: fostering health and learning, engaging all school partners (i.e., staff, students, parents and community), providing a healthy environment and implementing healthy policies and practices (5,10). In Canada, the Pan Canadian Joint Consortium for School Health (JCSH) is a partnership of federal, provincial and territorial governments that provides leadership to facilitate a comprehensive school health (CSH) approach. JCSH has developed a framework with four distinct but inter-related pillars that provide a foundation for CSH in Canada; these pillars include Teaching and Learning, Healthy School Policy, Physical and Social Environments, Partnerships and Services (15). Guidelines to support implementation have generally focused on establishing key processes, rather than defining required implementation activities, (10,13) and recent research has suggested that an emphasis on the "functioning" of these processes (i.e. how they are implemented) could bring about a new focus to strengthen the science base for HPS (16,17). Furthermore, there is emerging literature that to suggest the need to support HPS development with practical solutions according to different stages of readiness (18–21).

The adaptability of HPS is an important feature of the approach as it ensures flexibility to diverse school contexts (with respect to enrollment criteria, socio-economic factors, curricular demands due to language or religious instruction, etc.) (13). However, this adaptability has also led to considerable uncertainty as to how HPS should be evaluated across schools (22–25). Various evaluative methods have been developed but their applicability to variations in jurisdictional boundaries has not been well explored (26). In Canada, the Healthy School Planner helps schools assess the health of their school and build a plan for

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improvements (15). Importantly, there is a foundational module that considers the process for implementation ("how it is being implemented") while also including practical modules that assess school practices ("what is being implemented"). Although this tool shows promise for measuring the implementation of HPS, the applicability of a national tool is challenged by the variations in provincial/territorial policy contexts within Canada (26). Furthermore, considering the dynamic and ongoing processes of HPS (21), the challenge for evaluators will be to find appropriate methods that track the transformation of change.

Program context

Various school jurisdictions across Canada have developed relevant policies and guidelines to support adoption across schools, including the small east coast province of Nova Scotia. Research had provided local data regarding the significance of poor nutrition, physical inactivity and unhealthy weights among NS children (27,28) and a recent policy study described the development of health promotion policies and programs at the provincial and school district levels (29). In particular, a provincial health promoting schools initiative (NS HPS) and a food and nutrition policy (NS FNP) for public schools have been introduced and implemented over the last ten years. In 2006, the Provincial Government provided support the development of regional HPS partnerships and frameworks that considered local assets and needs. Enhancing physical activity and supporting healthy eating practices, based on guidelines of the NS FNP (30), was the initial provincial focus; however, schools were encouraged to adapt and address issues relevant to their unique school contexts (31).

The recent launch of new policies and programs in NS provides the opportunity to study their uptake in a 'real-world' context and the extent to which they are reflected in school practices. As a result of the adaptability of the NS HPS approach, it was expected that local (i.e. school) implementation of HPS

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would be considerably different across the province (29). Chapter 2 reported on the development of an educational tool in NS that was used to plan and track implementation of HPS according to the accepted model in one school district. Varying descriptions for best practice were provided in this tool with relevance to different stages of readiness; these descriptions helped to both plan and evaluate implementation of HPS (32). This research provided important foundation to broaden the current study to consider HPS implementation across the province. Therefore, the aim of this study was to assess what practices were being adopted by schools to support HPS in NS. For this purpose a 'school practice assessment tool' was developed based on actionable characteristics of HPS in NS. Considering the comprehensive and holistic nature of the HPS approach, it was of particular interest to identify if there were any differences between the comprehensiveness of categorical practices that school reported they were implementing. Understanding what school practices were implemented by schools following the introduction of health promotion policy initiatives is important for measuring the progress and enhancing uptake of NS HPS. Furthermore, this insight would help to generate insight to inform health promotion policy development and advance HPS uptake across other jurisdictions.

5.2   Methods

The tool to assess school practices

Based on a review of available tools and the provincial policy scan in Chapter 2 (29), a framework was developed to characterize the critical components of HPS for NS (Appendix 6). In consultation with national and local stakeholders, key components were assessed for their contribution to the HPS framework and relevance to the unique policy context of NS schools. These components were contextualized into school practices (i.e. actions that schools

could implement) that were organized into four sequential stages of expected practice; this "rubric" format was pragmatic for schools and is similar to the previous work in HPS assessment describe in Chapter 2 (32). Before finalizing the tool, local experts were consulted (including policy makers, school district staff and principals) and their feedback was incorporated. Overall, 72 practices, 14 categories and four themes relating to health and physical education, physical activity, healthy eating and health promotion were included in the final evaluation tool. An example of how one category (category 4, 'active free play') of school practices was sequentially described is provided in Table 5.1. The final items in the tool are included in the results section (Table 5.2) and a copy is available on the project website (www.nsclass.ca) and Appendix 7.

Table 5.1. Example of school practices in category four ('active free play') and practices 20-23.

	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4
	Beginning implementation	⟶		Full implementation ⟶
Active free play	☐ Active free play is scheduled during the school day (e.g., before school, recess, lunchtime)	☐ Different spaces are available for students during active free play (e.g., playground, green space, fields, lunchroom, foyer)	☐ Different equipment is available for students to use during active free play (e.g., mix of nontraditional such as snowshoes and traditional sport equipment)	☐ Indoor space for active free play is available during poor weather

Tool administration

Ethics approval was obtained by the Health Research Ethics Boards at the University of Alberta and Dalhousie University. Participating school boards in Nova Scotia granted permission to access schools for the data collection. The evaluation tool was administered to all public schools in NS (approximately 97%

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of students) with Grade 5 students as part of the Children's Lifestyle and School-performance Study II (CLASS II) between February and June 2011. CLASS II is a province-wide research project that investigated the relationships between health, nutrition, physical activity, mental health and school performance of elementary school students in NS (student results not shown in this paper). During data collection, the assessment tool was given to each school principal. Principals were asked to administer the tool with either a team of key stakeholders or the person most responsible for HPS related practices. Upon completion, the evaluation tool was returned to the research team in person or by fax, email or mail.

5.3   Results

Validation of data

A total of 269 of 286 (94%) school principals agreed to take part in CLASS II and 237 evaluation tools were returned to the research team (93% of participating schools). For each school, two raters reviewed and assessed implementation of the 72 individual discrete practices (yes or no) and the categorical level of implementation (Level 1, 2, 3 or 4) to ensure inter-rater reliability and rigour. The number of practices required for full implementation (Level 4) of each category was different; for example, for category 1 (health education) had 8 practices and category 2 (physical education) had 5 practices. According to the design of the rubric, if a school reported implemented 4 practices overall for each of these categories, they would be assessed at Level 2 for health education and Level 3 for physical education. Qualitative information on the rubric was also used to determine if categories were applicable for schools. If it was determined the category was not applicable or the school did not report sufficient information, the school was removed from the valid sample for level of implementation and individual practices. In particular, some schools commented

that physical characteristics (e.g., rural location or lack of facilities/equipment for to prepare food) prevented implementation of practices (24-27, 34-38 and 39-45) that related to active transportation, food programs, food for purchase (categories 5, 7 and 8) and less than half of the overall sample (39%) reporting practices (53-36) related to fundraising with food (category 10); these circumstances reduced the valid sample for the results related to individual practices and categorical implementation.

Overview of the implementation

Percentage frequencies of discrete implementation (i.e. yes or no) across the 72 individual practices were reported in Table 5.2.

Table 5.2. School practices included in the HPS tool by practice category and practice theme.

School practice	School practice frequency	Practice category	Practice average frequency	Practice theme	Practice theme frequency
1. Health education is inclusive to all students	96%	1. Health education n = 183	84%	1. Health and physical education	84%
2. Health education adheres to curriculum	96%				
3. Health education resources are used	94%				
4. Mental health is integrated in health education	74%				
5. Classroom teachers attend professional development	65%				
6. Classroom discussions encourage respect	95%				
7. Curriculum is integrated into other subjects	70%				
8. Learning activities accommodate diverse learning needs	83%				
9. Physical education is inclusive to all students	97%	2. Physical education n = 183	85%		
10. Physical education	98%				

School practice	School practice frequency	Practice category	Practice average frequency	Practice theme	Practice theme frequency
adheres to curriculum					
11. Physical education resources are used	96%				
12. Physical education professional development is attended	94%				
13. Curriculum is integrated into other subjects	38%				
14. Organized activities are inclusive to all students	92%				
15. Organized activities are provided at no cost	88%	3. Organized physical activity n = 183	76%		
16. Organized activities are non-competitive	82%				
17. Transportation is provided to support attendance	53%				
18. Non-traditional activities are offered	83%				
19. Program are offered regularly to student	61%				
20. Active play is scheduled during the day	95%				
21. Various spaces are available for play	92%	4. Active free play n = 183	81%	2. Physical activity	69%
22. Different equipment is available for play	74%				
23. Indoor space is available during poor weather	63%				
24. Cross walks and guards are available	55%				
25. Storage provided for active transportation equipment	86%	5. Active transportation n = 148	46%		
26. Active transportation is promoted	33%				
27. School has an active transportation policy	12%				
28. School takes part in active school-wide activities	93%	6. School activity environment n = 183	67%		
29. School takes part in active living initiatives	97%				

School practice	School practice frequency	Practice category	Practice average frequency	Practice theme	Practice theme frequency
30. Students are leaders for activities	82%				
31. Staff model physical activity	72%				
32. Daily physical activity is provided	22%				
33. Activity is incorporated in classroom	37%				
34. Food program is universally accessible to students	82%	7. Subsidized food programs n = 174	79%		
35. Programs adhere to the nutrition policy	93%				
36. Parents and students are aware of subsidized programs	93%				
37. Parents contribute to food programs	67%				
38. Education is included in food programs	59%				
39. Food for purchase adheres to nutrition policy	93%	8. Food for purchase n = 164	75%	3. Healthy eating	71%
40. Most foods are maximum nutrition	74%				
41. Only healthy beverages are available	93%				
42. Healthy foods are competitively priced	70%				
43. Proper portion sizes considered for age of students	79%				
44. Space is considered (i.e. healthy food at eye level)	61%				
45. Local food products are used	52%				
46. Clean water is available	98%	9. School nutrition environment n = 183	75%		
47. Food safety is practiced	96%				
48. Healthy nutrition initiatives are organized	73%				
49. Food is not used as reinforcement	80%				
50. Healthy eating is modeled by staff	86%				

School practice	School practice frequency	Practice category	Practice average frequency	Practice theme	Practice theme frequency
51. Students are involved in food menu planning	30%				
52. Healthy food is promoted at school functions	62%				
53. Minimum nutrition foods are not used to fundraise	54%				
54. Moderate nutrition foods are sometimes used to fundraise	68%	10. Fundraising with food n = 71	49%		
55. Maximum nutrition foods are sometimes used to fundraise	43%				
56. Only healthy foods or activity used to fundraise	32%				
57. Parents and students are engaged with health promotion	89%				
58. Students are offered opportunities for leadership	74%	11. School community engagement n = 183	84%		
59. Community partners are engaged and involved	87%				
60. Funding is sought to support health promotion	87%			4. Health promotion	76%
61. School respects and values diverse perspectives	96%				
62. Positive learning interactions are promoted	89%	12. School mental health n = 183	87%		
63. Bullying prevention program is established	75%				
64. Student accomplishments are recognized	87%				
65. Positive effective student behaviours are supported	96%				
66. Cross cultural understanding is supported	88%	13. Healthy school environment n = 183	79%		
67. Safe places are provided for students	81%				

School practice	School practice frequency	Practice category	Practice average frequency	Practice theme	Practice theme frequency
to express concern					
68. School has a policy for health promotion	50%				
69. Support for health promotion is provided by school administration	96%				
70. School has a diverse team for health promotion	48%	14. School support n = 183	53%		
71. Data is collected to support health promotion outcomes	42%				
72. Health is integrated into school improvement goals	25%				

The average percentage frequency across the 14 categories and four themes of the tool were also reported along with the valid sample sizes. Considering the categorical nature between the different levels of implementation (differences between levels were not necessarily equal), the median values were reported in Table 5.3 to provide a provincial midpoint in the provincial level of implementation (from 1 to 4) for each category.

Table 5.3. Level of implementation in the HPS tool by practice category.

Practice category	Sample size	Median level of implementation
1. Health education	n= 234	Level 4
2. Physical education	n= 233	Level 3
3. Organized physical activity	n= 234	Level 3
4. Active free play	n= 235	Level 3
5. Active transportation	n= 190	Level 2
6. School activity environment	n= 234	Level 3
7. Subsidized food programs	n= 220	Level 3
8. Food for purchase	n= 205	Level 3
9. School nutrition environment	n= 234	Level 3
10. Fundraising with food	n= 92	Level 2
11. School community engagement	n= 228	Level 4
12. School mental health	n= 229	Level 4
13. Healthy school environment	n= 229	Level 3
14. School support	n= 229	Level 2

The percentage frequencies across the four levels of implementation were depicted in Figure 5.1 to demonstrate the spread across the four levels.
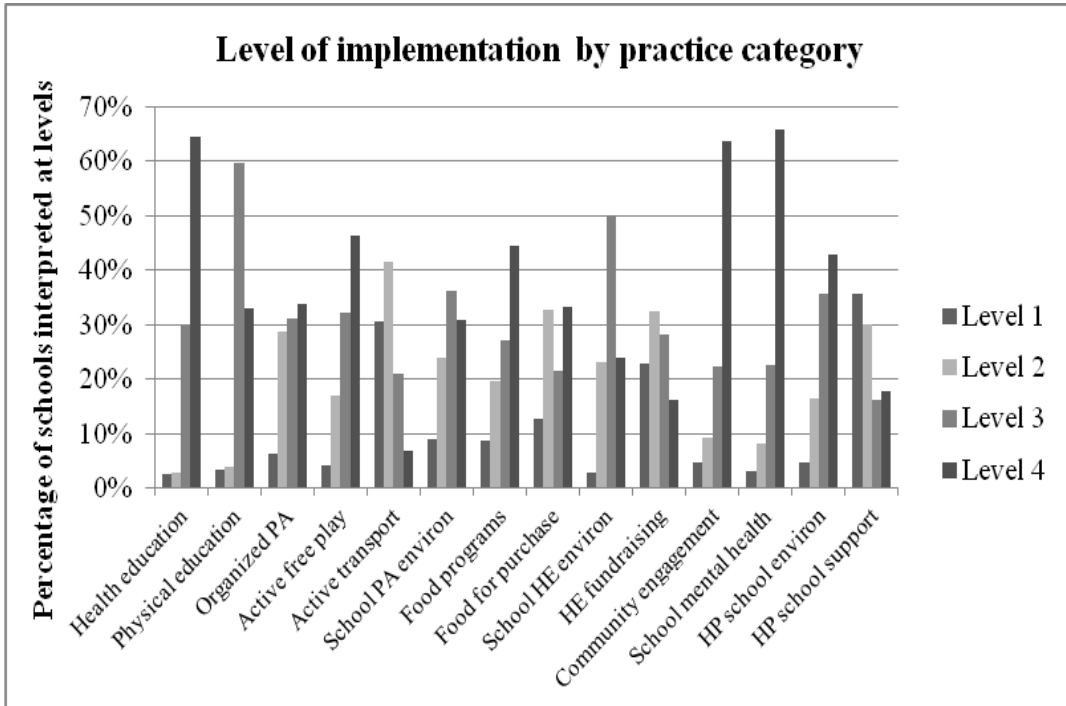
Figure 5.1. Frequency of levels of implementation by practice category across schools

Implementation results

Overall, a higher percentage of schools reported implementing practices related to practice themes 1 and 4, health and physical education (84%) and health promotion (76%), compared to practice theme 2 and 3, physical activity (69%) and healthy eating (71%). With respect to the categories, the highest reported implementation of practices related to categories 12 (mental health, 87%), 2 (physical education, 85%), 11 (community engagement, 84 %) and 1 (health education, 84%). The lowest percentage implementation of practices related to categories 5 (active transportation, 46%), 10 (fundraising, 49%), 14 (school support for health promotion, 53%) and 6 (school activity environment, 67%).

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The median implementation was Level 3 for most categories, with the exception of categories 1, 11 and 12 (health education, school community engagement and mental health) which were all at Level 4 and categories 5, 10 and 14 (active transportation, fundraising with food and school support) which were all at Level 2.

With respect to physical activity, many schools reported that they were implementing practices for category 4, active free play (81%, Level 3), but the individual practice reporting on the existence of an indoor space for free play activity during poor weather (practice 23) was less frequently reported (61%). Category 3, organized physical activity opportunities, were also highly reported (76%, Level 3), but the individual practices relating to providing transportation (practice 17) and offering the program on a regular basis (practice 19) were also less frequent (53% and 61 % respectively). The lowest reported practices relating to physical activity were in categories 5 (active transportation) and 6 (school environment) and related to the integration of physical activity in the classroom (practice 33, 37 %), promotion of active transportation (practice 26, 33 %), provision of daily physical activity (practice 32, 22%) and the existence of a policy to support active transportation (practice 27, 12%).

Related to healthy eating, many schools reported having a universal food program (practice 34, 82%) and the vast majority reported adherence to the provincial food and nutrition policy during food programs and with food that was available for purchase (practices 35 and 39, 93% for both). However, several nutrition policy directives relating to healthy foods (practices 42 to 44 relating to competitive pricing, portion size and priority space for healthy food) were less frequently reported (70%, 79% and 61% respectively). Furthermore, two guidelines that were recommended but not required by the nutrition policy (practices 45 and 51, local food products and students involved in menu planning)

were the least frequently implemented practices related healthy eating (52% and 30%).

5.4   Discussion

The results of the study provided a description of health promotion practices that were being implemented in schools across the province of NS in 2011 using a school practice assessment tool that was based on jurisdictionally relevant characteristics of HPS. Considering the holistic nature of the HPS approach, it was also important to identify if there were any differences between the "functioning" (i.e. comprehensiveness) of reported practices. Therefore, although these results suggested that HPS existed at a high level of implementation, important differences were observed across themes, categories and individual practices that are related to the completeness of the HPS approach. For example, practices relating to the first theme of Health and Physical Education described curriculum expectations and were frequently reported. Comparatively, practices relating to the themes of Physical Activity and Healthy Eating described activities that were beyond educational policies relating to curriculum and were less frequently reported. Furthermore, the least frequent practices relating to opportunities for activity and nutritious food were those that would help to remove potential barriers (i.e. cost) and promote healthier options. Similarly, within the theme of health promotion, individual practices that would help to integrate health promotion into school priorities (e.g., by developing a school team for health promotion and linking health with school improvement processes) were less commonly reported. Overall, the results of this study provided an understanding of what school practices were implemented (and their contribution to the HPS approach) following the introduction of health promotion policies. This insight will help inform future policy development and advance HPS uptake across NS and other jurisdictions.

Our policy inventory had suggested that a range of policies have been developed relating to different health promotion topics but there was also a gap in district-level guidelines for NS HPS (29). The present study advanced the previous work by suggesting that a narrow approach to HPS was being adopted across schools with a greater frequency of curriculum practices reported when compared with practices that could embed health promotion, physical activity and healthy eating into aspects of the school environment and daily priorities. These results were not surprising considering the deep-rooted traditions of educational systems and the tendency of schools to address health promotion issues through classroom curricula (12). However, although "teaching and learning" is a key pillar, HPS also requires distinct action and interaction between the other pillars, including healthy school policies, physical and social environments and partnerships and services (15). This emphasis on curriculum practices and narrow approach to current activities confirms the lack of understanding of HPS among some schools that has been reported in previous literature (20,33,34). The present study advances the literature by providing insight to the policy and school-level actions needed to remove potential barriers and advance HPS, including a greater need to integrate activities and generate stronger school support. This will require continuing discussion between both health and education sectors about the meaning and purpose of HPS and also consideration of how a more comprehensive approach can be integrated into current school culture (5,17,20,35)(17).

Research has previously reported on the potential influence of jurisdictional policies related to the nutrition and physical activity environment (36–42) and the contradictory results related to reported adherence of the provincial food and nutrition policy provided important implications for improving practice. Although the vast majority of schools reported that they were adhering to the policy, fewer reported that they had adopted the specific directives that are outlined as policy requirements (e.g., considering portion sizes for

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different ages and competitively pricing for healthy foods). These results are consistent with previous research that has described barriers, including the misunderstanding of policy requirements, preventing authentic school nutrition policy adoption (43–45). A second implication for practice is the opportunity to define essential elements related to physical activity for schools across NS (29) as there is currently no policy to guide physical activity implementation (beyond the curricular requirement for physical education). Schools frequently reported adopting practices to support organized activity and active free-play, although fewer reported providing daily opportunities and integrating activity into classroom lessons. Previous research has suggested that physical activity can be used as a mechanism to enhance learning (46,47) but that knowledge, attitudes and values of teachers may influence their willingness and ability to properly implement activities and model healthy behaviours (48). Therefore, the results suggest that there is a need to clarify, redefine or expand current and future policies and provide adequate and appropriate support to enhance uptake by educators and participation by students. Engaging school stakeholders in consultative processes early in the process of policy development has supported early adoption, adherence and positive changes in schools (45,49) and continuing to support grass-roots HPS development will be an important focus for NS.

This research offers an important jurisdictional case study of the adoption of practices that support HPS; however, it is important to note the potential limitations of this study. First, while the adoption of supportive HPS practices might be a result of the changing policy climate in NS, they may have also been present prior to the introduction of the policies. Given the dynamic nature of policy implementation, it is difficult to ascertain whether this is a factor. Although many contextually relevant evidence-based practices were included in the evaluation tool, it is plausible that items were missed. Furthermore, the specificity of practices relevant to NS may reduce the generalizability of results for other jurisdictions. To mitigate these challenges, feedback was sought from a national

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panel of experts to assist with item inclusion and reduction. The self-report nature of this tool may also have introduced response biases from schools. In particular, previous research has suggested that there are differences within and between schools in how HPS is perceived and defined (20). The tools were completed by the person/people most responsible for HPS related practices and should have had the best knowledge on HPS. The modest response rates were influenced by the data collection burden on schools and resulted in variability in sample sizes across different types of practices (in particular categories 5 and 10), which influences the generalizability of the results. Independent review of tools by two research team members to determine the level of implementation helped to strengthen these results and provided an important standard to inform future analysis; however, this was limited by the information provided from schools.

Lessons Learned

This study offers important lessons learned for planners and evaluators. With respect to planning, the results from this study suggested that is important to support schools in broadening health promotion practices beyond traditional classroom responsibilities for health and physical education. The evaluation tool developed in this study used the form of a rubric, which is a familiar assessment tool used in schools. Furthermore, the rubric was consistent with local jurisdictional priorities and considered different stages of readiness by describing practical solutions along a continuum of implementation. Considering the dynamic and ongoing processes of health promotion strategies in schools, this evaluative method offers important implications for evaluators as it provides a method to track the transformation of change (21). Future research should evaluate the use of this tool over time to appraise its potential for advancing implementation and additional validation would help to determine the relevancy of the practices across schools.

5.5 Conclusions and implications

The current study provides a description of the population-level HPS practices that are relevant for jurisdictional policies and programs in NS. The findings revealed that many schools took a narrow approach to HPS, which suggested that the comprehensive and holistic approach necessary for successful implementation of HPS might have been misunderstood or too difficult for schools to put into place. Furthermore, it was observed that there many be a need to redefine and expand current policy related to nutrition and physical activity to reduce confusion of requirements and enhance current practices. These findings have implications for policy and practice. There is a need for formal policy implementation to support HPS practices, which in turn can influence resource allocation and training needs. However, this also requires appropriate resources for monitoring of implementation. Moreover, broadening current practices and policies will require continuing discussion about the meaning and purpose of HPS to seek a more realistic understanding of what can be achieved through school interventions (20). Moving forward, it will be essential to consider how a more comprehensive approach can be fostered to integrate health promotion activities into the 'way of life' of schools.

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Chapter 6

Contextual Understanding of Health Promoting Schools: A Mixed Methods Study[8]

6.1   Introduction

Health promoting schools (HPS) is an internationally recognized approach that offers important potential for supporting improvements in health and education outcomes (1–6). HPS focuses on connecting health and learning in a planned, integrated and holistic way through supportive policies and environments, alignment between curriculum and involvement from the community (3,6,7). It is also known as Comprehensive School Health or Coordinated School Health, with each term used interchangeably depending on jurisdictional context (8). In Canada, the Pan Canadian Joint Consortium for School Health (JCSH) is a partnership of federal, provincial and territorial governments that provide leadership to facilitate a comprehensive school health (CSH) approach. JCSH has developed a framework with four distinct but inter-related pillars that provide a foundation for CSH in Canada; these pillars include Teaching and Learning, Healthy School Policy, Physical and Social Environments, Partnerships and Services (9). Supported by such high-level strategies, various school jurisdictions across Canada (and globally) have developed relevant policies and guidelines to support adoption across schools (8,10–12); however, achieving system-wide implementation and sustaining its effects across schools continues to pose a challenge to progress this field of work (13). Population health intervention research offers an important framework to learn from current actions related to HPS and an opportunity to understand how to

advance allied policies and practices; this knowledge can help to increase the potential of impact on health at the population level (14,15).

As a result of diversity across school contexts (e.g. with respect to enrollment criteria, socio-economic factors, curricular demands due to language or religious instruction, etc.), a standard protocol to guide HPS implementation and evaluation is not feasible (8). Rather, implementation standards need be generic to allow tailoring to the needs of individual school communities. Correspondingly, HPS guidelines have recommended establishing key *processes* (e.g., developing local policy, achieving administrative support, creating a small group, conducting a school audit, establishing goals and a strategy to achieve them) to allow schools to adapt their local practices according to their contextual needs (2). However, the requirement for flexibility has created a great deal of uncertainty as to how the approach should be evaluated across schools (16–18). In Canada, the Healthy School Planner helps schools assess the health of their school and build a plan for improvements (9). Importantly, there is a foundational module that considers the process for implementation ("how it is being implemented") while also including modules to assess supportive school practices ("what is being implemented") for priority health issues. Although this tool shows promise for measuring the implementation of HPS, the applicability of the national tool is challenged by the variations in provincial/territorial policy contexts (19). The development of an educational tool that was used to plan and track implementation of HPS according to the accepted model in one school district was previously described in Chapter 4. Providing varying descriptions for best practice, of relevance to different stages of readiness, helped to both plan and evaluate implementation of HPS (20). The focus on supporting HPS development with practical solutions according to different stages of readiness is emerging in recent literature (21) and provided important rationale for the current study.

Issues related to program context have been cited as an important feature of public health evaluations (22,23) and are also important to consider with complex, adaptive initiatives like HPS (24,25). Program implementation represents a complex interaction between characteristics of the innovation (i.e. HPS), the providers (i.e. school stakeholders involved) and various aspects of organizational context or functioning (26–28). With respect to the providers of HPS, research has shown that educators are often concerned with seeking practical solutions and gaining new knowledge that meets their situational needs, organizational circumstance and stage of growth (13,21,29,30). Features related to organizational context, such as capacity and school culture, have been cited as critical to HPS success and sustainability (21,31); therefore it is essential to understand the interaction between the practical features (i.e. what is being done), the functional processes (i.e. how it is being done) and the contextual environment. This alignment between practice and process has been evaluated in previous mixed methods research (28) and similar inquiry related to HPS has the potential to help advance its effectiveness and dissemination.

The province of Nova Scotia (NS), Canada, provides a unique case for population-level inquiry related to HPS. A recent policy study described the development of health promotion policies and programs that were developed at the provincial and school district levels, including a provincial health promoting schools initiative (NS HPS) and a food and nutrition policy (NS FNP) for public schools (32). Funding was distributed to support the development of regional HPS partnerships and frameworks that considered local assets and needs. Enhancing physical activity and supporting healthy eating practices, based on guidelines of the NS FNP (33), was the initial provincial focus; however, schools were encouraged to adapt and address issues relevant to their unique school contexts (34). The policy circumstances in NS provide an important opportunity to understand how population-level policy actions may have stimulated uptake of HPS across schools and provide context to advance further implementation.

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Therefore, the purpose of this study was to provide an integrated contextual lens to describe how HPS practices and processes were adopted across NS schools. The research was guided by a mixed methods approach to allow consideration of both practice and contextual processes and shed insight on the complex, multifaceted environments of NS schools. The aim was to provide evidence to inform future directions for NS HPS while also helping to inform the current evidence-base for HPS.

6.2   Methods

Overall research design

This study is situated within the context of the Children's Lifestyle and School-performance Study II (CLASS II) which is a province-wide research project that investigated the impact of provincial and school district policies on school practices and students' behaviour and weight status. A mixed methods research design was employed to understand the mechanisms related to organizational functioning that may have influenced provincial trends in HPS implementation (35). The first phase of the research included the development and implementation of an evaluation tool to quantitatively describe adoption of HPS practices across the province. The second phase used a case study approach to qualitatively investigate organizational factors and processes that may have influenced adoption of the HPS. The two phases were sequential, in that, the sample selection, data collection protocol and analysis occurred separately (36); however, preliminary results from the first phase helped to guide development and analysis of the second phase. Interpretation from both phases informed the overall findings of the research. Ethics review was provided by the Health Research Ethics Boards at the University of Alberta and Dalhousie University. Participating school districts in Nova Scotia granted permission to access schools and informed consent was attained prior to data collection.

6.3   Quantitative tool to assess school practices (phase one)

The objective of the first phase of the research was to develop a tool to assess implementation of HPS and to use this tool to quantitatively describe implementation of HPS across schools to respond to the following research question: *To what extent was HPS implemented across schools?* A full description of the development of the evaluation tool has been described previously (Chapter 5). Briefly, based on a review of available tools and the provincial policy scan in Chapter 2 (32), a framework was developed to characterize the critical components of HPS for NS. In consultation with national and local stakeholders, key components were assessed for their contribution to HPS and relevance to the unique policy context of NS schools. These components were contextualized into school practices (i.e. actions that schools could implement) that were organized into four sequential stages of expected practice; this "rubric" format was pragmatic for schools and is similar to the previous work in HPS assessment described in Chapter 4 (20). Before finalizing the tool local experts were consulted (including policy makers, school district staff and principals) and their feedback was incorporated. The final evaluation tool includes 72 practices, 14 categories and four themes and can be found in the resources available on the project website (www.nsclass.ca) and can be found in Appendix 7; this study focuses on the results from categories and themes within the tool.

Data collection

The evaluation tool was administered to all public schools in NS (approximately 97% of students) with Grade 5 students as part of the CLASS II study. During data collection, the assessment tool was given to each school principal. Principals were asked to administer the tool with either a team of key stakeholders or the person most responsible for HPS related practices. School stakeholders were asked to indicate what practices were taking place at their

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school using a check box. Upon completion, the evaluation tool was returned to the research team in person or by fax, email or mail. Two research team members individually reviewed the tools and rated a "level of implementation" for each of the 14 categories and the average across the four themes (from 1 to 4). Differences between ratings were discussed and an agreed level was determined by consensus for schools with reliable data. To represent provincial implementation, the median value was calculated by finding the "middle" level of implementation across schools.

