

Assessing the Food Environment in Manitoba
Schools: Analysis of the 2009 Manitoba School
Nutrition Survey

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A thesis submitted to the Faculty of Graduate Studies of
The University of Manitoba
in partial fulfilment of
the requirements for the degree of
Master of Science

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March 2013

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ABSTRACT

Objectives: To analyze data collected in the 2009 Manitoba School Nutrition Survey to describe the school food environment, and to assess whether Manitoba schools have developed and implemented food and nutrition policies. **Methods:** A quantitative survey sent to all publicly funded schools in Manitoba (n=688). Questions covered food service facilities (cafeterias, canteen/tuck shops, and vending machines), lunch at school, fundraising, food-related school events, school food programs, and policy development. **Results:** Response rate from schools was 78%. Results indicate that 56% of schools have a policy in place at the division level and a further 29% have policies at the school level. 65% of Manitoba schools have nutrition and/or health committees in place. 44% of schools stated they have funded school food programs. The top three food items sold for fundraising were Mom's pantry items (41%), chocolate bars (27%), and frozen pizza (24%). **Conclusions:** Results of the 2009 Manitoba School Nutrition Survey show that food remains as an essential part of school life. The high response rate suggests that great importance is being placed on child nutritional health in schools. The survey shows that there have been changes in the school food environments compared to the baseline data from the 2006 survey, especially in the area of policy development and the placement of a health committee. School food programs continue to be an important element in schools. **Implications:** This study shows that the Manitoba approach to school nutrition policy appears to have been effective in producing changes in Manitoba schools and provides directions for future efforts to implement policies.

ACKNOWLEDGMENTS

I would like to thank my advisor Dr. Fieldhouse for his endless support during the course of my graduate work. I know it was a long road to get here but I am grateful for the continued encouragement and words of wisdom you have offered. I am thankful to have had the chance to work with an advisor who was always kind, generous, and understanding. Thank you to my committee members, Dr. Aukema and Dr. Yu, for the helpful feedback and support you have given me during this process.

I would like to thank my family for their continued support and unconditional love they have given me all my life. Without your words of encouragement, or all the life lessons you have taught me, I would not be where I am today. Thank you for always being there to listen, to give advice, and to push me when I needed it.

Finally, I would like to thank my husband, Haidar, for the incredible amount of patience, support, optimism, and love you have given me every day.

DEDICATION

This thesis is dedicated to my parents for always teaching me the importance of education and that hard work and perseverance always have their rewards.

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LIST OF ABBREVIATIONS

EWCFG: Eating Well with Canada's Food Guide

SNP: School Nutrition Policy

CSH: Comprehensive School Health

CHAPTER 1: INTRODUCTION

1.1 Background

Nutrition plays an important role in a child's physical growth and development. In order for children to meet their nutrient requirements, Health Canada recommends following *Eating Well with Canada's Food Guide (EWCFG)* as a tool to ensure children are receiving the appropriate number of servings of each food group for their age (Health Canada, 2007). Nutrition also affects cognitive development. The higher the nutritional quality of a child's diet, the better their academic performance and conversely, poor nutrition leads to poor performance in school (Florence, Asbridge, & Veugelers, 2008); Fu, Cheng, Tu, & Pan, 2007).

Children spend a significant amount of their time in school and therefore the school food environment can have a great impact on a child's nutrition. This happens in two main ways: through what they eat and what they learn. In a school year, children may eat up to 200 lunches at school and may also consume food at various events held throughout the year which include dances, cultural events, and classroom parties. The school setting, through both the formal curriculum and its physical and social organization, provides educational opportunities for children to learn better eating habits that can evolve as they grow into adulthood.

With the goal of improving nutritional practices in schools, in 2006 the Government of Manitoba introduced the Manitoba School Nutrition Policy Initiative. This intervention which made school divisions in the province responsible for developing and implementing school nutrition policies [SNP] at the division or school level was a result of the Manitoba Healthy Kids, Healthy Futures Task Force report (Government of

Manitoba, 2005). The report was produced by an All-Party political task force that held consultations across the province on what was needed to support children's health and well-being in the areas of nutrition, physical activity and injury prevention. Of the forty-seven recommendations, five focused specifically on SNP.

1. The provincial government require all schools to have a written school food and nutrition policy as part of their school plan.
2. The provincial government provide model policy statements as examples, to help schools or school divisions to develop specifics to suit local needs and circumstances.
3. The provincial government provide "Guidelines for Foods Served at Schools" as well as a series of tools and resources that schools could access to help them take action in this area.
4. Schools report annually to parent advisory councils and Manitoba Education, Citizenship and Youth on actions taken regarding written school food & nutrition policies.
5. These recommendations are phased in over a period of two years beginning in the 2006 – 2007 school year for grades K-6 with remaining grades to follow in the 2007 – 2008 school year.

Acting on these recommendations, the provincial government implemented the policy requirement and developed resources, such as the Manitoba School Nutrition Handbook, to assist schools in this task (Government of Manitoba, 2006a). To ensure that schools were implementing policies, and to assess the impact of these policies, the Government of Manitoba created a multi-component evaluation plan. One element of this was a

quantitative survey that established baselines for nutrition-related practices in schools (Government of Manitoba, 2006b). In 2009, after three years of implementation, the survey was repeated. Analysis of the 2009 Manitoba School Nutrition Survey is the subject of this thesis.

1.2 Hypothesis

The introduction of school nutrition policies brings about positive changes in the school food environment.

1.3 Objective

This main purpose of this study was to analyze data collected in the 2009 Manitoba School Nutrition Survey to describe if and how Manitoba schools have developed and implemented food and nutrition policies. This data is then be used to determine if changes have occurred over time in the school food environment. This study will address:

- What is the status of SNP development in 2009?
- What are the characteristics of school food environments in Manitoba schools in 2009?
- What has changed in the school food environment between 2006 and 2009?

Through the use of a self-administered questionnaire, this study will be able to describe the current school nutrition environment, specifically food choices available in school settings (cafeterias, canteens, and vending machines), current school food programs, and status of school nutrition policies.

1.4 Significance

Allocation of public funding and other resources to school programs and policies designed to enhance child nutrition is at least partly dependent on evidence that such programs and policies are effective in achieving desired results. By describing school food environments after three years of policy intervention, this study contributes to the evidence base on which policy-makers can draw for making future program and policy decisions.

CHAPTER 2: LITERATURE REVIEW

2.1 Child Nutrition

2.1.1 Important for growth and development

Adequate nutrition is essential for a child's growth and development. In order for children to receive the proper nutrients, Health Canada recommends following *Eating Well with Canada's Food Guide (EWCFG)* as a tool to ensure children are receiving the appropriate servings for their age. Table 2.1 shows the recommended number of servings for each food group per day (Health Canada, 2007).

Table 2.1: EWCFG Recommended Number of Food Guide Servings per day for Children

Age	2-3	4-8	9-13	14-18	14-18
Gender	Male and Female			Female	Male
Vegetables and Fruit	4	5	6	7	8
Grain Products	3	4	6	6	7
Milk and Alternatives	2	2	3-4	3-4	3-4
Meat and Alternatives	1	1	1-2	2	3

Meeting the recommended number of servings each day will allow children to grow and thrive. It will help them to meet their daily needs for vitamins and minerals, as well as decrease their risk of developing certain diseases. Unfortunately, many children are not meeting the daily recommendations for milk and alternatives, fruits and vegetables, and meat alternatives as outlined in Health Canada's EWCFG (Garriguet, 2004; Starkey, Johnson-Down, & Gray-Donald, 2001). Consumption of dairy products, especially milk, can provide a majority of the nutrients required for optimum growth and bone health such as calcium, magnesium, phosphorus, vitamins D and A, riboflavin,

vitamin B12, zinc, and potassium (Murphy, Douglass, Johnson, & Spence, 2008).

Children with adequate intakes of calcium have increased bone density and have a lower risk bone fractures later in life, as well as having a larger stature, as opposed to children with low intakes of calcium (Kalkwarf, Khoury, & Lanphear, 2003; Black, Williams, Jones, & Goulding, 2002). Consumption of milk has been found to quickly decrease in adolescent years. Many children, especially girls, do not consume the adequate amounts of milk and dairy products needed to achieve peak bone mass (Fiorito, Mitchell, Smiciklas-Wright, & Birch, 2005). Encouraging milk and dairy product consumption on a regular basis in young children will improve their nutritional status and help them to build lifelong habits that will carry on into adulthood (Teegarden, Lyle, Proulx, Johnston, & Weaver, 1999).

Fruits and vegetables are also an important part of the diet that is needed for growth and development. They are rich in vitamins and minerals, fibre, and anti-oxidants important for decreasing risk of cardiovascular disease (Bazzano et al., 2002; Joshipura, et al. 2001). The abundance of nutrients in fruits and vegetables also have beneficial effects on bone mass (Tylavsky et al., 2004; Vatanparast, Baxter-Jones, Faulkner, Bailey, & Whiting, 2005). Low consumption of fruits and vegetables puts children at a higher risk of being overweight and obese than those who eat the recommended servings (Yu, Protudjer, Anderson, & Fieldhouse, 2010). Increased fruit and vegetable intake, especially green, leafy vegetables and vitamin C-rich fruits and vegetables have shown a protective effect in preventing coronary heart disease and lowering the risk of cardiovascular diseases (Bazzano et al., 2002; Joshipura, et al. 2001).

Meeting the daily requirements for protein, found in meat and dairy products, is beneficial as a source of energy and required for growth. The components of protein are important for the structure and function of the body's cells, organs, and tissues (Garriguet, 2007). Meat products are important sources of iron, therefore low intakes of can cause decreased growth, impaired learning which leads to poor work performance, and low immune function (Starkey et al., 2001). Children who followed the recommendations of required servings in *EWCFG* were more likely to consume the adequate amounts of foods rich in protein as well as the required servings from the other food groups (Storey et al., 2009). Thus, it is very important to emphasize the importance of eating a diet that closely follows *EWCFG* so that children are receiving their daily requirements of micro-and macronutrients needed for optimal growth and development.

2.1.2 Nutrition status of Canadian children

Although there are guidelines and recommendations in place to ensure children are meeting their daily requirements of required nutrients, many children are not acquiring the recommended intakes of some food groups established in *EWCFG*. Seven out of 10 children from ages 4 to 8 had less than the recommended 5 serving of fruits and vegetables and 62% of girls and 68% of boys in the 9-13 year old category did not meet the minimum requirement of 6 servings (Garriguet, 2007). The recommended number of servings for milk products for ages 4-8 is 2, but 30% of children did not meet this recommendation. When children reached between the ages of 10 and 16, 61% of boys and 83% girls did not meet the minimum recommendation of 3 servings of milk products (Garriguet). Canadian youth, especially adolescent girls, are not meeting the recommended intakes of meat and alternatives and milk and alternatives on a regular

basis (Starkey et al., 2001). Research has shown that inadequate intakes of fruits and vegetables and milk products is prevalent among children (MacLellan, Taylor, & Wood, 2008; Moffat & Galloway, 2008; Veugelers & Fitzgerald, 2005). According to the Youth Health Survey Report, only 2% of Manitoba youths in grades 9-12 reported that they consumed 7 or more serving of vegetables and fruits; fifty-nine percent reported consumption of 2 servings or less (Partners in Planning for Healthy Living, 2009).

Breakfast is considered one of the most important meals of the day. Children who eat a nutritious breakfast have better academic performance in school and have greater cognitive function (Rampersaud et al., 2005). Therefore, it is important to encourage children to form a habit of regularly consuming breakfast so that the frequency of skipping breakfast as age increases is reduced (Niemeier, Raynor, Lloyd-Richardson, Rogers, & Wing, 2006; Nelson, Lowes & Hwang, 2007).

Consumption of high-fat and high-sugar snack foods, for example, chips, cookies, and soft drinks are found to be quite common in children's diets (Moffat & Galloway, 2008; Storey et al., 2009). High intakes of these types of foods increase the likelihood of being overweight or obese (Anderson & Butcher, 2006; Bowman, Gortmaker, Ebbeling, Periera, & Ludwig, 2004; Ludwig, Peterson, & Gortmaker, 2001). The rate of overweight/obese adolescents aged 12-17 in Canada has more than doubled, rising from 14% to 29% in the last 25 years (Shields, 2004). Obesity and overweight rates have been increasing in Manitoba since 1981, when it was found that 18% of children were overweight or obese. That number rose to 25% in 1996 and has been steadily increasing to a rate that is even higher than the Canadian average (Willms, Tremblay, &

Katzmarzyk, 2003). Today, approximately one-third of Manitoba children are overweight (22%) or obese (9%) (Yu et al., 2010).

Children from low SES households have a higher incidence of overweight and obesity even though the rates of obesity and overweight have increased within all income ranges (Willms et al., 2003). In 2009, 92 650 people under the age of 18 (approximately 33%) in Manitoba were living in poverty, the highest rate in Canada (The Social Planning Council of Winnipeg, 2011). Because low-income has been directly related to food insecurity, children from low-income households are more likely to become overweight or obese, and therefore less likely to achieve the recommended intakes of many nutrients (Munoz, Krebs-Smith, Ballard-Barbush, & Cleveland, 1997).

2.1.3 Consequences associated with poor nutrition

During childhood, poor nutrition can have many consequences which may persist and lead to more complications in adult life. Poor nutritional status and overweight or obesity can affect a child's health in the short term, but it can be corrected. If not corrected, it can lead to the development of a number of chronic diseases in later life.

Poor nutritional status comes as a result of inadequate nutrition intake to support the body and its needs, is frequently seen in food insecure households. Food security is defined as having physical and economic access to sufficient and nutritious food to meet the dietary needs of an active and healthy lifestyle (Health Canada, 2004). Living in a food secure household allows children to meet the recommended nutrient intakes in some of the food groups such as milk and alternatives and fruits and vegetables (Kelly & Patterson, 2006; Sylvestre, O'Laughlin, Gray-Donald, Hanley, & Paradis, 2007). Unfortunately, children in food insecure households may not be receiving the nutrients

needed for their growth and development. When children are not receiving the adequate nourishment their bodies need, it can also affect their school attendance and performance (Rampersaud et al., 2005). Low socio-economic status (SES) households tend to consume nutrient-poor, energy-dense foods since they are at a lower cost than nutritious foods, and also have limited access to recreational facilities (Moore, Diez Roux, Evenson, McGinn, & Brines, 2008). Furthermore, for children living in a low SES household, the risk of being overweight or obese is higher as they would have limited access to nutritious foods (Kestilä, Rahkonenm, Martelin, Lahti-Koski, & Koskinen, 2009; Yu, et al., 2010).

In overweight and obese children, the prevalence of high blood pressure is highly elevated. If obesity-related high blood pressure exists in childhood, there is more of a likelihood that it will continue into adulthood (McGavock, Torrance, McGuire, Wozny, & Lewanchuk, 2007). Overweight children have also shown an increased occurrence of iron deficiency which can cause behavioural and learning problems in school-aged children (Nead, Halterman, Kaczorowski, Auinger, & Weitzman, 2004; Tussing-Humphreys, Liang, Nemeth, Freels, & Braunschweig, 2009). The social implications for children who are overweight or obese can also greatly impact their lives. They are more likely to experience teasing in school, depression, shame, and social segregation from their peers (Edmunds, 2008).

The long-term outcomes of overweight and obesity contribute to development of several chronic diseases. Being overweight or obese is one of the major risk factors for developing cardiovascular disease (Freedman, Dietz, Srinivason, & Berenson, 1999).

Hypertension, type 2 diabetes, some types of cancers, heart disease, stroke, and mental health problems are all diseases associated with obesity (Pan et al. 2004).

The treatment of these chronic diseases associated with overweight and obesity can be very expensive. Six billion dollars was spent on treatment by the Canadian Government in 2006, which was a great increase from 1997's \$1.8 billion (Anis, Zhang, Bansback, Guh, Amarsi, & Birmingham, 2010; Birmingham, Muller, Palepu, Spinelli, & Anis, 1999). In 2008, the Manitoba Government spent \$762 million treating obesity related chronic diseases (Kruger, 2010). Ensuring that children develop healthy eating lifestyles can affect the outcome of their adult health, reducing their risk for developing chronic diseases and also reducing cost to healthcare.

2.2 Learning Food Behaviours and Skills

Many factors can influence a child's eating habits and food choices. The main influencers are parents, friends/peers, the school environment, the media and the wider spectrum of the social environment (Fox, Dodd, Wilson, & Gleason, 2009; Kubik, Lytle, Hannan, Perry, & Story, 2003; Roblin, 2007). The media, especially television advertisements of high-sugar and high-fat foods are aimed at children influence the foods a child will ask their parents to prepare or purchase (Taylor, Evers, & McKenna, 2005). The environment (community, city, country) can also influence a child's food choice. In North America, the increased availability, affordability and reliance on restaurants, especially fast-food and convenience foods, has led to a high consumption of sugar-sweetened beverages, and high fat, high sodium, low-nutrient and low-fibre foods, which has contributed to the increased incidence of obesity and malnutrition (Lin, Guthrie & Frazao, 2001; Storey et al., 2009).

A child's food preferences are primarily influenced by their parents and their ability to procure and prepare food for the family. Accessibility and cost of food for families is limited to the geographical area in which they live and can affect the way in which food is provided. The family's SES and the time they spend on acquiring and preparing food are also factors that affect food provision (Fieldhouse, 1996; Moore, & Diez-Roux, 2006; Powell, Slater, Mirtcheva, Bao, & Chaloupka, 2007). The development of food choices can also be influenced by the religion and culture of a child's family and thus can play a major role in the progression of eating habits (Fieldhouse, 1996). Family meal time is also very important; there is a strong, positive association between frequency of family meals and the quality of dietary intake. The frequency of family meals is positively associated with greater intake of fruits and vegetables, grains, and calcium-rich foods, allowing children to have an adequate intake of nutrients needed for growth, such as protein, calcium, iron, folate, fiber, and vitamins A, C, E, and B6. This positive association between frequency of meals and nutrient intake promotes better dietary intake into adolescence and therefore develop eating habits that will continue into adulthood (Neumark-Sztainer, Hannan, Story, Croll, & Perry, 2003).

Children's eating habits are also influenced by their parents' food choices and nutrition knowledge (Cullen, Baranowski, Rittenbery, & Olivera, 2000). Parents serve as role models and so their food choices are closely observed and further influence their children's eating behaviour (Fisher, Mitchell, Smiciklas-Wright, & Birch, 2002). As positive role- modeling can be an effective tool to promote children's fruit and vegetable consumption, parental control and restrictions can equally hinder a child's willingness to

try new foods and develop healthy eating habits (Wardle, Herrera, Cooke, & Gibson, 2003).

The school environment, which includes peers and teachers, becomes a more important external influence once a child enters the school setting and can be another means to influence eating habits of children. Because habits developed during early childhood can continue into adolescence and possibly into adulthood, it is important to recognize that the school environment can play a major role in this progression (Birch, Zimmerman, & Hind, 1980). Therefore, to establish long-term results, it is important to aim for behaviour changes at an early age. One method of practising this would be to use peer leaders in schools where the children can learn healthy eating habits. According to schools that have used this method, implementing a program in which peers teach and practice healthy eating behaviours, has positively affected knowledge, attitude, and behaviours towards healthy eating (Stock, et al., 2007; Story, Lytle, Birnbaum, & Perry, 2002).

Teachers are also role models for students and can also influence a child's nutrition choices through the curriculum and offering rewards. Students who were taught about health and nutrition through a curriculum had increased nutrition knowledge and were found making better food choices and adopting a healthier lifestyle (Fahlman, Dake, McCaughtry, & Martin, 2008). Teacher role-modeling by eating certain types of foods can positively convince children to try new foods, but the teacher needs to be vocal and enthusiastic about the consumption nutritious foods (Hendy & Raudenbush, 2004). The school environment can support children in establishing habits and skills that maintain healthy eating because in reality, teachers rarely eat their lunches in the company of the

students. Consequently, this results in a lost opportunity for teachers to role-model healthy eating choices (Fieldhouse, 2010; Moore, Tapper, & Murphy, 2010).

2.3 Nutrition and School Life

2.3.1 Food in school

Children spend a significant amount of their time in school and therefore the school food environment can have a great impact on a child's nutrition. In a school year, children may eat up to 200 lunches at school and can also consume food at various events held throughout the year which include dances, cultural events, and classroom parties. Students can also purchase food and beverages from cafeterias or canteens, or from vending machines. Nutrition programs, fundraisers, bake sales, and classroom rewards and incentives are also other chances for students to access food in schools. In Manitoba alone, this adds up to approximately 100,000 eating events occurring in schools every day. This provides a great opportunity for schools to promote healthy eating practices and also to provide more nutritious foods and beverages in schools (Fieldhouse, 2010). Unfortunately, most school environments are not promoting healthy eating (French, Lin, & Guthrie, 2003; Harrison & Jackson, 2009).

In 2006, Manitoba schools reported that many "junk" food items (e.g., candy, cookies, chips, French fries, soft drinks, chocolate bars and hot dogs) were amongst the ten most popular foods being sold in cafeterias and canteens (Manitoba Health, 2006). The constant availability of high-fat, high-sugar, low-nutrient food in schools is directly related to the increased consumption of such foods, yet, children have shown that if nutritious foods were more easily accessible, they would consume more fruits and vegetables (Vereecken, Bobelijn & Maes, 2005; Winson, 2008; Cullen et al., 2007). A

fruit and vegetable program which offered snacks daily during lunch, noticed that students were consuming less high-calorie, low-nutrient foods as compared to schools that did not offer raw fruit and vegetable snacks daily (Briefel, Wilson & Gleason, 2009).

Vending machines can play a role in providing students with healthy food and beverage options, however many schools are not using this opportunity. Purchasing food regularly from a vending machine can contribute greatly to a child's food and beverage intake and can also increase their consumption of sugar-sweetened drinks (Wiecha, Finkelstein, Troped, Fragela, & Peterson, 2006). In Manitoba, before the implementation of SNP, school vending machines were dispensing a variety of non-nutritive, sugar-sweetened beverages: 56% sold iced tea, sports drinks and energy drinks; 55% sold fruit punch/cocktails; and 38% sold soft drinks (Manitoba Health, 2006). Including healthy foods and restricting "junk foods" within the school food environment can positively affect a student's food choices (Briefel, Crepinsek, Cabili, Wilson & Gleason, 2009).

2.3.2 Link between health and education

There is ample evidence in the literature to show that student health is linked to student academic achievement. Previously, schools placed great emphasis on academics and little importance was given to student health education to improve academic success (Daniels, 2008). Research has shown that academic achievement and student health go hand in hand. Children's diet quality can also affect their performance in school. The higher the nutritional quality of their diet, the better their academic performance (Florence, Asbridge, & Veugelers, 2008) and consequently, poor nutrition leads to poor performance in school (Fu, Cheng, Tu, & Pan, 2007). For example, students who

regularly consume breakfast were found to perform better on standardized school tests and have better attendance in school (Rampersaud et al., 2005).

Research in Prince Edward Island has shown that an increased intake of fruits and vegetables, and dairy products is positively associated with higher academic performance (MacLellan et al., 2008). Conversely, overweight and obese children have been found to have poor school attendance and low academic achievement (Taras & Potts-Datema, 2005). Therefore, it is important to emphasize overall diet quality, given that students perform better academically than students who have poor diets (Florence et al., 2008; Glewwe, Jacoby, & King, 2001).

Good nutrition results in increased concentration in the classroom and less disruptive behaviour whereas poor nutrition may impair attentiveness and retention of knowledge (Daniels, 2008; Taras & Potts-Datema, 2005). It is important that schools recognize the link between student health and academic success by supporting nutrition programs. Nutrition programs can improve student health and as a result schools can begin to see an improvement in school attendance and academic performance.

2.4 Approaches to Nutrition in Manitoba Schools

2.4.1 Comprehensive school health

Comprehensive school health [CSH] is an approach to health promotion that encompasses parents, community, and stakeholders and includes policies, programs, and environments (Veugelers & Schwartz, 2010). CSH is recognized worldwide as a framework to support children's education in a planned and holistic way (Avison, 2010). In order to implement CSH, four pillars (distinct but inter-related) must be addressed: 1)

health and school policy; 2) teaching and learning; 3) social and physical environments; and 4) partnerships and services (Veugelers & Schwartz, 2010).

Health and education are mutually dependent; healthy individuals are better learners, and better-educated students are healthier. In the classroom CSH can improve academic outcomes and decrease behavioural problems. In the school setting, CSH allows students to develop skills needed for living a healthy lifestyle (Joint Consortium for School Health, n.d.).

2.4.2 Curriculum

When schools include nutrition education in a curriculum, it can improve students' nutrition knowledge and allow them to make changes to their eating habits that would point towards a healthier lifestyle (Fahlman et al., 2008). In Manitoba, the nutrition curriculum is included as a component of physical education/health education. Every year, children in kindergarten to grade 10 are required to receive lessons in physical education/health education (Manitoba Education, n.d.).

Manitoba Education, based on the learning capacity for each age group, has specified a detailed school nutrition curriculum. Children in kindergarten to grade 4 should be introduced to general nutrition information and concepts. By the introduction of strategies to plan and manage nutrition, the middle year students should be able to expand on the nutrition knowledge they gained in the early years. Senior students, at this point, should be proficient at planning, managing, and analysing nutrition information related to nutrition related diseases (Manitoba Education, n.d.).

Resources have been developed in Manitoba to help demonstrate how nutrition can be incorporated into the curriculum for subjects not relating to physical/health

education. Dairy Farmers of Manitoba has designed such a resource, *Power to Play Program Manitoba Curriculum Integration*, to help teachers integrate nutrition related material into various aspects of the curriculum agenda. Examples of curriculum outcomes that are addressed using nutrition related material in the *Power to Play Program* are: English language arts: “make connections between prior knowledge, ideas, information and oral, visual, and written text features”, Mathematics: “Organize data independently, using graphic organizers as diagrams, charts, and lists”, Science: “Recognize that food is a form of energy and healthy eating is essential for growth and development”, Social Studies: “Cooperate and collaborate with others” (Dairy Farmers of Manitoba, n.d.). Including nutrition into the core curriculum lessens the pressure for school teachers to integrate extra lessons in the class schedule.

2.4.3 Nutrition Programs in Manitoba Schools

In Manitoba, many nutrition education programs have been implemented which support the SNP initiative. The *Healthy Buddies Pilot Project* was implemented as part of Manitoba’s healthy schools initiative. The basis of the project is to have older students mentor younger students to learn and develop healthy eating behaviours and encourage physical activity (Government of Manitoba, 2009b). This project is being piloted in 20 schools across the province.

The Dairy Farmers of Manitoba’s milk program is another program in Manitoba which encourages children to consume milk (whether from home or purchased from school) and they are then rewarded with a ballot for a draw (Dairy Farmers of Manitoba, n.d.). Further support for nutrition in schools includes a vegetable fundraiser pilot program which was piloted in 66 schools in Manitoba in October 2010. Schools sold

vegetable bundles to raise funds in place of traditional fundraising items and the vegetables were sold for the same price across the province, meaning that northern and remote locations could access vegetables for the same cost as in urban areas (Government of Manitoba, 2010). In 2010, the provincial Healthy Schools initiative featured a Healthy Eating Campaign which provided funding for interested schools to embark on projects that support healthy eating. This funding was used to support activities such as nutrition related games and cooking lessons (Manitoba Healthy Schools, n.d.). Other sources of funding include Breakfast for Learning which provides grants that allow schools to supply breakfast to students at no cost to the student. However, last year their program funding was only able to provide for 42% of schools that applied to the program (Breakfast for Learning, 2010). There are other sources of funding available for nourishment programs (e.g., school fundraising and Child Nutrition Council of Manitoba) but there is not enough funding to meet the needs of children in all Manitoba schools, indicating a need for additional support for nourishment programs in Manitoba (P. Fieldhouse, personal communication, May 14, 2011).

The Child Nutrition Council of Manitoba instituted a fruit and vegetable pilot project to test various models of providing fruits and vegetables in low-income schools across Manitoba and to identify a sustainable method of program implementation. The intent of a sustainable fruit and vegetable program is to provide produce to children who do not have consistent access to these foods outside of the school setting (Government of Manitoba, 2008).

In addition to the programs and funding available, the Government of Manitoba has developed various nutrition resources, including; the *Manitoba School Nutrition*

Handbook (containing model policies and guidelines), a Healthy Lunch Program Checklist, a Step by Step Guide to Healthy Lunches, a Lunch Check (for measuring changes to lunches consumed at school), and a toll free information line and website (Government of Manitoba, n.d.).

2.5 School Nutrition Policy in Canada

A school nutrition policy is:

- A statement of philosophy and belief
- Established to make healthy choices the easier choices
- A way to ensure that good nutrition is promoted both in theory and in practice
- A direction for action

Establishing a school nutrition policy is an effective method to address child nutrition issues (Manitoba Healthy Schools, n.d.). A successful SNP will promote an environment that will support healthy food choices, by providing students with the opportunity to learn and practice good nutrition and by making the nutritious choice the easy choice.

Over the past decade, there has been a growing interest in SNP in Canada. Because health and education falls to the provincial and territorial government, there is no national school nutrition policy in Canada. Almost all provinces and territories have developed written school nutrition policies, although not all provinces have mandated that schools have a written SNP. Table 2.2 provides a summary of SNP throughout Canada.

Table 2.2: Overview of School Nutrition Policies and Guidelines in Canada

Province/Territory	Nature of Policy/ Guideline	Ministry Responsible	Date Implemented	Voluntary/ Mandatory
British Columbia	All foods and beverages sold in schools	Ministry of Education and Ministry of Health	Elementary: January 2008 Middle and Secondary: September 2008	Mandatory
Alberta	Foods sold in schools/facilities used by children in a daycare, learning, recreational setting	Alberta Health and Wellness	June 3, 2008	Voluntary
Saskatchewan	All foods sold in Saskatchewan schools and sporting events	Public Health Nutritionist of Saskatchewan Working Group	November 2009	Voluntary
Manitoba	Provincial guidelines suggest foods sold in or provided by schools	Manitoba Healthy Living, Youth and Seniors	Grades K-6: 2006/2007 Grades 7-12: 2007/2008	Policy: Mandatory Guidelines: Voluntary (except trans-fats)
Ontario	All foods and beverages sold in school, including programs and events	Ministry of Education	September 2011	Mandatory
Quebec	Foods served and sold in schools	Ministry of Education, du Loisir et du Sport	January 2008	Mandatory
Newfoundland and Labrador	All foods and beverages sold and served in schools and school endorsed/sponsored events	Department of Education and Department of Health and Community Services	Fall 2008	Unsure
New Brunswick	Foods sold or offered in public schools	Department of Education	March 2005	Mandatory
Nova Scotia	Foods sold and served in public schools when	Department of Education and	3 year phase began in 2006/2007	Mandatory

	students are present	Department of Health Promotion and Protection	Full implementation June 2009	
Prince Edward Island	Foods served and sold in schools	Department of Health and PEI Healthy Eating Alliance	Schools without cafeterias 2006 Schools with cafeterias 2009	Mandatory
Yukon Territory	All schools develop their own SNP	Department of Education	September 2008	Mandatory
Northwest Territory	No territorial policy			
Nunavut Territory	Territorial policy in development			

Adapted from Dietitians of Canada, 2008

2.6 Evolution of School Nutrition Policies in Manitoba

In 2005, Manitoba Healthy Living launched the Healthy Kids Healthy Futures All-Party Task Force. The task force was particularly interested in factors affecting children's health in the areas of nutrition, physical activity, and injury prevention. The task force report was released in 2005 and the provincial government accepted all recommendations.