Summary of results

A total of 269 of 286 (94%) school principals agreed to take part in CLASS II and 237 evaluation tools were returned to the research team (93% of participating schools. The results and sample sizes are summarized in Table 6.1 according to the median level of implementation (from 1 to 4) for each category. A full description of the quantitative results was discussed in the previous work (Chapter 5).

Table 6.1 School practices included in the HPS tool by practice category and practice theme.

Practice theme	Category	Sample size	Provincial implementation
1. Health and physical education	1. Health education	n= 234	Level 4
	2. Physical education	n= 233	Level 3
2. Physical activity	3. Organized physical activity	n= 234	Level 3
	4. Active free play	n= 235	Level 3
	5. Active transportation	n= 190	Level 2
	6. School activity environment	n= 234	Level 3
3. Healthy eating	7. Subsidized food programs	n= 220	Level 3
	8. Food for purchase	n= 205	Level 3
	9. School nutrition environment	n= 234	Level 3
	10. Fundraising with food	n= 92	Level 2
4. Health promotion	11. School community engagement	n= 228	Level 4
	12. School mental health	n= 229	Level 4
	13. Healthy school environment	n= 229	Level 3
	14. School support	n= 229	Level 2

6.4   Qualitative case studies (phase two)

The objective of the qualitative phase of the research was to understand the contextual experiences of schools to give meaning to HPS implementation, based on the following research question: *What organizational factors were influencing implementation of HPS?* Data were collected using a collective case study approach (37) to explore the contextual experiences across multiple schools. Selection of cases was guided by theoretical framework of the study (38); specifically, it was important to understand the experiences of HPS implementation across of the school districts and varying degrees of implementation. Considering the provincial nature of this research I decided to use a collective case study design and select one or two schools across each school district.

Data collection

Following preliminary analysis of the first phase of the research, nine schools were purposively selected to take part in the second qualitative phase. Schools were selected based on their implementation results from phase one, recommendations from school districts and the interest expressed by the school. The research team also considered the size and region of the school (i.e., urban/rural and school board) to ensure there was appropriate representation of communities across NS. Furthermore, recommendations were sought from school districts and considered expressed interest from schools. According to these criteria, nine schools (n=9) across the seven (n=7) Anglophone public school districts were invited to take part as a case study school. The sample size is justified by the alignment with the theoretical framework (38) and a similar sample size has been reported in recent qualitative school-based research (28).

The primary investigator contacted the principal of selected schools to inform them about the subsequent research and determine their willingness to

participate. All selected school principals agreed to take part and a first meeting was scheduled. According to the individual circumstances of each case school, an interview was scheduled with the school principal or a meeting was scheduled with the school staff or HPS committee. The purpose of the initial meeting was to discuss the results from CLASS II and potential contextual factors that may have influenced their results. By working with schools to help understand their results, the researcher had the opportunity to build relationships with individuals in each school; which enabled improved data collection and increased understanding about the contextual factors influencing HPS. Further visits, interviews and meetings were scheduled with key school stakeholders based on recommendations of key stakeholders following this visit (see Appendix 9-12 for information letter, consent form and interview guide for participants).

Following each school visit, the researcher recorded descriptive observations as well as any feelings, reactions, reflections, insights and interpretation of what was observed (e.g., physical layout and structure of the school, food available in the cafeteria, promotion materials to support healthy living) and tracked decisions that were made. Semi-structured interviews and researcher observations were the primary source of data in this study. Principles of saturation (39) were used to determine the number and type (i.e. principal, teacher or parent) of interviews that needed to take place within each school. Specifically, it was important to gather sufficient organizational context to health promotion activities within each school. Depending on the school circumstance, different stakeholders (with varying roles) were identified as key informants. Interviews followed a conversational format (39) and guides were developed for each participant to explore the school-specific context and participant experience by discussing strengths, limitations and areas of improvement of health-related programs and activities. With permission from participants, interviews were recorded and transcribed verbatim.

Based on the extent to which the researcher was able to engage with school stakeholders to develop a rich description of school context, five schools were selected to be included in the analysis for the current study. Across these schools, fourteen participants (n=14) took part in either an individual or group interview. These participants included school principals (n=5), physical education (PE) teachers (n=3), classroom teachers (n=2), support teachers (n=2) and parent/community volunteers (n=2). Documents available through school websites that related to HPS (e.g., meeting notes, grant proposals, school menus, etc.) were used to inform the researcher of past and current activities of the school and provide important background to guide interactions with school stakeholders and inform analysis. Seventeen observation notes were made related to school and participant interactions across the five schools. Table 6.2 provides an overview of the five cases according to the data collected, school and community characteristics and opportunities for healthy eating and physical activity.

Table 6.2. Data collected and contextual information of case study schools.

Case	Data collected	School community characteristics	Physical activity opportunities	Food available at school
1	2 school visits (1 presentation, 1 for interviews) In person interviews with principal and 3 teachers (PE[1], classroom and resource support)	Rural municipality; fishing is major industry; grades primary-6; ~200 students; newer facility with access to equipment and technology	Full-time PE teacher; various programs available during lunchtime and afterschool; majority of students bussed (large geographical boundaries)	Daily free breakfast program (sit-down or grab-and-go[2]) organized by parent volunteers with basic options[3] Snack and lunchtime food managed by school; hot and cold options; students buying lunch eat in cafeteria (others eat in classroom); subsidy for lunch program available upon request
2	3 school visits (2 presentations, 1 for interviews) In person interviews with principal and 2 teachers (classroom and resource	Community 20km outside downtown core of large city; Grades primary-6; ~100 students; older building and facilities	Part-time PE teacher (role is shared with another school); no activities available during lunch and few available after school; most students walking distance from	Daily free breakfast program (grab-and-go) organized by community volunteers; basic and monthly special[4] options No cafeteria or kitchen (students eat in classroom); occasional snacks as fundraiser; weekly pizza day (for purchase) organized by parents; no subsidy established for lunch

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	support)		school	
3	1 school visit (interview and tour) In person interview with principal, telephone interview with 2 parents, informal interactions	Large town school; grades primary-6; ~500 students; fairly new school (6 years) with good facilities	Full-time PE teacher; no activities available during lunch time but many available afterschool; almost all students in walking distance from school	Daily free breakfast program (sit-down) organized by volunteer parent coordinator with community and student volunteers; basic daily options, weekly and monthly specials Snack and lunchtime food not locally managed; hot and cold options; all students eat in cafeteria; basic options available for students requiring lunch
4	1 extensive school visit (interviews, tour and presentation) In person interview with principal and 1 teacher (PE), informal interactions	Community 20km outside small city; grades primary-6 ~300 students; good school facilities	Full-time PE teacher; many activities available during lunch and afterschool; almost all students bussed to school (some long distances)	Daily free breakfast program (sit-down) organized by parent and community volunteers; basic daily options, weekly and monthly specials Snack and lunchtime food managed by school; hot and cold options; all students eat in cafeteria; basic and sponsored lunch options available for students requiring food
5	1 school visit (for interviews and tour) and various prior interactions with school In person interview with principal and teacher (PE and resource), informal interactions	Rural village outside of small town; agriculture is major industry; grades primary-5; ~250 students; older facility with extra classrooms available for activities	Full-time PE teacher (works part-time in school on resource); many activities available during lunch and afterschool; ; most students bussed to school	Daily free breakfast program (sit-down) organized by school food manager and community volunteers; basic options available Snack and lunchtime food managed by school; hot and cold options; all students eat in classroom; subsidy for lunch available upon request or identification of need

[1] PE = physical education
[2] Sit-down breakfast reinforced family meals and grab-and-go allowed students to take food to class
[2] Basic options usually include bread, cereal, milk, fruit, cheese, yogurt
[4] Weekly and monthly specials often a different option for students (e.g., smoothies or pancakes)

6.5   Data analysis

The qualitative data were analyzed using tenets of a grounded theory methodological approach. Specifically, principles of grounded theory were applied to coding strategies (e.g., open and selective coding and constant comparison) and the overall aim to identify themes to explain the results from the

quantitative phase (40,41). The goal of the merged analysis was to understand potential school contextual interactions that might be influencing the provincial trends of implementation across the four themes of the tool (health and physical education, physical activity, healthy eating and health promotion).

Transcripts from field notes, observations and interviews were imported into qualitative data analysis software (QSR NVivo Version 8.0) to organize and code the data. Two authors independently reviewed selected interview transcripts and employed open coding strategies (41) to inductively identify codes emerging from the data. Emerging codes were discussed and defined by both primary authors using labels taken from the words of participants as well as those relevant to HPS literature (42). Data was also coded according to the four main themes of the HPS tool to facilitate cross-case comparisons relevant for the merged analysis (35,43). This list of codes and definitions was used to enable constant comparison within and between case study schools. Frequent discussions were held to revise codes and definitions. While coding, the primary author also recorded memos related to information, ideas and insights about the relationships in the emerging themes.

After the data were coded, the primary author conducted theoretical coding, by using the quantitative scores from individual qualitative cases, to explore ideas and insights that emerged from interpretations of the results from both phases. Specifically, categories were used to classify relationships (commonalities and differences) between case study schools to increase the degree of abstraction and achieve theoretical interpretation of the results from both phases (35,40).

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6.6   Results

The subsequent section integrates the quantitative and qualitative results and describes provincial implementation using the contextual information collected from the case studies. The results are organized by the four main themes of the tool and the categories are identified in **bolded** script.

Health and physical education

The categories of **health education** (HE) and **physical education** (PE) practices were frequently implemented across the province and case study schools (Level 4 or 3). However, results from the case studies suggested that there may have been differences in how curriculum was delivered. For example, only one school (Level 4) provided a specific of how their classroom teachers were supported with relevant resources to support the delivery of the HE curriculum outcomes. This practice was institutionalized as a priority goal for the school that they achieved by putting together a *"rolling resource cart"* (i.e. cart that could be moved around to different classrooms based on teacher needs) that was designed to *"enhance in-class instruction related to HPS"* (document from school). Participants also commented that HE instruction and the ability to integrate HE and PE outcomes in the classroom was dependent upon the classroom teacher. One principal (Level 4) commented that integrating physical activity outcomes into the classroom only *"works to a point given the comfort zone and the ability level of your classroom teachers"* Both principals and teachers elaborated that the success of integrating health into the classroom was related to having adequate staff to meet both curriculum and student needs (i.e. staff to support behavioural and learning issues). This seemed to be especially true for schools to feel prepared to address emerging mental wellness issues in schools, including things like bullying, attention and behaviour disorders and mental illness (e.g., depression and anxiety).

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Physical activity

The case studies provided important contextual information around the adoption and implementation of practices related to physical activity. Table 7.2 described basic characteristics related to physical activity across case schools. The four categories in this theme included active free play, organized physical activity, active transportation and supportive activity environment.

Active free play and organized physical activity

Most schools reported supporting opportunities for **active free play** (Level 3 across the province) and challenges that were discussed were mostly related to having adequate resources (e.g., equipment) and space at the school. For example, only one case school identified that they had a consistent indoor space that was available for students to be physically active during poor weather. Similarly, the context provided by the case studies suggested that the capacity of a school to provide **organized physical activity** (Level 3 across the province), such as intramurals and afterschool programs, could be related to school and community characteristics. For example, one school (Level 1 for organized activity) indicated that their rural location made it challenging to provide equal access for activities provided afterschool because the majority of students took a bus to and from school. If a student wanted to take part in the afterschool program, their parents needed to pick them up or organize a drive home for their child (i.e. with a another classmate). One teacher elaborated that the large geographical catchment of the school created a barrier for student participation: *"Geographically we're at a disadvantage… children that live 30 kilometers from here, it's not feasible for them [parents] to come and get them and they might only have one vehicle because they really live in isolated areas."*

Organized physical activity

Organizational capacity of the school (e.g., leadership, collaboration and commitment) emerged from the qualitative data as contributors to the practices adopted by schools. For example, collaboration and commitment from PE teachers, school staff and parent volunteers were identified as important contributors to implementing a successful **organized physical activity** program. Schools that did not exhibit these qualities seemed to struggle with offering afterschool physical activities on a regular basis. For example, students at one case school (Level 2) lived in walking distance from the school (suggesting that transportation would not be a concern) but there was limited core staff (PE teacher was only part-time) and commitment from other stakeholders to ensure that regular afterschool activities were offered to students. In contrast, another school (Level 4) had established a process to ensure inclusivity at afterschool programs. Transportation costs were factored into the school budget and the school provided clear options for families needing support (e.g., drive home with another parent or a taxi). Although providing transportation was costly, the principal at this school demonstrated important leadership by ensuring that lack of transportation did not prevent participation, regardless of the financial cost. The principal said: *"...we will take the money from our school funds, because the program is too valuable and if we spend $300-$400 on taxis, that's nothing. You know I mean it keeps kids being active...you know it has to happen."*

Active transportation

Characteristics of school context also seemed to influence how schools could support **active transportation**. Across the province many schools reported that the promotion of active transportation was either not applicable (low sample size) or difficult for their school to advance (Level 2 across the province). Consistent with the provincial results, participants in the case schools reported that, often, their ability to promote and support active transportation was constrained by issues of safety and geography (i.e. proximity to highway and

school catchment area). For example, school stakeholders felt that it was difficult to promote active transportation when the vast majority of students took the bus to and from school because of rural locations and larger geographical school boundaries. However, beyond these geographical barriers, there also seemed to be a cultural reliance on inactive means of transportation to and from school. For example, two case schools were "walking" schools (bussing not provided because students lived in close proximity. One principal (Level 2) commented that many parents felt it was easier to drive students to and from school and felt that this might be a wider cultural trend: *"We have way too many parents that drive their kids to school but anyway that's the way it is, it's a sign of the times I think."*

<center>Supportive activity environment</center>

Although practices related to a **supportive activity environment** were frequently reported across schools (Level 3 across the province), the qualitative data suggested that student engagement, staff role modeling and integration of physical activity were not necessarily embedded into the daily life of the school. For example, one school (Level 2) spoke about the introduction of a whole-school physical activity break at the beginning of the school day, but this was only implemented during their healthy living week and was not a habitual practice. In contrast, two other schools (both at Level 3) provided regular opportunities for students to act as leaders on the playground and involved older students as referees and coaches to younger students. This regular integration seemed to help sustain the potential impact of reported practices.

Healthy eating

The qualitative data provided important context to describe the nature of healthy eating across the four categories of subsidized food programs, food available for purchase, school nutrition environment and fundraising.

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Subsidized food programs and food available for purchase

Subsidized food programs and **food available for purchase** were highly reported across the province (Level 3 for both). Specifically, programs were developed based on the student need, the facilities available and the capacity (e.g., financial and human resource) available. Table 7.2 also provided an overview of the circumstantial variations in school food across the cases. From the perspective of participants, the NS FNP was perceived as changing school norms of what was considered as acceptable food and beverages at school. However, although schools had a broad understanding of the policy requirements, the promotion of healthy food and beverages seemed to be hindered by contextual factors. For example, although food offered by cafeterias technically adhered to the policy, some principals and teachers felt that healthier options were not always promoted or appealing to students. Two principals commented on the struggling relationships with food service staff. Specifically, one principal (Level 1) commented that the reluctance of cafeteria staff to change resulted in less appealing healthy school lunch options: *"...cafeteria staff are pretty old fashioned, change is not good, they think they know what sells..."* A teacher from this school agreed that there were challenges in working with staff to expand their menus with new options but wanted to find a way to improve the working relationship.

School nutrition environment

In contrast, another school (Level 4 and 3 for healthy eating categories) had enhanced their organizational capacity by creating a paid position for a school food manager. This champion was a key support to healthy and appealing school food menus (and participation by students) and also helped to integrate healthy nutritional practices into their breakfast program and support school-wide nutrition-related activities (**school nutrition environment**). Furthermore, the champion engaged other school partners, which helped to create a supportive school culture and embed healthy eating into the everyday practices of the school.

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The principal provided an example of the connections and consistency between their nutrition practices, messages and school functions that was achieved through school-level collaborations and commitment:

> *"We do blueberry fundraiser… and it involves the whole school…so for two weeks we have blueberry trivia, and so we have blueberry smoothies, and blueberry pancakes and you know so [the food service manager] does an amazing job at introducing a certain food and making it fun."*

The context from the case studies suggested that the **school nutrition environment** (Level 3 across the province) was influenced by the processes that schools took to address issues related to healthy eating. For example, almost all case schools had a system in place to support students that required additional food (i.e. if families could not afford); however, the processes for accommodating these needs were different. For example, some schools subsidized lunches with food from their breakfast program or a separate food supply, which meant that students receiving the subsidy were getting something different from those that purchased lunch and that students were at risk for stigmatization. Comparatively, other schools had established a subsidy program through their cafeteria, which ensured that students were not identifiable. The integrated and accessible structures suggested increased commitment from the school in supporting families by using an inclusive, non-stigmatizing and holistic approach.

Fundraising with food

Fundraising with food was a contentious issue across schools and many schools reported that it was not applicable to their school (Level 2 across the province and small sample size). The case studies provided important context and suggested that although customary less nutritious fundraisers (e.g., chocolate bar and cookie dough sales) were less frequent since the introduction of the NS FNP, some schools were still offering fundraising with "bake sales" that included food that was moderately healthy (according to guidelines of the FNP). Oftentimes,

these fundraisers were being held by parent groups and it was evident that the cultural traditions were difficult to eradicate. Importantly, two case schools (Level 3 and 4) took advantage of local healthier food options that were also culturally celebrated (e.g. blueberries and lobster) but it was apparent that these healthier customs were uncharacteristic of communities across the province.

Health promotion activities

The categories for health promotion included community partnership, mental health, school environment and school support. **Community partnerships**, **mental health** and **school environment** was frequently implemented across the province (Level 4 or 3). Case study schools commented on the importance of engaging parents, students and school staff in health promotion activities and identified that successful strategies required collaboration with multiple partners. One teacher spoke about the collaborative advantages of being from a small community: *"…our school is so close-knit, there's so much positive going on, like if we need some whistles, the local home hardware would probably donate the 15 whistles for the running club."* The context provided from the case schools also identified that school culture was an important enabler for health promotion practices. In particular, positive relationships and engagement of multiple partners in decision-making and implementation of activities seemed to foster a supportive school culture. Characteristics of enhanced **school support** were less frequently implemented across the province (Level 2). Participants from several case study schools noted that it was important to integrate practices into the organizational priorities of the school but this was challenged by competing academic priorities. One principal (Level 3 for school support) commented that having a positive school climate helped the school overcome challenges and achieve success: *"… it's a whole concerted effort…you just can't take the [nutrition] policy and be able to run the*

type of program we have without having a lot of people believing in it and putting
extra effort." Another principal (Level 2) provided context on how data from the
CLASS II project helped the school start planning for improvement in health
promotion. A focus on continuous school improvement also seemed to enable a
supportive school culture and a focus toward improving practice.

6.7   Discussion

This study provided important insight to inform how the dynamic nature
of school contexts may influence adoption of HPS. The qualitative case studies
provided perspective on how practices were being implemented in NS and
provided a unique contribution to the HPS literature by exploring the interaction
between practical (i.e. what is being done), the processes (i.e. how it is being
done) and the context (role of environment). Specifically, these results add to the
emerging evidence-base that suggests that organizational context is a critical
feature in the dissemination and sustainability of the HPS approach (21,31).
Furthermore, this study suggested that although school characteristics, like staff
allocation, physical location and structures, are important, these barriers can be
mitigated by fostering relationships and establishing a supportive school culture.
Successful school processes also seemed to be related to schools' potential for
integration and sustainability (21). These processes were inherently influenced by
school organizational characteristics, which have been reported as affecting the
implementation of change, or an innovation (like HPS) in schools (44,45).

Durlak and DuPre reported that contextual variables were related to the
delivery (i.e. organizational capacity) and support system (organizational
functioning) of the implementation practices (27). In the current study,
organizational capacity for HPS was established through internal school processes
such as having a committed leadership, collaboration across stakeholders and key

champions that led and sustained innovation change; these factors are all consistent with previously reported facilitators for school health innovations (27,46–48). Differing organizational capacity of schools to engage and develop requires strategies to support organizational functioning that are sensitive to the different stages of implementation (21,27). The results of this study provided additional context to advance the earlier finding suggesting that NS schools were taking a narrow approach to HPS (Chapter 5). Specifically, case schools at lower levels of implementation were often dependent on practices related to the implementation of an activity (e.g., offering an afterschool program) compared to processes that would embed health into the daily life of a school (e.g., ensuring equal access to programs by organizing and paying for transportation). This was especially evident in the practices relating to the development of a school team and integration of health into school improvement priorities; such practices are cited as being essential in HPS development (2) but potentially more difficult to implement as they require changes in the deep-rooted traditions of a school. Similarly, Boot et al. suggested similar findings in that practical issues are more likely to fit into the daily task of teachers, whereas developing policies and changing school processes were more challenging. The authors also suggested that changing these higher level processes requires someone with time, the professional skills and knowledge to develop and implement structural health promotion programs and policies (29).

Research has shown that capacity of individuals toward a new innovation can be built through training and ongoing reinforcement. Since not all Canadian universities require mandatory course work in HE, PE or HPS (8,49), professional development or training should be a critical policy focus to ensure teachers are qualified and feel comfortable to teach health-related subjected matter and also possess the conceptual understanding to put HPS into practice (50). In addition to staff training, this study also suggested that schools need to be equipped with adequate and appropriate staff and have access to professional assistance to

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properly adopt supportive HPS practices and processes (26,27,51). Support from an external advisor has been shown to make a positive contribution to health promotion in schools (29) and offers an opportunity to support improvements in HPS across the province of NS. Although all school districts have developed their own regional plans to support HPS among schools (32) variability in professional assistance across the province limits the overall potential of HPS. Specifically, establishing a provincially-based system to support HPS development in NS is an important policy implication that could help to progress adoption, implementation and sustainability of HPS (11,52). Furthermore, fostering collaboration between health and education sectors would help to develop an understanding of the mutual benefit between health and educational outcomes; this might be an especially important "selling" point from schools' perspectives (13).

Limitations

It is important to note the potential limitations of this study. The specificity of practices relevant to NS may reduce the generalizability of results for other jurisdictions and the self-report nature of the tool may have introduced response biases from schools. The qualitative methods strengthened the quantitative results that were previously reported (Chapter 5) but they also may have introduced other limitations. Due to differences in depth of data collected across the nine schools, it was decided to focus on five schools with the richest source of data (and with comparable contextual information); however, the inherent differences in the data that was collected across the cases may be a limitation of the study. Interview participants may have also provided an exaggerated description of the healthfulness of their school as they were identified as having the most interest and value in school health initiatives. Despite these limitations, the case schools were not meant to be representative of contextual circumstance of all schools, but rather, provide a mechanism for interpreting the quantitative results. Importantly, data triangulation (interviews, observations and

documents) helped to strengthen the trustworthiness of the qualitative data and the rich description of cases (provided in Table 6.1) provides important context to enable greater transferability of the results.

6.8 Conclusions

This research provided a contextual lens to explore the population-level actions related to HPS. The findings provide important transferable evidence (53) on practices, school context and their interactions to advance help advance the effectiveness and dissemination of HPS. Organizational capacity for HPS was established through internal school processes such as having a committed leadership, collaboration across stakeholders and key champions that led and sustained innovation change. Establishing a broad system to support HPS could help to progress adoption, implementation and sustainability of HPS within the province of NS and among other jurisdictions. Furthermore, fostering collaboration between health and education sectors is essential to develop an understanding of the mutual benefit between health and learning and establish the need for promoting health in schools.

6.9   Bibliography

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Chapter 7

Applying Theoretical Components to the Implementation of Health Promoting Schools[9]

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7.1   Introduction

Population health intervention research offers an important opportunity to study the adoption and implementation of activities that promote health in schools (1,2). In Canada, a recent policy scan provided evidence of the proliferation of policies and programs relating to school health promotion in the province of Nova Scotia (NS) (3) that was catalyzed by local research evidence (4). In particular, a provincial health promoting schools (NS HPS) initiative has fostered the adoption of health promotion strategies across schools since 2006. NS HPS is led by the Nova Scotia Department of Education and the Department of Health and Wellness, and comprises school districts, district health authorities, and community members. Regional partnerships between health and education were fostered to develop different implementation frameworks, support and funding structures according to local assets and needs (5). This provincial initiative provided a unique opportunity to study how the health promoting schools approach has been "naturally" adopted across schools; such natural experiments (intervention not controlled or withheld by researcher) have been cited as an underutilized strategy in public health research (2).

Health promoting schools (HPS) is an internationally recognized approach that connects health and education in a planned, integrated and holistic way through supportive policies and environments, alignment between curriculum and

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involvement from the community (6–8) and offers important potential for supporting improvements in both health and education (7–11). In Canada, the Pan Canadian Joint Consortium for School Health (JCSH) is a partnership of federal, provincial and territorial governments that provide leadership to facilitate a comprehensive school health (CSH) approach, is synonymous to HPS and coordinated school health (12). JCSH has developed a framework with four distinct but inter-related pillars that provide a foundation for CSH in Canada; these pillars include Teaching and Learning, Healthy School Policy, Physical and Social Environments, Partnerships and Services (13). Through this partnership, various school jurisdictions in Canada, including the Province of NS, have taken important actions to support a comprehensive approach to school health through the development of relevant policies and guidelines. However, despite the existence of frameworks and increasing adoption of HPS strategies there is considerable variability in how it is being implemented and limited agreement of how it should be evaluated (12,14,15). Developing a standard protocol to guide implementation is challenging as they need to be adaptable to allow for variations based on school context (e.g., with respect to enrollment criteria, socio-economic factors, curricular demands due to language or religious instruction) (12). As a result, guidelines to support implementation of HPS have generally focused on establishing key processes (e.g., developing local policy, achieving administrative support, creating a small group, conducting a school audit, establishing goals and a strategy to achieve them) rather than defining required implementation activities (9,12). Recent research has attempted to clarify HPS implementation by providing theoretical and empirical evidence to describe the operational function of eight interdependent implementation components for HPS (16,17). These components are briefly summarized in Table 7.1.

Table 7.1. Summary of HPS implementation components (adapted from Rowling and Samdal (19))

Policy and institutional anchoring	• Development and/or review of supportive school/district polices • Clear communication of policy to school community
Leadership and management practices	• Distributed leadership that includes students, teachers and other educational personnel as well as partners in the community • Supportive processes, such as shared decision making, effective human resource management, relationship and knowledge building
Preparing and planning for school development	• Identifying supporting policies, goals, structures, practices and resources • Establishing commitment from leadership and engagement of all stakeholders through a coordination or action committee/team • Development of an action plan that includes a needs assessment, prioritization and identification of actions
Professional developing and learning	• Ongoing teacher professional development (knowledge and competency development) and professional learning (knowledge, attitudes, skills, aspirations and behaviour)
Relational and organizational context	• Positive relational support that is reflected through staff behaviours and student-centred learning • Physical and organizational structures that promote effective implementation (e.g., organizational collaboration)
Student participation	• Student-centred approach that actively engages students in classroom learning experiences and wider engagement in governance and decision-making in the school
Partnerships and networking	• Effective collaborative models between school and community with particular consideration of parent engagement • Supportive networks that facilitate stakeholder readiness, financial support, effective working relationships and multi-faceted roles
Sustainability	• Building new approaches and practices into school priorities • Long-term anchoring of initiative in policy plan • Monitoring and evaluating progress

Rowling and Samdal (16,17) suggested that attention is required to the "functioning" of components (i.e., how they are implemented) and postulate that an emphasis on function could bring about a new focus to strengthen the science

base for HPS; other published research has also called for such strengthening to move HPS forward (7,8,14,15).

Purpose of Research

To my knowledge, the implementation components presented by Rowling and Samdal (16) have not been tested in natural settings. The purpose of this research was to describe HPS implementation in NS using the framework offered by Rowling and Samdal (16). Case study research offered a method to investigate the contemporary phenomenon of HPS within its real life context; this research used a collective case study approach and qualitative research methods to investigate multiple bounded systems through in-depth data collection that involved different sources of information (18,19). Since in-depth case studies have the potential to provide the clearest understanding of what works, in what situation, and why (20), the aim of this research was to provide sufficient context to inform future directions for NS HPS and also produce transferable evidence to inform HPS implementation across other jurisdictions.

7.2   Methods

Sampling Frame

Considering the provincial nature of the research, a collective case study design was used and one or two schools were selected across each of the school districts. The goal was to identify similar and contrasting results across case study schools to produce an anticipatable explanation of the theoretical propositions (21). Selection of cases was guided by theoretical framework of the study (22); particularly, it was important to understand the experiences of HPS implementation across schools from different district support structures and with varying degrees of HPS adoption and implementation. Within school districts and implementation strategies, the research team also considered the size (i.e.,

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population of students) and region of schools (i.e., urban/rural) to ensure there was appropriate representation of communities across NS. Furthermore, recommendations were sough from school districts and considered expressed interest from schools.

Preliminary results from the Children's Lifestyle and School-performance Study (CLASS) II were used to assess outcomes related to HPS. CLASS is a province-wide project that examines the relationships between health, nutrition, physical activity, mental health and school performance of children in NS (www.nsclass.ca). In both 2003 (CLASS I) and 2011 (CLASS II), data collection included the completion of student and parent surveys and a self-report school survey to measure aspects of the school environment (data are not shown). As part of the CLASS II knowledge translation strategy, participating schools were provided with a confidential report with their individual school results compared to provincial averages and information and strategies to support HPS practices.

Procedures

Ethics review was provided by the Health Research Ethics Boards at the University of Alberta and Dalhousie University. Participating school districts in Nova Scotia granted permission to access schools for the data collection. Prior to any data being collected, principals and key informants also provided informed consent. According to the sampling frame, nine schools (n=9) across the seven (n=7) Anglophone public school districts were invited to take part as a case study school. The sample size is justified by the alignment with the theoretical framework (22) and a similar sample size has been reported in recent qualitative school-based research (23). Table 7.2 provides an overview of the selected cases according to school and community characteristics.