To address the issue of healthy eating, the task force recommended that the provincial government increase access to nutritious foods in schools. The report called on the government to require all schools to have a written school food and nutrition policy as part of their school plan, provide model policy statements as examples, to help schools or school divisions develop specifics to suit local needs and circumstances, and provide *Guidelines for Foods Served at Schools* as well as a series of tools and resources to help schools take action.

In 2006, the Manitoba School Nutrition Handbook was designed to help schools develop and implement nutrition policies to promote healthier eating environments and to support students in establishing healthy eating habits for a lifetime. The handbook contained guidelines for foods to serve in schools and model policies and tools.

In 2009, the requirement of a written SNP was legislated as part of the Manitoba Public Schools Act (Government of Manitoba, 2009).

2.7 Evaluating School Nutrition Policy

2.7.1 Importance of evaluating school nutrition policies.

The purpose of an evaluation is to enhance support and allocate appropriate resources for the policy. It also helps to inform decision-making and contribute to evidence base.

In order to conduct an evaluation, it is important to decide which indicators will be evaluated. Indicators are defined as variables that help to measure change and understand the success of a policy (World Health Organization, 2008).

2.7.2 Methods of evaluating school nutrition policies.

Indicators can be measured using a variety of data collection methods. Some evaluations are quantitative (generate numerical data), examples include: surveys, self-reported food intake (dietary recall, or food frequency questionnaires), body fat measures (BMI, DEXA scan, fat grip tests), biological changes (blood pressure, blood sugar), and standardized academic achievement tests. Some indicators are better measured using qualitative methods, examples of qualitative evaluations include: interviews, focus groups, archival records, and observations.

Changes to the school environment are one common focus of evaluations. Researchers have used pre and post school nutrition policy surveys as a measure of

monitoring changes to the school environment including: areas of improvement, and changes to food service (Cullen et al., 2007; Rideout, Levy-Milne, Martin, & Ostry, 2007). Other methods of assessing changes to the school environment include: the use of checklists filled by teachers or administrators, collection of food sales data from cafeterias, canteens and vendors and analyses of menu modifications (Blum et al., 2007; Cassady, Vogt, Oto-Kent, Mosley, & Lincoln, 2006; Cullen & Watson, 2009; McGraw et al., 2000).

Assessment of physiological and food consumption changes is another form of SNP evaluation. Researchers have assessed changes to student BMI after introduction of a school nutrition policy (Foster et al., 2008; Manios et al., 1999; Sanchez-Vaznaugh, Sanchez, Baek, & Crawford, 2010). Others have examined changes in student food consumption via: self-recorded lunch food records and food and beverage intake questionnaires (Cullen, Watson & Zakeri, 2008; Neuhouser, Lilley, Lund, & Johnson, 2009; Neumark-Sztainer, French, Hanna, Story & Fulkerson, 2005).

2.8 Manitoba Approach to Evaluation

In Manitoba, a systematic evaluation of SNP was undertaken. To achieve a comprehensive understanding of the impact and implementation of SNP, Manitoba researchers used a variety of methods, including: school planning reports, qualitative case studies, and a series of quantitative surveys.

2.8.1 Annual school plan report.

In 2006, Manitoba Education Citizenship and Youth (MECY) required that elementary schools report progress of the SNP initiative. Starting in 2007, secondary schools were also expected to file reports. The progress of SNP in schools was to be reported via the

school plan which uses a "checklist" style report format. The checklist asked 5 top level questions concerning use of the Manitoba School Nutrition Handbook and its guidelines, the assignment of a nutrition committee, and the status of a written SNP. Overall, the data suggests that compliance with the development of SNPs has been high and that most schools utilized the support materials provided (Fieldhouse, 2010).

2.8.2 Qualitative case studies.

A qualitative case study approach was used to create an understanding of SNP from the perspective of the school community. A series of key informant interviews and focus groups, were analyzed to identify strengths and weaknesses of SNP implementation (Rutherford, 2011).

2.8.3 Quantitative survey.

Quantitative evaluation was used to monitor the components and assess the level of policy implementation. It allows for identification of changes to the school environment.

In 2006, the Healthy Living Branch of Manitoba Healthy Living, Youth and Seniors with support from Manitoba Education developed and implemented a survey to be conducted across the province. The Manitoba School Nutrition Support Team (Dietitians of Canada, Child Nutrition Council of Manitoba, Dairy Farmers of Manitoba) were also involved in the development of the questionnaire.

Some findings of the survey showed that 33% of schools had a nutrition/health committee in place for planning and leading school health initiatives. Foods sold for fundraising included a wide range but the three most popular fundraising activities were hot dogs days, pizza days, and selling chocolate bars. Of the schools surveyed, 59% indicated having a beverage vending machine in their schools (Government of Manitoba,

2006b). Other aspects of the survey will be addressed in the Discussion section of this thesis.

The 2006 survey provided a baseline that described the school food environment prior to the implementation of the SNP recommendations as a result of the Task Force Report.

In 2009, the survey was repeated to provide a snapshot of the school food environment and to provide information about the progress and development of SNP.

The objective of this study was to analyze data collected in the 2009 Manitoba School Nutrition Survey to describe if Manitoba schools have developed and implemented food and nutrition policies. This data is then used to determine if changes have occurred over time in the school food environment. This study addressed:

- What is the status of SNP development in 2009?
- What are the characteristics of school food environments in Manitoba schools in 2009?
- What has changed in the school food environment between 2006 and 2009?

This study will be able to describe the current school nutrition environment, specifically food choices available in school settings (cafeterias, canteens, and vending machines), current school food programs, and status of school nutrition policies. My hypothesis is that the introduction of school nutrition policies has resulted in positive changes in school food environments.

CHAPTER 3: METHODOLOGY

3.1 Ethics

The study is being carried out under the auspices of Manitoba Health and Healthy Living. Because the data set used for analysis is secondary data provided by the Province of Manitoba, and does not identify individuals, the University of Manitoba confirmed that there is no requirement for an ethical review.

3.2 Study Design

3.2.1 Sample

Usually in surveys a sub-set or sample of the target population is chosen for inclusion for reason either of study focus, cost, practical logistics or a combination. A survey that includes the entire target population is called a census. In this survey, the study unit was the school and the sampling frame was all publicly funded schools in Manitoba, making this effectively a census study. Schools in Manitoba directory (a provincial directory of all schools, divisions and districts) was used to identify all publicly funded schools (n=688), including francophone and colony schools in Manitoba (Manitoba Education, 2008). Schools that received no provincial funding and First Nations schools were excluded as they were not subject to provincial school nutrition policy.

3.2.2 Instrument

The study utilized data collected in a cross-sectional self-administered questionnaire survey of schools in Manitoba. Self-administered questionnaires have a number of advantages that makes them appropriate for this sort of study and also some limitations which will be discussed in a subsequent section.

In 2009, the province of Manitoba, through the department of Manitoba Healthy Living, Youth and Seniors, conducted the "Manitoba School Nutrition Survey" with the assistance of the researcher.

The survey used a quantitative, self-administered questionnaire based on an instrument developed and validated for a similar survey in 2006 that had provided baseline data on school nutrition (Government of Manitoba, 2006). The purpose of the 2009 survey was to gather information about school food service facilities and arrangements, the types of foods sold in schools, and food-related policies and guidelines in place in Manitoba schools. The questionnaire consisted of 49 questions covering different aspects of school nutrition grouped as:

- food service facilities, including cafeterias and canteens, and vending machines,
- lunch at school,
- fundraising,
- food-related events,
- school food programs, and
- school nutrition policy.

The questions were designed to provide a comprehensive description of the school food and nutrition environment.

The 2006 baseline questionnaire was developed by a group of academic, policy and practice nutrition experts, in consultation with education consultants, and drawing on similar surveys in other Canadian jurisdictions (Government of Manitoba, 2006). For the 2009 survey, minor changes were made to the 2006 questionnaire, also by the researcher:

- a) Some adjustments to content were necessary to reflect changes in practice:

"The Manitoba School Nutrition Handbook" was included in the list of options of nutritional guidelines and standards that schools might be using. The Handbook was developed subsequent to the 2006 survey (Government of Manitoba, 2006). The 2006 questionnaire included questions on implementation of compulsory Physical Activity for Grades 11-12, which was an important policy issue at the time. In 2009, it was not needed and therefore removed from the survey.

b) Formatting changes were made to enhance ease of completion:

The definitions of cafeteria, canteen/tuck shop, and vending machines were moved from the front page to their respective sections within the survey for easier referencing by the respondents.

c) Some questions were amended to so as to provide better quality data:

All 2006 questions that asked respondents to rank the options were changed to "check all that apply" so as to get more complete information on all items of significance to schools.

Previously a single question, the policy section of the survey was divided into two questions. The first asked if there was a written policy (in place, under development, or no policy) at the specified levels. The second question asked what topics were included in the written policy.

d) And to allow easier tracking of responses, the surveys were pre-coded with a 3-digit code which identified the school once school names were stripped from the data. The name and number of the school contact person was required on the survey so that the researcher could easily follow-up if necessary, for example, to obtain missing data or clarify specific responses.

Question flow and skip-patterns were checked by asking a group of volunteers to answer the survey and identify any wording or technical problems.

The final questionnaire, which contained 49 closed-answer questions, 16 of which were mandatory to answer by all schools, was translated into French by the provincial French Language Translation Service.

The English and French versions were formatted as automated Teleforms. This format creates machine-readable data forms. Completed forms are optically scanned and the data is automatically transferred to a Microsoft Excel chart which was later imported into SPSS statistical software version 17.0 for Windows (SPSS Inc, Chicago, 2008), providing an effective and efficient way of gathering and recording data ready for analysis.

3.3 Data Collection and Entry

Once approval was obtained for survey distribution from Manitoba Education, Citizenship, and Youth, an information letter was sent from provincial officials in the department of Healthy Living, Youth and Seniors to superintendents of all School Divisions, making them aware of the study and allowing time for questions and clarifications. Subsequently, the survey was sent to the principals of each of the schools, with a postage paid return envelope. A cover letter explaining the survey was included, as well as instructions on how to complete the survey. Principals were asked to designate someone in the school to complete the survey and return it within a 4-week time frame.

As the surveys were returned, they were first subjected to quality control checks by the researcher and follow-up calls were made to clarify responses or obtain any missing information, which were added by the researcher as necessary. After the quality

control review, the completed surveys were scanned at the Healthy Child Manitoba Office using TeleForm software and the data extracted was imported into SPSS statistical software version 17.0 for Windows (SPSS Inc, Chicago, 2008) from a Microsoft Excel file.

Five hundred and thirty-five schools, of a total 688, sent in completed surveys for a final response rate of 78%.

Table 3.1: Response by School Type

School Type	Number of Schools
Elementary (K-6)	166
Elementary/middle school (K-8)	139
Middle/high school (7-12)	129
All grades (K-12)	101
Total	535

As shown in Table 3.1, the schools were divided into four categories:

1. Elementary schools (grades K-6)
2. Elementary and middle schools (grades K-8)
3. Middle and high schools (grades 7-12)
4. Schools containing all grades (K-12)

This breakdown of school type allows for better comparison between the different grade levels with emphasis on whether there are similarities or differences between elementary schools and schools with middle and/or high school grades.

A variety of people were involved in answering the survey questions. Ninety percent of schools had administrators complete the survey, 15 percent had cafeteria operators involved, 14 percent had physical education or health teachers assist with answering the questions and 7 percent involved either a parent volunteer or parent council. Student councils were not as well represented as only 3 per cent of the school

involved them in answering the survey. Thirty four percent of the respondents indicated that others were involved in filling out the survey. This included paid coordinators, food service companies, not-for-profit organizations and school health committees.

3.4 Data Analysis

The analysis of the data was carried out using SPSS statistical software version 17.0 for Windows (SPSS Inc, Chicago, 2008). Descriptive statistics were used to describe characteristics of food environment at school division and school level. These included the aspects of school nutrition that were used in the questionnaire as mentioned previously. A total number of 684 variables were identified. For each of these, simple frequency tables were generated.

3.4.1 Comparison of 2006 and 2009 data

To determine if the changes occurring in the school food environment were statistically significant, a subset of schools was analyzed. This subset used schools that responded to the exact same questions in both the 2006 and 2009 survey for better accuracy of results.

These questions were:

1. Does your school have vending machines that dispense drink items?
2. How many vending machines are in your school?
3. In the 2008 and 2009 school year what food items have been sold for fundraising?
4. Is there a committee in place to promote healthy eating in school?

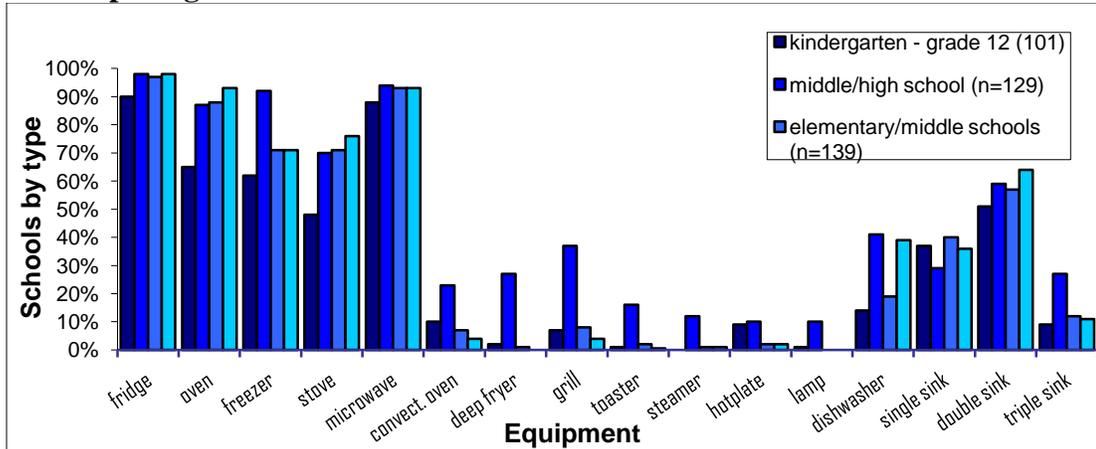
CHAPTER 4: RESULTS

4.1 Food Services

Schools were asked about the type of equipment available for preparing and storing food.

Figure 4.1 shows the availability by school type.

Figure 4.1: Percentage of Schools Indicating Availability of Equipment for Storing and Preparing Food.



Over 90% of schools have refrigerators, microwaves, and ovens, while 50-60% of schools also have stoves, freezers, and double sinks. 27% of middle/high schools have deep fryers and 37% have grills as additional equipment in their food service facility. A follow-up question asked if the refrigeration available at the schools was adequate for the schools current needs, to which 89% of the total respondents said yes.

4.2 Food Provision

The survey asked about food provision in three distinct settings:

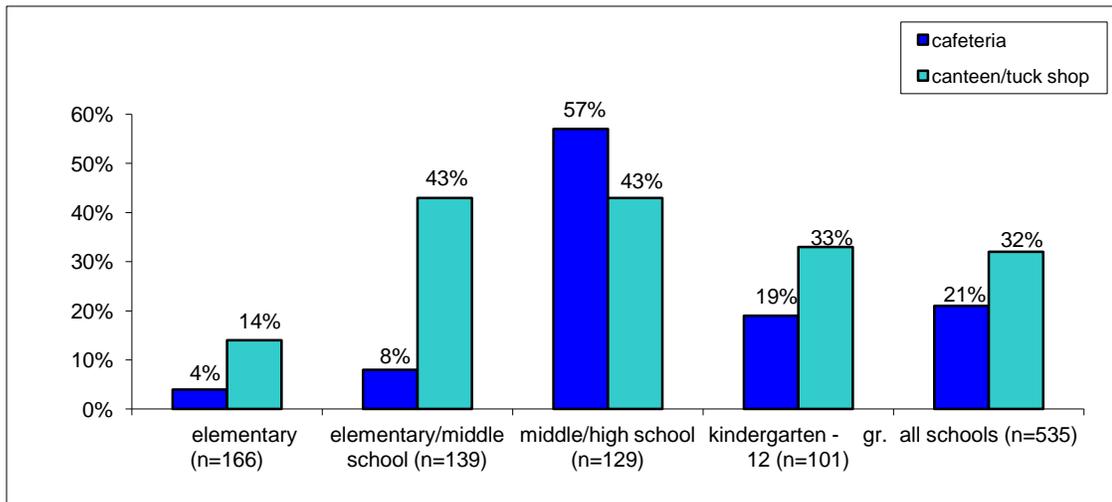
- Cafeterias defined as: a designated area of the school where food is **prepared** (example: where sandwiches are made; where hot meal items are prepared) and **served** to students. It includes a space for students to sit and eat. A cafeteria may be a fully operating food service establishment

or it may have limited food preparation capabilities due to space constraints.

- Canteens/tuck shops defined as: an outlet in the school (other than the cafeteria) that sells snack items and or **pre-packaged** food items. Foods sold here have been prepared elsewhere. Example: pre-wrapped sandwiches.
- Vending machines defined as: a slotted machine that dispenses beverages (ex. Soft drinks, juice) or food items (ex. Potato chips, chocolate bars, packaged snacks, sandwiches, fruit)

Of all the 535 respondents, 21% operated a cafeteria, 32% operated a canteen/tuck shop, and 6% operated both. Figure 4.2 shows the breakdown, analyzed by school category.

Figure 4.2: Percentage of Schools that Operate a Cafeteria or a Canteen/Tuck Shop



Forty-seven percent of schools surveyed had neither a cafeteria or canteen/tuck shop.

4.2.1 Access to cafeterias and canteens

Schools with cafeterias (n=110) were asked when they were open and accessible to students. Eighty-seven percent were open at 12 noon for lunch service, 50% were open mid-morning, and 42 percent were open for breakfast before school hours. While the cafeterias also operated fairly frequently mid-afternoon (32%), and during special events (28%), only 9 percent operated their cafeterias all day.

Use of cafeteria facilities by students also varies. Thirty percent of schools said that fewer than 25% of the students purchased food from the cafeteria on a typical day. Most commonly, 50% of schools indicated that between 25-50% per cent of their students purchased food from the cafeteria, while 16% said that 50-74% of their students purchased food, with only 4% of schools saying that 75-100% of the students purchased food from the cafeteria.

Of the schools that had a canteen/tuck shop (n=172), 85% operated during the lunch hour. However, very few were open at other times of the day, with the exception of catering to special events such as sporting activities, which was reported by 33% of schools.

School canteens or tuck shops can serve multiple purposes. Eighty-eight percent of respondents said the primary purpose of the canteen/tuck shop was as a service to students. Forty-three percent indicated that it was a service for staff, and 33% said it provided fundraising dollars. Fewer than 1 in 10 schools (8%) used the canteen to serve community events or groups.

4.2.2 Nutrition Guidelines

Nutritional guidelines are a tool for schools to use to determine what foods should be available to students with the goal of providing good nutritional value. Ninety-seven percent of schools with cafeterias followed some type of nutritional guideline or standard to determine what was being sold to students. Seventy eight percent cited the *Manitoba School Nutrition Handbook*. The next most popular resource was *Eating Well with Canada's Food Guide* (68%). Other guides included *Breakfast for Learning Guidelines* (14.5%) and only 3% of schools used recommendations from a dietitian.

Nutritional guidelines were also used by 95% of schools with canteen/tuck shops. Seventy-two percent used the *Manitoba School Nutrition Handbook*; 57% said they used *Eating Well with Canada's Food Guide*. *Breakfast for Learning Guidelines* (14%) and recommendations from a dietitian (5%) were used less often, while 21% percent of schools used other local guidelines, such as “no junk-food” rules, peanut and nut awareness, division and school policies, and directives from advisory groups, including the parent council and other school committees.

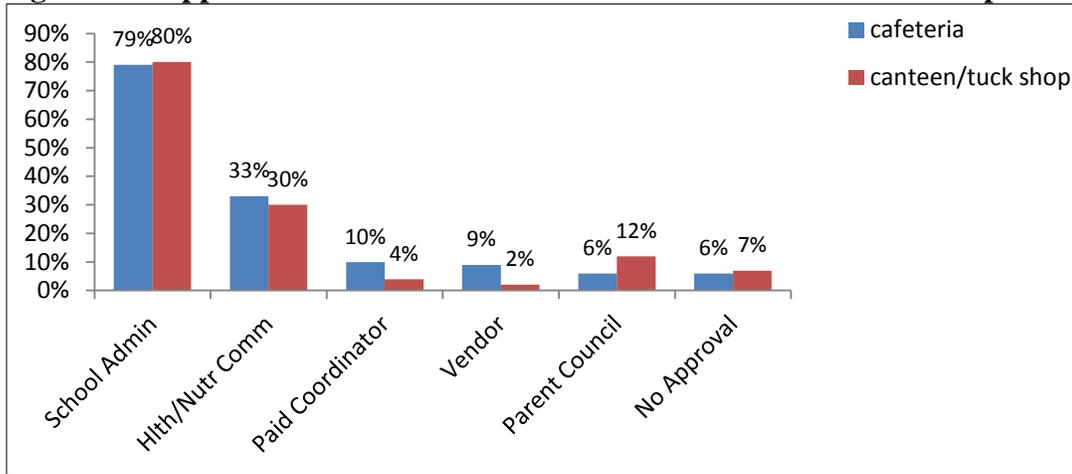
4.2.3 Approval for Food Sold in Cafeterias and Canteen/Tuck Shops

In schools operating cafeterias, approval of the food to be served was most often the responsibility of school administrators (79%) and 33% of schools utilized a health/nutrition committee. Only 6% indicated there was no approval mechanism in place for food choices in the cafeteria.

For schools operating canteen/tuck shops, 80% stated school administrators were responsible for approving items sold in canteen/tuck shops, 30% named health/nutrition committees often in partnership with the parent council, the vendor, the health/nutrition

committee, or the paid coordinator. Seven percent of schools indicated there was no approval process in place for foods sold in canteen/tuck shops. Figure 4.3 summarizes the data for approval process in cafeterias and canteen/tuck shops.

Figure 4.3: Approval for Food Sold in Cafeterias and Canteen/Tuck Shops



4.2.4 Food Items Sold in Cafeterias and Canteen/Tuck shops

The survey asked schools to record what food items were sold in the cafeteria and the amount sold on a random selected day of the week of their choosing. This was done to avoid systematic bias of a particular day, such as treat days on Fridays or special event days. Mondays and Tuesdays were chosen by 40% of schools, 33% percent selected Wednesday, Thursday and Friday, 15% and 11%, respectively.

A range of hot and cold food items are offered in cafeterias. The most common in the dairy product category was chocolate milk followed by white milk. Yogurt was also a common item. 100 percent fruit juice, fresh fruit, and raw vegetables were favoured in the fruit and vegetable category. Sandwiches, wraps, and muffins were popular bread and cereal choices, as well as bagels, toast, and cereals. A variety of hot, cooked foods and "daily specials" included pasta dishes, chicken dishes, chili, and pizza. Soup was also a

popular item. Chips were often available, as well as cake and cookies. Hot chocolate, tea, coffee, and water were among the beverages included.

A similar question was asked of schools with canteen/tuck shops. Canteen/tuck shops offered more snack food items, including granola bars, muffins, and cracker snacks, as opposed to cafeterias offering more lunch-type items, such as hot foods. Dairy products were offered in both. Table 4.1 summarizes the most popular foods sold in cafeterias and canteen/tuck shops based on the frequency of sales on the day chosen by the respondent.

Table 4.1: Top Ten Foods Sold in Cafeterias and Canteen/Tuck Shops

Cafeteria	Canteen/Tuck Shop
Chocolate milk	Chocolate milk
Juice	Juice
Sandwiches/wraps	White milk
White milk	Hot rods
Water	Yogurt
Soup	Water
Muffins	Cheese
Fresh fruit	Cheese and crackers
Yogurt	Soup
Raw vegetables	Fresh fruit

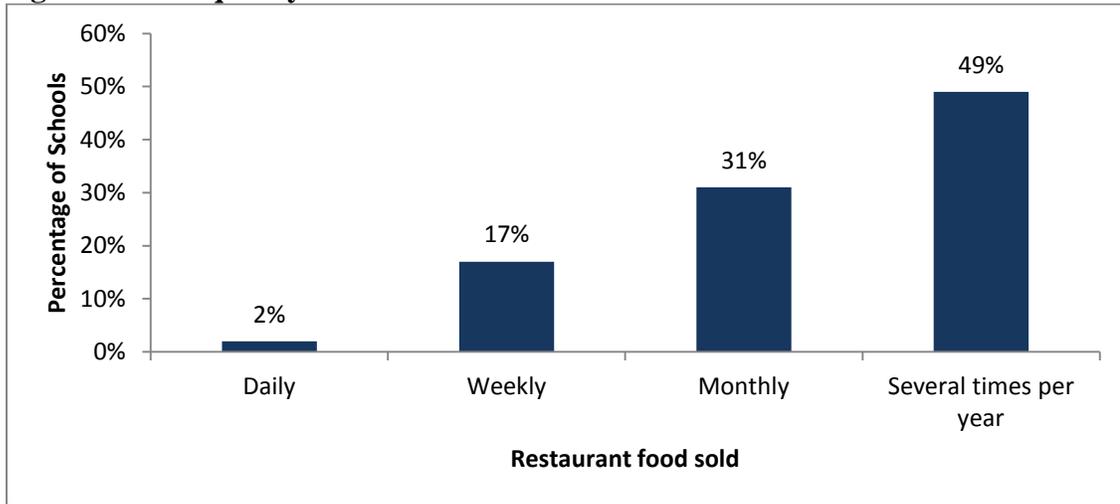
4.2.5 Restaurant Food

To determine the extent to which commercial restaurants, including fast food outlets, contributed to the food available in the school environment, respondents were asked if restaurant food was sold in their schools.

Forty percent of the schools surveyed (n=212) did sell products from restaurants. Eighty per cent of this subgroup indicated that they sold products from the local pizza restaurants, 35% named Subway as a source, while only 6% sold products from other fast food chains (McDonald's and Wendy's). These products were for the most part not

sold often, most usually “*several times a year*”, or “*once a month*”. Only 2% of this subgroup sold restaurant products “*on a daily basis.*” Figure 4.4 summarizes these results.

Figure 4.4: Frequency of Restaurant Food Sold in Schools



4.3 Vending Machines

A series of questions about vending machines were asked to determine the number, contents, and accessibility of such machines.

Two hundred and eighty-eight (54%) of the schools surveyed, indicated that they had beverage vending machines for a total of 475. Fifty-nine percent of these schools had only one beverage vending machine while 25% had two and 16 had three or more. Only 51 schools of the respondents have snack vending machines for a total of 64 overall. 84% of these schools had one snack machine, while 16% had two or more. Figures 4.5 and 4.6 show the breakdown of the results and availability by school type, respectively.

Figure 4.5: Percentage of Schools Having One or More Vending Machines

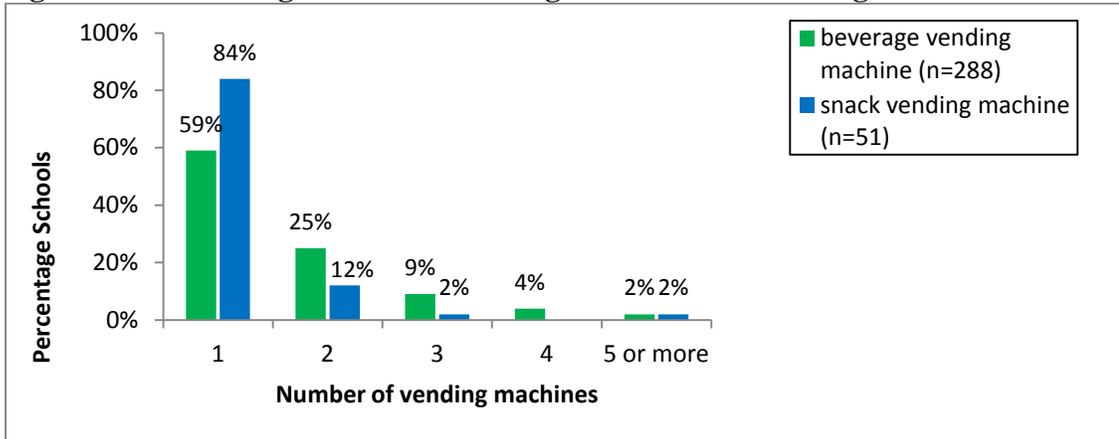


Figure 4.6: Vending Machine Availability By School Type

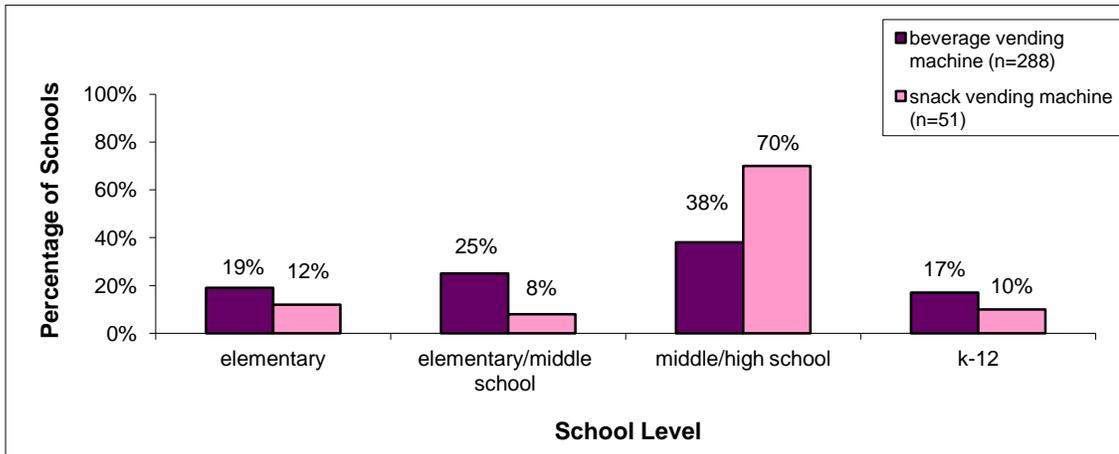
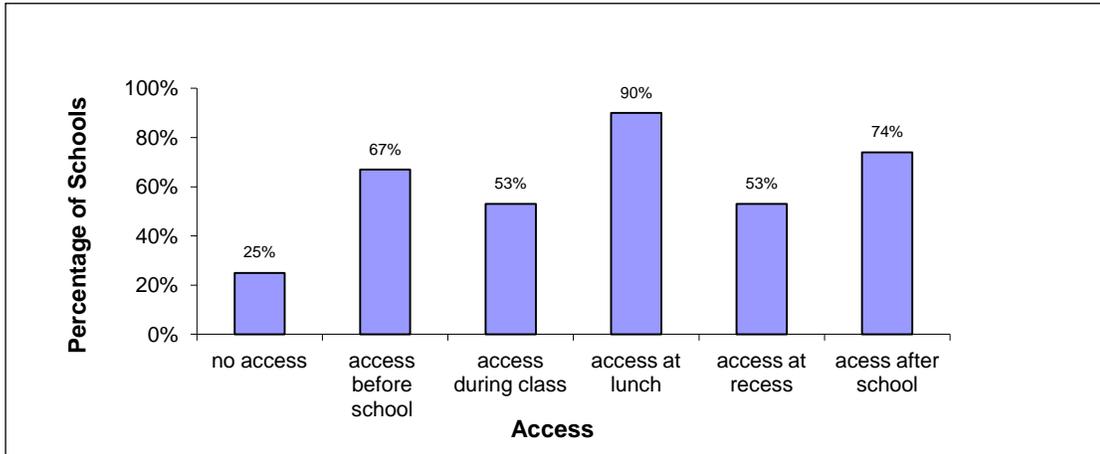


Figure 4.7 shows when students had access to vending machines. Lunchtime was when the majority of the schools allowed students to have access to beverage and snack vending machines. This was followed by access after school and before school. In 25% of the schools, students were not allowed any access to the vending machines. Of the schools surveyed, 66% reported that the primary purpose of the vending machine was as

a service for staff and students. Seventeen percent stated that it was a service to community groups and events, and 15% stated that served as a means of fundraising.