Table 7.2. School and community characteristics of case study schools

School	School characteristics	Community characteristics
School 1	Grades P-6, ~ 200 students Older facility, limited space outside for free play	Rural inland community approximately 30 kilometres outside large town
School 2	Grades P-6, ~ 200 students Newer facility, vast playground equipment and access to technology	Rural municipality; fishing is major industry
School 3	Grades P-6, ~ 100 students Small community school, older building and facilities	Community approximately 20 kilometres outside downtown core of city
School 4	Grades P-6, ~ 215 students Smaller, older facility, portable classrooms to accommodate student population	Rural community approximately 10 kilometres outside small town; many seasonal occupations
School 5	Grades P-6, ~75 students Small community school, at risk of being closed due to district cost reductions	Rural community approximately 20 kilometres outside large town
School 6	Grades P-6, ~ 500 students Fairly new school (6 years) with good facilities	Large town school
School 7	Grades P-6, ~300 students	Community approximately 20 kilometres outside core of small city
School 8	Grades P-5,~250 students Older facility with extra classrooms available for activities	Rural village outside of small town; agriculture is major industry
School 9	School 9, Grades P-12, ~400 students Larger facility with elementary grades in designated area of school	Small rural village in rural county

The primary investigator contacted the school principal from selected cases to inform them about the subsequent research and determine their willingness to participate. All school principals agreed to take part and a first meeting was scheduled. According to the individual circumstances of each case school, an interview was scheduled with the school principal or a meeting was scheduled

with the school staff or HPS committee. The purpose of the initial meeting was to discuss the results of their CLASS II school report and potential contextual factors that may have influenced their results. By working with schools to help understand their results, the researcher had the opportunity to build relationships with individuals in each school; which enabled improved data collection and increased understanding about the contextual factors influencing HPS. A purposive snowball sampling approach (24) was employed by scheduling further visits and interviews with key informants (principals, teachers, school staff and parents) based on recommendations following this initial visit (see Appendix 9-12 for information letter, consent form and interview guide for participants).

Data Collection

This case study research collected observational data, conducted interviews and performed document analysis using school documents. The researcher also recorded descriptive observations, including any feelings, reactions, reflections, insights and interpretation of what was observed, as well as broader observations (e.g., physical layout and structure of the school, food available in the cafeteria, promotion materials to support healthy living). These observations were used to track decisions that were made, inform analysis and provide context for research discussions. Semi-structured interviews were the primary source of data in this study. Interviews followed a conversational format (25) and guides were developed for each participant to explore the school-specific context and their experiences with health promotion activities; questions were asked to elicit description of the strengths, limitations and areas of improvement of health-related programs and activities within the school. Interviews were conducted by the primary author and ranged from 28-79 minutes. With permission from participants, interviews were recorded and transcribed verbatim. Observational data and documents available through school websites that related to HPS (e.g., meeting notes, grant proposals, school menus) were used to inform

the researcher of past and current activities of the school, guided interactions with school stakeholders and informed analysis.

Analysis

Principles of saturation (25) were used to determine the number and type (i.e., principal, teacher or parent) of interviews that needed to take place within each school. It was important to gather sufficient context to understand the organizational functioning for each case study school. As a result of variable school circumstances, each school had a unique sample (type and number) of key informants. Transcripts from field notes, observations and interviews were imported into qualitative data analysis software (NVivo 8.0) to organize and code the data. Data was coded inductively using open coding strategies to identify codes emerging from the data (18,26). Emerging codes were discussed and defined and used to selectively code to enable constant comparisons across transcripts. The data was also coded using the eight theoretical components, which were established a priori (16). While coding, the primary author recorded memos related to information and emerging ideas and insights about themes emerging from the data. During data analysis there was a focus on identifying patterns in the theoretical propositions (a priori implementation components) using the observed data from the case studies to develop organizational logic that would help to explain the results (21,25). As schools are constantly undergoing reform and change, the process of matching observations to emerging themes was not expected to be linear; rather, continued transforming and reforming was expected among schools (21). Schools were classified into implementation categories based on similarities in implementation patterns (i.e., representation of the implementation components within a school) to provide explanation to the level of HPS functioning across NS (21).

7.3   Results

Overall, thirteen school visits were made, including five presentations to school staff, parents or students. Interview participants (n=23) comprised school principals (n=9), physical education (PE) teachers (n=3), classroom teachers (n=3), support teachers (n=2) and parent/community volunteers (n=6). Three sequential categories emerged to describe implementation patterns from the data analysis across case study schools; level 1 was the beginning stage of implementation where schools were "planting the seeds" for future growth; level 2 was the middle stage of implementation that was represented by actions that suggested that schools were "spreading roots" to allow for extension of growth; and level 3 was the final stage of implementation observed and was characterized by school actions that focused on "branching out" to advance HPS processes. Table 7.3 describes the observed functioning of the eight components across the three categories.

Table 7.3. Implementation components of case study schools by implementation categories

	Planting the seeds	**Spreading roots**	**Branching out**
Policy and institutional anchoring	Bureaucratic and political obstacles	Variable support for activities provided	Consistent support for action plans provided
Leadership and management practices	Enforcement of policies and leadership by formal leaders (e.g., principal and lead individuals)	Evidence of shared leadership across multiple partners	Evidence of distributed leadership and effective management processes
Preparing and planning for school development	Very little evidence; decisions made in isolation	Planning for smaller, short term activities	Based on identified priorities, goals set and plan in place

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Professional developing and learning	No mention	Superficial mentioning	Superficial discussion
Relational and organizational context	Limited collaborative examples observed	Evidence of collaboration among staff through supportive organizational structures	Collaboration among staff and evidence of sustainable and effective organizational structures
Student participation	Students involved but not engaged	Student engaged as peer leaders during activities	Student centred learning and engagement are key priorities
Partnerships and networking	Involvement but limited collaboration	Collaboration with core group of community partners	Community partners are engaged in school planning and action
Sustainability	Focused on time limited activities	Mostly time limited with some discussion of sustainability	Focused on integrating activities to sustain impact

The resulting organizational logic is depicted according to the emerging interactions between the a priori components in Figure 7.1.
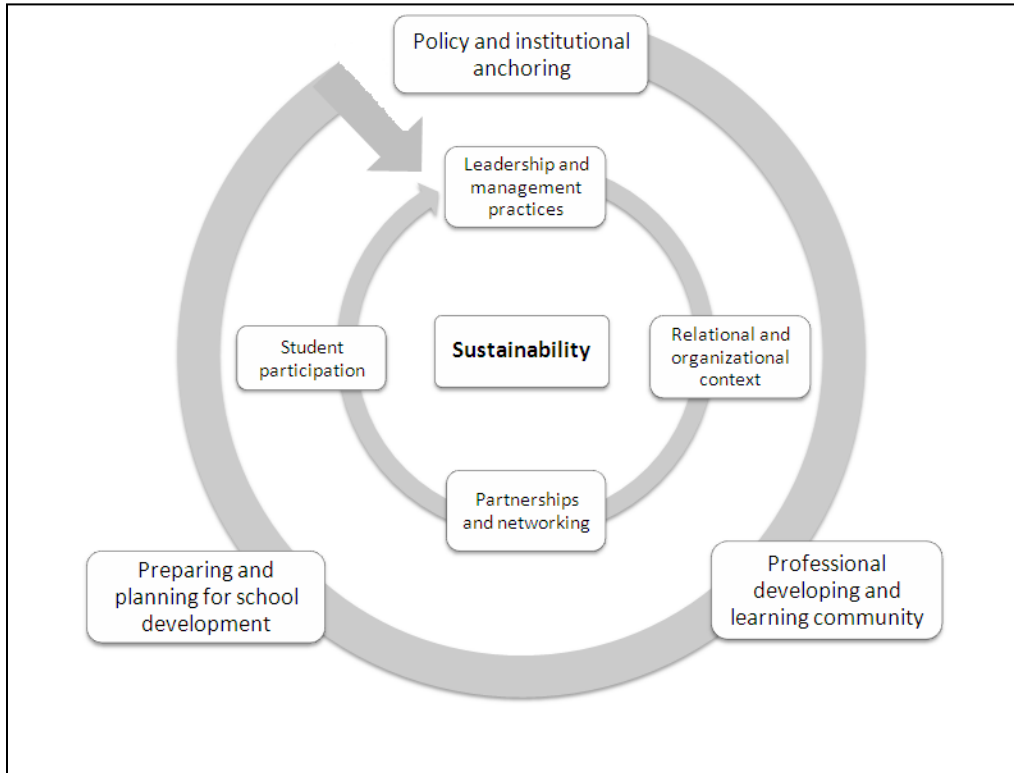
Fig 7.1. Functioning of Rowling and Sandal's (19) implementation components as characterized by case study results

In the outer circle, the results suggested that high-level policy and institutional anchoring of HPS was a critical feature in overall HPS adoption and influenced the functioning of other implementation components. Within the inner circle, the style of leadership appeared to have an important influence on the organizational context. In turn, these components shaped school partnerships and student engagement. Altogether, the relative functioning of high-level influences combined with internal school processes enabled long-term anchoring and enabled sustainable long-term support for HPS. The subsequent results section provides further detail to HPS implementation; key elements consistent with Rowling and Samdal's (16) implementation components are substantiated through **bolded** script. As the initial health focus of NS HPS was to support physical activity and healthy eating, the majority of examples are related to these health topics.

Planting the Seeds (Level 1)

Two schools exhibited similar patterns of implementation that was categorized as the first level: planting the seeds. **Leadership and management practices** were described through enforcement of a provincial nutrition policy by the school principal or through delivery of other school activities by a school staff or volunteer, such as activity-based intramurals or breakfast programs. Although this leadership was important for implementing supportive activities, other stakeholders (including staff, parents and students) were not described as being engaged in school management, nor were effective examples of collaboration consistently observed. This disconnection between the formal school leader and community partners was evident in the following converging excerpts (from two different stakeholder interviews in one school) relating to unhealthy food being sold at school:

> Principal: *But I don't let them, we don't sell them as part of our lunch program, we don't make a huge amount of money but it's a huge seller, kids love hotdogs, they're cheap, it's a great way to boost your kitchen funds but, we just don't do it.*
>
> Parent: *We actually got in a little bit of hot water because we served hotdogs at our [fundraiser] canteen...it is easier to seek forgiveness than to ask permission sometimes.*

It seemed that, the principal was trying to enforce the nutrition policy and not permit the sale of unhealthy foods but the policy was not fully understood nor embraced by other school partners.

Among the two schools in this category, processes relating to management were primarily focused on the need for local (i.e., school) control; one example was related to food service delivery. Interviews with school principals at this level

focused on the bureaucratic and political challenges that were preventing their school from improving food service. For example, a principal from one school spoke about the challenges of improving the nutritional quality of school menus when an outside food service company is responsible for school food: *"…the lady who runs the cafeteria has made it very clear you know that she works for [food service company] and they give her the menu and that's what she does."* It seemed that limited engagement and partnership with the food service company (**partnerships and networking**) resulted in differing priorities and created an obstacle for the school to move forward with a healthier model for school food. This was also evident from the conflicting perspectives from the parent and principal (described earlier). Although both schools implemented activities that supported healthy eating and physical activity, their actions also tended to be infrequent and time-limited. The focus on implementing activities was reinforced by a district-wide emphasis on as opposed to change processes that would integrate health into school priorities (**policy and institutional anchoring** and **sustainability**).

Spreading Roots (Level 2)

Three schools reported similar strengths and challenges with implementation and were categorized at the second level: spreading roots. These schools exhibited supportive leadership from the principal who also provided flexibility to enable support among school staff (**leadership and management practices**). For example, the principal at one school commented that providing flexibility to classroom teachers to schedule physical and health education encouraged creativity among teachers in planning their lessons, such as combining class periods allowed to allow for extensive outdoor activities (**relational and organizational context)**. Furthermore, there was evidence of student involvement in health promotion and examples of student leadership (**student participation**). One principal also commented on the natural leadership

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portrayed by students at the school: *"Leadership happens on a natural basis. You'll see a lot, you'll see kids helping young kids put their snowsuits on, you'll see, little things every day, we really try to focus on that."*

Despite various positive implementation elements, schools at this category struggled with sustaining activities that promoted healthy behaviours into the daily life of the school (**preparing and planning for school development** and **sustainability**). Participants commented on their perceived limited capacity; the principal from one of the smaller schools commented that the limited organizational capacity was related to the size (i.e., number of teachers) of the school: *"And you need manpower, so you need, that's key and when you're in a small school, you don't have the manpower."* However, the challenges of capacity and time were also shared by a larger school in this category that wanted to broaden and diversify their lunch program but struggled with having sufficient staff and volunteer capacity to make this change (**policy and institutional anchoring** and **sustainability**). All three schools also felt somewhat limited in engagement with community partners (**partnerships and networking**). Furthermore, schools were responsive to the results of the CLASS study (i.e., wanted to understand what results meant for their school), but did not seem to consider a sustainable plan to improve current school practices (**preparing and planning for school development**). Therefore, similar to schools at level 1, schools in this category described shorter term initiatives or activities rather than integrating health into school priorities; this short-range approach was reinforced by the time-limited support available from their school district. Similar to the previous category, the school districts responsible for schools in this category were limited in capacity as a result of the size of the district and/or dedicated resources (human and financial) for HPS (**policy and institutional anchoring**).

Branching Out (Level 3)

Four schools demonstrated examples of positive implementation functioning and were categorized at a third level of implementation: branching out. Importantly, all schools had a supportive leader (i.e., principal) but there were also illustrations of how leadership was exhibited at the school district-level and distributed across all school partners (**leadership and management practices** and **partnerships and networking**). For example, the responsibility for activity-based intramurals and afterschool programs was shared among school staff, parents and the broader community. Furthermore, although the key informants that were interviewed were important champions in supporting the organization of activities, they repeatedly acknowledged the critical support that was provided by other partners. One principal illustrated their collaborative focus by commenting on the benefit of the contribution from multiple stakeholders: *"And to me if you get the right people involved, things happen, simple as that."* Engagement at schools in this category also included students (**student participation**) and there was evidence of student centred learning and an emphasis skill development and fostering enjoyment among students (**relational and organizational context** and **student participation**). All schools also engaged students as leaders on the playground and during classroom instruction. For example, one school had recently organized a student action team that met weekly to discuss and organize HPS activities. This action team was involved with implementing a monthly healthy snack initiative using HPS funds and healthy "tips" shared with the school community.

In addition to displaying evidence of distributed leadership, all schools in this category had a committee or team that met to plan activities (**preparing and planning for school development** and **policy and institutional anchoring**). The establishment of these teams was a HPS strategy that was encouraged by their respective school districts. Furthermore, school planning was purposeful and

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focused on sustaining the influence on the school environment and students' health (**sustainability**). For example, one school had a healthy active living committee that used the data provided by the CLASS research as a baseline for establishing a goal to increase physical activity of students. Another school had recently established a HPS committee and exhibited enthusiasm in working with community partners to plan activities to support established goals. Another school had established a policy for daily physical activity that required collaborative engagement and delivery by classroom teachers (**relational and organizational context**), in addition to scheduled physical education with a specialist teacher (i.e., individual who has received certification to teach physical education). There was also recognition of how health promotion priorities could be addressed within the broader context of student wellness (**policy and institutional anchoring** and **sustainability**). A physical education teacher provided context to this by commenting on the importance of preventing scheduling conflicts across other extra-curricular activities (e.g., music and art clubs) to provide broader opportunities for students and foster positive relations among staff.

Furthermore, across all schools there was an understanding of the need to integrate health into the priorities and culture of the school; this philosophy was shared by their school district (**policy and institutional anchoring** and **sustainability**). Two schools had created a permanent paid position for a school food manager that helped to sustain the positive effects of healthy nutrition practices. Principals at these two schools had also been involved with HPS initiative for over ten years and commented that the success of HPS should be attributed to the grass-roots approach that was taken by school partners to collaboratively assess and act upon priorities determined by the school community (**partnerships and networking** and **sustainability**). One of these principals spoke about the importance of having people that believed in the importance of promoting health in schools: *"Your demographics matter, you've got to have enough of a critical mass of people that believe in good nutrition"*

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The key element for these schools seemed to be related to having a supportive school culture. The principal from another school commented that there was a "*culture for health promotion*" within the school. Another principal commented on the alignment of their health promotion goal with key school priorities for the school: "*…this is a priority for us right now, we'll make the time and my teachers are very good to make the time...For something like this, it's something that they believe in...*" This school had garnered support from the entire school staff to support the implementation of school-wide activities.

Common elements across categories

All schools provided examples of how educational and cultural priorities limited health promotion progress and sustainability (**policy and institutional anchoring** and **sustainability**). Participants commented that they were disappointed with the conflicting messages between policy, priorities and resources from current provincial and school district policies; this was a particular concern for schools from districts that had recently lost resources (both human and financial) to support health promotion activities. Participants also spoke about the difficulty in balancing health promotion initiatives with current academic priorities. One principal elaborated on the difficulty to add expectations for activities to support health promotion when teachers were already stressed: "*I'm always conscious of that because things that come from the top down, and the pressures… and I'm the person that has to deliver that expectation and I look at [teachers] and I think you're giving me everything…*" Correspondingly, across all schools, professional development opportunities that related to health promotion seemed to be difficult for schools to put into place (**professional developing and learning**); in fact, overall, there was very little mention of professional development. Only one school explicitly identified the need for resources to enhance in-class infrastructure as a priority goal for HPS. Staff from this school also had the opportunity to attend a district wide professional development

opportunity to learn about gardening and the school had a plan to build a garden in the near future.

7.4   Discussion

This research described the naturally occurring functioning of HPS across schools in NS according to the theoretical and empirical evidence proposed by Rowling and Samdal (16,17). The present study builds on previous work in NS (3) and the results suggested that school district leadership for health promotion was an important precursor for school-level adoption and implementation of HPS. Schools that were stimulated by jurisdictional vision and provided with relevant HPS support exhibited the implementation components more consistently; correspondingly, these schools were classified at a higher level of HPS implementation (Level 3). Consistent with implementation components (17), these schools were also involved with planning for development and action in health promotion and had supportive leadership and management practices that inspired key functions to enhance HPS. Collectively, a positive organizational context and reinforcement from successful community partnerships appeared to integrate and enable progress toward successful HPS implementation.

Advancing the work of Rowling and Samdal (16,17), successful HPS strategies were observed through collective interactions between key theoretical components. Although all principals in the current study were important school leaders, the distribution of leadership and processes of school management were considerably different. Principals from schools at a higher level of implementation had demonstrated their understanding and commitment to successful change through effective management of human resources and by fostering partnerships and relationships (27). The translation of these leadership processes was also observed to have an influence on other implementation

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components, in particular enabling a positive relational and organizational support through facilitated processes. Previous research has also described principals as the key force in stimulating a critical mass of individuals (28) as well as influencing the adoption (29,30) and quality of adherence (31) of school wellness initiatives. Moreover, the integration of leadership into the regular activities and mission of a school have been reported as important for facilitating school-based health promotion of a school, building a collaborative school culture and school readiness for change (32,33). The results are similar to case study research in Ireland that reported a "close-knit" relationship with families and active engagement of students provided an important foundation for school wellness initiatives (34). The evidence of distributed leadership from our case study schools suggested that a more sustainable "whole school" approach is effective in creating systemic change and advancing HPS goals (35). The results of this study suggested that leadership, 'whole-school' buy-in and commitment were critical features in enabling this change.

The significance of higher-level jurisdictional vision for HPS in stimulating and enabling the school development process in this study was consistent with the recent call for leadership and commitment to invest in education and the health of school students and teachers (36). High-level vision and policies provide a strategy for action and can support school development through financial, organizational and technical resources (27,37). The results of the current study advances the literature and provides important practical implications to guide jurisdictional visioning to establish commitment and priorities for action (33,37,38). These results suggested that district-level HPS approaches that focused on school-level prioritization of needs, identifying assets and planning for long-term change, as opposed to enforcement of policies, were more enabling to implementation by schools. Schools with high-level support that encouraged this approach had established a coordinating committee to support relevant practices and had developed a school plan to address identified needs of

the school community; correspondingly, resources distributed by school districts were designed to reinforce this developmental, school-driven, process. Therefore, the culture of the district emerged as being an essential feature to sustain successful collaborative implementation. This finding is consistent with literature on educational leadership (39); Hargreaves and Shirley (40) suggested that this can be achieved through a shift from accountability (a focus on outcomes) to responsibility (a focus on ownership) in school health promotion. This new way of thinking about health promotion in schools requires greater integration of health into current educational visioning and priorities thereby enabling improvements in both health and education. Building on the results of this study, an important area of future research is to examine how varied HPS functioning influences students' health and educational outcomes (41–43).

Study limitations

The purpose of this study was to provide context to the adoption of HPS using perspectives gathered from multiple schools in NS. Although qualitative research does not assume generalizability, this study used multiple schools, with different characteristics, to maximize the transferability to schools across NS and to broaden the interpretation such that they become meaningful to schools in other jurisdictions. School context and characteristics provided a rich description of the cases to facilitate knowledge transfer. It is important to note that, despite the same protocol being used to gather information from schools, schools differed in their receptiveness to the research, resulting in different interactions across schools. Although this may have influenced the depth of data collected from each school, sufficient information was collected from all schools to provide a common understanding of how HPS was implemented. Furthermore, while perspectives gathered from stakeholder interviews might not be representative of the entire school community, the focus of the interviews was on describing processes (how

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things happened) rather than experiences or values. Observations and school documents also helped to triangulate the data collected during the interviews.

7.5   Conclusions

This collective case study constitutes a description of how HPS was adopted and implemented in a 'real world' setting. Schools assembled into three categories of implementation but there also seemed to be opportunity for future growth (e.g., level 4 where schools are "nurturing growth" and cultivating the successful implementation of components). Higher-level visioning and support from school districts was a critical feature in enabling supportive organizational processes, such as distributed leadership and a collaborative school culture that facilitated adoption and implementation of HPS across schools. Schools that perceived limited jurisdictional vision were less successful in establishing school-level change that was needed to achieve long-term HPS goals. This study confirmed other reports that it is imperative to integrate HPS into educational values and use it as a mechanism to enable improvements in both health and education. Reforming the focus of HPS will require multiple levels of collaborative leadership and adequate resources to help to reinforce this change.

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Chapter 8

Culture matters: A case of school health promotion in Canada [10]

8.1   Introduction

Rising concerns of poor health behaviours of children and youth have stimulated international support for health promotion in schools and recognition of the critical opportunities to support healthy nutritional behaviours and physical activity within this setting (1–3). Schools offer the potential to reach children at an early age, just as they are developing important attitudes and behaviours that may influence their health in the future (4). There is increasing evidence that suggests that school-based health promotion initiatives are most likely to have a positive influence when they are comprehensive and multifaceted (5–8). Additionally, research interventions have demonstrated positive effects on nutrition and physical activity by targeting multiple components of the environment including physical education, health curriculum and school food service while being supported with staff training and involvement from the school community (9–12). In response to developing evidence, recent government actions have stimulated 'naturally occurring' interventions that provide 'top-down' support (e.g., policy and resources) to enable a comprehensive approach to school health (13,14); this approach is often called Health Promoting Schools (HPS), Comprehensive School Health or Coordinated School Health, with each term used interchangeably depending on jurisdictional context (14). Regardless of the term, such natural experiments have been cited as an underutilized strategy in public health (15) and offer an important opportunity to study the adoption,

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implementation and impact of health promotion policies and environmental strategies at the population-level (16).

The 'holistic' HPS approach is based on four distinct but interrelated principles: fostering health and learning, engaging all school partners (i.e., staff, students, parents and community), providing a healthy environment and implementing healthy policies and practices (5,17,18). Guidelines to support local implementation focus on establishing key processes that would enable long-term changes to the school environment and schools are encouraged to adopt a local strategy that is relevant to their unique contextual needs (e.g., with respect to enrollment criteria, socio-economic factors, curricular demands due to language or religious instruction) (5,14). Lessons learned about implementation are important for schools to advance practice, especially for schools that are new to the approach (19). Considering the dynamic and ongoing processes of HPS (20), the challenge for evaluators will be to find appropriate methods that track the transformation of change. An exploration of local factors involved in implementation of HPS is therefore critical to the understanding of this progressive approach (19).

Sustaining the positive effects of external interventions requires adoption and commitment from schools and barriers (such as lack of time, low priority of health promotion and financial concerns) have been reported as preventing institutionalization (21–23). Previous research has also suggested that successful adoption and maintenance of comprehensive school interventions and policies require 'bottom up' organizational capacity, which can include school leadership, supportive practices and school culture[11], shared vision and involvement from families and the community (25–29). However, little is known about how

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[11] School culture or climate refers to the tone of the school that influences perceptions and emotions (24).

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supportive and prohibitive elements influence implementation in naturally occurring HPS initiatives.

Nova Scotia (NS) is Canada's second most densely populated province, and located on the east coast with many rural communities with rich histories of fishing, mining and agriculture. Research has provided local data regarding the significance of poor nutrition, physical inactivity and unhealthy weights among NS children (30,31) and recent policy and environmental strategies have been implemented to support health promotion across the province (32). In particular, a provincial HPS initiative (NS HPS) has supported the implementation of contextually relevant HPS strategies across school jurisdictions since 2006 (33). Developing healthy nutritional practices, consistent with the guidelines of a provincial nutrition policy (34), and promoting physical activity had been the initial priorities of NS HPS; however, schools were also encouraged to address other health issues (e.g., mental health, sexual health, substance abuse prevention) that were of concern for their school community (33). Funding was distributed from the provincial government to support the development of regional HPS partnerships (including stakeholders from education and health) and different models were developed to support dissemination and uptake across schools; as a result of the regional variability and the autonomy of schools it was expected that local HPS strategies would be considerably different across the province (32).

NS HPS provides a unique opportunity to learn what has influenced its implementation. The purpose of this research was to study the factors preventing and facilitating school-level implementation of HPS practices. A qualitative case study approach was used to explore the perspective of principals, teachers and parents (35).

8.2   Methods

Sampling Frame

As schools are bounded systems with unique cultures, each school in NS could have provided a different case for investigation. In case study research, the intent is not to be representative but rather to provide an in-depth understanding of selected cases (35) and provide evidence to inform what works, in what situation, and why (36). Selection of cases was guided by the theoretical framework of the study (37); specifically, it was important to understand the experiences of HPS implementation across the school districts in relation to varying degrees of HPS implementation. Considering the provincial nature of this research a collective case study was used and one or two schools were selected to take part across each Anglophone public school district.

Variations in HPS implementation were determined following school participation in the Children's Lifestyle and School-performance Study (CLASS) II. CLASS is a province-wide project that examines the relationships between health, nutrition, physical activity, mental health and school performance of children in NS (www.nsclass.ca). In both 2003 (CLASS I) and 2011 (CLASS II), data collection included the completion of student and parent surveys and a self-report school survey to measure aspects of the school environment (data are not shown). As part of the project knowledge translation strategy of CLASS II, participating schools were provided with a confidential report with their individual school results compared to provincial averages and information and strategies to support HPS practices. These individual school results provided important context to ensure selection of schools that had different implementation strategies. The size (i.e., population of students) and region of schools (i.e., urban/rural) were also considered to ensure there was appropriate representation of communities across NS, along with recommendations from school districts and

interest from schools. According to these criteria, nine schools (n=9) across the seven (n=7) Anglophone public school districts were invited to take part as a case study school. The sample size is justified by the alignment with the theoretical framework (37) and a similar sample size has been reported in recent qualitative school-based research (38).

Procedures

Ethics review was provided by the Health Research Ethics Boards at the University of Alberta and Dalhousie University. Participating school districts in NS granted permission to access schools for the data collection. Prior to any data being collected, principals and key informants also provided informed consent. After determining potential cases, the primary investigator contacted the school principal to inform them about the subsequent research and determine their willingness to participate. All selected school principals agreed to take part and a first meeting was scheduled. Following the initial meeting a purposive snowball sampling (39) was employed by asking principals to provide recommendations of key informants (school staff and parent/community volunteers) that were involved with health promotion activities. Depending on school circumstances, either an individual interview with the school principal or a meeting with school staff was scheduled. The purpose of this initial meeting was to meet with the principal or present to a school team regarding the school-specific results and discuss potential contextual factors that may have influenced the results within selected schools. Further visits, interviews and meetings were scheduled with key school stakeholders based on the recommendations made following the initial visit (see Appendix 9-12 for information letter, consent form and interview guide for participants).

Data Collection

The discussion of contextual factors during key informant interviews was the basis for data collection for this study. Interviews were conducted with key stakeholders involved in supporting health promotion (e.g., principals, school staff and parent volunteers). Interviews followed a conversational format and guides were developed for each participant to collect rich descriptions of current health promotion programs and activities and their related strengths and challenges. Interviews were conducted by the primary author, either in-person or over the phone, and ranged from 28-79 minutes. With permission from participants, interviews were recorded and transcribed verbatim. Two participants could not participate in an interview so they provided written responses to open-ended questions. These data were also transcribed and analyzed in the same way as the interview transcripts. Field notes, including observations from the researchers, and memos, including insights and hunches, were transcribed and included as data for analyses (40).

Analysis

Principles of saturation (41) were used to determine the number and type (i.e. principal, teacher or parent) of interviews that needed to take place within each school. Specifically, it was important to gather sufficient organizational context to describe the factors preventing and facilitating health promotion activities within each school. Depending on the school circumstances, different stakeholders (with varying roles) were identified as key informants. Data transcripts were imported into qualitative analysis software (QSR NVivo Version 8.0) to organize and code data. Two authors independently reviewed selected transcripts and employed open coding strategies (42) to inductively identify emerging codes (43). Emerging codes were discussed and defined by both primary authors using labels taken from the words of participants as well as those

relevant to HPS literature (40). This list of codes and definitions was used to enable constant comparison when coding subsequent transcripts. Frequent discussions were held to revise codes and definitions. While coding, the primary author also recorded memos related to information, ideas and insights about the relationships in the emerging themes. After the data were coded, the primary author conducted theoretical coding to explore ideas and insights emerging through data analysis. Commonalities were sought between different codes to increase the degree of abstraction of the analysis. Categories were used to classify relationships between codes, which enabled an increased level of abstraction and development of interpretation regarding factors influencing HPS implementation.

8.3   Results

Overall, twenty-three stakeholders (n=23) across the nine schools took part in either an individual or group interview. Participants comprised school principals (n=9), physical education (PE) teachers (n=3), classroom teachers (n=3), support teachers (n=2) and parent/community volunteers (n=6). Table 8.1 provides detail on participants and school and community characteristics.

Table 8.1. Interview participants and school community characteristics across the nine cases.