Figure 4.7: Student Access to Vending Machines



4.3.1 Items Sold in Beverage Vending Machines

Table 4.2 provides a breakdown of what drinks are stocked in school vending machines while Table 4.3 gives details on product sizes and prices. Bottled water is the most commonly vended item, found in just over two-thirds of machines followed by 100% fruit or vegetable juice. Fewer machines contained fruit punch, iced tea, and sports drinks or soft drinks, while milk and milk drinks along with hot drinks were uncommon.

Table 4.2: Items for Sale in Beverage Vending Machines

Beverage	# of vending machines that offer selections (n=475)
Water	331 (70%)
100% Fruit or Vegetable Juice (ex: V8 original, orange juice, apple juice)	300 (63%)
Fruit Punch/Cocktails (ex: Five Alive, Snapple, Tropicana Twister, V8 Splash, Fruitopia)	169 (35.5%)
Iced Tea; Sports Drinks (Gatorade); Sobe	150 (31.5%)
Soft Drinks	121 (25%)
Basic Flavoured Milk Drinks (chocolate, strawberry, vanilla, banana)	28 (6%)
Milk (plain white milk)	19 (4%)
Coffee, Tea, Hot Chocolate	8 (2%)
Candy Bar Flavoured Milk Drinks (ex: Rolo); Milkshakes	1 (0.2%)

4.3.2 Beverage sizes in Vending Machines

Respondents were asked to record the size, cost, and, location of beverage items in the vending machine (or choose one vending machine if the school had more than one).

Table 4.3 shows, for the five most common beverages, the number of machines stocking each of four discrete sizes. The shaded cells identify the most commonly vended size for each product category. Fruit punch and 100% juice are most commonly vended in the 350 ml size, while soft drinks, sports drinks, and water are most commonly vended in containers greater than 500 ml. It is not possible from this data to fully determine comparative prices of different categories of drinks.

Table 4.3: Frequency of Size & Price of Popular Drinks Found in Beverage Vending Machines in Schools (n=288)

Beverage	250 ml	350 ml	500 ml	>500 ml	Most common price of most popular size
Soft drinks	13	23	11	34	\$1.75
Sports drinks	1	13	10	46	\$2.00
Fruit punch	19	69	20	13	\$1.00
Water	15	29	61	119	\$1.50
100% juice	28	125	44	14	\$1.00

4.3.3 Organization of Beverage Displays

The survey asked about shelf placement of drinks in vending machines as this is known to affect purchasing decisions. The survey results showed that various types of drinks were found in different rows of the vending machines. Table 4.4 shows patterns in how beverages were presented.

Table 4.4: Placement of Drinks in Vending Machines

Drink Category	Frequency found on top row (%)	Frequency found on middle row (%)	Frequency found in bottom row (%)
Soft drinks	38	44	26
Sports drinks	41	46	43
Fruit punch	40	54	29
100% Fruit juice	50	56	38
Water	63	28	47

4.3.4 Items Sold in the Snack Vending Machines

A total of 64 snack vending machines were reported, considerably fewer than in the case of beverage vending machines. Table 4.5 lists the types of snacks sold and their

frequency. Baked snacks and uncoated granola bars were the most common items, while no schools reported vending sandwiches or whole fruit.

Table 4.5: Items Sold in Snack Vending Machines

Snack	# of vending machines that offer selections (n=64)
Baked snacks (pretzels; popcorn; potato, corn, wheat or rice chips; crackers)	49 (76%)
Uncoated granola/breakfast/sports bars; nut bar	38 (59%)
Chocolate or yogurt-coated granola/breakfast/sports bars; chocolate bars; nut bars	37 (57%)
Pastries; cookies; squares; donuts; cakes; Rice Krispie Squares	31 (48%)
100% fruit or vegetable leathers; dried fruits, nuts/trail mix	29 (45%)
Fried snacks (potato, corn, wheat or rice chips; cheesies; crackers)	28 (43%)
Cheese & crackers	18 (28%)
Peanut butter and crackers	3 (5%)
Sandwiches	0
Fresh fruit (ex : oranges, apples, etc.)	0

In terms of the location of certain snacks in the vending machine, chips – whether fried or baked - were found more often in the upper rows of the vending machines while granola bars were located in the middle, and chocolate bars, cookies and cereal-based squares were more likely to be located in the lower half of the vending machine. All the snacks were reported to cost between \$1.00 and \$1.25 per unit.

4.3.5 Control of Vending Machines

Schools were asked who decided what was to be sold in school vending machines.

Vending machines were most commonly operated by a food service company (29%), followed by school administration (24%), independent operators (23%), student council (12%), and school clubs and programs (7%).

The primary purpose of the vending machines, as stated by the majority of schools, was to service the students and staff (32%). This was followed by service community events and groups (9%) and fundraising (8%).

Beverage and snack vending machines were considered as a single category for the purposes of this question. 42% of the respondents indicated that the school administrator was responsible for this decision, followed by the health/nutrition committee (23%) and the vendor (20%).

4.4 Lunch at School

Three questions about lunch at school provided information about students being permitted to stay at school over lunchtime, where lunch was eaten and how much time was allowed for lunch to be eaten.

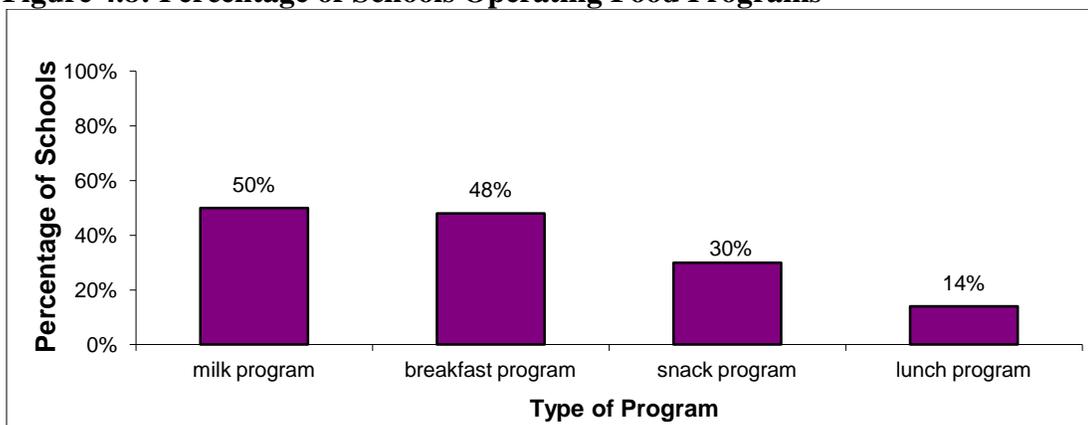
Eighty-six percent of schools allowed their students to remain at school for lunch. Fifty percent of the schools allowed 20-29 minutes for lunch, while 15% allowed 30 to 39 minutes and 14% allowed 40 or more minutes. Six percent of the schools allowed less than 20 minutes for lunch. Two percent of schools had no designated lunchtime.

The classroom is the location of choice for students to eat their lunch for 56% of the schools. This is followed by a room designated as the lunch room (27%), a formal cafeteria (15%) and the hallway (12%). Other miscellaneous locations made up 12 percent and include the gymnasium (where many schools indicated they set up tables on the stage or balcony), multi-purpose rooms and other available spaces, such as the band room, classrooms, study hall, student lounge and the front foyer of the school, where tables were set up.

4.5 School Food Programs

School food programs remain common in the school environment for a variety of reasons that will be discussed later. Two hundred and thirty-six (44%) of the schools that participated in the survey reported having funded school food programs. Of these schools, 50% operated a milk program, 48% operated a breakfast program, 30% had a snack program and 14% had a lunch program (see Figure 4.8). Thirty per cent of the schools operated more than one funded program. The majority of the funded food programs were in the elementary/middle schools category. All 38 of the school divisions had schools offering some type of food program.

Figure 4.8: Percentage of Schools Operating Food Programs



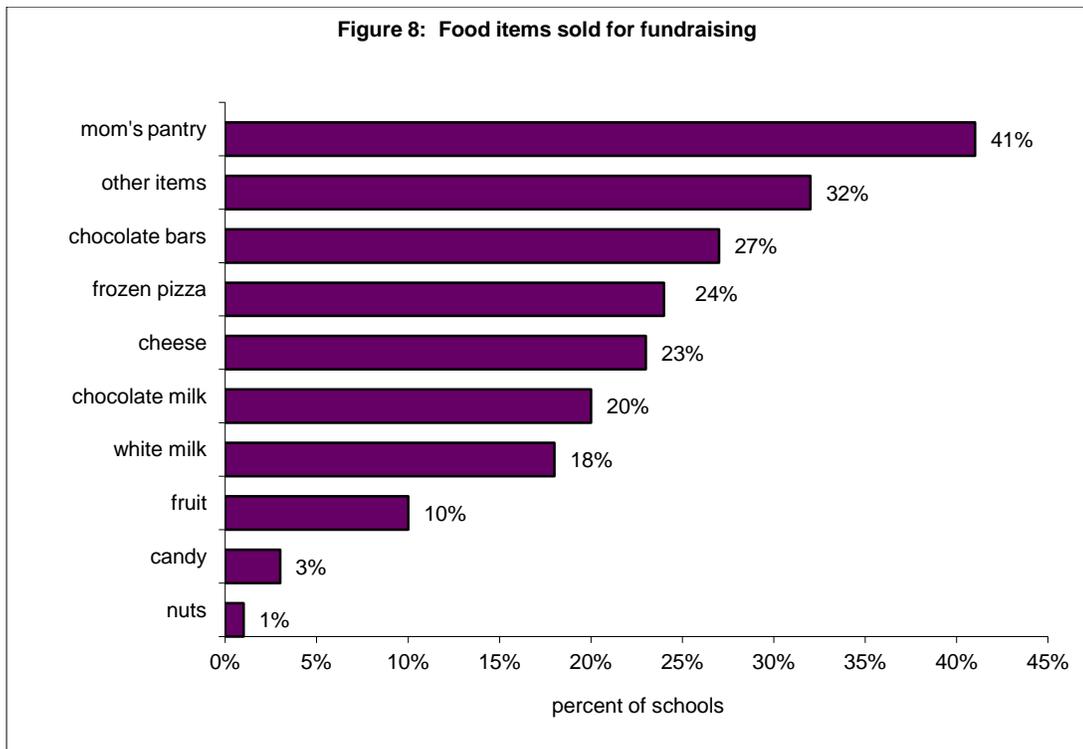
Ninety-one percent of schools that operated a food program used nutritional guidelines to assist them. Seventy-three percent of schools that had a food program used the *Manitoba School Nutrition Handbook* guidelines and also *Canada's Guide to Healthy Eating*. Thirty-one percent used the *Breakfast for Learning Guidelines*, predominantly for breakfast programs. A small number of schools (9%) also used the *Breakfast for Learning Guidelines* for their snack and milk programs, often in conjunction with *Canada's Guide to Healthy Eating*.

The costs of running school food programs were met by funding obtained through various sources, the most common being school division budgets (31%) and school funds (30%), followed by donations/sponsorships (38%), and granting agencies (27%). Student fees/purchases (22%) were also identified. Twenty percent of the schools had multiple funders. The operation of funded food programs are most often the responsibility of the staff at the school (67%). Others who were responsible in the operation of food programs included parents and volunteers (26%) and a paid coordinator (22%).

4.6 Fundraising

Sixty-two percent of the schools that responded to the survey sold some type of food item for fundraising in the 2008/2009 school year. Figure 4.9 provides a breakdown of items sold.

Figure 4.9: Food Items Sold for Fundraising



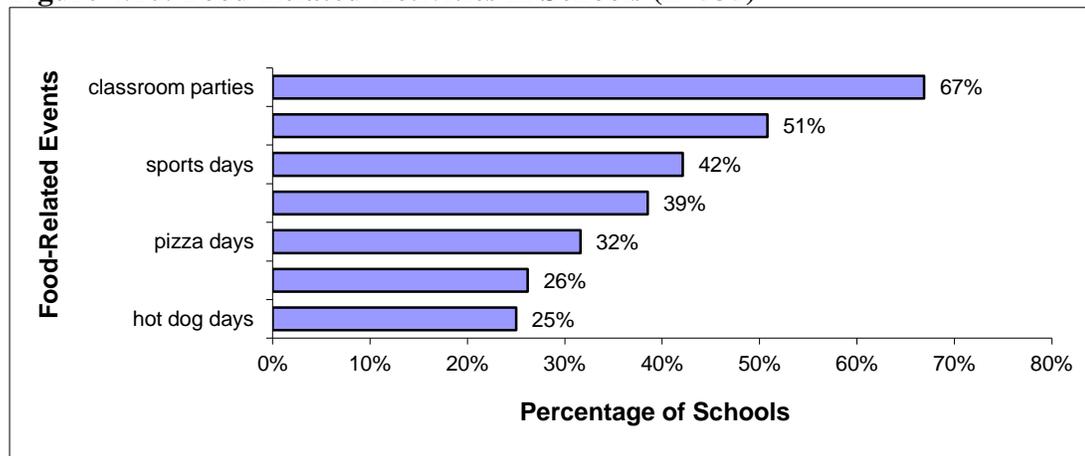
The top three food activities for fundraising were the sale of Mom's Pantry products (41%), chocolate bars (27%), and frozen pizza (24%). Other items used for fundraising included a vast array of different foods: cookie dough, cheesecakes, baked goods, fast foods (such as submarine sandwiches, fried chicken, and tacos), and a variety of hot lunches (such as soup lunches, perogies, spaghetti, pizza, and BBQ hamburgers).

When it came to making a decision about what foods to sell for fundraising, nutritional value of the item was the most mentioned factor (42%), followed by profit margin (38%). The availability of the product as a factor was mentioned by 24%.

4.7 Other Food-Related Events

Figure 4.10 shows the percentage of the schools that reported holding non-fundraising activities where food was involved. Classroom parties were the most popular food-related event with 67% of the respondents indicating that they participated in this activity. This was followed by BBQ'S (51%) and sports days (42%). Cultural events were mentioned by 39% of schools; examples of these included learning about other people's cultures through experiencing traditional dishes and/or attending special religious or ethnic occasions where food is involved, such as powwows, Rosh Hashanah, or Christmas celebrations. Dances, where food was served, occurred at 26% of the schools and non-fundraising pizza days (32%) and hot dog days (25%) were also identified as food events.

Figure 4.10: Food Related Activities in Schools (n=535)



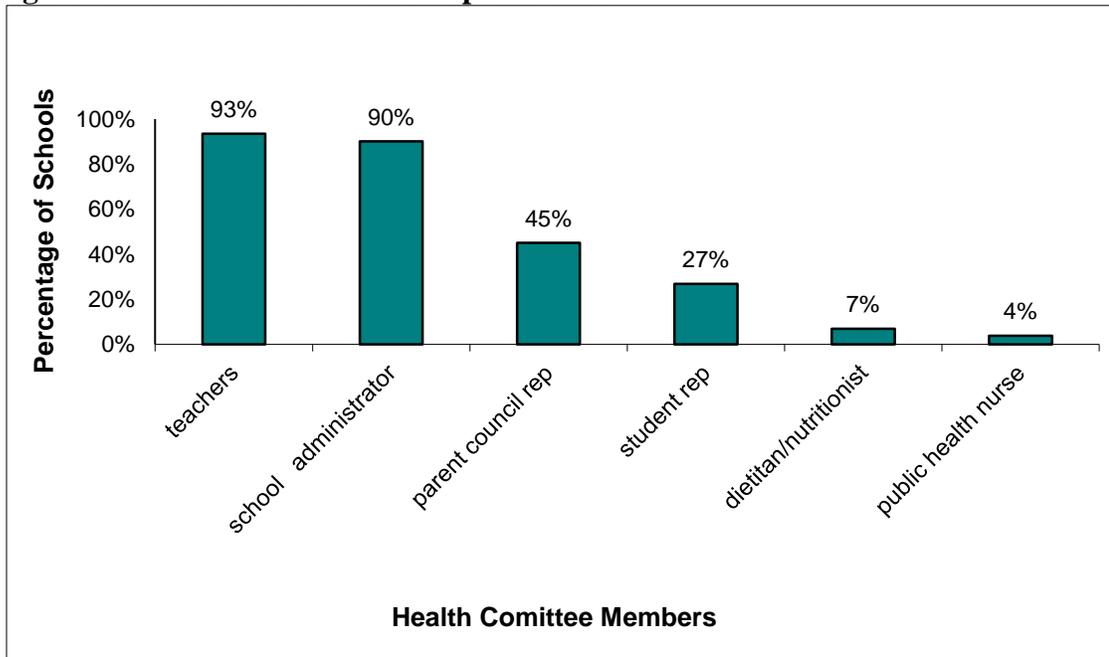
4.8 Food as a Reward

Almost half (46%) of schools reported that food was used as a reward or incentive. In the classroom setting, food treats were the most popular reward/incentive, used by 30% of the schools; this was followed by restaurant food coupons (8%) and class trips to restaurants (5%). Other incentives were indicated by 22%, the most popular being pizza parties, and cafeteria and canteen coupons. Hot chocolate, candy, popcorn parties, and BBQs were also mentioned.

4.9 Nutrition/Health Committees

Three hundred and fifty (65%) of schools said yes to the question “Is there a committee in place to promote healthy eating in school?” Teachers and schools administrators were most commonly represented on such committees, though almost half (45%) included parents and 27% had students. Health professionals such as dietitians and public health nurses were relatively uncommon as committee members (Figure 4.11).

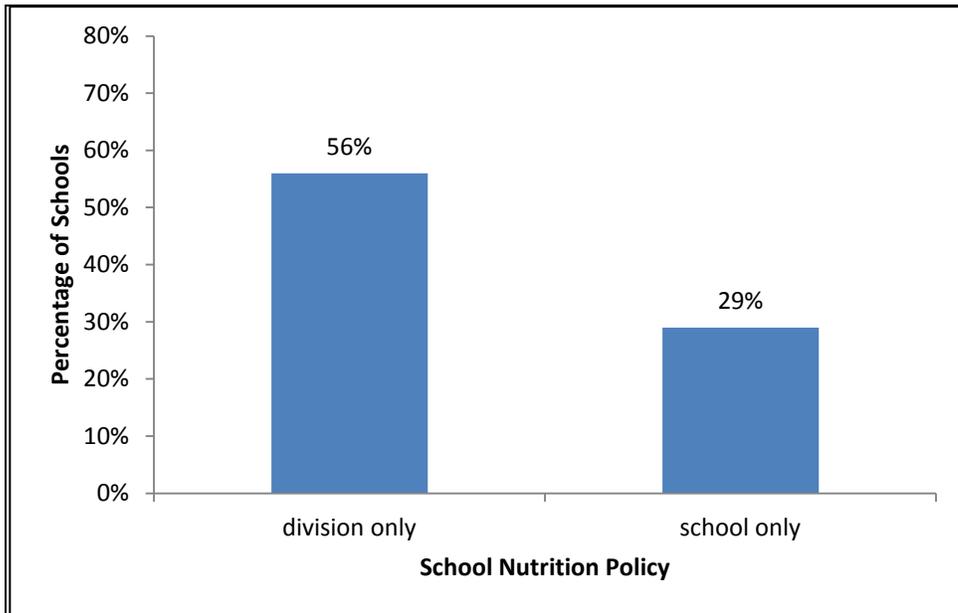
Figure 4.11: Health Committee Representation



4.10 School Nutrition Policy

Schools were asked if they had written nutritional policies in place, under development, or had no policy at all. Fifty-six percent of schools had a policy at the division level and 29% of schools had their own SNP in place. Additionally, 53% of schools indicated that their school nutrition policy was the same as the school division and 13% of schools had policies in place different than the school division.

Figure 4.12: Status of School Nutrition Policies



(As of Fall 2010, all school divisions in Manitoba have nutrition policies in place.)

Of the schools that had written school nutrition policies in place, 90% also had health/nutrition committees.

4.11 Comparison of 2006 and 2009 Data

In order to have accurate results, the subset of schools chosen were respondents in both the 2006 and 2009 surveys; a total of 297 schools participated in both surveys. This subset answered the following questions in both surveys.

1. Does your school have vending machines that dispense drink items?

In 2006, 59% of schools reported having a beverage vending machine. In 2009, that dropped to 54%.

2. How many vending machines are in your school?

The total number of vending machines in the province was 650 in 2006, compared to the 475 machines that were reported in 2009.

3. In the 2008 and 2009 school year what food items have been sold for fundraising?

Food items sold for fundraising were compared individually in both survey years to determine which items sold more or less. The top three items sold for fundraising in 2009 were Mom's pantry products, chocolate bars, and frozen pizza; a change from 2006 when hot dog days and pizza days were in the top three items, although chocolate is still popular. While a change can be observed, the results are not statistically significant.

4. Is there a committee in place to promote healthy eating in school?

The number of health/nutrition committees in the province almost doubled from 33% in 2006 to 65% in 2009.

The results of the first three question showed that there were no statistically significant changes (p -value <0.05) in the school food environment. However, the number of health committees in place in the province is statistically significant at 65% as opposed to the 33% that were in place in 2006.

CHAPTER 5: DISCUSSION

As the literature review shows, schools can have a significant influence on the present and future eating habits of children. The food environment of the school is an important component of this influence. This section discusses the food environment in Manitoba schools as described in the preceding findings.

5.1 Food Services

It is important to determine what facilities and equipment schools have in order to prepare and provide meals and snacks to students throughout the school year.

Schools are limited in what they can serve to students by the equipment and facilities available. Schools that are able to offer more storage and food preparation facilities have the capacity to serve a wide range of foods than schools with less equipment, but not necessarily foods with greater nutritional value. Schools with adequate refrigeration can readily offer milk and dairy products to their students, whereas schools lacking proper refrigeration are unable to serve their students dairy products. Having fully equipped cafeterias allow schools to potentially provide healthier options for the students but can also allow for unhealthy foods, such as deep fried foods, to be served.

Although a moderate number of middle/high schools are equipped with additional equipment such as fryers and grills, the K-12 schools appear to be the least equipped overall, possibly a reflection of their size. Even though the basic equipment is available, it may be insufficient to meet actual needs if it is too small, too old, or inaccessible to use for the general school community. Adequate refrigeration is also a factor in meeting the needs of a school. Yet, 1 in 10 schools still do not have adequate refrigeration, which can be a factor in the variety of nutritious food sold or offered in the schools. Generally,

nutrient-rich foods require refrigeration, such as fruits and vegetables. Only 1% of schools indicated that they had no food preparation or storage equipment. The majority of schools do have the basics for food preparation and storage, such as refrigerators, freezers, stoves, and microwaves. Microwaves provide students with an option to bring food from home that they can reheat. Being available in schools does not necessarily mean that all students can use them. Sometimes concerns are expressed that younger students cannot safely operate a microwave.

5.2 Food Provision

Cafeterias and canteen/tuck shops are available in schools to provide food to students. It is a place where students can regularly purchase food, therefore, the availability of healthy food choices for purchase can impact the choices a student makes when it comes to healthy eating. The foods available for sale in these facilities can either reinforce or challenge the healthy eating messages that have been established in the curriculum.

Middle/high schools were most likely to operate a cafeteria, while elementary, elementary/middle schools and K-12 schools were more likely to operate a canteen/tuck shop. This could be due to the fact that middle/high schools may have more space and can accommodate a full service food establishment. However, 47% of schools had neither a cafeteria or canteen/tuck shop which shows that food availability across the province is inconsistent.

Access to cafeterias or canteen/tuck shops can sometimes be a struggle for students if hours of operation are limited or if timetables result in variable lunch times, or if there are no lunch breaks at all. If students are purchasing food, the majority of cafeterias were open during the lunch hour at noon but only a few schools (9%) operated

cafeterias all day. Because elementary, elementary/middle schools and K-12 schools were more likely to operate canteens/ tuck shops, they operated mainly during the lunch hour (87%) primarily as a service to the students.

The process of approving what foods are offered at school may be influenced by the decision-maker or it may fall to the discretion of certain individuals within the school to apply guidelines pertaining to different circumstances as they see fit. Analysis of the approval process yielded similar findings for schools with cafeterias and/or canteen/tuck shops. Most often, the responsibility of approving what food is to be sold fell to the school administration.

Although picking one day of the week does not tell us the kinds of choices students are making on a daily basis, (in terms of healthy or poor food choices), it does provide some insight into what foods tend to be offered most frequently to students by the schools, as well as what students tend to consume. The top ten foods sold in cafeterias and canteen/tuck shops provides a snapshot into what foods were frequently sold on the day chosen. The differences in the offerings between cafeterias and canteen/tuck shops are paralleled by differences in what foods are actually purchased. Cafeterias tend to offer more lunch-type items to choose from while canteen/tuck shops lean more towards snack foods. The top ten foods sold in cafeterias and canteens/tuck shops differed dramatically in 2009 than what was reported in the baseline survey in 2006. Cookies, pizza, French fries, and soft drinks are no longer among the top 10 foods sold in cafeterias; muffins, fresh fruit, yogurt, and raw vegetables have become more popular. While chocolate milk remains very popular, white milk, hot rods, yogurt, processed cheese and crackers, soup, and fresh fruit have replaced candy, pizza, chips, hot dogs, chocolate bars, soft drinks and

ice cream as the top foods sold in canteens/tuck shops. Although this suggests positive changes, not all the respondents of the 2009 survey participated in the 2006 baseline study, and therefore a comparison of the two could not be statistically calculated. Using Canada's Food Guide can be a helpful tool for schools to use to make changes to the food that is available and can provide children with healthier options and therefore can positively affect the top foods sold in schools.

Students may leave school grounds to purchase food at neighbourhood restaurants (commonly fast food), but there is also the case that commercial restaurants are ascertaining more of a direct presence in schools. Although, 49% of schools who sold restaurant food in schools only did so several times a year, 19% sold restaurant products on a daily or weekly basis. The regularity in which restaurant food is being brought into Manitoba schools suggests there is a need to continually pay attention to the nutritional value of such foods, and to explore options to ensure healthy options are available.

5.3 Vending Machines

Vending machines contribute to the type and availability of foods that students have access to in school. They can provide both healthy and less healthy food and beverage options as in these examples: water vs. soft drinks; milk vs. sports drinks; crackers and cheese vs. potato chips; granola bars vs. cookies.

Vending machines are the main point-of-purchase for schools that do not have cafeterias or canteens, therefore allowing the opportunity to provide healthier choices for students. The aspects of vending that were explored in the survey were the types of products sold, the positioning of products in the vending machine, pricing of products and access to vending machines.

In total, there are 475 beverage vending machines in Manitoba schools that were surveyed. This is a decrease, though not statistically significant, from 2006. It is not known whether machines were removed as a consequence of the introduction of school nutrition policies. The middle/high school category had the highest percentage of both beverage and snack vending machines although they were less common than beverage vending machines.

All schools imposed some restrictions on vending machines either in the period of time at which they were accessible or physical access. It is not possible to determine from this survey if these restrictions are deliberate actions to reduce access to vending machines or a consequence of how the school day is organized and/or general policies about when students may be on the school premises. The majority of schools (90%) allowed access during lunchtime, if the vending machine is the main point-of-purchase. In 25% of the schools, students were not allowed access to the vending machines, possibly because these machines were located in the staff rooms.

Water was the most frequently vended item in beverage vending machines. This could be a result of increased marketing of bottled water products and a declining demand for soft drinks in schools. Although 100% fruit or vegetable juices were the second most frequently vended beverages, the size that was purchased was the 350 ml bottles. While 100% fruit juice is a healthier option than soft drinks, the portion size is equivalent to approximately 2.5 servings of fruit and vegetables according to *Eating Well with Canada's Food Guide*. In this instance, eating whole fresh fruits or vegetables is much more beneficial than juice which usually contain high amounts of sugar.

Remarkably, no schools reported the sale of energy drinks in schools—a positive result given the high amounts of caffeine and sugar they contain.

The way in which drink items are displayed in the beverage vending machine may also have implications in terms of healthy and less healthy choices. For example, beverages that are placed in the upper and middle rows of drink vending machines are more visible and may be purchased more frequently than those in the lower rows.

The top row, considered ‘prime real estate’, was most commonly occupied by water and 100% fruit juice. Soft drinks were sometimes found on the middle rows and rarely on the lower. All other beverages were distributed between middle and lower rows.

Because of the limited number of snack vending machines in the schools, snack vending, in the context of food provision in the schools, is less of an issue. Baked snacks and uncoated granola bars were the most common items vended in snack machines, 76% and 59% respectively. Fried snacks were less common at 43%. There may be a discrepancy in the data as baked and fried snacks have very similar examples of products listed. It is possible that respondents didn't actually check the packages but guessed or put an item in one or both categories randomly.

Schools that own their vending machines may have more ready control over what is vended and can use it as an opportunity to promote healthy choices. As there were only 27 schools that reported owning their own vending machines, it was not possible to statistically compare their contents.