	Participants	**School characteristics**	**Community characteristics**
School 1	Principal and parent	Grades P-6, ~ 200 students Older facility, limited space outside for free play	Rural inland community 30km outside large town
School 2	Principal and 3 teachers (PE[1], classroom and support[2])	Grades P-6, ~ 200 students Newer facility, vast playground equipment and access to technology	Rural municipality; fishing is major industry
School 3	Principal and 2 teachers (classroom and support)	Grades P-6, ~ 100 students Small community school, older building and facilities.	Community 20km outside downtown core of city
School 4	Principal and parent	Grades P-6, ~ 215 students Smaller, older facility, portable classrooms to accommodate student population	Rural community 10km outside small town; many seasonal occupations

School 5	Principal and parent	Grades P-6, ~75 students Small community school, at risk of being closed due to district cost reductions	Rural community 20km outside large town
School 6	Principal and 2 parents	Grades P-6, ~ 500 students Fairly new school (6 years) with good facilities.	Large town school
School 7	Principal and PE teacher	Grades P-6, ~300 students Good school facilities	Community 20km outside core of small city
School 8	Principal and PE teacher	Grades P-5,~250 students Older facility with extra classrooms available for activities	Rural village outside of small town; agriculture is major industry
School 9	Principal, community volunteer and classroom teacher	School 9, Grades P-12, ~400 students Larger facility with elementary grades in designated area of school	Small rural village in rural county

[1]PE teacher = physical education teacher
[2]Support teachers provided assistance to students with resource and behavioural needs

Although several themes emerged, the focus of the results included in this paper was on the factors that prevented or facilitated school implementation of HPS. Also, as the initial health focus of NS HPS was to support physical activity and healthy eating (as it relates to the provincial nutrition policy), the majority of examples are related to these health topics. An overview of the emerging themes, substantiated with school context and direct quotations from participants, are shown in Table 8.2 and the subsequent section provides a narrative summary of the themes that emerged from data analysis (themes are identified with *italic* script).

Table 8.2. Themes emerging as barriers and facilitators that influence HPS implementation.

Theme	Participant and school context	Participant quotes
Barrier: Increasing demands on the education system	School stakeholders wanted to support student health but felt conflicted about how to balance competing priorities and academic. Parents agreed that supporting health was important	Principal: *"This doesn't show up in my job description anywhere but we know that fed kids are happier kids and fed kids are healthier kids and fed kids are more productive academically."* Support Teacher: *"You have teachers*

	role for schools but they felt that the priority should be on academics.	*that are so passionate about wanting to get out and do this, but at the end of the day, you are one person…"*
Barrier: Political and financial obstacles	Principals commented on political and financial challenges across different models[a] for school food. Parents also spoke about their experiences with school food (many volunteered in lunch or breakfast programs).	Principal: *"...the fact that we're profit-driven, we're selling our soul."* Parent: *"Our kitchen, which is separate from the breakfast program, serves hot meals. But it's always been financially strapped, like we're always in the hole with the kitchen."*
Barrier: Obstructive community culture	School staff spoke about unhealthy cultural norms and the challenges mitigating conflicting messages from students' homes. Participating parents acknowledged cultural challenges and appreciated reminders from schools about healthy choices.	Principal: *"Well the biggest issue for us was the celebration, culture defines us, right? Our food defines our culture..."* Parent: *"… family dynamics have changed so much that really there's never anybody home with those kids when they come home from school... So the parents aren't spending the time with the children that they used to…"*
Facilitator: Top-down policy	Participants reported that although the nutrition policy encountered resistance it was changing school food. Support from school principals helped to foster engagement.	Principal: *"I mean because if they didn't have the policy, people wouldn't have a reason to change right? They would still do what they always did because people tend to do that…"*
Facilitator: School leadership	Principals were reported as being vital to obtain buy-in and teachers helped to support activities on the ground (e.g. organization and delivery of health initiatives). Parents were involved with fundraisers, advisory committees and helped to support food and activity programs. Several schools paid for a school food coordinator who was a champion for school health initiatives.	Principal: *"...you just can't take the policy and be able to run the type of program we have without having a lot of people believing in it and putting extra effort."* Support Teacher: *"...in this school, we work, all of us work so hard to try and instill this, to promote it, to make sure we're eating healthy as a role model, I think that's just as important."*
Facilitator: Supportive school culture	Successful health practices were embedded into the culture (i.e. the way of life) of schools. Participants provided examples of how collaboration within and beyond the school helped to support school health initiatives.	Classroom Teacher: *"...everybody's taking a little piece of the puzzle and they're working towards that goal."*
[a] School food programs managed at the school were organized and delivered by parent volunteers, a paid school food coordinator or an external outside food service provider.		

Barriers

It was evident that *increasing demands on the education system* limited the overall support a school could provide for health promotion activities. All participants understood the importance and relevance of supportive school health practices, but school staff (i.e., principals and teachers) commented that large class sizes, changes to curricula and pressures to raise standardized assessment results mitigated the ability of their school to support health promotion activities. Most parents also acknowledged the increasing educational demands on school staff. Furthermore, mental wellbeing was recognized as an essential part of student learning and overall health but was an issue that posed a challenge for ill-equipped schools. Many teachers spoke about the need for guidance, resources and behavioural support in classrooms as a result of the increasing needs of students and complex challenges faced by families. Correspondingly, principals commented that their restricted budgets made it difficult to provide sufficient behavioural support to classroom teachers. Many principals and teachers said that they wanted more organizational capacity through additional staff rather than curriculum resources or professional development.

School food provision and regulations for food preparation created a number of *political and financial challenges* for schools, especially related to garnering support from volunteers in the community. Political challenges and organizational barriers were evident when food service was not managed by the school (two schools); these obstacles seemed to create a 'business' culture and negatively influenced relationships at the school and the nutritional quality of food. However, principals noted that changes to school food management were difficult and would require significant investment (time and money) by the school. Furthermore, school-level management of food did not necessarily liberate the school from challenges; financial viability was also reported as a major challenge to school-managed programs (five schools) and those organized

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by parent volunteers (two schools). Financial challenges also seemed to limit the ability of a school to offer opportunities for physical activity; particularly with respect to having sufficient core staff (e.g., physical education teachers) and providing transportation options for students to participate in afterschool activities (especially relevant for rural schools).

The *obstructive community culture* also posed a unique challenge for schools. All parents (and also school staff who were parents) commented on the increasing societal challenges to healthy living (e.g., increased costs of healthy foods, pervasiveness of fast food and the challenges to keep pace with increasingly busy family schedules). Parents also reported that they were aware of school health promotion activities and appreciated receiving information from school about nutrition as it reminded them of the expected school norms. However, it seemed that these persisting cultural norms negatively influenced schools' ability to adopt health promotion practices. For example, teachers felt that inconsistency between healthy messages promoted at the school and unhealthy messages in the broader community (and potentially reinforced at home) was undermining what students were learning in the classroom about healthy eating. Many principals also struggled with these norms, commenting that they did not want to disregard support provided by parents because of potential incongruity with their school's efforts to promote health; rather, principals felt that they needed to foster engagement of parents regardless of the messaging. However, personal values of individual participants also seemed to influence their perspective regarding the appropriate "balance" for promoting health in schools. For example, some participants (principals, teachers and parents) felt that regular sale of less nutritious foods (according to a provincial nutrition policy) was acceptable whereas others thought that such foods should only be available during special school celebrations and holidays.

Facilitators

Many schools commented on how *top-down policy* supported healthier school practices; in particular, participants noted that the provincial nutrition policy had made an impact on the nutritional quality of food provided at schools and was starting to change the norm for 'acceptable' school food. Most principals appreciated having the policy as it provided justification to change unhealthy food practices. Teachers and parents provided examples of recent positive changes to breakfast and lunch programs. With respect to procuring food in schools, several principals also reported that outside vendors were now providing healthier foods that were aligned with the policy. Support from school districts was also perceived as enabling change to school food practices; in particular, principals and teachers noted that funding and training opportunities related to the nutrition policy were helpful to facilitate action in schools.

It was clear that *school leadership* fostered support for health promotion within schools. Principals were important champions who provided leadership to school health initiatives and identified their commitment with decisions that supported healthy school practices. Despite the financial implications and potential discontent from parents (see previous comments in *obstructive community culture)*, several principals prohibited the sale of unhealthy foods and allocated transportation funds to ensure that all students could take part in afterschool activities. From the perspective of teachers and parents, this leadership set expectations for the school, enabled change and garnered support from other school partners. Teachers and parents also played important roles in the schools, with teachers often leading physical activity programs and parents supporting the school food program. Participating parents commented that they helped to raise and distribute funds and worked in an advisory capacity to increase the quality of education provided by the school. The dedication of all school champions seemed to be driven by a commitment and passion for the health and wellness of their

students/children. Several schools had also hired a school food or afterschool program coordinator to formalize community leaders. This champion helped to lighten the load from school staff and alleviate the reliance on volunteers to organize and implement initiatives.

Elements of a *supportive school culture* were facilitated through collaboration between school partners and expressed through the opinions and attitudes of participants. School health initiatives were perceived as being easier to support when they were consistent with the school culture. Several principals and teachers identified that aligning health initiatives with academic priorities of schools was important. For example, success was reported by schools in providing opportunities for physical activity to directly enhance concentration in classroom lessons and integrating health into lesson plans (e.g., taste-testing different fruits). Furthermore, fostering a 'whole school approach' through collaboration among partners helped to ensure that initiatives were embedded into the accepted culture. Beyond school staff, partners in public health and recreation provided important support by identifying additional potential resources in the community and identifying opportunities to reinforce healthy messages. Finally, students were acknowledged as playing important roles in successful initiatives and were reported as leaders through peer mentorship and playground leadership programs.

8.4   Discussion

We studied factors that prevented or facilitated implementation of HPS practices in the province of NS, Canada. At a broad level, barriers observed were mostly structural and systemic, whereas the facilitating factors were related to political leadership and organizational capacity. The results of this study are consistent with school intervention literature but the context related to cultural

factors (both externally prohibiting and internally facilitating) contribute important insight into how health promotion activities were challenged and supported in schools following the implementation of a population-level HPS initiative. These results have important implications to inform the sustainability of current school interventions and naturally occurring school-based initiatives that have been stimulated by government policy. In particular, they provide evidence on how schools can maintain health promotion strategies by embedding practices into their school culture to sustain positive changes beyond targeted intervention and government funding. Furthermore, as a holistic approach is more likely to have a positive influence on student health and learning (5,44), it is important to consider the interactions between the emerging barriers and facilitators and their cumulative influence on schools.

Political support, top-down through policies and resources, can help to set standards and priorities for health promotion activities (13,45); however, increasing pressures and demands on the school system create a paradoxical challenge for schools to support school health interventions and policy initiatives (26–28,46,47). Consistent with recent literature (48), the participants in the current study reported that increasing demands on teachers and principals limited the overall support that a school could provide to health promotion activities. Although the existence of a mandated provincial food and nutrition policy stimulated organizational support, "buy-in" from school stakeholders was a key factor in the adoption, implementation and acceptance of the policy. Previous research has suggested that all school champions, including principals, teachers and parents, have the potential to influence the adoption and sustainability of a school initiative (25) and school principals can be a key force in stimulating a critical mass of individuals (28) and influencing the adoption (44,49) and quality of adherence (50) to school wellness initiatives. However, similar to other studies, these results suggested that it is essential to support champions with sufficient

time and resources to overcome potential indifference or resistance to HPS (19,51).

This study also elaborated on the cultural and bureaucratic challenges with both food service providers and adhering to a nutrition policy. While, previous research is also is beginning to describe how organizational, community and parent norms can impede school wellness policy implementation (29,52) the current study builds on the understanding of the significance of deeply-rooted traditions that cultivate unhealthy cultural norms and influence school communities. Considering differences in values and ideas for health promotion, this study suggests that a 'ground-up approach' is needed to change school food norms and enable a supportive school culture that embraces the change. Similarly, previous research has reported that successful development of school nutrition policies includes consultative processes that engage key stakeholders early in development. This engagement is postulated to have enabled earlier adoption and increased adherence of health promotion practices (53,54). Building readiness among school stakeholders by stimulating shared values and beliefs can have a positive effect on the culture of a school (55). Therefore, to overcome political and cultural challenges, schools will need to consider how they can foster organizational capacity by developing partnerships, engage multiple school stakeholders in decision making, establish norms for school practices and transform the culture of the school so that health is embedded as the "way of life" of the school (13,14,25,28).

An important policy implication of this study was the reported concerns with mental wellbeing from school stakeholders and uncertainty around how to respond to this complex health issue. These results clearly suggest that these issues created a significant burden on teachers and their capacity to deliver curriculum and support other health issues. This finding is important considering that the initial focus of NS HPS was to support nutrition and physical activity.

Recently, there has been an emerging trend that moves beyond a problem-focused approach to embrace a more positive view of mental health (56). Fostering an inclusive and supportive social and physical environment can help to support the overall mental and emotional wellbeing of students (57) but there is limited research that has explored how to navigate implementation of a positive mental health approach in schools. Since fostering a positive mental health approach contributes to psychological wellness and increased readiness to pursue goals related to healthy lifestyle change (i.e., improved nutrition and physical activity behaviours) (58), it will be important for NS stakeholder to consider how to integrate mental wellbeing into current health promotion strategies by providing schools with adequate and appropriate staff capacity and support.

Study limitations

This study adds value to emerging literature on school health interventions and policy initiatives by providing context to the factors inhibiting and facilitating school-level implementation of practices related to school health. This study provides different perspectives from nine schools in the province of NS; therefore the findings of this study might be specific to the contexts of the participating schools. A snowball sampling approach (39) was employed to attain additional participants based on recommendations following the first meeting at the school. As a result, selection bias may have contributed that participants are more likely to be interested and valuing school health initiatives. There was no consistent emphasis on stakeholder role (i.e. depending on school circumstance, different groupings of key informants took part); this approach provided depth in context related to the research questions but may not have captured the full breadth of stakeholder perspectives across various school roles.

Conclusions

This study provided important context to factors that facilitate or slow down the implementation of HPS practices. The results add to the evidence base of the contribution of community and organizational culture in supporting or hindering health promotion within schools. With increasing priority to promote mental wellbeing, it will be important for future HPS strategies to consider how to integrate this into current health promotion strategies. Both physical and mental health is inextricably linked to children's long-term prosperity and requires continued government attention to ensure continuing support within school communities. Effective implementing and sustaining the positive effects of HPS will require continuous engagement and collaboration with schools and their multiple stakeholders.

8.5   Bibliography

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Chapter 9

General Discussion and Conclusions

The purpose of this research was to provide contextual understanding of the adoption, implementation and impact of health promotion policies and practices in NS. Research objectives were explored through interrelated papers that provided critical evidence to inform future directions for school-based health promotion policies in NS while also contributing to the evidence-base for population-level intervention research. The results of this thesis described the multifaceted interactions of a population level policy intervention (i.e., NS FNP and NS HPS) on school practices (i.e. what was being done), processes (i.e. how the intervention was being implemented) and the overall impact on children health and weight status. Overall, the findings provide an in-depth understanding of the contextual influences and interactions that influenced the real-world uptake of health promotion policies in NS; this context enabled interpretation of the overall outcomes and impact of the population-level intervention.

9.1 Key findings from research

According to the stages of diffusion (1), Chapter 2 described the development and dissemination of health promotion policies and Chapters 4, 5, 6 and 7 elaborated on the variability in adoption and implementation across schools. Chapters 6, 7 and 8 provided additional insight into the dynamic organizational functioning of HPS and the contextual factors that may have influenced current adoption and implementation of health promotion across schools. Altogether, these results regarding the interaction of contextual practices and processes were helpful to interpret potential outcomes (2) in Chapter 3 (impact on student behaviours and weight status) and also provided understanding to the

effectiveness of current health promotion policies (i.e. with who and under what circumstances it fosters change) (3,4).

This research identified important outcomes across levels of the ecological model. Chapter 2 shed light on the existence of many health promotion policies across the province, but identified different priorities across levels of jurisdiction (provincial and school district) in relation to their dissemination. Chapter 3 identified some improvements in diet quality, energy intake and healthy beverage consumption of children over time but there was no significant effect observed on weight. Chapters 4 and 5 identified that schools were adopting and implementing health promotion practices, but the particular practices that were reported represented a narrow approach to HPS. For example, there was greater adoption of curriculum practices, but fewer practices that could foster a comprehensive (i.e. holistic) approach to school health. The integrated qualitative findings in subsequent chapters (Chapters 6, 7 and 8) provided important context to help explain the previous outcomes. In particular, these results described the important role that school leadership and culture played in building organizational capacity and highlighted that this capacity was vulnerable to competing institutional priorities and social/cultural norms. These interactions across ecological levels were elucidated through the use of a theoretical framework for HPS implementation (5,6) in Chapter 7; schools that were stimulated by "top-down" jurisdictional vision and provided with relevant support exhibited processes that were more consistent with successful adoption and implementation of HPS. However, "bottom-up" commitment, leadership and a supportive school culture sometimes helped to overcome the absence of this higher level support and enable adoption and implementation of health promotion policies (Chapter 8).

Overall, the intervention context, particularly the complexity of policy implementation, significance of competing educational/community demands and

importance of a supportive organizational capacity, was critical for understanding the policy, organizational and individual outcomes observed in this thesis. These results provide important foundation for understanding why the policies might not have been effective (i.e. not comprehensive) and efficacious (i.e. having the desired impact on behaviour and weight) and also provides essential groundwork to make recommendations for improvements to current policy and practices.

9.2 Relating the findings to recent literature

Consistent with the literature, it is clear that the resultant interaction between "top-down" institutional policies and "bottom-up" organizational capacity seemed to influence the overall diffusion of HPS within a school (8–10). Although policies and resources established guidelines for health promotion activities in NS, the conflicting and persistent pressures and demands within the school system created a paradoxical challenge for NS schools to adopt and implement health promotion initiatives. The difficultly of prioritizing health promotion interventions alongside of educational priorities is a common barrier reported in the literature (4,9–16); this competing emphasis relates to the incompatibility of the HPS innovation with the existing values and needs of school stakeholders and can mitigate the rate of adoption thereby limiting the potential for impact on individual behaviours (17). Furthermore, since NS schools were relativity autonomous in their decisions to adopt and implement health promotion policies (i.e. provincial health promotion policies were not enforced nor monitored), my results suggested that principals and teachers were more likely to implement activities or practices that were consistent (or compatible) with their usual "ways of working" that were determined by these educational priorities (i.e. a stronger curriculum focus) and accepted community norms (18). Similarly, a case study of the Dutch "Schoolbeat" approach, which was aimed at establishing health promotion policies and activities in secondary schools,

described that, schools were more likely to implement practical activities that could be fit into their daily tasks, rather than addressing more complicated activities that required broader school-level changes (e.g., writing a school plan) (19). Moreover, a recent qualitative study in Quebec that examined how stakeholder perspectives might influence dissemination of HPS suggested that the approach was continuingly challenged by the priority toward educational objectives (20). This study also elaborated on the divergence between health and educational sectors, which corroborates findings from other studies that have commented on the challenges of partnership between sectors (4,14).

Despite successes and continuing investment and advocacy of HPS, achieving system-wide and sustainable implementation remains a challenge (14). Considering the theoretical implications of innovation theory, the results provided context to advance the current understanding of the systematic challenges of the diffusion of a population health intervention and provided theoretical insight for understanding how to achieve the broad vision for HPS. Although NS HPS is a partnership between health and education, the most proximal jurisdictional policies that influence school decisions (i.e. school district level) were often focused on health issues related to safety, rather than broader health promotion goals. Moreover, the accountability framework for schools remained focused on academic outcomes (e.g., mathematics and literacy), which challenged implementation of health promotion initiatives because they were not conceptualized to be an integrated part of the school mission but rather portrayed as an "add-on" or extra initiative for schools to consider. Overall, the results of this thesis are consistent with the literature that describes a lack of authentic understanding of the HPS concept within the education sector (particularly the comprehensiveness and holistic nature) and the limited integration of health into the institutional priorities of the school system (14). Since the overall impact of preventive innovations like NS HPS and NS FNP are delayed in time and

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relatively intangible, the innovations are often perceived as low in relative advantage (degree to which the approach or policy is perceived to be better as the usual practices) and may contribute to a slower rate of adoption (17). Therefore, a focus on increasing the perceived relative advantage (i.e. improved health can enhance educational success) is an important strategy to improve innovation adoption and implementation.

Advancing the literature, the results of this thesis suggested that policies and future investments in health promotion in schools will require ongoing attention to achieve the overall goals; particularly, a mutual benefit needs to be established between health and educational outcomes by embedding health as the core business of the school (14,21). Furthermore, the policy, community and organizational context in this study provided insight to explain the modest changes in nutrition behaviours that were observed; broad-level, systemic action and partnerships across education and health sectors is therefore required to support increased dissemination of health promotion interventions in schools and maximize its potential for impact on health behaviours and weight status. This systems-level change requires a paradigm shift that could help to inspire a culture where a healthy school environment is accepted, expressed and nurtured (22). Further integration and partnership between health and education will also help to establish a compelling moral purpose for HPS that can steer the system, bind stakeholders together and redefine challenges as opportunities (23).

Building on past literature, the results of this thesis suggested that organizational capacity was established with committed leadership, collaboration across stakeholders and key champions that led and sustained innovation change (4,11,12,24). In particular, school principals have been cited as a key force in stimulating a critical mass of individuals (13) and influencing the adoption (8,25,26) and quality of adherence (27) to school wellness initiatives. However, although principals are suggested as catalysts for change, research on educational

innovation and change suggests a need for shared roles and distribution among school partners (22,23,28). Moreover, distributed leadership has been described as being able to promote collective responsibility and support greater effectiveness and sustainability of educational innovations (23). In the current study, examples of distributed leadership facilitated a supportive school culture and enabled adoption and implementation of health promotion policies. It seemed that the reciprocal interactions between distributed leadership and collective responsibility fostered a positive "way of working" that was driven by the goals of HPS. Furthermore, a critical finding of this thesis is that the presence of a collaborative community culture helped schools to surmount the competing educational and "obesogenic" norms and embrace the holistic HPS approach; the results also suggested that this collaborative culture helped to facilitate implementation of the NS FNP. Another important finding of this thesis was the significance of district-level support. Similarly, Fullan (2005) suggested that although it is possible for a school to become highly collaborative, it is difficult for schools to stay highly collaborative within challenging and competing circumstances (i.e. unsupportive district policies and insufficient resources) (22). Therefore, it is paramount that schools are supported with "top-down" resources and political support so they are able to sustain environmental changes and support improved health behaviours among children.

Moving forward with health promotion in schools requires a new way of thinking and re-culturing to change the context within all levels of the system (22,29). A systematic focus on building organizational capacity can help to facilitate and nurture development and change (30). In particular, the limited observation of professional development related to health promotion is consistent with inadequate training that has been reported by others (31,32); therefore, it is essential to consider how opportunities for professional learning can be integrated into the everyday life of the school. For example, Viig & Wold (2005) studied teachers' perceptions of the factors that facilitated participation in a school-based

health promotion project. The results of this study suggested that leadership needed to be integrated into the mission of a school, rather than a discretely different, and that a professional learning community could be an important vehicle to achieve school change toward health promotion interventions (30). Furthermore, in helping to build organizational capacity through training and resources, it is important to consider the different stages of readiness and unique circumstances of school communities. Previous research has reported challenges in standardizing health promotion innovations while also allowing sufficient tailoring of strategies to the readiness and needs of local contexts (33). Considering these challenges, contextual guidance has been described in the governance of complex social systems (34) and has been cited as a potential population-level strategy to support HPS adoption and implementation (35,36). Applying contextual guidance to HPS would combine internal self-organization (i.e., local decisions and control) and external strategic framing of options (i.e., providing a framework and resources). A recent study described the effectiveness of applying this framework to HPS; schools had the support they needed but they also had the autonomy to implement according to their unique needs (35). Moreover, other research has elaborated on the potential support provided by external health advisors. These advisors have potential to support a greater comprehensiveness of actions adopted by schools (i.e. restructuring working procedures and building a long-term vision) that require time, professional skills and health promotion knowledge (19). Although this research observed some positive external support and guidance, there was a great deal of variability across school districts and resources were perceived as being vulnerable to changes in government priorities and policies.

9.3   Implications for policy and practice

Building on the literature on educational reform (23), the challenge for NS stakeholders will be to understand how to make current progress last and spread. A recent case study in Scotland provided a framework for understanding the stages and processes of school health promotion at the policy-level. This was described as four interconnected phases: 1) getting started, 2) political will and strategic vision, 3) population-level leadership and integration and 4) embedding into the education system (35). The results of this research suggested that NS has demonstrated political will and jurisdictional leadership through the dissemination of health promotion policies but increased strategic vision, integration and embedding into the education system will be needed to advance adoption, implementation and maintenance at the school-level. Furthermore, effective action will require sustainable leadership at multiple levels, a supportive political and school culture and a strong sense of moral purpose that mutually supports improvements in both health and learning (22,23). With increased population-level strategic vision and integration, NS can maintain decision-making and flexibility at the local level to enable continued ownership that supports adoption and implementation across schools (20). The Province and school districts have a critical role in helping to reaffirm commitment, identify priorities for action and provide relevant and appropriate support for schools that is consistent with a continuum of implementation (37,38). This could be achieved through a focus on contextual guidance; this flexible support could advance HPS in NS to enable adoption and implementation as it is determined by the current progress and culture of individual school communities (36).

This research also offers important implications for future policy development as it identifies current distracters (23) that are limiting the adoption of HPS in NS. First, many schools adopted a narrow approach to HPS that was focused on the school curriculum, rather than practices and processes that would

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foster a 'holistic' approach to school health. This confirms the lack of understanding of HPS among some schools that has been reported in previous literature (14,37,39). Second, challenges were identified related to the adherence to the NS FNP, such as competing cultural norms, financial and bureaucratic barriers and misunderstanding of policy directives, that were consistent with the literature (40–42). Third, the results identified that there is an opportunity to build upon current practices related to physical activity to integrate daily opportunities for activity with current school strategies and curriculum requirements. Finally, considering the emerging issues related to mental wellbeing in this study, it will be important for NS stakeholders to consider how to integrate (and properly support) mental wellness in current health promotion strategies to address the needs of students.

9.4 Recommendations for policy and practice

The overall results from this research are summarized in the following contextualized recommendations for health promotion policy and practice. These recommendations focus on alignment across the results and the key priorities for action in NS.

1. **Foster ongoing collaboration between health and education sectors.**
   Recent investments in health promotion were momentous in shaping health promotion priorities across the province of NS; however, greater integration with broader educational and cultural norms are needed to develop an understanding of the mutual benefit between health and learning and establish the need for promoting health in schools. Furthermore, expectations for current policies need to be clarified to establish a common understanding and commitment toward change.

2. **Align current health promotion policies and HPS with a broader picture of child and youth prosperity.** There is momentum building in NS for new aligned initiatives with the cross-governmental strategy (including health and education sectors) to prevent childhood obesity (*Thrive! A plan for a healthier Nova Scotia*). This strategy focuses on upstream actions that are consistent with the HPS approach and could provide opportunities to inspire local actions to improve overall the overall health and prosperity of children (43). Considering the importance of academic performance and emergence of mental health issues, broadening health promotion priorities within NS HPS (i.e. beyond physical activity and healthy eating) and positioning health as precondition for learning could help to advance current progress.

3. **Build organizational capacity by providing adequate and appropriate support for current school champions.** Although structures and resources were in place to support health promotion in schools, establishing a coordinated system might help to enable greater adoption by schools. Stepwise development (33,44) of contextual guidance (34–36) would promote continual advancement of health promotion policies by providing schools with resources that are sensitive to different stages of readiness and allow flexibility based on school circumstance. The stepwise development would also seek to incorporate ongoing evaluation of the goals of health promotion policies through knowledge on how, when and for whom positive effects were observed (44) to foster systemic and continuous improvement.

4. **Reduce innovation complexity and increase the relative advantage and compatibility of the policies.** Notably, the collective challenges of HPS and the NS FNP suggest a high degree of innovation complexity, which can influence the rate of adoption (17); therefore, reducing the degree to which HPS and NS FNP are perceived as being difficult to understand and

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implement could help to support greater uptake and implementation. This can be achieved by providing greater specificity and adequate support to guide appropriate implementation. Furthermore, fostering and supporting champions within schools and providing peer support/networks might help to build the relative advantage and compatibility of the innovations by encouraging the social process of innovation diffusion (17).

5. **Strengthen school community collaborations and connections with parents/guardians to support school initiatives.** This research described that parents currently volunteer their time to help fundraise and implement school activities and that community support is sought, based on the needs of the school. Further engagement of partners along all stages of the change process will help to build collective commitment and a school community culture to effectively achieve health promotion goals. This engagement may also help to shift community and family norms so that they naturally reinforce (rather than diminish) the health promoting goals of the school.

6. **Monitor ongoing changes in health promotion policies and the relative impact on school environments, students' health behaviours and population weight status.** The intervention context provided important insight to help interpret the modest outcomes of policies on students' health behaviours and weight status. It will be essential to continue to monitor changes in policies and implementation at the community and organizational levels. This context will enhance policy development while also provide ongoing explanation to population level trends.

9.5 Strengths and limitations

The mixed methods approach and population health intervention research framework used in this research offers a number of methodological strengths. First, this research enabled an in-depth and multi-level understanding of health promoting policies in NS by integrating both quantitative and qualitative research approaches. The mixed methods research design helped to strengthen the overall results of the research by merging information on HPS practices and contextual processes. These population-level findings represent a unique contribution to the HPS literature as it combined the interaction between practical (i.e. what is being done), process-related (i.e. how it is being done) contextual (role of environment) features with outcomes across levels of the ecological model. Triangulation between data sources (interviews, observations and documents) was a key focus of the qualitative analysis and the similarities that emerged across the research papers enhanced the credibility and confirmability in the findings. Furthermore, data collection and analysis procedures were discussed with other researchers and decisions were tracked throughout the work to enhance the dependability of the methods used. Although qualitative research does not assume generalizability, this study used multiple schools, with different characteristics, to maximize the transferability to schools across NS and to broaden the interpretation such that they become meaningful to schools in other jurisdictions. The descriptive focus (included as thick descriptions of case context) within this work also strengthened the transferability of the findings to other jurisdictions.

It is also important to note the potential limitations of this study. First, it should be noted that, while the adoption of supportive HPS practices, processes and improvements in student outcomes might be a result of the changing policy climate in NS, they may have also been present prior to the introduction of the policies. Given the dynamic nature of policy implementation, it is difficult to ascertain whether this is a factor and this remains a limitation of this work.

Furthermore, although the methods endeavored to include all contextually relevant evidence-based practices in the school assessment tool, it is plausible that items were missed. The tool was developed in partnership with local stakeholders to minimize this limitation, and feedback was sought from a national panel of experts to assist with item inclusion and reduction to maximize the relevance of the assessment to other jurisdictions. The self-report nature of the tool may also have introduced response biases from schools and students. The modest response rates were influenced by the data collection burden on schools, which influences the generalizability of the results. Finally, as a result of a limitation of the scope of this research, this thesis was not able to include an exploration of student results based on level of implementation of the school.