5.4 Lunch at School

Eighty-six percent of schools permitted students to remain at school for lunch. This could mean that up to 150,000 students are eating lunch at school on a daily basis. This has

significant implications for the nutritional health of students; a high number are eating their lunches at school, with many of them eating food provided by the school cafeteria or canteen/tuck shop. Schools are provided with a major opportunity to support healthy eating through providing and selling nutritious foods.

Since eating is a social and nutritional activity, time allocated and location are important factors. Ensuring adequate time and appropriate space sends the message that mealtime is important. The findings in this survey suggest that most children had adequate time to eat their lunches. 6 % allowed less than 20 min to eat lunch which may not be sufficient time.

Providing adequate eating space can be a challenge for some schools. In the absence of a designated space to eat lunch, schools were able to solve the problem for location of food consumption in a variety of creative ways.

5.5 School Food Programs

Because there are concerns that children may not be getting enough to eat or not eating properly, school food programs remain common in the school environment. Educators are increasingly recognizing that having food programs in schools can compensate the negative effects of hunger on learning, and improve the student's ability to focus on classroom tasks.

Nutritional guidelines are a useful resource that schools can use to assist them in determining what foods would provide the most nutritional value. These guidelines provide ideas on what to serve students and allow for variations in menu items depending on availability and cost.

5.6 Fundraising

An ongoing, continuing concern for many schools as they seek ways to raise money for extra programs and resources is fundraising. Selling food items, either to students in the school or to the general community, has always been a popular method of raising money and an important activity for schools.

The top three items for fundraising (Mom's Pantry, chocolate bars, frozen pizza) showed a change from the 2006 survey of hot dog days, pizza days, and chocolate bars but it is not a significant change. Hot dog days and pizza days may not be included in fundraisers anymore but they are still part of the school scene but are classified as special events.

Some examples of healthy fundraising that schools can take part in are smoothie sales, bake sales (baked goods using whole grains, fruits, and nuts), and a school cookbook where students and staff collect their favourite healthy recipes.

Since the primary reason for fundraising is to make a profit, it is important that the food sold is appealing but the nutritional value of the item is also essential. It is important to find a balance between the popularity of an item and its health value so that students can learn to appreciate good food.

5.7 Other Food-Related Events

Food is an important part of the cultural and social foundation of the school. Some events such as hot dog days, BBQ's and pizza days, focus on food. Dances, classroom parties, cultural events, and sports days often involve a food component. Because of the diversity of cultural events, it is not possible to determine what foods are usually served at these

occasions and it would mean that the respondent would have to personally know and successfully recall details of the events.

5.8 Food as a Reward

When food is used as a reward or incentive in the classroom, it is imperative that it be seen as part a healthy diet. It is not known what types of food treats are given as rewards in the classroom. Rewarding children with low nutritional value food may not help in supporting them to make healthy choices for themselves when faced with the opportunity.

5.9 Nutrition/Health Committees

Organizing a committee that will lead health initiatives in the school is one of the ways in which to promote school health and nutrition. The school is made up of many levels; therefore, the committee should represent students, administration, teachers, and the community. Everyone in the committee is invested in the health and well-being of school-age children and youth and so it is important that the committee creates a healthier school food environment for the children. The significant change of the number of schools with nutrition/health committees in place (from 33% in 2006 to 65% in 2009) is a positive sign that schools are moving in the right direction towards health promotion and education.

5.10 School Nutrition Policy

School nutrition policies are tools that can be used to ensure good nutrition is taught in theory and in practice. Nutrition policies are important to schools because students spend much of their time at school, and next to their parents, schools have the most impact in shaping a child's eating habits. While schools had earlier reported progress in developing

school nutrition policies, through annual reports to the Department of Education, the effect this had on foods being provided in schools was not known (P. Fieldhouse, personal communication, February 28, 2013).

At the time of the survey, 56% of schools reported that a divisional written SNP was in place. Additionally, 29% of schools had developed their own school-based nutrition policy. A range of topics were covered in these policies; policy statements included types of food sold in cafeterias, canteen/tuck shops, vending machines, fundraising, and school events. Other statements covered topics such as discouraging food as a reward, limiting access to less nutritious food during school hours, promoting recycling, buying and serving locally grown foods, having adequate time to eat lunch, and food allergies.

Subsequent to this survey, all school divisions in Manitoba had a school nutrition policy in place. In 2011, a preliminary content analysis of all school division policies (37) showed the following topic areas were addressed within those policies:

- Definitions of 'nutritious food' (25 school divisions)
- Vending machines (26 school divisions)
- Special events (22 school divisions)
- Canteens/cafeterias (27 school divisions)
- Pricing and promotion (10 school divisions)
- Classroom rewards (14 school divisions)
- Fundraising (28 school divisions)
- Eating Environment (11 school divisions)
- Food Security (4 school divisions)

- Food allergies and food related chronic disease (14 school divisions)
- Food Service contracts (5 school divisions)
- Food Safety (10 school divisions)
- Local food (1 school division)

While statements on communication were included in 33 of the policies, a separate analysis showed that few divisions or schools made their SNPs available on their websites (P. Fieldhouse, personal communication, April 11, 2013)

CHAPTER 6: LIMITATIONS

Limitations of this study are mainly those associated with self-administered questionnaires. The main limitation concerns the validity and reliability of responses obtained to questions. Surveys provide only verbal descriptions of what a person says they do or how they feel about something. Responses cannot always be taken as accurate descriptions of what the respondents actually do or really feel about something. Therefore, self-administered questionnaires do not yield as precise data as, for example, face-to-face interviews or direct measurements and observations. Also, with this questionnaire, it was not specified who was to complete the survey, as it was anticipated that this would vary from school to school. As a result there were no means of ascertaining the knowledge or experience base of the respondents or the lengths to which they went to obtain information or consult with others.

Although schools reported having SNP in place, the quality of the written SNP cannot be determined from this survey.

CHAPTER 7: CONCLUSION

Food still remains an important part of school life, as seen from the results of the survey.

The high response rate of the survey also serves to prove that school nutrition is an important matter. Manitoba children are constantly eating food at school, whether it is lunch, classroom parties, fundraising, breakfast, and snack or lunch programs, or receiving it as a reward. It is through these events that schools should enhance the children's knowledge of healthy eating and making good food choices.

The comparison of the 2006 and 2009 subsets did show a change in the school food environment. Although not all the changes were statistically significant, there seems to be a positive shift in Manitoba schools towards healthy eating, especially in the area of nutrition/health committees.

The results from the 2009 Manitoba School Food and Nutrition survey serves as one measure of assessing the impact of SNP in promoting healthy food choices in schools. This method can be an effective measure of providing a snapshot of the school food environment and changes occurring in that setting.

7.1 Future Research

Thorough content analysis of SNP needs to be done in order to determine what topics are covered and the quality of SNP. Repeating the survey once again would then allow for comparison and further investigation of the changes occurring in Manitoba schools correlated to the scope and strength of their policies. The survey was an effective method of tracking changes in the school food environment and can allow for monitoring the status of SNP in the province, especially now that it is a part of the Public Schools Act.

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APPENDIX

The 2009 Manitoba School Food and Nutrition Survey was developed and implemented by the Healthy Living Branch of Manitoba Healthy Living, Youth and Seniors with support from Manitoba Education. The Manitoba School Nutrition Support Team (Dietitians of Canada, Child Nutrition Council of Manitoba, and Dairy Farmers of Manitoba) was involved in the development of the original 2006 questionnaire, and in 2009, Elif Seyidoglu (University of Manitoba) revised the content and minor changes were made to the original.

MANITOBA SCHOOL FOOD AND NUTRITION SURVEY 2009

SCHOOL DEMOGRAPHICS

1. School Code _____
2. Total Number of Students Enrolled _____
3. Grade Levels offered (Check all that apply) Elementary School
 Middle School
 High School
4. Contact Person (name, number, and position) _____

In May 2006, schools throughout the province completed a baseline food and nutrition survey prior to the introduction of the Manitoba School Nutrition Policy guidelines. The 2009 survey will help us to determine what has changed since then, so your answers are very important to us.

The following instructions are intended to help you complete the survey efficiently.

- Some questions may not apply to your school so follow the prompts as they will guide you.
- All schools must answer questions 1, 2, 3, 9, 15, 18, 23, 31, 33, 37, 41, 43, 44, 46, 48, 49.
- Most questions are straight forward and should be quick and easy to answer. A few questions will require more effort to complete. Please note that this detail provides important information that will allow us to track change in the future.
- We recommend that you ask your cafeteria operator and canteen/tuck shop operator to help complete questions related to the cafeteria and canteen/tuck shop.

If you need further help with completing this survey please contact us at 1-888-547-0535 and leave a message. We will be pleased to return your call and provide assistance.

FOOD SERVICE

Food Services Available – Your school may or may not have a cafeteria but may have some equipment for storing and preparing food.

1. What types of equipment do you have available for storing and preparing food?

Types of Equipment

- | | | |
|--|---|---|
| <input type="checkbox"/> Refrigerator | <input type="checkbox"/> Deep Fryer | <input type="checkbox"/> Dishwasher |
| <input type="checkbox"/> Freezer | <input type="checkbox"/> Grill | <input type="checkbox"/> Sink – single |
| <input type="checkbox"/> Oven | <input type="checkbox"/> Industrial Toaster | <input type="checkbox"/> Sink – double |
| <input type="checkbox"/> Convection Oven | <input type="checkbox"/> Steamer | <input type="checkbox"/> Sink- triple |
| <input type="checkbox"/> Stove Top | <input type="checkbox"/> Heat Lamp | <input type="checkbox"/> No equipment available |
| <input type="checkbox"/> Micro Wave | <input type="checkbox"/> Hot Plate | |

2. Is the refrigeration available at your school adequate for your current refrigeration needs?

- Yes No

CAFETERIA

Definition: a designated area of the school where food is **prepared** (example: where sandwiches are made; where hot meal items are prepared) and **served** to students. It includes a space for students to sit and eat. A cafeteria may be a fully operating food service establishment or it may have limited food preparation capabilities due to space constraints.

3. Does your school have a cafeteria?

- Yes No **IF “NO” go to Question # 9**

4. IF “YES”, when is the cafeteria open? Check all that apply.

- | | | |
|---|--|---|
| <input type="checkbox"/> Before School | <input type="checkbox"/> Noon (lunch) | <input type="checkbox"/> All day |
| <input type="checkbox"/> Morning (breakfast) | <input type="checkbox"/> Mid afternoon | <input type="checkbox"/> Special events |
| <input type="checkbox"/> Mid morning | <input type="checkbox"/> After school | |
| <input type="checkbox"/> Other (Please Specify) _____ | | |

5. Approximately how many students purchase food from the cafeteria on a typical day?

- | | |
|--|---|
| <input type="checkbox"/> Less than 25% of student population | <input type="checkbox"/> 51% to 74% of student population |
| <input type="checkbox"/> 25% to 50% of student population | <input type="checkbox"/> 75 to 100% of student population |

6. What nutritional guidelines or standards does your cafeteria follow determining what is sold to students? Check all that apply.

- | | |
|--|---|
| <input type="checkbox"/> NONE | <input type="checkbox"/> Canada’s Guide to Healthy Eating |
| <input type="checkbox"/> Breakfast for Learning Guidelines | <input type="checkbox"/> Recommendations from a Dietitian |

Manitoba School Nutrition Handbook

Other (Please Specify) _____

7. Who approves what is sold in the cafeteria?

No formal approval

Health/nutrition committee

Vendor

Parent Council

School administration

Paid Coordinator

Other (Please Specify) _____

You may want to ask your cafeteria operator to help complete the following question.

8. We would like to know what is sold in your cafeteria. To determine this please complete the following table.

- In **COLUMN A** please indicate **all** items sold in your cafeteria.
- Next, select **one day** (Monday through Friday) of the week and record the number of each item sold on that day in **COLUMN B (disregard the size of the item)**. This should be a day when there is no food sold to students for fund raising or special events. *Do not include items that are sold only from vending machines located in the cafeteria.*
- **Please indicate Day of the Week used for recording the number of each food items sold**

Monday Tuesday Wednesday Thursday Friday

A Check all Food items sold		B # of Food items sold on selected day	A Check all Food items sold		B # Of Food items sold on selected day
<input checked="" type="checkbox"/>	Example: Fruit	23	<input type="checkbox"/>	French Fries	
<input type="checkbox"/>	White Milk		<input type="checkbox"/>	Gravy	
<input type="checkbox"/>	Chocolate Milk		<input type="checkbox"/>	Poutine	
<input type="checkbox"/>	Milkshakes		<input type="checkbox"/>	Soup	
<input type="checkbox"/>	100% Fruit Juices		<input type="checkbox"/>	Raw Vegetables	
<input type="checkbox"/>	Fruit Drinks (e.g. Fruitopia)		<input type="checkbox"/>	Vegetable Salads	
<input type="checkbox"/>	Sports Drinks (e.g. Gatorade™)		<input type="checkbox"/>	Cooked Vegetables	
<input type="checkbox"/>	Energy Drinks (e.g. Red Bull)		<input type="checkbox"/>		
<input type="checkbox"/>	Bottled Water		<input type="checkbox"/>	Cereal	
<input type="checkbox"/>	Soft drinks		<input type="checkbox"/>	Toast	
<input type="checkbox"/>	Coffee		<input type="checkbox"/>	Bagels	

	Tea			Eggs	
	Hot Chocolate			Yoghurt	
	Sandwiches &/or Subs			Cheese	
	Tortilla Wraps			Fresh Fruit	
	Chicken Nuggets			Muffins	
	Chilli			Cookies	
	Hot Dogs			Puddings	
	Hamburgers			Cakes and Pastries	
	Pizza			Ice Cream	
	Fish & Chips			Potato Chips	
	Chicken Burger			Chocolate Bars	
	Grilled Chicken Burger			Granola type Bars	
	Spaghetti			Other	
	Lasagne			Other	
	Tacos			Other	
	Onion Rings			Other	

CANTEEN / TUCK SHOP

Definition: an outlet in your school (other than the cafeteria) that sells snack items and or **pre-packaged** food items. Foods sold here have been prepared elsewhere. Example: pre-wrapped sandwiches.

9. Does your school have a canteen service?

YES

NO

IF "NO" go to Question # 15

10. IF "YES", when is the canteen open? Check all that apply.

Before School

Noon (lunch)

All day

Morning (breakfast)

Mid afternoon

Special events

Mid morning

After school

Other (Please Specify) _____

11. What nutritional guidelines or standards do your canteen follow for determining what is sold to students? Check all that apply.

NONE

Canada's Guide to Healthy Eating

Breakfast for Learning guidelines

Recommendations from a Dietitian

Manitoba School Nutrition Handbook

Other (Please Specify) _____

12. Who approves what is sold in the canteen?

- No formal approval
- Vendor
- School administration
- Other (Please Specify) _____
- Health/nutrition committee
- Parent Council
- Paid Coordinator

You may want to ask your canteen operator to help complete the following question.

13. We would like to know what is sold in your canteen. To determine this please complete the following table.

- In **COLUMN A** please indicate **all** items sold in your canteen/tuck shop.
- Next, select **one day** (Monday through Friday) of the week and record the number of each item sold on that day in **COLUMN B (disregard the size of the item)**. This should be a day when there is no food sold to students for fund raising or special events. *Do not include items that are sold only from vending machines located in the cafeteria.*
- **Please indicate Day of the Week used for recording the number of each food items sold**

Monday Tuesday Wednesday Thursday Friday

A Check all Food items sold		B # of Food items sold on selected day	A Check all Food items sold		B # Of Food items sold on selected day
✓	Yoghurt	35			
	White Milk			Pizza	
	Chocolate Milk			Hamburger	
	Milkshakes			Hot Dogs	
	100% Fruit Juices			Soup	
	Fruit Drinks (e.g. Fruitopia)			Pasta	
	Sports Drinks (e.g. Gatorade™)			French Fries	
	Energy Drinks (e.g. Red Bull)				
	Bottled Water			Cakes and Pastries	
	Soft drinks			Cookies	
	Coffee			Chocolate Bars	
	Tea			Nuts	
	Hot Chocolate			Candy	
	Yoghurt			Gum	
	Cheese			Potato Chips	
	Jello Puddings			Other	
	Ice Cream Products			Other	

	Sandwiches			Other	
	Cheese and Crackers			Other	
	Muffins			Other	
	Peanut Butter and Crackers			Other	
	Bagels, bread products			Other	
	Fresh Fruit			Other	
	Fruit Gels			Other	
	Granola Bars			Other	
	Hot Rods			Other	

14. What is the purpose of the canteen? Check all that apply

- Service to students
 Service to community groups/events
- Service to staff
 Fundraising
- Other (Please Specify) _____

15. Are any products from these restaurants sold in your school? Check all that apply.

- McDonald's
 Wendy's
- Subway
 Local Pizza Restaurant
- Other restaurants (Please Specify) _____
- None
 IF "NONE" go to question # 18

16. How often are these restaurant products sold in your school?

- Daily
- Weekly
- Monthly
- Several times per year

17. What is the purpose of selling restaurant food in your school? Check all that apply.

- Fundraiser
- Service to students and parents
- Other (Please Specify) _____

VENDING MACHINES

Definition: a slotted machine that dispenses beverages (Example: soft drinks, juice) or food items (Example: potato chips, chocolate bars, fruit, sandwiches, packaged snacks).

18. Does your school have vending machines that dispense drink items?

Yes No, never had one

No, previously removed, If removed, please state why

IF "NO" go to Question # 23

19. **IF "YES"**, how many beverage vending machines are in your school?

- One
- Two
- Three
- Four
- Five
- More than five

20. To determine who has access to the **BEVERAGE** vending machine and when, please complete the following table. Check all categories that apply.

	No Access	Before School	During School Hours	Lunch	Recess	After School/ Evening
Staff						
Grades K- 5						
Grades 6-8 (Junior High)						
S1-S4 (Senior High)						
Community Groups / clubs						
Public Events Only						
Other: Please Specify						

21. Go to each **BEVERAGE** vending machine (maximum 5), as you look at the items in front of you:

- **Count** the number of **selections** in each category.
- **Record** this number in the table below.
- If there are any selections that don't fit, please specify these under the category "**other**".

Beverage Categories	Number of selections counted for each machine				
	Machine #1	Machine #2	Machine #3	Machine #4	Machine #5
Soft Drinks					

Energy Drinks (e.g. Red Bull)					
Ice tea; Sports Drinks (Gatorade); Sobe™;)					
Fruit Punch/Drink/Cocktails; (e.g. Five A-Live, Snapple™, Tropicana Twister™, V8 Splash, Fruitopia)					
Water					
100% fruit or vegetable juice (e.g. V8 Original™, Orange juice, Apple juice)					
Milk (plain white milk)					
Basic flavoured milk drinks (chocolate, strawberry, vanilla, banana)					
Candy Bar Flavoured Milk Drinks (e.g. Rolo™), Milkshakes					
Coffee, Tea, hot chocolate					
Other (Please Specify)					
Other (Please Specify)					

22. For only one beverage machine:

- Please indicate the size and price of these items.
- If there are two or more sizes of the same beverage please indicate the size and price of each.
- If the sizes differ from the categories given choose the closest one.
- Indicate where each of these items are located within the vending machine (**U** =Upper; **M** = Middle; **L** = Lower)

BEVERAGE	SIZE	PRICE	LOCATION IN UNIT
Soft Drinks	___ 250 ml	_____	<input type="checkbox"/> U <input type="checkbox"/> M <input type="checkbox"/> L
	___ 350 ml	_____	<input type="checkbox"/> U <input type="checkbox"/> M <input type="checkbox"/> L
	___ 500 ml	_____	<input type="checkbox"/> U <input type="checkbox"/> M <input type="checkbox"/> L
	___ > 500 ml	_____	<input type="checkbox"/> U <input type="checkbox"/> M <input type="checkbox"/> L
Energy Drinks (e.g. Red Bull)	___ 250 ml	_____	<input type="checkbox"/> U <input type="checkbox"/> M <input type="checkbox"/> L
	___ 350 ml	_____	<input type="checkbox"/> U <input type="checkbox"/> M <input type="checkbox"/> L
	___ 500 ml	_____	<input type="checkbox"/> U <input type="checkbox"/> M <input type="checkbox"/> L
	___ > 500 ml	_____	<input type="checkbox"/> U <input type="checkbox"/> M <input type="checkbox"/> L
Sports Drinks (e.g. Gatorade™)	___ 250 ml	_____	<input type="checkbox"/> U <input type="checkbox"/> M <input type="checkbox"/> L
	___ 350 ml	_____	<input type="checkbox"/> U <input type="checkbox"/> M <input type="checkbox"/> L
	___ 500 ml	_____	<input type="checkbox"/> U <input type="checkbox"/> M <input type="checkbox"/> L
	___ > 500 ml	_____	<input type="checkbox"/> U <input type="checkbox"/> M <input type="checkbox"/> L
Fruit Drinks (e.g. Five A-Live, Snapple™, Tropicana)	___ 250 ml	_____	<input type="checkbox"/> U <input type="checkbox"/> M <input type="checkbox"/> L
	___ 350 ml	_____	<input type="checkbox"/> U <input type="checkbox"/> M <input type="checkbox"/> L
	___ 500 ml	_____	<input type="checkbox"/> U <input type="checkbox"/> M <input type="checkbox"/> L

Twister™, Splash, Fruitopia)	___ > 500 ml	_____	<input type="checkbox"/> U <input type="checkbox"/> M <input type="checkbox"/> L
Water	___ 250 ml	_____	<input type="checkbox"/> U <input type="checkbox"/> M <input type="checkbox"/> L
	___ 350 ml	_____	<input type="checkbox"/> U <input type="checkbox"/> M <input type="checkbox"/> L
	___ 500 ml	_____	<input type="checkbox"/> U <input type="checkbox"/> M <input type="checkbox"/> L
	___ > 500 ml	_____	<input type="checkbox"/> U <input type="checkbox"/> M <input type="checkbox"/> L
100% Fruit Juice	___ 250 ml	_____	<input type="checkbox"/> U <input type="checkbox"/> M <input type="checkbox"/> L
	___ 350 ml	_____	<input type="checkbox"/> U <input type="checkbox"/> M <input type="checkbox"/> L
	___ 500 ml	_____	<input type="checkbox"/> U <input type="checkbox"/> M <input type="checkbox"/> L
	___ > 500 ml	_____	<input type="checkbox"/> U <input type="checkbox"/> M <input type="checkbox"/> L
Milk: White or Chocolate	___ 250 ml	_____	<input type="checkbox"/> U <input type="checkbox"/> M <input type="checkbox"/> L
	___ 350 ml	_____	<input type="checkbox"/> U <input type="checkbox"/> M <input type="checkbox"/> L
	___ 500 ml	_____	<input type="checkbox"/> U <input type="checkbox"/> M <input type="checkbox"/> L
	___ > 500 ml	_____	<input type="checkbox"/> U <input type="checkbox"/> M <input type="checkbox"/> L

23. Does your school have **SNACK machines** that dispense food?

YES

NO

IF "NO" go to Question # 31

24. **IF "YES"**, how many **snack vending machines** are in your school?

One

Two

Three

Four

Five

More than five

25. To determine who has access to the **SNACK** vending machine and when, please complete the following table. Check all categories that apply.

	No Access	Before School	During School Hours	Lunch	Recess	After School/ Evening
Staff						
Grades K- 5						
Grades 6-8 (Junior High)						
S1-S4 (Senior High)						
Community Groups / clubs						
Other: Please specify						

26. Go to each **SNACK** vending machine (maximum 5), as you look at the items in front of you:

- **Count** the number of **selections** in each category.
- **Record** this number in the table below.
- If there are any selections that don't fit, please specify these under the category **"other"**.

Snack Vending Categories	Number of selections counted for each machine				
	Machine #1	Machine #2	Machine #3	Machine #4	Machine #5
Potato/corn/wheat or rice chips; cheesies; crackers (fried)					
Pretzels; popcorn; potato/corn/wheat or rice chips or crackers (baked)					
Chocolate or Yoghurt Coated granola/breakfast/sports bars; Chocolate bars; nut bars					
Uncoated granola/breakfast/sports bars; nut bars					
100% fruit or vegetable leathers; dried fruit, Nuts/trail mix					
Pastries; cookies; squares; donuts; cakes; Rice Krispie Squares					
Cheese & Crackers					
Peanut Butter & Crackers					
Sandwiches					
Fresh Fruit: oranges, apples, etc.					
Other (Please Specify)					
Other (Please Specify)					

27. Please indicate the price and size of these specific items. In addition, indicate where each of these items are located within the vending machine (**U** =Upper; **M** = Middle; **L** = Lower)

	PRICE	LOCATION
Potato chips (fried)		<input type="checkbox"/> U <input type="checkbox"/> M <input type="checkbox"/> L
Potato chips (baked)		<input type="checkbox"/> U <input type="checkbox"/> M <input type="checkbox"/> L
Chocolate Bar		<input type="checkbox"/> U <input type="checkbox"/> M <input type="checkbox"/> L
Uncoated granola type bar		<input type="checkbox"/> U <input type="checkbox"/> M <input type="checkbox"/> L
Cookies		<input type="checkbox"/> U <input type="checkbox"/> M <input type="checkbox"/> L
Rice Krispie Squares		<input type="checkbox"/> U <input type="checkbox"/> M <input type="checkbox"/> L

28. Who decides what is sold in the vending machines?

- Vendor
- School administration
- Health/nutrition committee
- Parent Council
- Other (Please Specify) _____

29. Who operates the vending machines? Check all that apply

- School Administration
- School clubs/programs
- Business class
- Student Council
- Parents and volunteers
- Independent operator
- Not-for-profit group
- Food Service Company
- Other (Please Specify) _____

30. What is the purpose of the vending machine? Check all that apply.

- Service to students
- Service to staff
- Service to community groups/events
- Fundraising
- Other (Please Specify) _____

31. Does your school **own** any vending machines?

- YES NO **IF "NO", go to Question # 33**

32. **IF "YES"**, how many vending machines does your school own? _____

LUNCH AT SCHOOL

33. Are your students permitted to remain in the school building for lunch?

- YES NO **IF "NO", go to Question # 37**

34. IF "YES", approximately how many students remain at school for lunch? _____

35. How much time do students have to **eat** their lunch? (Record only that portion of the lunch period that is assigned for eating lunch)

Less than 20 minutes

30-39 minutes

20-29 minutes

40 minutes or more

No designated time

36. Where do students eat lunch in the school? Check all that apply.

Cafeteria

Separate room, established as a lunch room

Classroom

Hallway

Other (Please Specify) _____

SCHOOL FOOD PROGRAMS

37. Does your school have any of these **funded or subsidized** programs? Check all that apply.

Breakfast program

Snack program

Hot Lunch program

Milk program

NONE (No Food Program) IF "NONE", Go to Question # 41

38. Do you use any of the following guidelines for your program? Check all that apply.

Breakfast for Learning

Canada's Guide to Healthy Eating

Manitoba School Nutrition Handbook

Other (Please Specify) _____

39. Who funds your food program? Check all that apply.

Private Business

Donations/sponsorship

Government Funding

Division/district budget

Student fees/purchase

School Funds

Granting agencies

40. Who operates your food program? Check all that apply.

School staff

Paid coordinator

School clubs

Private Business

Parents and volunteers

Other (Please Specify) _____

FUND RAISING

41. In the 2008 and 2009 school year what food items have been sold for **fund raising**? Check all that apply.

- White milk
- Chocolate milk
- Chocolate Bars
- Candy
- Nuts
- Fruit
- Other (Please Specify)

- Cheese
- Mom's Pantry
- Frozen Pizza
- None,
If "NONE", go to Question # 43
- Other (Please Specify)

OTHER FOOD RELATED EVENTS

42. What are the most important factors for deciding what food will be used for fund raising? Check all that apply.

- Profit margin
- Availability
- Nutritional value / Health

Other (Please Specify) _____

43. Does your school have any of the following food related events that are **not** fundraisers? Check all that apply.

- Pizza days
- Hot dog days
- Sports Days
- BBQ's
- Dances
- Classroom parties
- Cultural Celebrations

44. Is food used as a reward or incentive in your school? (Examples: for classroom contests; reward for Crossing Guards or other volunteer activities; incentives for fundraising or competitive events)

YES

NO

IF "NO", go to Question # 46

45. **IF "YES"**, what types of food rewards and/or incentives are given in your school? Check all that apply.

- Restaurant meal coupons
- Trips to restaurants as rewards for school involvement
- Food 'treats' in classrooms
- Other (Please Specify) _____

POLICY QUESTIONS

46. Is there a committee in place to promote healthy eating in school?

- YES NO **IF “NO”, go to question # 48**

47. **IF “YES”**, who is on the Health Committee? Check all that apply.

- School Administrator
- Teachers
- Parent Council Representative
- Student Representative
- Public Health Nurse
- Dietitian / Nutritionist
- Others from outside the school. Please give their positions, example: Local Councillor.

48. Do you have a written nutrition policy at the level of:

	In place	In development	No written policy
Division only			
School only			
School policy same as division			
School policy different to division			

49. What topics does your school/division nutrition policy include? Check all that apply.

<input type="checkbox"/> Types of food sold in school vending machines.
<input type="checkbox"/> Types of food sold in school cafeterias
<input type="checkbox"/> Types of food sold in canteen/tuck shop
<input type="checkbox"/> Types of food sold at school special events
<input type="checkbox"/> Fundraising
<input type="checkbox"/> Competitive pricing to promote healthy food choices
<input type="checkbox"/> Discouraging the use of food as a reward
<input type="checkbox"/> Limiting access to less nutritious foods during school hours
<input type="checkbox"/> Providing adequate time
<input type="checkbox"/> Food Allergy Policy
<input type="checkbox"/> Reduction of food packaging and food waste disposal (Recycling program)
<input type="checkbox"/> Food safety (safe preparation and handling of food)

<input type="checkbox"/> Buying and serving locally grown foods
<input type="checkbox"/> Other: Please specify
<input type="checkbox"/> Other: Please specify

Please indicate all who contributed to the completion of this Manitoba School Food and Nutrition Survey. Check all that apply.

School Administration

Health Committee

Parent Volunteer

Phys Ed / Health Teacher

Cafeteria Operator

Parent Council

Student Council

Paid coordinator

Food Service Company

Independent Operator

Not-for-profit group

Other (Please Specify) _____

ONCE YOU HAVE COMPLETED THIS SURVEY PLEASE PLACE THE **ENTIRE SURVEY** IN THE RETURN ENVELOPE PROVIDED AND **MAIL TO:**

Attn: Dr. Paul Fieldhouse
 Manitoba Health and Healthy Living
 300 Carlton St.
 Winnipeg, Manitoba
 Canada R3B 3M9

Thank you for your valuable assistance in completing this survey.

If available, please email us a copy of your school's nutrition policy at schoolnutritionpolicy@gov.mb.ca

Please Note: For quality control purposes, a small, random sample of schools will be selected for follow-up.