With respect to the limitations of the qualitative work, a snowball sampling approach (45) was employed to attain interview participants based on recommendations following the first meeting at the school. As a result, participants likely represent the individuals with the most interest and value in school health initiatives and there was no consistent emphasis on stakeholder role (i.e. depending on school circumstance, different groupings of key informants took part); this approach provided depth in context related to the research questions but may not have captured the full breadth of stakeholder perspectives across various school roles. Despite these limitations, the case schools were not meant to be representative of contextual circumstance of all schools, but rather, to provide a mechanism for interpreting the quantitative results.

9.6   Opportunities for future research

Derived from the diffusion of innovations, Glasgow, Vogt and Boles (1999) developed the RE-AIM model to plan, evaluate, and review a variety of public health interventions according to five dimensions across individual and

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contextual levels, including reach, effectiveness, adoption, implementation and maintenance (46). Various studies have employed components of RE-AIM in school-related public health interventions (44,47,48) and offer important insight toward how health promotion interventions are implemented in schools; however, naturally implemented policy interventions often lack of clarity around key components, which creates a challenge in applying traditional intervention, implementation and evaluation frameworks. For example, a conceptual framework offered by Domitrovich et al. (2008) contextualizes the quality of implementation in preventive interventions in schools by defining characteristics of the intervention and the support system. These characteristics are situated within a multilevel framework of factors, which correspond to the spheres of influence described in a social ecological model (e.g., macro, school and individual levels); the authors suggested that these factors influence the quality, which with interventions are implemented in schools (47). Central to this framework are the core elements in the intervention model; as previously suggested these components are sometimes difficult to apply in policy interventions that are contextualized to diverse school communities. Moreover, although HPS is often defined through four interconnected pillars (teaching and learning, social and physical environment, healthy school policy and partnerships and services), these pillars only provide a framework for actions in schools. Since the core "practices" for HPS implementation are currently not well defined, this thesis has advanced the current literature by developing contextualized practices to describe "what" and "how" schools were implementing HPS in NS. However, additional research is needed to further test and define the core elements of processes and practices that contribute to effective HPS implementation.

Despite the fact that many school jurisdictions have adopted health promotion policies and guidelines as part of a broader comprehensive strategy to address childhood, there is limited research that has investigated how "naturally occurring" population level interventions have influenced changes in school

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environments and student behaviours. Building on the results of this research, it would be important to monitor changes to health promotion policies and provide further clarity to the different support mechanisms that have been established across school districts in NS. Furthermore, as health promotion policies and political investments evolve, it will be important to track contextual experiences of schools as they advance implementation of HPS (i.e. over time). Further evaluation on the impact of provincial and school district policies on student behaviours and childhood body weight is also needed, focusing on how student outcomes differed according to the practices and processes adopted and implemented by schools. A more objective assessment of school culture and its effect on the adoption of school practices and relative impact on student outcomes would also be valuable. Finally, action-oriented research that is conducted with schools could enable increased translation and exchange of evidence-based action that could facilitate improved local action among schools and communities.

9.7   Final conclusions

To conclude, this research provides a contextual lens to explore the population-level actions related to HPS in NS and important transferable evidence (49) on practices, school context and their interactions to help advance the effectiveness and dissemination of HPS. Although primary research interventions have helped to build evidence on the potential effectiveness of school-based health promotion strategies, naturally occurring interventions are increasingly emerging as a result of healthy public policies and grass-roots health promotion programs. The unique jurisdictional policy circumstances of NS provided a critical opportunity to shed light on how intervention context influenced the overall population-level impact of health promotion policies. This focus on context is often missed in traditional research, which limits the overall meaningfulness of interpretations. Furthermore, as obesity is a complex public

health issue with multifaceted behavioural and social structural influences, illuminating this context in population-level interventions will be critical to improve implementation and the overall impact on population-level weight status.

Recent investments in health promotion in NS were momentous in shaping future circumstances to support improved health among children and youth; however, the limited integration with broader educational and cultural norms may have influenced the narrow approach adopted by some schools. Organizational capacity for HPS was established through internal school processes such as having a committed leadership, collaboration across stakeholders and key champions that led and sustained innovation change. This research identified that school capacity facilitated a supportive school culture and enabled adoption and implementation of health promotion policies. Establishing a broad system to support HPS could help to progress adoption, implementation and sustainability of HPS within the province of NS and among other jurisdictions. Furthermore, fostering collaboration between health and education sectors is essential to develop an understanding of the mutual benefit between health and learning and establish the need for promoting health in schools. Considering the abundance of demands on schools and communities, increased alignment and establishing a common function for health promotion in schools would help to redefine current challenges as opportunities to advance both health and learning outcomes of students.

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Appendices

Approval Form

Date:	October 5, 2010
Principal Investigator:	Paulus Veugelers
Study ID:	Pro00007488
Study Title:	Assessing the Impact of Healthy Eating and Physical Activity Policies on School Based Practices and Health Behaviours of Children in Nova Scotia
Approval Expiry Date:	October 4, 2011
Sponsor/Funding Agency:	CIHR - Canadian Institutes for Health Research CIHR

Thank you for submitting the above study to the Health Research Ethics Board - Health Panel . Your application, including revisions received today, has been reviewed and approved on behalf of the committee.

A renewal report must be submitted next year prior to the expiry of this approval if your study still requires ethics approval. If you do not renew on or before the renewal expiry date, you will have to re-submit an ethics application.

Approval by the Health Research Ethics Board does not encompass authorization to access the patients, staff or resources of Alberta Health Services or other local health care institutions for the purposes of the research. Enquiries regarding Alberta Health Services administrative approval, and operational approval for areas impacted by the research, should be directed to the Alberta Health Services Regional Research Administration office, #1800 College Plaza, phone (780) 407-6041.

Sincerely,

Beverley O'Brien, DNSc.
Chair, Health Research Ethics Board - Health Panel

Note: This correspondence includes an electronic signature (validation and approval via an online system).

Adapted Youth and Adolescent Food Frequency Questionnaire

Harvard Youth Adolescent Food Frequency Questionnaire adapted for Canadian settings

1. What is your age? ___
2.   Are you (circle one) : Male / Female
3. Do you now take vitamins (like Flintstones, One-A-Day, etc.)?
    No / Yes → if yes,   a) How many vitamin pills do you take a week? _____
                                  b) For how many years have you been taking them? _____

4. How many teaspoons of sugar do you ADD to your beverages or food each day?
    o   None/less than 1 teaspoon per day
    o   1-2 teaspoons per day
    o   3-4 teaspoons per day
    o   5 or more teaspoons per day
5. Which cold breakfast cereal do you usually eat? _____
    Or do you never eat cold breakfast cereal? _____

6. Where do you usually eat breakfast?
    a.   At home
    b.   At school
    c.   Don't eat breakfast
    d.   Other

7. Which of the following best describes your lunch on a school day?
    a.   I bring a prepared lunch from home
    b.   I buy my lunch at school
    c.   I eat my lunch at home
    d.   I don't eat lunch
    e.   Other
8. How many times each week (including weekdays and weekends) do you usually eat at a fast food restaurant, or eat food taken out from a fast food restaurant?
    o   Never/less than once per week
    o   1-2 times per week
    o   3-4 times per week
    o   5 or more times per week
9. How many times each week do you usually eat supper at the table with other people?
    a.   Never/less than once per week
    b.   1-2 times per week
    c.   3-4 times per week
    d.   5 or more times per week
10. How many times each week (including weekdays and weekends) do you usually eat supper in front of the TV?
    o   Never/less than once per week
    o   1-2 times per week
    o   3-4 times per week
    o   5 or more times per week
11. How many times each week (including weekdays and weekends) do you usually eat supper at a friend's house?

  a. Never/less than once per week
  b. 1-2 times per week
  c. 3-4 times per week
  d. 5 or more times per week

12. How often do you have supper that is ready made, like frozen dinners, Spaghetti-O's, microwave meals, etc.?
  a. Never/less than once per week
  b. 1-2 times per week
  c. 3-4 times per week
  d. 5 or more times per week

13. How many times each week (including weekdays and weekends) do you usually eat supper alone?
  a. Never/less than once per week
  b. 1-2 times per week
  c. 3-4 times per week
  d. 5 or more times per week

14. How often do you eat food that is fried at home, like fried chicken?
  a. Never/less than once per week
  b. 1-3 times per week
  c. 4-6 times per week
  d. Daily

15. How often do you eat fried food away from home (like French fries, chicken nuggets)?
  a. Never/less than once per week
  b. 1-3 times per week
  c. 4-6 times per week
  d. Daily

16. Diet pop (1 can or glass)
  a. Never/less than 1 per month
  b. 1-3 cans per month
  c. 1 can per week
  d. 2-6 cans per week
  e. 1 can per day
  f. 2 or more cans per day

17. Pop – not diet (1 can or glass)
  a. Never/less than 1 per month
  b. 1-3 cans per month
  c. 1 can per week
  d. 2-6 cans per week
  e. 1 can per day
  f. 2 or more cans per day

18. Hawaiian Punch, lemonade, Koolaid or other non-carbonated fruit drink (1 glass)
  a. Never/less than 1 per month
  b. 1-3 glasses per month
  c. 1 glass per week

Adapted Youth and Adolescent Food Frequency Questionnaire

      d.   2-4 glasses per week

      e.   5-6 glasses per week

      f.   1 glass per day

      g.   2 or more glasses per day

19. Iced Tea – sweetened (1 glass, can or bottle)
    a. Never/less than 1 per month
    b. 1-3 glasses per month
    c. 1-4 glasses per week
    d. 5-6 glasses per week
    e. 1 or more glasses per day

20. Tea (1 cup)
    a. Never/less than 1 per month
    b. 1-3 cups per month
    c. 1-2 cups per week
    d. 3-6 cups per week
    e. 1 or more cups per day

21. Coffee – not decaf. (1 cup)
    a. Never/less than 1 per month
    b. 1-3 cups per month
    c. 1-2 cups per week
    d. 3-6 cups per week
    e. 1 or more cups per day

22. What TYPE of milk do you usually drink?
    a. Whole milk
    b. 2% milk
    c. 1% milk
    d. Skim/nonfat milk
    e. Don't know
    f. Don't drink milk

23. Milk (glass of with cereal)
    a. Never/less than 1 per month
    b. 1 glass per week or less
    c. 2-6 glasses per week
    d. I glass per day
    e. 2-3 glasses per day
    f. 4+ glasses per day

24. Chocolate milk (glass)
    a. Never/less than 1 per month
    b. 1-3 glasses per month
    c. 1 glass per week
    d. 2-6 glasses per week
    e. 1-2 glasses per day
    f. 3 or more glasses per day

25. Instant Breakfast Drink (1 packet)
    a. Never/less than 1 per month
    b. 1-3 times per month
    c. Once per week
    d. 2-4 times per week

e. 5 or more times per week

26. Whipped Cream
    a. Never/less than 1 per month
    b. 1-3 times per month
    c. Once per week
    d. 2-4 times per week
    e. 5 or more times per week

27. Yogurt (1 cup) – Not Frozen
    a. Never/less than 1 per month
    b. 1-3 cups per month
    c. 1 cup per week
    d. 2-6 cups per week
    e. 1 cup per day
    f. 2 or more cups per day

28. Cottage or Ricotta Cheese
    a. Never/less than 1 per month
    b. 1-3 times per month
    c. Once per week
    d. 2 or more times per week

29. Cheese (1 slice)
    a. Never/less than 1 per month
    b. 1-3 slices per month
    c. 1 slice per week
    d. 2-6 slices per week
    e. 1 slice per day
    f. 2 or more slices per day

30. Cream Cheese
    a. Never/less than 1 per month
    b. 1-3 times per month
    c. Once per week
    d. 2 or more times per week

31. What TYPE or yogurt, cottage cheese & dairy products (besides milk) do you mostly use?
    a. Nonfat
    b. Lowfat
    c. Regular
    d. Don't know

32. Butter (1 teaspoon) – NOT margarine
    a. Never/less than 1 per month
    b. 1-3 teaspoons per month
    c. 1 teaspoon per week
    d. 2-6 teaspoons per week
    e. 1 teaspoon per day
    f. 2-4 teaspoons per day
    g. 5 or more teaspoons per day

33. Margarine (1 teaspoon) – NOT butter
    a. Never/less than 1 per month

      b.   1-3 teaspoons per month

      c.   1 teaspoon per week

      d.   2-6 teaspoons per week

      e.   1 teaspoon per day

      f.   2-4 teaspoons per day

      g.   5 or more teaspoons per day

34. What FORM and BRAND of margarine does your family use?
    a. None
    b. Stick
    c. Tub
    d. Squeeze (liquid)

What specific brand and type (like "Parkay corn oil spread")

_____   (leave blank if you don't know)

35. What TYPE of oil does your family use at home?
    a. Canola oil
    b. Corn oil
    c. Safflower oil
    d. Olive oil
    e. Vegetable oil
    f. Don't know

MAIN DISHES

36. Cheeseburger (1)
    a. Never/less than 1 per month
    b. 1-3 per month
    c. One per week
    d. 2-4 per week
    e. 5 or more per week

37. Hamburger (1)
    a. Never/less than 1 per month
    b. 1-3 per month
    c. One per week
    d. 2-4 per week
    e. 5 or more per week

38. Pizza (2 slices)
    a. Never/less than 1 per month
    b. 1-3 times per month
    c. Once per week
    d. 2-4 times per week
    e. 5 or more times per week

39. Tacos/burritos (1)
    a. Never/less than 1 per month
    b. 1-3 per month
    c. One per week
    d. 2-4 per week
    e. 5 or more per week

40. Which taco filling do you usually have:

Adapted Youth and Adolescent Food Frequency Questionnaire

    a. Beef & beans
    b. Beef
    c. Chicken
    d. Beans

41. Chicken Nuggets (6)
    a. Never/less than 1 per month
    b. 1-3 times per month
    c. Once per week
    d. 2-4 times per week
    e. 5 or more times per week

42. Hot dogs (1)
    a. Never/less than 1 per month
    b. 1-3 per month
    c. One per week
    d. 2-4 per week
    e. 5 or more per week

43. Peanut Butter sandwich (1) (plain or with jelly, fluff, etc.)
    a. Never/less than 1 per month
    b. 1-3 per month
    c. One per week
    d. 2-4 per week
    e. 5 or more per week

44. Chicken or Turkey sandwich (1)
    a. Never/less than 1 per month
    b. 1-3 per month
    c. One per week
    d. 2 or more per week

45. Roast beef or ham sandwich (1)
    a. Never/less than 1 per month
    b. 1-3 per month
    c. One per week
    d. 2 or more per week

46. Salami, bologna, or other deli meat sandwich (1)
    a. Never/less than 1 per month
    b. 1-3 per month
    c. One per week
    d. 2 or more per week

47. Tuna Sandwich (1)
    a. Never/less than 1 per month
    b. 1-3 per month
    c. One per week
    d. 2 or more per week

48. Chicken or Turkey as main dish (1 serving)
    a. Never/less than 1 per month
    b. 1-3 times per month
    c. Once per week
    d. 2-4 times per week
    e. 5 or more times per week

49. Fish sticks, fish cakes or fish sandwich (1 serving)
    a. Never/less than 1 per month
    b. 1-3 times per month
    c. Once per week
    d. 2 or more times per week
50. Fresh fish as main dish (1 serving)
    a. Never/less than 1 per month
    b. 1-3 times per month
    c. Once per week
    d. 2-4 times per week
    e. 5 or more times per week
51. Beef (steak, roast) or lamb as main dish (1 serving)
    a. Never/less than 1 per month
    b. 1-3 times per month
    c. Once per week
    d. 2-4 times per week
    e. 5 or more times per week
52. Pork or ham as main dish (1 serving)
    a. Never/less than 1 per month
    b. 1-3 times per month
    c. Once per week
    d. 2-4 times per week
    e. 5 or more times per week
53. Meatballs or meatloaf (1 serving)
    a. Never/less than 1 per month
    b. 1-3 times per month
    c. Once per week
    d. 2-4 times per week
    e. 5 or more times per week
54. Lasagna (1 serving)
    a. Never/less than 1 per month
    b. 1-3 times per month
    c. Once per week
    d. 2 or more times per week
55. Macaroni and cheese (1 serving)
    a. Never/less than 1 per month
    b. 1-3 times per month
    c. Once per week
    d. 2 or more times per week
56. Spaghetti with tomato sauce (1 serving)
    a. Never/less than 1 per month
    b. 1-3 times per month
    c. Once per week
    d. 2-4 times per week
    e. 5 or more times per week
57. Eggs (1)
    a. Never/less than 1 per month
    b. 1-3 eggs per month

    c. One egg per week

    d. 2-4 eggs per week

    e. 5 or more eggs per week

58. Liver: beef, calf, chicken or pork (1 serving)

    a. Never

    b. Less than once per month

    c. Once per month

    d. 2-3 times per month

    e. Once per week or more

59. Shrimp, lobster, scallops (1 serving)

    a. Never/less than 1 per month

    b. 1-3 times per month

    c. Once per week

    d. 2 or more times per week

60. French toast (2 slices)

    a. Never/less than 1 per month

    b. 1-3 times per month

    c. Once per week

    d. 2 or more times per week

61. Grilled Cheese (1)

    a. Never/less than 1 per month

    b. 1-3 times per month

    c. Once per week

    d. 2 or more times per week

62. Eggrolls (1)

    a. Never/less than 1 per month

    b. 1-3 times per month

    c. Once per week

    d. 2 or more times per week

MISCELLANEOUS FOODS

63. Brown Gravy

    a. Never/less than 1 per month

    b. Once per week or less

    c. 2-6 times per week

    d. Once per day

    e. 2 or more times per day

64. Ketchup

    a. Never/less than 1 per month

    b. 1-3 times per month

    c. Once per week

    d. 2-4 times per week

    e. 5 or more times per week

65. Clear soup (with rice, noodles, vegetables) 1 bowl

    a. Never/less than 1 per month

    b. 1-3 bowls per month

    c. 1 bowl per week

    d. 2 or more bowls per week

66. Cream (milk) soups or chowder (1 bowl)
    a. Never/less than 1 per month
    b. 1-3 bowls per month
    c. 1 bowl per week
    d. 2-6 bowls per week
    e. 1 or more bowls per day
67. Mayonnaise
    a. Never/less than 1 per month
    b. 1-3 times per month
    c. Once per week
    d. 2-6 times per week
    e. Once per day
68. Low calorie/fat salad dressing
    a. Never/less than 1 per month
    b. 1-3 times per month
    c. Once per week
    d. 2-6 times per week
    e. Once or more per day
69. Salad dressing (not low calorie)
    a. Never/less than 1 per month
    b. 1-3 times per month
    c. Once per week
    d. 2-6 times per week
    e. Once or more per day
70. Salsa
    a. Never/less than 1 per month
    b. 1-3 times per month
    c. Once per week
    d. 2-6 times per week
    e. Once or more per day
71. How much fat on your beef, pork, or lamb do you eat?
    a. Eat all
    b. Eat some
    c. Eat none
    d. Don't eat meat
72. When you have chicken or turkey, do you eat the skin?
    a. Yes
    b. No
    c. Sometimes

BREADS & CEREALS

Cold breakfast cereal (1 bowl)
    a. Never/less than 1 per month
    b. 1-3 bowls per month
    c. 1 bowl per week
    d. 2-6 bowls per week
    e. 1 or more bowls per day
73. Hot breakfast cereal, like oatmeal (1 bowl)
    a. Never/less than 1 per month

    b.   1-3 bowls per month
    c.   1 bowl per week
    d.   2-4 bowls per week
    e.   5-7 bowls per week
    f.   2 or more bowls per day

74. White Bread, pita bread, or toast (1 slice)
    a.   Never/less than 1 per month
    b.   1 slice per week or less
    c.   2-4 slices per week
    d.   5-7 slices per week
    e.   2-3 slices per day
    f.   4+ slices per day

75. Dark bread (1 slice)
    a.   Never/less than 1 per month
    b.   1 slice per week or less
    c.   2-4 slices per week
    d.   5-7 slices per week
    e.   2-3 slices per day
    f.   4+ slices per day

76. English muffins or bagels (1)
    a.   Never/less than 1 per month
    b.   1-3 per month
    c.   1 per week
    d.   2-4 per week
    e.   5 or more per week

77. Muffin (1)
    a.   Never/less than 1 per month
    b.   1-3 muffins per month
    c.   1 muffin per week
    d.   2-4 muffins per week
    e.   5 or more muffins per week

78. Cornbread (1 square)
    a.   Never/less than 1 per month
    b.   1-3 times per month
    c.   Once per week
    d.   2-4 times per week
    e.   5 or more per week

79. Biscuit/roll (1)
    a.   Never/less than 1 per month
    b.   1-3 per month
    c.   1 per week
    d.   2-4 per week
    e.   5 or more per week

80. Rice
    a.   Never/less than 1 per month
    b.   1-3 times per month
    c.   Once per week
    d.   2-4 times per week

Adapted Youth and Adolescent Food Frequency Questionnaire

      e.   5 or more times per week

81. Noodles, pasta
    a. Never/less than 1 per month
    b. 1-3 times per month
    c. Once per week
    d. 2-4 times per week
    e. 5 or more times per week

82. Tortilla – no filling (1)
    a. Never/less than 1 per month
    b. 1-3 per month
    c. 1 per week
    d. 2-4 per week
    e. 5 or more per week

83. Other grains, like kasha, couscous, bulgur
    a. Never/less than 1 per month
    b. 1-3 times per month
    c. Once per week
    d. 2 or more times per week

84. Pancakes (2) or waffles (1)
    a. Never/less than 1 per month
    b. 1-3 times per month
    c. Once per week
    d. 2 or more times per week

85. French fries (large order)
    a. Never/less than 1 per month
    b. 1-3 orders per month
    c. 1 order per week
    d. 2-4 orders per week
    e. 5 or more orders per week

86. Potatoes – baked, boiled, mashed
    a. Never/less than 1 per month
    b. 1-3 times per month
    c. Once per week
    d. 2-4 times per week
    e. 5 or more times per week

87. Raisins (small pack)
    a. Never/less than 1 per month
    b. 1-3 times per month
    c. 1 per week
    d. 2-4 times per week
    e. 5 or more times per week

88. Grapes (bunch)
    a. Never/less than 1 per month
    b. 1-3 times per month
    c. 1 per week
    d. 2-4 times per week
    e. 5 or more times per week

89. Bananas (1)

    a. Never/less than 1 per month
    b. 1-3 per month
    c. 1 per week
    d. 2-4 per week
    e. 5 or more per week

90. Cantaloupe, melons (1/4 melon)
    a. Never/less than 1 per month
    b. 1-3 times per month
    c. 1 per week
    d. 2 or more times per week

91. Apples (1) or applesauce
    a. Never/less than 1 per month
    b. 1-3 per month
    c. 1 per week
    d. 2-6 per week
    e. 1 or more per day

92. Pears (1)
    a. Never/less than 1 per month
    b. 1-3 per month
    c. 1 per week
    d. 2-6 per week
    e. 1 or more per day

93. Oranges (1), grapefruit (1/2)
    a. Never/less than 1 per month
    b. 1-3 per month
    c. 1 per week
    d. 2-6 per week
    e. 1 or more per day

94. Strawberries
    a. Never/less than 1 per month
    b. 1-3 times per month
    c. Once per week
    d. 2 or more times per week

95. Peaches, plums, apricots (1)
    a. Never/less than 1 per month
    b. 1-3 per month
    c. 1 per week
    d. 2 or more per week

96. Orange juice (1 glass)
    a. Never/less than 1 per month
    b. 1-3 glasses per month
    c. 1 glass per week
    d. 2-6 glasses per week
    e. 1 glass per day
    f. 2 or more glasses per day

97. Apple juice and other fruit juices (1 glass)
    a. Never/less than 1 per month
    b. 1-3 glasses per month

    c. 1 glass per week

    d. 2-6 glasses per week

    e. 1 glass per day

    f. 2 or more glasses per day

98. Tomatoes (1)

    a. Never/less than 1 per month

    b. 1-3 per month

    c. 1 per week

    d. 2-6 per week

    e. 1 or more per day

99. Tomato / spaghetti sauce

    a. Never/less than 1 per month

    b. 1-3 times per month

    c. Once per week

    d. 2-4 times per week

    e. 5 or more times per week

100. Tofu

    a. Never/less than 1 per month

    b. 1-3 times per month

    c. Once per week

    d. 2-4 times per week

    e. 5 or more times per week

101. String beans

    a. Never/less than 1 per month

    b. 1-3 times per month

    c. Once per week

    d. 2-4 times per week

    e. 5 or more times per week

102. Beans/lentils/soybeans

    a. Never/less than 1 per month

    b. Once per week or less

    c. 2-6 times per week

    d. Once per day

103. Broccoli

    a. Never/less than 1 per month

    b. 1-3 times per month

    c. Once per week

    d. 2-4 times per week

    e. 5 or more times per week

104. Beets (not greens)

    a. Never/less than 1 per month

    b. Once per week or less

    c. 2 or more times per week

105. Corn

    a. Never/less than 1 per month

    b. 1-3 times per month

    c. Once per week

      d.   2-4 times per week

      e.   5 or more times per week

106. Peas or lima beans

      a.   Never/less than 1 per month

      b.   1-3 times per month

      c.   Once per week

      d.   2-4 times per week

      e.   5 or more times per week

107. Mixed vegetables

      a.   Never/less than 1 per month

      b.   1-3 times per month

      c.   Once per week

      d.   2-4 times per week

      e.   5 or more times per week

108. Spinach

      a.   Never/less than 1 per month

      b.   1-3 times per month

      c.   Once a week

      d.   2-4 times per week

      e.   5 or more times per week

109. Greens/beet greens

      a.   Never/less than 1 per month

      b.   1-3 times per month

      c.   Once per week

      d.   2-4 times per week

      e.   5 or more times per week

110. Green/red peppers

      a.   Never/less than 1 per month

      b.   1-3 times per month

      c.   Once a week

      d.   2-4 times per week

      e.   5 or more times per week

111. Yams/sweet potatoes (1)

      a.   Never/less than 1 per month

      b.   1-3 times per month

      c.   Once a week

      d.   2-4 times per week

      e.   5 or more times per week

112. Zucchini, summer squash, eggplant

      a.   Never/less than 1 per month

      b.   1-3 times per month

      c.   Once per week

      d.   2-4 times per week

      e.   5 or more times per week

113. Carrots, cooked

      a.   Never/less than 1 per month

      b.   1-3 times per month

      c.   Once per week

      d.   2-4 times per week
      e.   5 or more times per week

114. Carrots, raw
      a.   Never/less than 1 per month
      b.   1-3 times per month
      c.   Once per week
      d.   2-4 times per week
      e.   5 or more times per week

115. Celery
      a.   Never/less than 1 per month
      b.   1-3 times per month
      c.   Once per week
      d.   2-4 times per week
      e.   5 or more times per week

116. Lettuce/tossed salad
      a.   Never/less than 1 per month
      b.   1-3 times per month
      c.   Once per week
      d.   2-6 times per week
      e.   One or more per day

117. Coleslaw
      a.   Never/less than 1 per month
      b.   1-3 times per month
      c.   Once per week
      d.   2 or more times per week

118. Potato salad
      a.   Never/less than 1 per month
      b.   1-3 times per month
      c.   Once per week
      d.   2 or more times per week

SNACK FOODS/ DESSERTS

119. Fill in the number of snacks (food or drinks) eaten on school days and weekends/ vacation days.

Snacks	School Days				
	NONE	**1**	**2**	**3**	**4 OR MORE**
Between breakfast and lunch					
After lunch, before dinner					
After dinner					

Snacks	Vacation/Weekend Days				
	NONE	**1**	**2**	**3**	**4 OR**

Adapted Youth and Adolescent Food Frequency Questionnaire

					MORE
Between breakfast and lunch					
After lunch, before dinner					
After dinner					

120. Potato Chips (1small bag)
    a. Never/less than 1 per month
    b. 1-3 small bags per month
    c. One small bag per week
    d. 2-6 small bags per week
    e. 1 or more small bags per day
121. Corn chips/ Doritos (small bag)
    a. Never/less than 1 per month
    b. 1-3 small bags per month
    c. One small bag per week
    d. 2-6 small bags per week
    e. 1 or more small bags per day
122. Nachos with cheese (1 serving)
    a. Never/less than 1 per month
    b. 1-3 times per month
    c. Once per week
    d. 2 or more times per week
123. Popcorn (1 small bag)
    a. Never/less than 1 per month
    b. 1-3 small bags per month
    c. 1-4 small bags per week
    d. 5 or more small bags per week
124. Pretzels (1 small bag)
    a. Never/less than 1 per month
    b. 1-3 small bags per month
    c. 1 small bag per week
    d. 2 or more small bags per week
125. Peanuts, nuts (1 small bag)
    a. Never/less than 1 per month
    b. 1-3 small bags per month
    c. 1-4 small bags per week
    d. 5 or more small bags per week
126. Fun fruit or fruit rollups (1 pack)
    a. Never/less than 1 per month
    b. 1-3 packs per month
    c. 1-4 packs per week
    d. 5 or more packs per week
127. Graham crackers
    a. Never/less than 1 per month

Adapted Youth and Adolescent Food Frequency Questionnaire

- b. 1-3 times per month
- c. 1-4 times per week
- d. 5 or more times per week

128. Crackers, like saltines or wheat thins
    - a. Never/less than 1 per month
    - b. 1-3 times per month
    - c. 1-4 times per week
    - d. 5 or more times per week

129. Poptarts (1)
    - a. Never/less than 1 per month
    - b. 1-3 poptarts per month
    - c. 1-6 poptarts per week
    - d. 1 or more times per day

130. Cake (1 slice)
    - a. Never/less than 1 per month
    - b. 1-3 slices per month
    - c. 1 slice per week
    - d. 2 or more slices per week

131. Snack cakes, Vachon Cakes (1 package)
    - a. Never/less than 1 per month
    - b. 1-3 per month
    - c. Once per week
    - d. 2-6 per week
    - e. 1 or more per day

132. Danish, sweetrolls, pastry (1)
    - a. Never/less than 1 per month
    - b. 1-3 per month
    - c. 1 per week
    - d. 2-4 per week
    - e. 5 or more per week

133. Donuts (1)
    - a. Never/less than 1 per month
    - b. 1-3 donuts per month
    - c. 1 donut per week
    - d. 2-6 donuts per week
    - e. 1 or more donuts per day

134. Cookies (1)
    - a. Never/less than 1 per month
    - b. 1-3 cookies per month
    - c. 1 cookie per week
    - d. 2-6 cookies per week
    - e. 1-3 cookies per day
    - f. 4 or more cookies per day

135. Brownies (1)
    - a. Never/less than 1 per month
    - b. 1-3 per month
    - c. 1 per week
    - d. 2-4 per week

e. 5 or more per week

136. Pie
   a. Never/less than 1 per month
   b. 1-3 slices per month
   c. 1 slice per week
   d. 2 or more slices per week

137. Chocolate (1 bar or packet) like Hershey's or M & M's
   a. Never/less than 1 per month
   b. 1-3 per month
   c. 1 per week
   d. 2-6 per week
   e. 1 or more per day

138. Other candy bars (Milky Way, Snickers)
   a. Never/less than 1 per month
   b. 1-3 candy bars per month
   c. 1 candy bar per week
   d. 2-4 candy bars per week
   e. 5 or more candy bars per week

139. Other candy without chocolate (skittles) (1 pack)
   a. Never/less than 1 per month
   b. 1-3 times per month
   c. Once per week
   d. 2-4 times per week
   e. 5 or more times per week

140. Jello
   a. Never/less than 1 per month
   b. 1-3 times per month
   c. Once per week
   d. 2-4 times per week
   e. 5 or more times per week

141. Pudding
   a. Never/less than 1 per month
   b. 1-3 times per month
   c. Once per week
   d. 2-4 times per week
   e. 5 or more times per week

142. Frozen yogurt
   a. Never/less than 1 per month
   b. 1-3 times per month
   c. Once per week
   d. 2-4 times per week
   e. 5 or more times per week

143. Ice cream
   a. Never/less than 1 per month
   b. 1-3 times per month
   c. Once per week
   d. 2-4 times per week
   e. 5 or more times per week

Adapted Youth and Adolescent Food Frequency Questionnaire

144. Milkshake or frappe (1)
    a. Never/less than 1 per month
    b. 1-3 per month
    c. 1 per week
    d. 2 or more per week
145. Popsicles
    a. Never/less than 1 per month
    b. 1-3 popsicles per month
    c. 1 popsicle per week
    d. 2-4 popsicles per week
    e. 5 or more popsicles per week

146. Please list any other foods that you usually eat <u>at least once per week</u> that are not listed (for example, coconut, hummus, falafel, chilli plantains, mangoes, etc...)

CLASS II
Student Survey

This survey asks questions about the food that you eat, the types of activities that you take part in and how you feel about your health. We will also measure your growth and development in private (height, weight, and arm span). Your answers will help us learn more about children in Nova Scotia.

Your answers will be kept PRIVATE. They will not be shown to anyone from your school or your family.

Your participation is voluntary.

I understand the information given to me about the research
I agree to take part in this research

○ Yes   ○ No

Your signature: _____   Date: _____

There are no right or wrong answers. Take your time and answer each question with the response that best describes you. If you need help or have any questions please ask the researcher who is visiting your class.

Please place this survey in the envelope when you are finished.
Thank you for your help!

Please use the CLASS II pencil provided in the envelope to mark your responses.

The right way to mark your answer	The wrong way to mark your answer
●	✓ ✗ ⊙ ◓

1) **How often do you do the following at your school?**	Not available at my school	Never	About once a month	About once a week	2-3 times per week	4 or more times per week
a) Buy food to eat as a snack	O	O	O	O	O	O
b) Buy food to eat for lunch	O	O	O	O	O	O
c) Buy something to drink	O	O	O	O	O	O
d) Eat at the breakfast program	O	O	O	O	O	O

2) **When you eat food or drink a beverage provided by your school, what do you usually have?**	Not available at my school	Never	About once a month	About once a week	2-3 times per week	4 or more times per week
a) White milk	O	O	O	O	O	O
b) Flavoured milk (like chocolate)	O	O	O	O	O	O
c) Bottled water	O	O	O	O	O	O
d) Juice	O	O	O	O	O	O
e) Snacks, like cookies, candy, chocolate	O	O	O	O	O	O
f) Snacks, like baked chips or crackers, plain granola bars	O	O	O	O	O	O
g) Snacks, like fruit, vegetables and yogurt	O	O	O	O	O	O

3) **How much do you care about…**	Not at all	A little bit	Quite a lot	Very much
a) being healthy?	O	O	O	O
b) being physically active at school?	O	O	O	O
c) being physically active outside of school?	O	O	O	O
d) eating healthy food at school?	O	O	O	O
e) eating healthy food outside of school?	O	O	O	O

4) **How often do you do the following:**	Never	About once a month	About once a week	2-3 times per week	4 or more times per week
a) help prepare or cook food in your home (e.g. make lunch or snack)?	O	O	O	O	O
b) help make family meal choices?	O	O	O	O	O
c) help with family grocery shopping?	O	O	O	O	O

5) Have you done any of the following activities in the last _7 days_ (last week)?
If yes, how many times? (Choose only one circle per row.)

	No	1-2	3-4	5-6	7 times or more
Skipping	O	O	O	O	O
Rowing/canoeing	O	O	O	O	O
In-line skating	O	O	O	O	O
Tag	O	O	O	O	O
Walking for exercise	O	O	O	O	O
Bicycling	O	O	O	O	O
Jogging or running	O	O	O	O	O
Aerobics	O	O	O	O	O
Swimming	O	O	O	O	O
Baseball, softball	O	O	O	O	O
Dance	O	O	O	O	O
Football	O	O	O	O	O
Badminton	O	O	O	O	O
Skateboarding	O	O	O	O	O
Soccer	O	O	O	O	O
Street hockey	O	O	O	O	O
Volleyball	O	O	O	O	O
Basketball	O	O	O	O	O
Ice skating	O	O	O	O	O
Cross-country skiing	O	O	O	O	O
Ice hockey/ringette	O	O	O	O	O
Other: _____	O	O	O	O	O
Other: _____	O	O	O	O	O

6) In the last _7 days_ (last week), during your physical education (PE) classes, how often were you very active (playing hard, running, jumping, throwing)?
(Choose one only)

    O I don't do PE. Why? _____
    O Hardly Ever
    O Sometimes
    O Quite often
    O Always

7) **This question is about what you do at <u>recess and lunch time</u>.**
In the last <u>7 days</u> (last week), what did you <u>usually</u> do… *(Choose one option per row)*

	Sat down *(talking, reading, doing school work)*	Stood or walked around	Ran or played a little bit	Ran around and played quite a bit	Ran around and played hard most of the time	I do not have recess
At morning recess	O	O	O	O	O	O
At lunch recess *(besides eating lunch)*	O	O	O	O	O	O
At afternoon recess	O	O	O	O	O	O

8) **This question is about what you do <u>outside of school time</u>.**
In the last 7 days (last week) how often did you do sports, dance, or play games in which you were <u>very active</u>? *(Choose one option per row)*

	None	1 time last week	2 to 3 times last week	4 or 5 times last week	6 or more times last week
Right after school	O	O	O	O	O
In the evenings?	O	O	O	O	O
Last weekend?	O	O	O	O	O

9) **Which *one* of the following describes you best for the last 7 days (last week)?**
Please read all five statements before deciding on the one answer that describes you.
- O <u>All or most</u> of my free time was spent doing things that involve little physical effort
- O I <u>sometimes</u> (1 - 2 times last week) did physical things in my free time
- O I <u>often</u> (3 - 4 times last week) did physical things in my free time
- O I <u>quite often</u> (5 - 6 times last week) did physical things in my free time
- O I <u>very often</u> (7 or more times last week) did physical things in my free time

10) **Please choose, how often you did physical activity (like playing sports, games, dancing, or any other physical activity) for each day last week.** *(Choose only one per row)*

	None	Little bit	Medium	Often	Very often
Monday	O	O	O	O	O
Tuesday	O	O	O	O	O
Wednesday	O	O	O	O	O
Thursday	O	O	O	O	O
Friday	O	O	O	O	O
Saturday	O	O	O	O	O
Sunday	O	O	O	O	O

11) Were you sick in the last <u>7 days (last </u>week), or did anything prevent you from doing your normal physical activities?   ○ No   ○ Yes   *What prevented you?*

_____

Please choose the answer that best describes you for each of the following questions.

| 12) If you wanted to, how confident are you that you could...	Not at all confident	A little bit confident	Quite confident	Very confident
a) be physically active no matter how tired you may be?	○	○	○	○
b) be physically active even if you have a lot of homework?	○	○	○	○
c) ask your parent or other adult to play a physical activity or sport with you?	○	○	○	○
d) be physically active for at least 60 minutes on 5 or more days per week?	○	○	○	○
e) eat healthy food at school?	○	○	○	○
f) choose a healthy snack between school and dinner time?	○	○	○	○
g) eat healthy food if you are alone at home	○	○	○	○
h) choose a healthy snack when you are bored?	○	○	○	○
i) choose a healthy snack when you are sad?	○	○	○	○

13) Please read the following statements and choose the answer that best describes you.	Never or almost never	Sometimes	Often or almost always
a) My future looks good to me	○	○	○
b) I like the way I look	○	○	○
c) I like myself	○	○	○
d) I feel like I do not have any friends	○	○	○
e) I feel unhappy or sad	○	○	○
f) I worry a lot	○	○	○
g) I am in trouble with my teacher(s)	○	○	○
h) I have trouble paying attention	○	○	○
i) I have trouble enjoying myself	○	○	○
j) If I have problems there is someone I trust to go to for advice	○	○	○

14)   Colour in the bubble below the picture that best matches <u>what you look like now.</u>

255

Girls
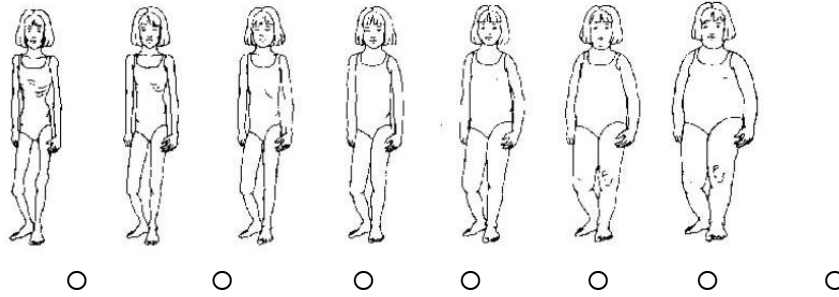
Boys
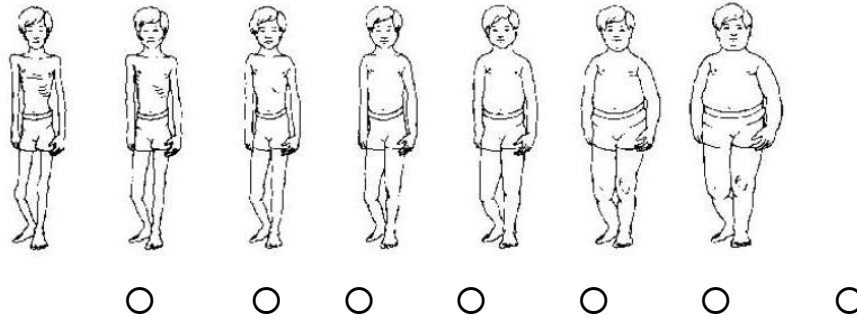
15)   **For each question, fill in one circle that best describes your health TODAY.**

a)   Walking
   ○ I have <u>no</u> problems walking around
   ○ I have <u>some</u> problems walking around
   ○ I have <u>a lot</u> of problems walking around

b)   Looking after myself
   ○ I have <u>no</u> problems washing or dressing myself
   ○ I have <u>some</u> problems washing or dressing myself
   ○ I have <u>a lot</u> problems washing or dressing myself

c)   Doing usual activities (e.g., going to school, hobbies, sports, playing ,
   doing things with family or friends)
   ○ I have <u>no</u> problems doing my usual activities
   ○I have <u>some</u> problems doing my usual activities
   ○ I have <u>a lot</u> of problems doing my usual activities

d)   Having pain or discomfort
   ○ I have <u>no</u> pain or discomfort
   ○ I have <u>some</u> pain or discomfort
   ○ I have <u>a lot</u> of pain or discomfort

e)   Feeling worried, sad or unhappy
   ○ I am <u>not</u> worried, sad or unhappy
   ○ I am <u>a bit</u> worried, sad or unhappy
   ○ I am <u>very</u> worried, sad or unhappy

Thanks for completing this survey!

CLASS II
Home Survey

PART 1: Information about CLASS II

Purpose: All Grade 5 students and their parent/guardian(s) in Nova Scotia are being invited to take part in an important research project called the Children's Lifestyle And School-performance Study II or CLASS II. This study looks at health, nutrition, physical activity, and school performance of children in Nova Scotia. The first CLASS project was completed in 2003 with over 5000 Grade 5 students and their parents participating. CLASS II will try to understand whether children's health and learning has changed in Nova Scotia by collecting similar information from students in Grade 5 in 2011.

You are being invited to participate.

If you agree to take part, you and your Grade 5 child will be asked to do the following:
1. Complete Part 2 of this booklet: the *Consent Form*. If you complete Part 2 you give us permission to invite your Grade 5 child to participate in:
   a. completing two surveys that ask about nutrition, physical activity and health; and
   b. have their growth and development measured at school by a trained project assistant (we measure body height, weight and arm span). Students will be asked to remove their shoes before being measured and will be standing on a scale that sends their weight to a private area so no comparison of weights will be possible by participants. Your child's classroom teacher and two project assistants will be present at all times while the measurements are taken. Measurements will be confidential, private, and not shared with your child or any other school personnel. The surveys and measurements will be carried out at your child's school and will take about 1 hour and 15 minutes of classroom time. Students who do not participate will be given crosswords, word searches, and other activities while their classmates complete the surveys.
2. You will be asked to fill out Part 3 of this booklet: the *Home Survey*. This will require approximately
   15 minutes of your time.

We also ask for your permission to have your child's survey information linked with her or his school performance and health care information. To be able to do this we are asking for the following:
1. **Your Grade 5 child's date of birth**. Your child's date of birth will be used to link your child's survey information with the provincial achievement test that she or he will write in Grade 6. The Nova Scotia Department of Education supports this linkage.
2. **Your Grade 5 child's health card number**. Your child's health card number will be used to link the survey information with existing health information. This will allow us to study things like the importance of nutrition and lifestyle for

health, doctor visits and hospital admissions. We will keep your child's health card number and health information anonymous. To do this, we will replace the health card number with a code. This code will be used to link with your child's health information that also uses this code. After the linkage has been made, the code will be removed. As such we will be able to analyze the health information, but will not have access to any personal information like health card numbers, names, addresses, etc.

If you are not comfortable with giving us permission for your Grade 5 child's survey to be linked with the results of the provincial assessments or with your child's health card number, you and your child can still take part in the survey.

Participation: Your participation in this study is <u>voluntary</u>. You participate by completing Part 3 of this booklet, the Home Survey. We will only invite your child to take part if you consent to her or his participation.

What we can learn from your participation: This study will help us answer questions such as:

- How have eating habits and lifestyles of children changed since 2003?
- How have schools supported health and learning in Nova Scotia?
- What can we do to improve the health of children in Nova Scotia?
- How can health care and the health system be improved in Nova Scotia?

How we will keep your personal information confidential:
We ask for your child's name so that we know who has permission to participate when we visit your child's school to carry out the survey. We will keep the names that you provide confidential. Responses from you and your child will be kept confidential and will not be shared with anyone including your child's school. We will treat all collected information with the highest level of respect and use it for research purposes only. Research reports and publications will never include names of individuals or schools. Completed surveys will be kept in a locked filing cabinet for 5 years following the completion of the project and then destroyed (confidentially shredded).

There is no penalty to withdraw from this study; it can be done at any point in time over the next five years. If you and your child decide to participate now, but you later decide to have your information removed, please contact Dr. Sara Kirk at the time.

The Health Sciences Research Ethics Board of Dalhousie University and Human Research Ethics Board of the University of Alberta have both reviewed this project. These Boards make sure that research is done with the highest ethical standards. If you have questions or concerns about any part of this study, you may contact: Patricia Lindley (Director of Dalhousie University's Office of Human Research Ethics Administration) at (902) 494-1462 (collect calls are accepted), or via email at patricia.lindley@dal.ca.

Benefits of taking part:
Through our research we hope to provide helpful information to schools, school boards and the provincial government on how they can better support your child's health and learning. We will share the results through newsletters that will be posted on our website (www.nsclass.ca).

Possible risks of taking part:
By taking part in this study, you will share information about yourself and your Grade 5 child with us. Some people may be uncomfortable with providing information on healthy eating, active living and body measurements. Your information and that of your child will only be used for research purposes. Information relating to you and your child will not be shared with other students, teachers, school staff or anybody else. This study has been ethically reviewed by Dalhousie University and the University of Alberta. Your child's school principal, and school board and the Government of Nova Scotia have also given their support for this research.

Who is doing this research: This study is being conducted by Dr. Sara Kirk at Dalhousie University and Dr. Paul Veugelers at the University of Alberta. Their contact information is:

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Halifax, Nova Scotia B3H 3E2
Ph: 902-494-8440 Fax: 902-494-7567
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Ph: 780-492-9095 Fax: 780-492-5221
Email: Paul.Veugelers@ualberta.ca

Questions or concerns: Please visit our website for more information about the study: www.nsclass.ca. For any questions about the project please contact Dr. Sara Kirk at 902-494-8440 or the Project Coordinator Jessie-Lee Langille at 902-494-8439 or Jessie-Lee.Langille@dal.ca.

Part 2: Consent Form

If you agree to take part and allow us to invite your Grade 5 child to participate, please fill out this Consent Form.

I have read the information about CLASS II.

I understand that participation is voluntary.

I give my consent for my Grade 5 child to take part in this study.

○ Yes   ○ No

My Grade 5 child's name (please print): _____

Your signature: _____   **Date:** _____

Your name (please print): _____

I also give my consent for my Grade 5 child's survey to be linked with the results of the provincial assessments from the Department of Education.	○ Yes	○ No
I also give my consent for my Grade 5 child's survey to be linked with existing health information.	○ Yes	○ No
If you have chosen "yes" for linking to health information, please tell us your Grade 5 Child's health Card Number:	_ _ _ _ _ _ _ _ _ _	

If you are not comfortable with giving us permission for your Grade 5 child's survey to be linked with the results of the provincial assessments or with your child's health card number, you and your child can still take part in the survey.

Part 3: Home Survey

Please take your time and choose the answer that best describes you and your Grade 5 child. There are no
right or wrong answers. If there is a question that you don't want to answer, you don't have to.
Your response will be kept PRIVATE and completely ANONYMOUS.

Section 1: Your neighbourhood

1-1   What is your postal code? _____

1-2   How long have you lived at your current address? _____ months _____ years

1-3 Please consider both the place you live and where you access services for your family when responding to the following statements.	Strongly disagree	Disagree	Agree	Strongly agree
a) I like where I live.	O	O	O	O
b) It is safe for children to play outside during the day.	O	O	O	O
c) In my neighbourhood there are good parks, playgrounds, and/or places to play.	O	O	O	O
d) In my neighbourhood there are sidewalks on most of the streets.	O	O	O	O
e) Traffic makes my neighbourhood an unsafe place for my child.	O	O	O	O
f) Crime makes my neighbourhood an unsafe place for my child.	O	O	O	O
g) In my neighbourhood, there are good sport and recreational programs for my Grade 5 child.	O	O	O	O
h) In my neighbourhood, it is easy to purchase fresh fruits and vegetables.	O	O	O	O

1-4 How many days per week does your Grade 5 child usually... *(Please respond to this question about most days when poor weather is not an issue)*	Never or almost never	1-2 days per week	3-4 days per week	5 days per week
a) walk to school?	O	O	O	O
b) bike to school?	O	O	O	O
c) drive to school (school bus or car)?	O	O	O	O

Section 2: Your Grade 5 child's school

2-1 Are you aware that there is a *Food and Nutrition Policy for Nova Scotia Schools*?
○ **Yes** ○ **No**
a) If yes, how important is this Policy?
○ Very important ○ Important ○ Somewhat important ○Not important
b) If yes, to what extent do you feel your Grade 5 child's school is following this Policy?
○ Very much ○ Quite a lot ○ A little bit ○Not at all ○Unsure

2-2 Are you aware that there is a *Nova Scotia Health Promoting Schools* Initiative?

○ **Yes** ○ **No**
a) If yes, how important is this Initiative?
○ Very important ○ Important ○ Somewhat important ○Not important
b) If yes, to what extent do you feel your Grade 5 child's school is following this Initiative?
○ Very much ○ Quite a lot ○ A little bit ○Not at all ○Unsure

Section 3: Your Grade 5 child's health

3-1 Was your Grade 5 child born in Nova Scotia? `
○ **Yes** ○ **No**

3-2 What is your Grade 5 child's date of birth?
__/__/____(mm/dd/yyyy)

3-3 In general, how would you describe your Grade 5 child's...

...health?	... eating habits?	... physical activity level?
○ Excellent	○ Very healthy	○ Very high
○ Very good	○ Healthy	○ High
○ Good	○ Somewhat healthy	○ Moderate
○ Fair		○ Low
○ Poor	○ Unhealthy	○ Very low
	○ Very unhealthy	

3-4 Was your Grade 5 child breast-fed, even if only for a short time?
○ **Yes** ○ **No** ○ **Unsure/prefer not to answer**
If yes, for how long?
○ Less than 1 week
○ 1 week or more, but less than 1 month
○ 1 month or more, but less than 3 months
○ 3 months or more, but less than 6 months
○ 6 months or more, but less than 1 year
○ 1 year or more
○ Unsure/ prefer not to answer

3-5 When was your Grade 5 child introduced to formula?
○ At less than 1 week
○ After 1 week but less than 1 month
○ After 1 month but less than 3 months
○ After 3 months but less than 6 months
○ After 6 months but less than 1 year
○ After 1 year or never
○ Unsure/ prefer not to answer

3-6 Please respond to the following questions about your child's sleeping habits.					
a) How often does your child snore?	Never	Rarely	Occasionally	Frequently	Almost always
	○	○	○	○	○
b) Is your child sleepy during the daytime?	Never	Rarely	Occasionally	Frequently	Almost always
	○	○	○	○	○

3-7 Please answer the following questions about your Grade 5 child's sleeping patterns. *Please choose only one circle per row.*							
a) At what time does your child usually wake up during:	Before 6:30 am	6:30 – 7:00 am	7:00 – 7:30am	7:30 – 8:00 am	8:00 – 8:30 am	8:30 – 9:00 am	After 9:00am
the week (Monday to Friday)?	○	○	○	○	○	○	○
the weekend (Saturday and Sunday)?	○	○	○	○	○	○	○
b) At what time does your child usually go to bed during:	Before 8:00 pm	8:00 - 8:30 pm	8:30 – 9:00pm	9:00 – 9:30 pm	9:30 – 10:00 pm	10:00 – 10:30 pm	After 10:30pm
the week (Sunday to Thursday)?	○	○	○	○	○	○	○
the weekend (Friday and Saturday)?	○	○	○	○	○	○	○

3-8 Has your Grade 5 child experienced any event or situation in the past year that has caused him or her a great amount of worry or unhappiness? ○ Yes ○ No

    ○ Unsure/prefer not to answer

    If you answered "yes" to the above, what was the event of situation? *(Please choose all that apply.)*

        ○ Move (change in residence)
        ○ Divorce or separation of parents
        ○ Illness or injury of Grade 5 child
        ○ Illness or death of a loved one
        ○ Other: _____

3-9 Think about the last 12 months. Please indicate how often your Grade 5 child usually does the following activities outside of school hours.	Never	Less than once a week	1 to 3 times a week	4 or more times a week
a. Play sports or do physical activity WITHOUT a coach or instructor (such as riding a bike, skateboarding, roller-blading, etc.).	○	○	○	○
b. Play sports or do physical activity WITH a coach or instructor, other than in gym class (soccer, swimming lessons, hockey, gymnastics, etc.).	○	○	○	○
c. Do physical activities with one or both parents/guardians, like going for walks, jogging, bike riding, swimming, dancing, skating.	○	○	○	○

3-10	On average, about how many hours per day does your Grade 5 child spend on the following activities, **not including school hours?**	Less than 1 hour a day	1-2 hours per day	3 - 4 hours per day	5 or more hours per day
a.	Using a computer or playing video games	O	O	O	O
b.	Watching TV	O	O	O	O

Section 4: You and your household

4-1 **Are you male or female?** O Male O Female	4-2 **How many people live in your household?** O 2 O 3 O 4 O 5 O more than 5

4-3 In general, how would you describe your...

...health?	... eating habits?	... physical activity level?
O Excellent	O Very healthy	O Very high
O Very good	O Healthy	O High
O Good	O Somewhat healthy	O Moderate
O Fair	O Unhealthy	O Low
O Poor	O Very unhealthy	O Very low

4-4 To what extent do you encourage your child to...	Not at all	A little bit	Quite a lot	Very much
a) eat healthy foods?	O	O	O	O
b) help choose and prepare snacks and meals?	O	O	O	O
c) be physically active?	O	O	O	O

4-5 How much do you agree with the following statements?	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
a) Eating habits of parents influence the eating habits of their children.	O	O	O	O	O
b) Children will exercise more if their parents exercise regularly.	O	O	O	O	O

These next questions are about the food eaten in your household in the **last 12 months**, and whether you were able to afford the food you need.

4-6 Please indicate whether the following applied to your household food situation **in the last 12 months.**	Often true	Sometimes True	Never True	Prefer not to answer
a) The food that we bought just didn't last, and we didn't have money to get more.	O	O	O	O
b) We couldn't afford to eat balanced meals.	O	O	O	O

4-7 In the last 12 months, did you or other adults in your household ever cut the size of your meals or skip meals because there wasn't enough money for food?
o Yes, almost every month
o Yes, some months but not every month
o Yes, only 1 or 2 months
o No

4-8	Please indicate whether the following applied to your household food situation <u>in the last 12 months</u>.	Yes	No	Don't Know
a)	Did you ever eat less than you felt you should because there wasn't enough money for food?	○	○	○
b)	Were you every hungry but didn't eat because there wasn't enough money for food?	○	○	○

4-9 What is the highest level of education that you have received?
○ No Schooling
○ Elementary
○ Secondary
○ Community College/Technical College
○ University
○ Graduate University
○ Prefer not to answer

4-10 What is your current household income from all sources?
○ Less than $20,000   ○ $20,001 to $40,000   ○ $40,001 to $60,000
○ $60,001 to $80,000   ○ $80,001 to $100,000   ○ More than $100,000
○ Unsure/prefer not to answer

Please use this area to give us any further comments, suggestions or information:
_____
_____
_____
_____
_____

Thank you for completing the survey.

Please make sure you completed Part 2, Consent Form if you would like your child to participate. Please put this booklet into the envelope, seal it and give it to your Grade 5 child to take to school. Her or his teacher will collect the envelope.

School Based Innovation Configuration (I See!) Maps
Annapolis Valley Health Promoting School Program

Healthy students learn better. The core business of a school is maximizing student learning outcomes. Quality Health Promoting Schools make a major contribution to achieving these outcomes.

This Innovation Configuration (IC) map is a tool that has been developed based on best practices. Its purpose is to assist your team and school community work towards the creation of a quality Health Promoting school and culture.

A Health Promoting School Culture:

- **Promotes the health and wellbeing of students**
  For example: students are encouraged to drink water throughout the school day, local physicians come to classes to add to   students knowledge of the link between lifestyle and chronic disease, P.A.R.T.Y. (Prevent Alcohol and Risk-Related Trauma
          in Youth) workshops take place.

- **Upholds social justice and equity concepts**
  For example: Income is not a barrier to participating in school-based activity, after school programs are offered at no cost and
    transport home is provided if needed

- **Involves student participation and empowerment**
  For example: Students help prepare school meals, Students are part of the HPS
    committee, Students present educational sessions to parents at Home and School meeting

- **Provides a safe and supportive environment**
  For example: Students can approach staff / administration to act as an advisor for a gay straight alliance

- **Links health and education issues and systems**
  For example: Students can verbalize the connection between what they eat and how they feel, In-school student support groups   are provided by addition services, Public Health staff act as a resource for the PDR Lead Team

- **Addresses the health and wellbeing issues of staff**
  For example: Staff are given adequate time to eat lunch in a relaxing environment

- **Collaborates with the local community**
  For example: Development of walking trails for school and community use

- **Integrates into the schools ongoing activities**
  For example: The health promoting school goals support and contribute to the accreditation goals of the school

- **Sets realistic goals**
  For example: A grab and go breakfast

- **Engages parents and families in health promotion**
    For example: Family cooking night introducing parents to use of slow cookers that have been donated by the community and   can be taken home

The bulleted statements are taken from the IUHPE "Protocols and Guidelines for Health Promoting Schools". The examples provided show some of the actions that have contributed to change in Health Promoting Schools in the Annapolis Valley.

Instructions for Completion of the IC (I See!)Map

- **Arrange a time when your whole team can come together to discuss** and complete this tool. Different sections apply to different individuals, but it is important that everyone shares in the discussion.

- For each desired outcome, highlight the text for your current level or clearly write the level in the "Notes" column.

- When you find yourself between two levels, pick the level where you have completed all the bullets. In the "Notes" column explain what prevents you from reaching the next level and/or information and actions that will help when setting future goals to reach the next level.

- It is important to be accurate in portraying your current position. Change takes time. Progress that is sustainable over time will be reflected in subsequent IC Maps.

- It is OK to be at the same level for several years in some desired outcomes. Maybe you don't have a school goal in that area at this time or there is a barrier to you moving ahead which takes a while to overcome.

- As successes and challenges are recorded, the information gained will help the Health Promoting School Program Team make appropriate plans for support for the coming year.

- The section for "All Teachers…" and "All Support Staff…." ideally will be completed by all individual staff members (at a staff meeting, or individually) then reviewed and collated by the team for future planning. These results should be reflected in the Notes section on the submitted school IC Map.

School Based Innovation Configuration (I See!) Maps
Annapolis Valley Health Promoting School Program

Elementary Level

THE HEALTH PROMOTING SCHOOL LEADER……

Desired Outcome	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4
Creates a Health Promoting School Team	Include on team the principal and/or leader, a classroom teacher, a parent, a student the food service provider(s), the physical activity teacher/leader, an educational assistant, a community partner and any other interested people. Schedule regular time and place for HPS Team to meet Connect with AVHPSP Manager Introduce the AVHPSP Manual ("How To Manual") to team Review I C Map with Team Complete IC Map and set yearly goals based on map in conjunction with team Apply for funding if needed Monitor progress Complete reports	Include on team the principal and/or leader, a classroom teacher, a parent, a student the food service provider(s), the physical activity teacher/leader, an educational assistant, a community partner and any other interested people. Schedule regular time and place for HPS Team to meet Connect with AVHPSP Manager Introduce the AVHPSP Manual ("How To Manual") to team Review I C Map with Team Complete IC Map and set yearly goals based on map in conjunction with team Apply for funding if needed.	Include on team the principal and/or leader, a classroom teacher, a parent, a student the food service provider(s), the physical activity teacher/leader, an educational assistant, a community partner and any other interested people. Schedule regular time and place for HPS Team to meet Connect with AVHPSP Manager Introduce the AVHPSP Manual ("How To Manual") to team Review I C Map with Team	Include on team the principal and/or leader, a classroom teacher, a parent, a student the food service provider(s), the physical activity teacher/leader, an educational assistant, a community partner and any other interested people. ;Schedule regular time and place for HPS Team to meet Connect with AVHPSP Manager Introduce the AVHPSP Manual ("How To Manual") to team

THE HEALTH PROMOTING SCHOOL TEAM (HPS TEAM)…..

Desired Outcome	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4
Develop a Health Promoting School Culture	Access expertise of the AVHPSP Implementation Team (e.g. to make presentations, attend meetings, support initiatives) Send representation to AVHPSP Board wide meetings and events Communicate the benefits of a healthy active lifestyle to the school community (e.g. health tips in	Access expertise of the AVHPSP Implementation Team (e.g. to make presentations, attend meetings, support initiatives) Send representation to AVHPSP Board wide meetings and events Communicate the benefits of a healthy active lifestyle to the school community (e.g. health tips in	Access expertise of the AVHPSP Implementation Team (e.g. to make presentations, attend meetings, support initiatives) Send representation to AVHPSP Board wide meetings and events Communicate the benefits of a healthy active lifestyle to the school community (e.g. health tips in	Access expertise of the AVHPSP Implementation Team (e.g. to make presentations, attend meetings, support initiatives) Send representation to AVHPSP Board wide meetings and events Communicate the benefits of a healthy active lifestyle to the school community (e.g. health tips in

	newsletters, daily announcements) Organize promotional events (e.g. taste testing, health fair) Model the culture of a HPS so it becomes the norm (e.g. language used, staff participation in physical activities) Monitor the quality of all planned activities (e.g. daily menus)	newsletters, daily announcements) Organize promotional events (e.g. taste testing, health fair) Model the culture of a HPS so it becomes the norm (e.g. language used, staff participation in physical activities)	newsletters, daily announcements) Organize promotional events (e.g. taste testing, health fair)	newsletters, daily announcements)
Promote an Inclusive Health Promoting School Culture	Review practices re inclusiveness (e.g. gender, family income, sexual orientation, race) Develop HPS initiatives to promote the inclusiveness of all students Monitor the successfulness of HPS initiatives to promote the inclusiveness of all students	Review practices re inclusiveness (e.g. gender, family income, sexual orientation, race) Develop HPS initiatives to promote the inclusiveness of all students	Review practices re inclusiveness (e.g. gender, family income, sexual orientation, race)	
Establish Partnerships	Identify partners who support the HPS goals of the school (e.g. recreation, service organizations, Home and School/PTA) Develop opportunities for collaboration with partners related to health promotion Involve partners in educational events Monitor success of partnerships	Identify partners who support the HPS goals of the school (e.g. recreation, service organizations, Home and School/PTA) Develop opportunities for collaboration with partners related to health promotion Involve partners in educational events	Identify partners who support the HPS goals of the school (e.g. recreation, service organizations, Home and School/PTA) Develop opportunities for collaboration with partners related to health promotion	Identify partners who support the HPS goals of the school (e.g. recreation, service organizations, Home and School/PTA))

THE PEOPLE (PERSON) RESPONSIBLE FOR PROVIDING SNACKS AND MEALS IN THE SCHOOL……

Desired Outcome	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4
Work(s) with the HPS Team	Liaises with the HPS Team Attends HPS meetings when possible Promotes initiatives of the HPS team Attends educational opportunities related to the HPS Program	Liaises with the HPS Team Attends HPS meetings when possible Promotes initiatives of the HPS team	Liaises with the HPS Team Attends HPS meetings when possible	
Support(s) the Intent of the	Discusses the intent of the policy Buys local first	Discusses the intent of the policy Buys local first	Discusses the intent of the policy Buys local first	Discusses the intent of the policy

Food and Nutrition Policy for Nova Scotia Public Schools	Promotes good nutrition on a daily basis through actions as well as words Tries new ideas (e.g. legumes) that meet maximum nutrition guidelines (refer to the policy)	Promotes good nutrition on a daily basis through actions as well as words		
Promote(s) Fruit and Vegetable Consumption	Provides quality fruit and vegetables Displays fruits and vegetables prominently Applies preferential pricing to fruits and vegetables (i.e. fruits and vegetables are cheaper than other less nutritious options) Incorporates a variety of seasonal fruits and vegetables Includes a side serving of fruit or vegetables with every meal served	Provides quality fruit and vegetables Displays fruits and vegetables prominently Applies preferential pricing to fruits and vegetables (i.e. fruits and vegetables are cheaper than other less nutritious options) Incorporates a variety of seasonal fruits and vegetables	Provides quality fruit and vegetables Displays fruits and vegetables prominently Applies preferential pricing to fruits and vegetables (i.e. fruits and vegetables are cheaper than other less nutritious options)	Provides quality fruit and vegetables Displays fruits and vegetables prominently
Emphasize(s) Whole Grains	Serve a variety of grain products (e.g. rice, pita, pasta) Serve whole grain / whole wheat products daily	Serve a variety of grain products (e.g. rice, pita, pasta)		
Actively Support a Health Promoting School Culture	Develop student appreciation of the benefits of a healthy lifestyle Model the culture of a HPS so it becomes the norm (e.g. staff uses positive language when trying new food) Raise awareness of health promoting opportunities in the local community (e.g. local u-picks, farm markets, apple orchards)	Develop student appreciation of the benefits of a healthy lifestyle Model the culture of a HPS so it becomes the norm (e.g. staff uses positive language when trying new food)	Develop student appreciation of the benefits of a healthy lifestyle	

THE PEOPLE (PERSON) RESPONSIBLE FOR PROVIDING BREAKFAST...

Desired Outcome	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4
Work(s) with the HPS Team	Liaises with the HPS Team Attends HPS meetings when possible Promotes initiatives of the HPS team Attends educational opportunities related to the HPS Program	Liaises with the HPS Team Attends HPS meetings when possible Promotes initiatives of the HPS team Attends educational opportunities related to the HPS	Liaises with the HPS Team Attends HPS meetings when possible Promotes initiatives of the HPS team	Liaises with the HPS Team Attends HPS meetings when possible

		Program		
Work (s) through Breakfast for Learning "Keys to Success"	Complete level four "Keys to Success"	Complete level three "Keys to Success"	Complete level two "Keys to Success"	Complete level one "Keys to Success"
Ensure(s) food is available when students arrive at school	Provide a breakfast program (5 days a week)	Provide a breakfast program (4 days a week)	Provide a breakfast program (3 days per week)	Provide a breakfast program (1-2 days per week)
Ensure(s) the food available meets nutrition guidelines	Provide breakfast which includes 3 food groups Follows the Provincial Breakfast Program Guidelines Provide breakfast which varies the selection available over the week Serve only maximum nutrition items	Provide breakfast which includes 3 food groups Follows the Provincial Breakfast Program Guidelines Provide breakfast which varies the selection available over the week	Provide breakfast which includes 3 food groups Follows the Provincial Breakfast Program Guidelines	Provide breakfast which includes 3 food groups
Ensure(s) universal accessibility	Provide a free breakfast program Locate the breakfast program in a visible welcoming space where everyone can freely attend Strive to feed a minimum of 20% of the school population	Provide a free breakfast program Locate the breakfast program in a visible welcoming space where everyone can freely attend	Provide a free breakfast program	
Encourage(s) community involvement	Provide opportunities for staff and families who wish to volunteer and/or donate supplies or money. Include students in the running of the breakfast program Partner with community groups for financial and/or volunteer support	Provide opportunities for staff and families who wish to volunteer and/or donate supplies or money. Include students in the running of the breakfast program	Provide opportunities for staff and families who wish to volunteer and/or donate supplies or money.	
Actively Support a Health Promoting School culture	Develop student appreciation of the benefits of a healthy lifestyle Model the culture of a HPS so it becomes the norm (e.g. staff uses positive language when trying new food) Raise awareness of health promoting opportunities in the local community (e.g.cooking/nutrition lessons in local grocery store)	Develop student appreciation of the benefits of a healthy lifestyle Model the culture of a HPS so it becomes the norm (e.g. staff uses positive language when trying new food)	Develop student appreciation of the benefits of a healthy lifestyle	

THE PEOPLE (PERSON) INVOLVED IN COORDINATING PHYSICAL ACTIVITY IN THE SCHOOL….

Desired Outcome	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4
Work(s) with the HPS Team	Liaises with the HPS Team Attends HPS meetings when possible Promotes initiatives of the HPS team Attends educational opportunities related to the HPS Program	Liaises with the HPS Team Attends HPS meetings when possible Promotes initiatives of the HPS team Attends educational opportunities related to the HPS Program	Liaises with the HPS Team Attends HPS meetings when possible Promotes initiatives of the HPS team	Liaises with the HPS Team Attends HPS meetings when possible
Provide(s) a range of opportunities so all students can participate in daily physical activity during the school day (recess and noon)	Provide activity ideas for "out of classroom" time. Teach a variety of non-traditional activities (e.g. low organized games, Speed Stacks, Dance, Dance Revolution) emphasizing different aspects of fitness. Develop leadership by students (e.g. Playground Activity Leaders) Use a variety of spaces (playground, classrooms, hallways, outdoors)	Provide activity ideas for "out of classroom" time. Teach a variety of non-traditional activities (e.g. low organized games, Speed Stacks, Dance, Dance Revolution) emphasizing different aspects of fitness. Develop leadership by students (e.g. Playground Activity Leaders)	Provide activity ideas for "out of classroom" time. Teach a variety of non-traditional activities (e.g. low organized games, Speed Stacks, Dance, Dance Revolution) emphasizing different aspects of fitness.	Provide activity ideas for "out of classroom" time.
Provide(s) opportunities for students to be physically active outside the school day (before and after school)	Coordinate opportunities for an after-school program 5 days a week	Coordinate opportunities for an after-school program 4 days a week	Coordinate opportunities for an after-school program 3 days a week	Coordinate opportunities for an after-school program 1 or 2 days a week
	Emphasize sportsmanship Encourage all students to participate Identify barriers to student participation to the principal and/or school based HPS Team Provide more time for a variety of non-traditional and recreational activities which emphasize different aspects of fitness Identify and promote opportunities for students during weekends & holidays Build links with local community (e.g. high school students)	Emphasize sportsmanship Encourage all students to participate Identify barriers to student participation to the principal and/or school based HPS Team Provide more time for a variety of non-traditional and recreational activities which emphasize different aspects of fitness Identify and promote opportunities for students during weekends & holidays	Emphasize sportsmanship Encourage all students to participate Identify barriers to student participation to the principal and/or school based HPS Team Provide more time for a variety of non-traditional and recreational activities which emphasize different aspects of fitness	Emphasize sportsmanship Encourage all students to participate Identify barriers to student participation to the principal and/or school based HPS Team
Actively	Develop student	Develop student	Develop student	

| Support(s) a Health Promoting School Culture | appreciation of the benefits of a healthy lifestyle
Model the culture of a HPS so it becomes the norm (e.g. staff uses positive language when introducing non-traditional activities, staff participation in physical activities)
Raise awareness of health promoting opportunities in the local community (e.g. Run for the Cure, Club 400) | appreciation of the benefits of a healthy lifestyle
Model the culture of a HPS so it becomes norm (e.g. staff uses positive language when introducing non-traditional activities, staff participation in physical activities) | appreciation of the benefits of a healthy lifestyle | |

THE PHYSICAL EDUCATION TEACHER(S)……

Desired Outcomes	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4
Work(s) with the HPS Team	Liaises with the HPS Team and attends meetings when possible Promote initiatives of HPS team Attend educational opportunities related to the HPS Program	Liaises with the HPS Team and attends meetings when possible Promote initiatives of HPS team	Liaises with the HPS Team and attends meetings when possible	
Provide(s) School Wide Leadership for Daily Physical Activity with support from the administration	Provide activity ideas to staff as needed Encourage (as age appropriate) students to take on a leadership role (e.g. coaching intramurals, Playground Activity Leaders) Share physical activity ideas with classroom teachers that link with subject-based outcomes	Provide activity ideas to staff as needed Encourage (as age appropriate) students to take on a leadership role (e.g. coaching intramurals, Playground Activity Leaders)	Provide activity ideas to staff as needed	
Actively Support(s) a Health Promoting School Culture	Integrate curriculum outcomes related to Health Promotion with class and school activities. Develop student appreciation for the benefits of a healthy lifestyle Model the culture of a HPS so it becomes the norm (e.g. staff uses positive language when introducing	Integrate curriculum outcomes related to Health Promotion with class and school activities. Develop student appreciation for the benefits of a healthy lifestyle Model the culture of a HPS so it becomes the norm (e.g. staff uses positive language when introducing non-traditional activities, staff participation in physical activities)	Integrate curriculum outcomes related to Health Promotion with class and school activities. Develop student appreciation for the benefits of a healthy lifestyle	

	non-traditional activities, staff participation in physical activities) Raise awareness of the health promoting opportunities in the local community (e.g. Michelin Junior Bike, Valley Launchers, Youth Curling)			

ALL TEACHERS…..

Desired Outcomes	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4
Actively Support a Health Promoting School Culture	Integrate curriculum outcomes related to health promotion with class and school activities. Develop student appreciation of the benefits of a healthy lifestyle Model the culture of a HPS so it becomes the norm (e.g. staff uses positive language when trying new food, staff drink water, staff participate in physical activities) Raise awareness of opportunities in the local community Provide opportunities to engage in physical activity while meeting outcomes in other curricular areas Engage class in physical activity on days when Physical Education is not scheduled	Integrate curriculum outcomes related to health promotion with class and school activities. Develop student appreciation of the benefits of a healthy lifestyle Model the culture of a HPS so it becomes the norm (e.g. staff uses positive language when trying new food, staff drink water, staff participate in physical activities) Raise awareness of opportunities in the local community Provide opportunities to engage in physical activity while meeting outcomes in other curricular areas	Integrate curriculum outcomes related to health promotion with class and school activities. Develop student appreciation of the benefits of a healthy lifestyle Model the culture of a HPS so it becomes the norm (e.g. staff uses positive language when trying new food, staff drink water, staff participate in physical activities)	Integrate curriculum outcomes related to health promotion with class and school activities. Develop student appreciation of the benefits of a healthy lifestyle

ALL SUPPORT STAFF….

Desired Outcomes	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4
Actively Support a Health Promoting School	Support student appreciation of the benefits of a Healthy Lifestyle Model the culture of a HPS so it becomes the lived experience (e.g.	Support student appreciation of the benefits of a Healthy Lifestyle Model the culture of a HPS so it becomes the lived experience (e.g.	Support student appreciation of the benefits of a Healthy Lifestyle	

Culture	staff uses positive language when trying new foods, staff participation in physical activities) Raise awareness of health promoting opportunities in the local community	staff uses positive language when trying new foods, staff participation in physical activities)		

Development of the CLASS II School Practices Evaluation Framework

The purpose of the CLASS II School Practices Framework was to establish a mechanism to measure the impact of Provincial and School Board policies and programs on the implementation of school practices**.**

This framework allowed us relate how the activities of a school relate to higher level policies and programs based on the core components of healthy eating and active living in schools. We will measure the extent of implementation using a School Practices Survey that will be developed based on indicators that will be developed from the core components in this framework.

The CLASS II School Practices Framework was developed based on a review of Canadian and international frameworks and assessment tools. Following the review of literature, it was determined that the Joint Consortium for School Health *Healthy School Planner* would provide a good starting point for development of the Framework and subsequent School Practices Survey. The *Healthy School Planner* is based on the concept of Comprehensive School Health, which addressed four distinct but inter-related pillars: social and physical environment; teaching and learning; healthy school policy; and partnerships and services. The assessment questions in the Healthy School Planner are taken from the SHAPES environmental survey modules. These survey modules were originally developed to correspond to the elements or components contained in the Ontario Ministry of Education Foundations for a Healthy School.

Similar to the *Healthy School Planner*, the framework is divided into three main sections (Health Promoting Schools, Physical Activity and Healthy Eating); four components further specify which aspect of CSH is addressed for PA and HE (*teaching and learning, healthy physical environment and supportive social environment, healthy school policies and partnership and services).*

Steps of developing CLASS II Framework

- Academic literature, national and provincial frameworks were scanned and relevant components were listed according to the three main sections along with their original source.
- Similar components were merged using the most appropriate description.
- As there was a particular emphasis to ensure the framework was specific to Nova Scotia, the list was sourced by specific Provincial policies and guidelines e.g. Food and Nutrition Policy for Nova Scotia Public Schools, Department of Education Curriculum Guidelines and revised to identify the most relevant core components.

Following approval by the research team, the list of core components was sent out for review by a national and regional expert panel (August 2009). Feedback was considered by the Project Coordinator and revisions were made following a discussion with the Principle Investigator SK (October 2009).

After the policy scan and document review was complete, the Framework was revised and updated and a draft of the School Practices Survey was developed. The Survey was sent out for review to several regional experts (spring/summer 2010).

The next step was to develop indicators to measure the extent to which schools are meeting the "best practices" of the core components. Categorical standards were developed to assess how a school can progress toward achieving best practice. This style of assessment uses theory from Innovation Configuration which was developed by experts in a national research center (University of Texas Research and Development Center in Austin) studying educational change. Innovation Configuration has been used previously in Nova Scotia to assess a Provincial Policy and is well established as a method of assess HPS in the Annapolis Valley Regional School Board and has been found to be a relevant and practical tool for schools. This style is also similar to a rubric which often provide guidelines in the education sector to ensure judgments of are accurate, consistent are fair. This tool will be reviewed by each school board in Nova Scotia to ensure the content is relevant across the province. This *Health Promoting Schools Evaluation Planning Tool* was administered across schools in 2011.

Measurement of the CLASS II Evaluation Framework

This evaluation framework provides an overview of the indicators included in the original core components framework and how they were assessed in the Health Promoting Schools Evaluation Tool (by question number) or by other sources of data collection (e.g., school schedule or observational data collected by evaluation assessments).

Active Living				
Topic	**Core component Indicators**	**Pillars of HPS[12]**	**Data source (i.e., practice description or other source of data)**	**Level of implementation[13]**
Physical Education	a. Times per week, length of class, activity level, curriculum outcomes, qualifications of teacher	TL HSP	1.2.9. All students participate in physical education (i.e. regardless of gender, skill, ability) *School schedule indicates time*	Level 1
	b. Teachers use adequate teaching/learning materials and appropriate teaching methodologies (Opportunity to warm up/cool down	TL	1.2.10. Physical education safety guidelines and curriculum outcomes are followed	Level 1
			1.2.11. Appropriate physical education	Level 2

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[12] Pillars of health promoting schools (HPS) include 1) teaching and learning (TL); 2) healthy physical environment and supportive social environment (HPSE); 3) healthy school policies (HSP); and 4) partnership and services (PS).

[13] The HPS evaluation tool described practices according to four levels of implementation (1=beginning implementation, 4=full implementation).

CLASS II School Practices Evaluation Framework

Active Living				
Topic	**Core component Indicators**	**Pillars of HPS[12]**	**Data source (i.e., practice description or other source of data)**	**Level of implementation[13]**
	during activities)		resources are used (curriculum supplements from the Department of Education, information/ materials from health organizations)	
	c. Physical education professional development opportunities available and encouraged for teachers and staff	TL	1.2.12. Physical education teacher attends professional development in physical education and/or health	Level 3
Physical activity during other instructional time (integrated with other subjects)	a. How often, curriculum outcomes, qualification of teacher	TL HSP	1.2.13. Physical education outcomes are integrated into other classroom subjects (e.g., science, math, French)	Level 4
			2.6.32. Daily physical activity is scheduled for all classes	Level 4
			2.6.33. Physical activity is incorporated into other classroom subjects	Level 4
Intramural programs/club activities and interschool programs/club activities (before school, recess, lunch time, after school)	a. Frequency, number/type of activities, availability (to who) and accessibility (cost) to students, % participation by students	TL HPSE HSP	2.3.15. Activities are provided at no cost to all students	Level 1
			2.3.16. Activities emphasize a noncompetitive environment	Level 2
			2.3.17. Transportation is provided if needed	Level 2
			2.3.18. Both nontraditional activities and traditional activities are offered	Level 3

CLASS II School Practices Evaluation Framework

Active Living				
Topic	**Core component Indicators**	**Pillars of HPS**[12]	**Data source (i.e., practice description or other source of data)**	**Level of implementation**[13]
			throughout the year (e.g., orienteering and sports like soccer and basketball)	
			2.3.19. Organized physical activity is available at least 3 days of the week	Level 4
Unstructured opportunities for physical activity (Before and after school, recess, lunchtime)	a. Frequency, number/type of activities, availability (to who) and accessibility (cost) to students, % participation by students	TL	2.4.20. Active free play is scheduled during the school day (e.g., before school, recess, lunchtime	Level 1
Variety of spaces and equipment available and accessible to staff and students during both instructional and non-instructional time	a. Gymnasium, outdoor field, playground, inclement weather facilities	HPSE	2.4.21. Different spaces are available for students during active free play (e.g., playground, green space, fields, lunchroom, foyer)	Level 2
			2.4.22. Different equipment is available for students to use during active free play (e.g., mix of nontraditional such as snowshoes and traditional sport equipment)	Level 3
			2.4.23. Indoor space for active free play is available during poor weather	Level 4
Active transportation promoted and safety measures encouraged	a. Bicycle rack, crossing guards, walking school bus, walk to school week, communicated to parents, safety measures taught (HSP)	HPSE HSP	2.5.24. Cross walks and crossing guards support students who walk to school	Level 1
			2.5.24. Bike racks/storage for equipment is available to support active transportation	Level 2

CLASS II School Practices Evaluation Framework

Active Living				
Topic	**Core component Indicators**	**Pillars of HPS[12]**	**Data source (i.e., practice description or other source of data)**	**Level of implementation[13]**
			2.5.24. Active transportation is promoted to students and parents (e.g., announcements, newsletters, website)	Level 3
			2.5.24. School has a policy that encourages active transportation	Level 4
Physical activity is offered inclusive	a. Barriers to students with disabilities have been addressed (modified equipment and facilities, inclusive activities) (HSP)	HPSE HSP	2.3.14. All students have the opportunity to participate in organized physical activity (i.e. regardless of gender, skill, ability)	Level 1
	b. All physical activities are inclusive of all students regardless of age, ability/disability, gender, culture with an emphasis on sportsmanship	HPSE HSP		
Places for active living are safe	a. Practices are in place to reduce excessive noise and crowding during physical activity (HSP)	HPSE HSP	Not assessed (see 1.2.10. Physical education safety guidelines and curriculum outcomes are followed)	
	b. Regular inspection of facilities and equipment to ensure play/activity space is safe (HSP)	HPSE HSP		
Student leadership and participation	a. Students are able to provide feedback and take on leadership roles to facilitate peer physical activity	HPSE	2.6.30. Students have the opportunity to be leaders for physical activity (e.g., playground leaders, Power-to-Play, refereeing activities, other leadership programs)	Level 2
	b. Students recognized for participating in physical activity	HPSE		
Physical activity	a. Incorporation into daily activities (ie:	HPSE	2.6.28. Physical activity is included in	Level 1

Active Living				
Topic	**Core component Indicators**	**Pillars of HPS**[12]	**Data source (i.e., practice description or other source of data)**	**Level of implementation**[13]
encouraged and incorporated in regular school activities/events	fundraising, field days) and non-structured play (recess and lunch)		school-wide activities (e.g., assemblies, field day)	
			2.6.29. School participates in active living initiatives (e.g., Walk to School Month, Terry Fox Walk)	Level 1
	b. Supported by staff and parents/families	HPSE PS	2.6.31. School staff model physically active lifestyles (e.g., organize or lead walking groups)	Level 3
Staff as role models of physical activity	a. Encouragement and positive language when introducing non-traditional activities	HPSE PS		
	b. Active participants in physical activity	HPSE PS		
Supportive school policies	a. Lack of prohibitive policies that discourage physical activity (e.g. no hockey sticks on bus or skateboards at school)	HPS	Not assessed	
	b. Restriction of physical activity is not used as a punishment	HPS		
School collaborates with community partners to support physical activity	a. Whole school community is involved with developing and monitoring school physical activities (e.g., Parents, families, district health authority, parks or recreational departments, youth organizations, etc.)	PS	4.11.57. Parents and volunteers are given opportunities to be involved in the planning and delivery of school activities	Level 1
	b. Those involved with coordinating physical education and physical activity collaborate with the school community	PS		
	c. A "joint use agreement" exists	PS	Not assessed	

CLASS II School Practices Evaluation Framework

Active Living				
Topic	Core component Indicators	Pillars of HPS[12]	Data source (i.e., practice description or other source of data)	Level of implementation[13]
	between the school and community to maximize facility use			
	d. School supports and promotes local community opportunities for physical activity	PS	4.11.59.The school works with community partners and organizations in the community (e.g., Public Health, municipality/town)	Level 3

Healthy Eating				
Topic	Core component Indicators	Pillars of HPS	Data source (i.e., practice description or other source of data)	Level of implementation
Health Education	a. Times per week, length of class, activity level, curriculum outcomes, qualifications of teacher	TL HSP	1.1.1. All students participate in health education (i.e. regardless of gender, skill, ability *School schedule indicates time*	Level 1
			1.1.2. Curriculum outcomes for health education are followed	Level 1
			1.1.3. Health education resources are used (e.g., curriculum supplements form the Department of Education, information/materials from health organizations)	Level 2
	b. Integration of health curricular outcomes in other classes (e.g. science, math, etc.)	TL HSP	1.1.7. Health curriculum outcomes are integrated into other classroom subjects (e.g., science, math, French)	Level 4

CLASS II School Practices Evaluation Framework

Healthy Eating				
Topic	**Core component Indicators**	**Pillars of HPS**	**Data source (i.e., practice description or other source of data)**	**Level of implementation**
	c. Students learn about Nova Scotia Food policy	TL HSP	Not assessed	
	d. Education exists beyond the classroom and includes hands on practical experience (food preparation, taste testing, cooking classes, food tasting, gardening, field trips)	TL HPSE	3.7.38. Nutrition education is incorporated into the food programs	Level 4
			3.9.48. School participates in initiatives to support healthy eating (e.g., taste-testing, school gardens, Nutrition Month)	Level 2
	e. Health education professional development opportunities are available and encouraged for teachers and staff	TL	1.1.5. Classroom teachers attend professional development in health education	Level 3
	f. Students encouraged and provided with opportunities and facilities to wash their hands before meals and snacks.	TL	3.8.47. Food safety is practiced during food preparation, serving and eating (e.g., clean spaces, hand washing, anaphylaxis policy)	Level 1
Environmental and social consciousness (i.e. where food comes from)	a. Bins to separate paper from other garbage, encouraging through posted signage, collecting refundable and recyclables separate from other garbage, composting, choosing energy saving equipment when making purchases for food programs; food growing and supply, economic impact of food	TL HSP	Not assessed	
	b. Gardening program	TL HPSE		
Food served as	a. Follow Nova Scotia	HPSE	3.8.39. Food available	Level 1

Healthy Eating				
Topic	**Core component Indicators**	**Pillars of HPS**	**Data source (i.e., practice description or other source of data)**	**Level of implementation**
sold in all facilities (e.g. Cafeteria, Canteen, Vending machine)	Food Policy:	HSP	for purchase follows the Food and Nutrition Policy	
	b. At least 70% of foods are of Maximum Nutrition, Moderate Nutrition items make up no more than 30% of choices,	HSP	3.8.40. Majority of choices are of Maximum Nutrition*	Level 1
	c. Only milk, 100% juice and water are served or sold in the school,	HSP	3.8.41. Only milk, 100% juice and water are offered as beverages	Level 1
	d. Food and beverages are appropriate portion sizes	HSP	3.8.43. Student portion sizes are considered in food preparation and serving	Level 2
	e. Use clean and appropriate spacing (table and chairs) for eating	HPSE HSP	Not assessed	
	f. Use practices are in place to reduce excessive noise and crowding during mealtimes			
	g. Regular access and encouragement to clean drinking water and clean air	HPSE HSP	3.9.46. Clean drinking water is available to students and staff throughout the school day	Level 1
Food is prepared and served in accordance with food safety standards	a. At least one person on site has received food safety training.	HPSE HSP	3.9.47. Food safety is practiced during food preparation, serving and eating (e.g., clean spaces, hand washing, anaphylaxis policy)	Level 1
	b. Spaces where food is provided is regularly inspected	HPSE HSP		
	h. The school aligns with school board anaphylaxis policy	HPSE HSP		
Time to eat	a. Lunch is scheduled so that students have at least 10 minutes to eat breakfast (if	HPSE HSP	School schedule	

CLASS II School Practices Evaluation Framework

Healthy Eating				
Topic	**Core component Indicators**	**Pillars of HPS**	**Data source (i.e., practice description or other source of data)**	**Level of implementation**
	applicable), 20 minutes to eat lunch (20 minutes for activity during lunchtime)			
	b. Students have scheduled time for nourishment every three/four hours	HPSE HSP	Not assessed	
School nutrition programs follow Provincial standards (including breakfast, milk lunch and snack)	a. Accessibility (Universally accessible for free to all students) b. Availability (Offered 5 days per weekday) c. Use (average % of children participating)	HPSE HPSE	3.7.34 A food program is universally available and free (or subsidized) for all students (i.e. all students are invited to participate)	Level 1
	d. Healthfulness (Includes 3 food groups, variable selection throughout the week, only maximum nutrition items)	HPSE HPSE	3.7.35. Food that is provided during food programs follows the Food and Nutrition Policy	Level 1
Special school functions and events	a. Special school functions with minimum nutrition items are limited to one or twice a month, moderate and maximum nutrition make up more than 50% of offerings	HPSE HSP PS	3.9.52. School functions or events mostly serve foods and beverages of Maximum* and Moderate Nutrition** (e.g., Halloween parties, family dances)	Level 4
	b. School events and trips apply the policy and Nova Scotia Food Policy food/beverage standards	HPSE HSP PS		
	c. Evening and weekend programs for students follow the Nova Scotia Food Policy	HPSE HSP PS		
	d. Fundraisers with	HPSE	3.10.53. Minimum	Level 1

CLASS II School Practices Evaluation Framework

	Healthy Eating			
Topic	**Core component Indicators**	**Pillars of HPS**	**Data source (i.e., practice description or other source of data)**	**Level of implementation**
	food and beverages only use items of maximum and moderate nutrition	HSP PS	nutrition foods are not used to fundraise	
			3.10.54. Moderate nutrition foods are sometimes used to fundraise	Level 2
			3.10.55. Maximum nutrition foods are sometimes used to fundraise	Level 3
			3.10.56. Only healthy foods or activity used to fundraise	Level 4
Broader environment	a. Healthy food and beverage choices are promoted (consistent with Max and Moderate nutrition lists) and priority space is provide to promote healthy food and beverages (as in max nutrition list)	HPSE HSP	3.8.42. Healthy food and beverage options are competitively priced (e.g., fruit cheaper than baked chips)	Level 2
			3.8.43. Priority space is given to healthy food and beverages (e.g., placement of healthy food at student eye level)	Level 3
	b. Food is not offered as a reinforcer or withheld from students as a consequence	HPSE HSP	3.9.49. Food is not used as a reward or reinforcement	Level 2
	c. Whenever possible Food and beverages that are grown, produced or manufactured in Nova Scotia and Atlantic Canada are included on school menus	HPSE	3.8.44. Local food products are used (e.g., cheese and milk products, meat, fruits and vegetables)	Level 4
	d. Students are aware of meal programs and healthy food and	HPSE	3.7.36.Students and parents are aware that healthy food is	Level 2

CLASS II School Practices Evaluation Framework

Healthy Eating				
Topic	**Core component Indicators**	**Pillars of HPS**	**Data source (i.e., practice description or other source of data)**	**Level of implementatio n**
	beverages sold during the school day and they are made accessible to all students (at minimal or no cost) in non-stigmatizing manner		available for students who may require food (available to students in a welcoming, non-stigmatizing manner)	
	e. Staff model healthy eating behaviours	HPSE	3.9.50. Healthy eating is reinforced and modeled by staff	Level 3
Whole school community is involved with developing and monitoring school food policies and practices	a. Collaboration with community partners to support healthy eating (including parents, families, regional health authority, parks or recreational departments, community groups (e.g. Lions Club), youth organizations, etc.	PS	3.7.37. Parents contribute to school food programs through donations of time, money or expertise	Level 3
	b. Sponsorships related to food encourage and promote healthy eating	PS	Not assessed	

Health Promoting Schools				
Topic	**Core component Indicators**	**Pillars of HPS**	**Data source (i.e., practice description or other source of data)**	**Level of implementation**
Schools policies exist to support healthy eating and active living or health promoting schools.	a. Policies exist to guide implementation of healthy eating or active living	TL HSP	4.13.68. The school has a policy related to the promotion of healthy lifestyle behaviours and the prevention of health-related harm	Level 4
	b. School budget supports healthy eating and active living or (health promoting school activities)	TL HSP		
	c. School improvement	TL	4.14.71.	Level 3

CLASS II School Practices Evaluation Framework

Health Promoting Schools				
Topic	**Core component Indicators**	**Pillars of HPS**	**Data source (i.e., practice description or other source of data)**	**Level of implementation**
	goals are relevant to healthy eating and active living (or health promoting schools)	HSP	Accreditation/school improvement team collects data recognizing that health and education issues are linked	
			4.13.72. The importance of healthy eating, active living or health promotion (e.g., mental health) are reflected in the schools accreditation goals	Level 4
Bidirectional communication strategies are used to develop relationships with parents	a. Parents and families are encouraged to participate in school events	PS	3.7.47. Parents contribute to school food programs through donations of time, money or expertise	Level 3
	b. Benefits of an healthy active lifestyle is communicated to parents (e.g., newsletters)	PS	2.5.24. Active transportation is promoted to students and parents (e.g., announcements, newsletters, website)	Level 3
	c. Parents supports the development of and participates in the development of a healthy school		4.11.57. Parents and volunteers are given opportunities to be involved in the planning and delivery of school activities	Level 1
Community partners are identified and sought out by the school	a. School organizes healthy eating and active living events that involve the broader community (e.g. health fairs),	PS	4.11.59.The school works with community partners and organizations in the community (e.g., Public Health, municipality/town)	Level 3
	b. Community resources are used to support healthy eating and active living,	PS		
	c. Partnerships help to facilitate support for	PS		

CLASS II School Practices Evaluation Framework

Health Promoting Schools				
Topic	**Core component Indicators**	**Pillars of HPS**	**Data source (i.e., practice description or other source of data)**	**Level of implementation**
	students requiring specialized health services,			
	d. School facilities and equipment are available to support community programs and opportunities,	PS HPSE		
	e. Successful heath promoting school practices and activities are documented and disseminated to school community stakeholders)	PS	4.12.64.Student contributions, achievements and accomplishments are recognized by the school and wider community	Level 4
School champion and team	a. This champion is supported by a health promoting school team or committee	PS	4.14.70. School has a diverse team (including parents, students and members of the community) that meet to discuss, plan and evaluate health promotion activities (e.g., active living, healthy eating and mental health)	Level 2
	b. Those involved with healthy eating and active living (or health promoting schools) activities in the school are actively involved, have clearly defined roles and responsibilities and are accountable for their actions	PS		
	c. Members of the team include a variety of representatives (principal, classroom teacher, parent, student, education assistant, district health partner, community partner, cafeteria worker, etc.)	PS		
	d. The team schedules regular time and place to meet, communicates with the School Board, applies for funding if needed, monitors progress and completes reports	PS		

Health Promoting Schools				
Topic	**Core component Indicators**	**Pillars of HPS**	**Data source (i.e., practice description or other source of data)**	**Level of implementation**
	e. School activities represent the priorities, needs and culture of the school community	PS		
	a. School accesses expertise from board (e.g. HPS Co-chairs, sport animators, public health nutritionist, active healthy living consultant) to assist with programming and support initiatives	PS	4.11.60. The school applies for funding to support health promotion activities	Level 4
	b. School applies for grants and funding through the Province or School Board to support initiatives	PS		
	c. School sends representation to board and provincial wide healthy eating and active living (or health promoting schools) meetings, events and professional development	PS TL	1.1.5. Classroom teachers attend professional development in health education	Level 3
The school creates a healthy social environment	a. Leaders in the schools set a respectful tone for interactions with students, staff and community	PS HPSE	4.14.69. School administration supports activities related to health promotion	Level 1
		PS	4.13.65. PEBS (Positive Effective Behaviour Supports) is implemented to create a safe and supportive environment for students	Level 1
		HPSE	4.13.66. Strategies to support Race Relations, Cross Cultural Understanding and Human Rights (RCH) are implemented	Level 2

CLASS II School Practices Evaluation Framework

Health Promoting Schools				
Topic	**Core component Indicators**	**Pillars of HPS**	**Data source (i.e., practice description or other source of data)**	**Level of implementation**
		PS	4.13.67. There are designated places and people where student concerns or needs can be shared without fear of punishment, stigmatization or loss of respect	Level 3
	b. A peer support or mentoring program is in place and supported by administrators, staff and parents	PS	4.12.61.All students and adults are mutually valued and respected regardless of individual or family differences or cultural diversity	Level 1
			4.12.62.Positive learning interactions among students, teachers, caregivers and school leaders are supported (informal, peer-assisted or structured mentorship approaches or programs)	Level 2
			4.12.63.A school-wide bullying prevention program or curriculum is in place to create a safe and caring environment for students	Level 3
		TL	1.1.4. The mental health curriculum outcomes are integrated into health education lessons	Level 2
	c. Student voices are involved in the school through student leadership opportunities, committee involvement and	PS HPSE	3.9.51. Students are involved in the planning of school food menus and choices	Level 3
			4.11.58. Students are engaged and	Level 1

CLASS II School Practices Evaluation Framework

Topic	Core component Indicators	Pillars of HPS	Data source (i.e., practice description or other source of data)	Level of implementation
	planned activities		involved in the leadership opportunities related to the planning and delivery of school activities	
			1.1.6. Classroom discussions encourage students to respect diverse perspectives	Level 3
			1.1.8 Education learning activities accommodate different learning styles or preferences	Level 4
	d. Signage, visual and verbal displays support healthy eating and active living or health promoting schools (e.g. daily announcements, bulletin boards, wall signs)	HPSE	Observations from evaluation assistants	

Health Promoting Schools Evaluation Tool

CLASS II is a province-wide project that will study the relationships between health, nutrition, physical activity and school performance of Grade 5 children in Nova Scotia. This research is a follow up to the original CLASS project in 2003.

A "health promoting school" is defined as a school that constantly strengthens its capacity as a healthy setting for living, learning and working. We consider all schools to be "health promoting schools" but at different levels of implementation according to individual school circumstances. The Health Promoting Schools Evaluation Tool describes a series of activities in different areas relating to curriculum, physical activity, healthy eating and health promotion (including mental health). This evaluation tool uses a rubric to describe different levels of implementation according to best practices. Starting from the left, the activities are described in four levels that range from beginning to full implementation.

Who should complete the tool?

- We recommend that the tool is completed by a team involved with health promotion activities at your school or by asking individuals who are most knowledgeable in the different areas.

How to complete the tool?

- For each row, use the check boxes to indicate what is taking place at your school. Based on what is taking place, decide which level your school is at for that particular section. Please complete all four parts of the tool. The tool should take 15-30 minutes to complete, depending on how many people are involved.

Your participation in this research is voluntary. Your participation includes completing this evaluation tool. All responses will be confidential and will only be seen by project staff at Dalhousie University and the University of Alberta. Without your signed permission, we will not be sharing individual school information with your School Board or the Province. With your input, you will help us to understand more about how schools are supporting the health of students in Nova Scotia in combination with the findings from the Grade 5 student and parent surveys.

To thank you for taking part, we will be developing reports for each school that participates in CLASS II. The reports will provide information to help your school plan healthy eating, physical activity and health promotion activities and will also provide useful data to support accreditation/school improvement. **The reports will be sent directly to the school principal and the person/people that have completed this tool.**

If you agree to take part, please complete the consent form on the next page. An electronic copy of the survey is available on our website at www.nsclass.ca. Please send both the consent form and completed evaluation tool to Jessie-Lee Langille by: email: jessie-lee.langille@dal.ca; Fax: 902-494-7567; or Mail: 1318 Robie Street, Halifax, NS B3H3E2

If you have any questions about the survey, please do not hesitate to contact Jessie-Lee Langille at 902-494-8439.

Thank you for your participation in CLASS II.

Consent Form

If you agree to take part in this study please fill out this page and complete the
Health Promoting Schools Evaluation Tool.

I have read the information about CLASS II.
I understand that participation is voluntary.
I consent to take part in this study.
☐ **Yes**   ☐ **No**

School:

_____

_____

School Board:

_____

_____

Print Name	Signature	Date	What is your role? (Principal, classroom teacher, physical education teacher, educational assistant, lunchroom manager, parent, student etc.)

Health Promoting Schools Evaluation Tool

Part 1: Health and Physical Education

Use the check boxes to indicate what is taking place at your school. Based on what is taking place, decide which level your school is at for each section.

		LEVEL 1 Beginning implementation	LEVEL 2	LEVEL 3	LEVEL 4 Full implementation	
a)	**Health Education**	☐ All students participate in health education (i.e. regardless of gender, skill, ability) ☐ Curriculum outcomes for health education are followed	☐ Health education resources are used (e.g., curriculum supplements from the Department of Education, information/materials from health organizations) ☐ The mental health curriculum outcomes are integrated into health education lessons	☐ Classroom teachers attend professional development in health education ☐ Classroom discussions encourage students to respect diverse perspectives	☐ Health curriculum outcomes are integrated into other classroom subjects (e.g., science, math, French) ☐ Education learning activities accommodate different learning styles or preferences	Our school is at level: ☐ 1 ☐ 2 ☐ 3 ☐ 4
b)	**Physical education**	☐ All students participate in physical education (i.e. regardless of gender, skill, ability) ☐ Physical education safety guidelines and curriculum outcomes are followed	☐ Appropriate physical education resources are used (curriculum supplements from the Department of Education, information/ materials from health organizations)	☐ Physical education teacher attends professional development in physical education and/or health	☐ Physical education outcomes are integrated into other classroom subjects (e.g., science, math, French)	Our school is at level: ☐ 1 ☐ 2 ☐ 3 ☐ 4
c)	**School schedule**	How often do Grade 5 students usually have health education? _____ classes/week or cycle How often do Grade 5 students usually have physical education? _____ classes/week or cycle Approximately how long is each class or block of time? _____ minutes				
d)	**Please provide any additional details to describe health and physical education at your school.**					

Health Promoting Schools Evaluation Tool

Part 2: Physical Activity

Use the check boxes to indicate what is taking place at your school. Based on what is taking place, decide which level your school is at for each section.

	LEVEL 1 Beginning implementation	LEVEL 2 →	LEVEL 3 →	LEVEL 4 Full implementation	
a) Organized physical activity (e.g., intramurals, afterschool programs)	☐ All students have the opportunity to participate in organized physical activity (i.e. regardless of gender, skill, ability) ☐ Activities are provided at no cost to all students	☐ Activities emphasize a noncompetitive environment ☐ Transportation is provided if needed	☐ Both nontraditional activities and traditional activities are offered throughout the year (e.g., orienteering and sports like soccer and basketball)	☐ Organized physical activity is available at least 3 days of the week	Our school is at level: ☐ 1 ☐ 2 ☐ 3 ☐ 4
b) Active free play	☐ Active free play is scheduled during the school day (e.g., before school, recess, lunchtime)	☐ Different spaces are available for students during active free play (e.g., playground, green space, fields, lunchroom, foyer)	☐ Different equipment is available for students to use during active free play (e.g., mix of nontraditional such as snowshoes and traditional sport equipment)	☐ Indoor space for active free play is available during poor weather	Our school is at level: ☐ 1 ☐ 2 ☐ 3 ☐ 4
c) Active transportation	☐ Cross walks and crossing guards support students who walk to school	☐ Bike racks/storage for equipment is available to support active transportation	☐ Active transportation is promoted to students and parents (e.g., announcements, newsletters, website)	☐ School has a policy that encourages active transportation	Our school is at level: ☐ 1 ☐ 2 ☐ 3 ☐ 4
d) School environment	☐ Physical activity is included in school-wide activities (e.g., assemblies, field day) ☐ School participates in active living initiatives (e.g., Walk to School Month, Terry Fox Walk)	☐ Students have the opportunity to be leaders for physical activity (e.g., playground leaders, Power-to-Play, refereeing activities, other leadership programs)	☐ School staff model physically active lifestyles (e.g., organize or lead walking groups)	☐ Daily physical activity is scheduled for all classes ☐ Physical activity is incorporated into other classroom subjects	Our school is at level: ☐ 1 ☐ 2 ☐ 3 ☐ 4
e)	**Please provide any additional details to describe physical activity at your school.**				

Part 3: Healthy Eating

Use the check boxes to indicate what is taking place at your school. Based on what is taking place, decide which level your school is at for each section.

	LEVEL 1 Beginning implementation ⟶	LEVEL 2	LEVEL 3	LEVEL 4 Full implementation	
a) Food programs (provided at no cost or subsidized) Check all that apply: ☐ Breakfast ☐ Snack ☐ Lunch ☐ Milk ☐ None (go to b)	☐ A food program is universally available and free (or subsidized) for all students (i.e. all students are invited to participate) ☐ Food that is provided during food programs follows the Food and Nutrition Policy	☐ Students and parents are aware that healthy food is available for students who may require food (available to students in a welcoming, non-stigmatizing manner)	☐ Parents contribute to school food programs through donations of time, money or expertise	☐ Nutrition education is incorporated into the food programs	Our school is at level: ☐ 1 ☐ 2 ☐ 3 ☐ 4
b) Food available for purchase at school If food for purchase is not available, check here ☐ and go to c	☐ Food available for purchase follows the Food and Nutrition Policy ☐ Majority of choices are of Maximum Nutrition* ☐ Only milk, 100% juice and water are offered as beverages	☐ Healthy food and beverage options are competitively priced (e.g., fruit cheaper than baked chips) ☐ Student portion sizes are considered in food preparation and serving	☐ Priority space is given to healthy food and beverages (e.g., placement of healthy food at student eye level)	☐ Local food products are used (e.g., cheese and milk products, meat, fruits and vegetables)	Our school is at level: ☐ 1 ☐ 2 ☐ 3 ☐ 4
c) School environment	☐ Clean drinking water is available to students and staff throughout the school day ☐ Food safety is practiced during food preparation, serving and eating (e.g., clean spaces, hand washing, anaphylaxis policy)	☐ School participates in initiatives to support healthy eating (e.g., taste-testing, school gardens, Nutrition Month) ☐ Food is not used as a reward or reinforcement	☐ Healthy eating is reinforced and modeled by staff ☐ Students are involved in the planning of school food menus and choices	☐ School functions or events mostly serve foods and beverages of Maximum* and Moderate Nutrition** (e.g., Halloween parties, family dances)	Our school is at level: ☐ 1 ☐ 2 ☐ 3 ☐ 4
d) Fundraising If your school does not fundraise with food or beverages, check here ☐ and go to e	☐ Fundraising with food and beverages does not use items of Minimum Nutrition*** (e.g., bakes sales without restrictions, chocolate bar sale)	☐ Fundraising with food and beverages includes foods of Moderate Nutrition**	☐ Fundraising with food and beverages includes foods of Maximum Nutrition*	☐ Healthy foods or physical activity is used to fundraise (e.g., oranges, blueberries, passes to recreation facilities)	Our school is at level: ☐ 1 ☐ 2 ☐ 3 ☐ 4
e) Please provide any additional details to describe healthy eating at your school.					

Pease consider the following definitions from the Food and Nutrition Policy for Nova Scotia Public Schools:

*Maximum nutrition: Food and beverages that are high in essential nutrients for growth, learning, and health and are low in salt, sugar, sweeteners, and saturated and trans fats.

**Moderate Nutrition: Food and beverages that contain essential nutrients for growth, learning, and health, but are somewhat lower in fibre and higher in fat, salt, sugar, sweeteners, and/or processing. ***Minimum Nutrition: Food and beverages that offer minimal nutritional value; are very high in sugar, fat, salt, caffeine, sweeteners, and/or processing; and tend to replace nutritious foods.

Part 4: All Health Promotion Activities (e.g. Active Living, Healthy Eating, Mental Health)
Use the check boxes to indicate what is taking place at your school. Based on what is taking place, decide which level your school is at for each section.

		LEVEL 1 **Beginning implementation**	LEVEL 2	LEVEL 3	LEVEL 4 Full implementation	
a)	**Community, parental and student engagement**	☐ Parents and volunteers are given opportunities to be involved in the planning and delivery of school activities	☐ Students are engaged and involved in the leadership opportunities related to the planning and delivery of school activities	☐ The school works with community partners and organizations in the community (e.g., Public Health, municipality/town)	☐ The school applies for funding to support health promotion activities	Our school is at level: ☐ 1 ☐ 2 ☐ 3 ☐ 4
b)	**Mental health**	☐ All students and adults are mutually valued and respected regardless of individual or family differences or cultural diversity	☐ Positive learning interactions among students, teachers, caregivers and school leaders are supported (informal, peer-assisted or structured mentorship approaches or programs)	☐ A school-wide bullying prevention program or curriculum is in place to create a safe and caring environment for students	☐ Student contributions, achievements and accomplishments are recognized by the school and wider community	Our school is at level: ☐ 1 ☐ 2 ☐ 3 ☐ 4
c)	**School environment**	☐ PEBS (Positive Effective Behaviour Supports) is implemented to create a safe and supportive environment for students	☐ Strategies to support Race Relations, Cross Cultural Understanding and Human Rights (RCH) are implemented	☐ There are designated places and people where student concerns or needs can be shared without fear of punishment, stigmatization or loss of respect	☐ The school has a policy related to the promotion of healthy lifestyle behaviours and the prevention of health-related harm	Our school is at level: ☐ 1 ☐ 2 ☐ 3 ☐ 4
d)	**School support**	☐ School administration supports activities related to health promotion	☐ School has a diverse team (including parents, students and members of the community) that meet to discuss, plan and evaluate health promotion activities (e.g., active living, healthy eating and mental health)	☐ Accreditation/school improvement team collects data recognizing that health and education issues are linked	☐ The importance of healthy eating, active living or health promotion (e.g., mental health) are reflected in the schools accreditation goals	Our school is at level: ☐ 1 ☐ 2 ☐ 3 ☐ 4
e)	**Please provide any additional details to describe health promotion at your school.**					

Thank you for your participation in CLASS II
Please send both the consent form and completed tool by email: jessie-lee.langille@dal.ca; fax: 902-494-7567; or mail: 1318 Robie Street, Halifax, NS B3H3E

Overview of Case Characteristics and Participants

School	Rationale for selection	School demographics and size	School visits	Interviews	Community characteristics relative to NS schools	Other school characteristics relative to NS schools
School 1	Interest from principal on school results	Grades P-6 (5-12 years old) Mid-size elementary school with about 200 students	1 school visit and school tour	In person interview with principal and telephone interview with parent	Rural inland community 30km outside large town	Older facility, limited space outside for free play
School 2	Recommendation from district	Grades P-6 (5-12 years old) Mid-size elementary school with about 200 students	2 school visits (1 presentation to health promoting school team, 1 for interviews)	In person interviews with principal and 3 teachers (PE1, classroom and resource support)	Rural municipality; fishing is major industry	Newer facility, vast playground equipment and access to technology
School 3	Interest from principal on school results	Grades P-6 (5-12 years old) Small elementary school with about 100 students	3 school visits (2 presentations, 1 for interviews)	In person interviews with principal and 2 teachers (classroom and resource support)	Community 20km outside downtown core of city	Small community school, older building and facilities.
School 4	Interest from principal	Grades P-6 (5-12 years old) Mid-size elementary school with about 215 students	1 school visit and school tour	In person interview with principal and telephone interview with parent	Rural community 10km outside small town; many seasonal occupations	Smaller, older facility, portable classrooms to accommodate student population
School 5	Interest from principal on school results	Grades P-6 (5-12 years old) Small elementary school with about 75 students	2 school visits (1 interview with principal, 1 presentation to parent group)	In person interview with principal and telephone interview with parent	Rural community 20km outside large town	Small community school, at risk of being closed due to district cost reductions
School 6	Interest from principal on school results	Grades P-6 (5-12 years old) Large elementary school with	1 school visit and school tour	In person interview with principal, telephone interview	Large town school	Fairly new school (6 years) with good facilities.

		about 500 students		with 2 parents		
School 7	Interest from principal on school results	Grades P-6 (5-12 years old) Mid to large elementary school with about 300 students	1 extensive school visit (interviews, tour and presentation)	In person interview with principal and 1 teacher (PE), informal interactions	Community 20km outside core of small city	Good school facilities
School 8	High results overall, previous interactions	Grades P-5 (5-11 years old) Mid to large elementary school with about 250 students	1 school visit (for interviews and tour) and various prior interactions with school	In person interview with principal and teacher (PE and resource), informal interactions	Rural village outside of small town; agriculture is major industry	Older facility with extra classrooms available for activities
School 9	Interest from principal on school results	School 9, Grades P-12 (5-17 years old) Small elementary, junior and high school combined with about 400 students in total	1 school visit and school tour	In person interview with principal and written responses from teacher and community volunteer	Small rural village in rural county	Larger facility with elementary grades in designated area of school

Dear [Principal],

Last year, your school was one of the 272 schools that took part in the data collection with Grade 5 students and their parents. Based on a recommendation from your school board, **your school is being invited to take part as a case study school.**

CLASS II is a province-wide project that is studying the relationships between health, nutrition, physical activity and school performance of Grade 5 children in Nova Scotia. The purpose of the CLASS II case studies is to learn more about the different factors that are influencing the implementation of health promoting practices in Nova Scotia schools. We will be using action-research, which will focus on conducting research *with* schools with the goal of program improvement.

Your participation as a case study school is voluntary. If you agree to take part, your school will be asked to do the following:

- At your convenience, meet with the Project Coordinator a <u>minimum of two times</u> (in person or over the phone) during the 2011-2012 school year to discuss the results contained within your school's report.
- The purpose of the meetings will be to clarify the results and to discuss potential opportunities for your school to use the information to support further implementation of health promoting schools.
- The target group for the meetings is dependent upon your interest; meetings could be held with the administration, physical education teacher, the health promoting school team, all school staff, students and/or the home and school association.
- The number of meetings will also depend on your interest. The Project Coordinator (or another research staff) will be readily available throughout the school year to meet with your school.

We want to understand more about the factors that both help and prevent schools from supporting health promotion activities. Information will be gathered through our observations and interactions with school stakeholders. Relevant school documents (school improvement/accreditation information, plans related to heath promotion, etc.) will help provide background to the experiences of your school.

What we can learn from your participation?
We know that schools are asked to take part and implement an abundance of health promotion initiatives. We want to learn more from your experiences to help inform our recommendations to policy makers about health promotion in schools.
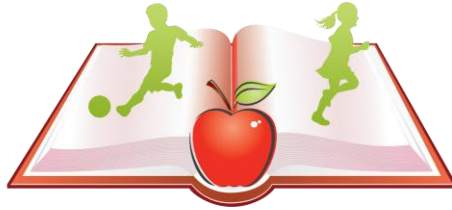
Benefits of taking part:
Your school will benefit from taking part as a case study by having the opportunity to understand what the results suggest for your school. Based on your interest, the research team will also work with your school to develop a plan to further support the health and learning of your students. Participation would help to support your school's improvement and/or accreditation plan. As the time that your school invests in this case study is dependent on your interest, there are no anticipated risks in taking part.

All responses will be confidential and will only be seen by project staff at Dalhousie University and the University of Alberta. Without your signed permission, we will not be sharing individual school information with your School Board or the Province. If you agree to take part, please complete the consent form on the next page.

Thank you for your consideration of taking part in this phase of the CLASS II research project. If you have any questions, please do not hesitate to contact Jessie-Lee Langille at 902-494-8439.

Dr. Sara Kirk, Co-Principal Investigator (Sara.Kirk@dal.ca)
Jessie-Lee Langille, Project Coordinator (Jessie-Lee.Langille@dal.ca.)

CLASS II

Children's Lifestyle And School-performance Study

Consent Form

If you agree to take part as a Case Study school for the CLASS II research project please fill out this page.

**I have read the information about the CLASS II case studies.
I understand that school participation is voluntary.
On behalf of my school, I consent to take part as a case study school.**

☐ Yes   ☐ No

School Name:
_____

Your Name: _____**Your School Role:** _____

Signature: _____   **Date:** _____

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Interviews guide for principal interviews

(Adapted for each principal according to school results and context)

1. How long have you been principal at the school?
    a. When you received the report, what were your impressions?
    b. Did you share the results with anyone? If so, what were there impressions?

Go through school report and prompt for successes/challenges relevant to the results

2. Tell me a bit about how healthy eating is supported at the school
    a. Does your school have a breakfast program? Is food available for purpose?
    b. What happens when a student does not have food during the school day?
    c. How else does your school support healthy eating?
    d. What are the successes/challenges of current activities?

3. Tell me a bit about how physical activity is supported at the school
    a. Does the school offer intramurals? After school programs?
    b. Are the programs inclusive to all students?
    c. What are the successes/challenges?

4. Tell me a bit about how mental wellness is supported in schools
    a. What supports does the school have available for students?
    b. What are the successes/challenges?

5. Tell me how families and communities support your support
    a. Are parents involved with volunteering?
    b. What are the successes/challenges?

6. Overall, how you feel your school supports healthy living? (Through classroom instruction, a supportive environment, partnerships with parents and the community, other practices or policies)
    a. What are your strengths/challenges?

7. In an ideal world, how could you improve the school support for health promotion?
    a. What do you need to achieve this improvement?

8. What are your plans for next year for supporting health promotion?
    a. Is there anything that would impact the success of this?

9. Who else can/should I speak with?

Dear [Key informant],

Last year, your school was one of the 272 schools that took part in the data collection with Grade 5 students and their parents. **With permission from your principal, your school is taking part as a case study school.**

CLASS II is a province-wide project that is studying the relationships between health, nutrition, physical activity and school performance of Grade 5 children in Nova Scotia. The purpose of the CLASS II case studies is to learn more about the different factors that are influencing the implementation of health promoting practices in Nova Scotia schools. We will be using action-research, which will focus on conducting research *with* schools with the goal of program improvement.

We want to understand more about the factors that both help and prevent schools from supporting health promotion activities. Information will be gathered through our observations and interactions with school stakeholders. Relevant school documents (school improvement or accreditation information, plans related to heath promotion, etc.) will help provide background to the experiences of your school.

Your participation as a key informant is voluntary. If you agree to take part as a key informant, you will be asked to participate in an interview or focus group to talk about your experiences with health promotion at your school.

What we can learn from your participation?
We know that schools are asked to take part and implement an abundance of health promotion initiatives. We want to learn more from your experiences to help inform our recommendations to policy makers about health promotion in schools.

Benefits of taking part:
Your school will benefit from taking part as a case study by having the opportunity to understand what the results suggest for your school. Based on the interest of your school, the research team will also work with your school to develop a plan to further support the health and learning of your students. Participation would help to support your school's improvement and/or accreditation plan. You will benefit from being involved as a key informant by being a part of helping your school further support the health of your students.

As the time that you invest in this case study is dependent on your interest, there are no anticipated risks in taking part. The information you provide will be kept confidential and will only be seen by project staff at Dalhousie University and the University of Alberta. Without your signed permission, we will not be sharing the information you provide to others at your school, your school board or the Province. If you agree to take part, please complete the consent form on the next page.

Thank you for your consideration of taking part in this phase of the CLASS II research project. If you have any questions, please do not hesitate to contact Jessie-Lee Langille at 902-494-8439.

Dr. Sara Kirk, Co-Principal Investigator (Sara.Kirk@dal.ca)
Jessie-Lee Langille, Project Coordinator (Jessie-Lee.Langille@dal.ca.)

CLASS II

Children's Lifestyle And School-performance Study

Consent Form

If you agree to take part as a key informant for the CLASS II research project please fill out this page.

**I have read the information about the CLASS II case studies.
I understand that my participation is voluntary.
I consent to take part as a key informant.**

☐ **Yes**   ☐ **No**

School Name:

_____

Your Name: _____   **Your School Role:** _____

Signature: _____   **Date:** _____

Interviews guide for key informants

(Adapted for each informant according to role, school results and context)

1. Can you tell me a bit about your role at the school?
    a. How long have you been involved?
    b. What do you do?
    c. Why did you get involved?

2. Can you tell me a bit about how _____ (e.g., breakfast program, physical activity opportunities) is organized?
    a. How often, when and where is it offered?
    b. What is typically served? (Do you have any sample menus?)

3. What do you feel is a strength of _____ (e.g., breakfast program, physical activity opportunities)?
    a. With respect to how it is organized and who and what it serves?

4. What do you feel is a challenge to _____ (e.g., breakfast program, physical activity opportunities)?
    a. With respect to how it is organized and who and what it serves?

5. In an ideal world, how could you improve the _____ (e.g., breakfast program, physical activity opportunities)?

6. What do you need to achieve this improvement?

7. Can you comment on the strengths and challenges about other opportunities for healthy eating and physical activity?

8. Do you have any other comments about how you feel this school supports the health of students?
    a. Through classroom instruction?
    b. Through partnerships with parents and the community?
    c. Through other practices or policies?
    d. Through other supports at the school? (Environment