# Healthy School Food Environments in New Brunswick: Analysis of Exemplary Schools

by

Suchitra Roy

MBBS (Bachelor of Medicine and Bachelor of Surgery)

University of Dhaka, 2005

A Dissertation Submitted in Partial Fulfillment
of the Requirements for the Degree of

Doctor of Philosophy

in the Graduate Academic Unit of Interdisciplinary Studies

**Supervisors:** Mary L. McKenna, PhD, Faculty of Kinesiology
Stephan Dombrowski, PhD, Faculty of Kinesiology

**Examining Board:** Rhona Hanning, PhD, Faculty of Public Health Sciences, University of Waterloo
Lynn Randall, PhD, Faculty of Education
Gabriela Tymowski-Gionet, PhD, Faculty of Kinesiology

**External Examiner:** Jennifer Black, PhD, Faculty of Food, Nutrition and Health, University of British Columbia

This dissertation is accepted by the Dean of Graduate Studies

THE UNIVERSITY OF NEW BRUNSWICK

June, 2026

© Suchitra Roy, 2026

# Abstract

**Introduction:** There is room for improvement in the food environments in Canadian schools. No comprehensive study has yet examined exemplary schools that demonstrate healthy food environments. Guided by the comprehensive school health framework and the consolidated framework for implementation research (2009), this research addressed this gap and examined exemplary school food environments to determine: 1) key components of positive food environments in exemplary schools, 2) the roles of partnerships, and 3) the factors associated with successful food environments.

**Method:** A case study, primarily qualitative, was conducted in six Anglophone exemplary schools in New Brunswick. Data were collected during in-person school visits through 1) observations; 2) interviews with school-level leaders and leaders of individual food programs (n=31); 3) focus group interviews with students in grade 6 and above (n=3); 4) a school self-assessment survey; and relevant fieldnotes, photographs and documents. Data analysis included cross case descriptive synthesis and thematic analysis.

**Results:** The components of positive food environments in all schools included free breakfast programs and mostly paid lunch programs (aimed to follow provincial nutrition policy) and nutrition education activities such as cooking classes; three schools had gardens. Positive aspects included the availability of fresh fruits and vegetables, food support to students in financial need, and involvement of students in food activities.

All schools had partnerships with community organizations and members, receiving 1) financial assistance for breakfast programs (n=6), and free lunches to students in need (n=3), cooking classes (n=4), and gardens (n=3); 2) volunteer services (n=6), supporting food programs (n=4), garden activities (n=2) and cooking classes (n=1); and 3) food donations (n=4) used in food programs.

Factors associated with overall success included awareness and optimism regarding school food, a low profit strategy, a supportive school environment, outsourcing of resources from the community, and customized strategies in management.

**Conclusion:** Exemplary school food environments had positive aspects regarding their activities and support from partners, making food a priority within their schools. Program sustainability was a potential issue due to schools' dependence on community organizations and lack of monitoring. Federal funding from the new national school food program can help address these challenges.

## Acknowledgements

I am incredibly grateful for the support I have received throughout my PhD experience. I would like to thank my committee members, Dr. Mary McKenna, Dr. Stephan Dombrowski and Dr. Rhona Hanning for their continuous support, suggestions, thought provoking comments and questions, and efforts in proofreading many drafts of the dissertation. I am thankful to my co-supervisor Dr. Stephan Dombrowski specifically for his guidance in data analysis and writing the draft of the dissertation. My biggest thank you is to my co-supervisor Dr. Mary McKenna for supporting me from the initial phase in designing this study and developing data collection tools. This research couldn't have been possible without her. Outside the faculty, I am thankful to Ms. Linda Dempsey-Nicholson for her support in school recruitment process. I would like to thank school districts for allowing me to reach out to the schools. My thanks to the schools that participated in this research for their time and cooperation. Finally, this research was financially supported by the Economic and Social Inclusion Corporation, New Brunswick and I am thankful to this organization.

# Table of Contents

Abstract ..... ii

Acknowledgements ..... iv

Table of Contents ..... v

List of Tables ..... xiv

List of Figures ..... xvi

1 Chapter 1: Introduction ..... 1

2 Chapter 2: Literature Review ..... 10

2.1 The review of evidence for school food environments (Chapter 4) ..... 11

2.1.1 Introduction to the comprehensive school health (CSH) framework ..... 11

2.1.2 The comprehensive school health (CSH) framework applied to school food ..... 13

2.1.3 Research on physical and social environments ..... 15

2.1.4 Overview of school nutrition policy (SNP) in Canada ..... 18

2.1.5 Status of school nutrition policy (SNP) implementation in provinces ..... 20

2.1.6 Nutrition education/food literacy in Canadian schools ..... 26

2.1.6.1 Class curriculum: ..... 26

2.1.6.2 Teaching and learning initiatives ..... 27

2.2 Review of evidence relevant for both school food environments and partnerships (Chapters 4 and 5) ..... 32

2.2.1 Overview of organizations that work in partnership with schools regarding school food ..... 32

2.2.2 School food in New Brunswick ..... 38

2.2.2.1 Policy ..... 38
2.2.2.2 Status of implementation of school nutrition policy (SNP) and food environments in NB ..... 40
2.2.2.3 Teaching and learning ..... 41
2.2.2.4 Partner organizations and activities on school food in New Brunswick..……...48
2.3 The review of evidence for implementation (Chapter 6) ..... 50
2.3.1 Factors associated with healthy school food environments ..... 50
2.3.1.1 Challenges for healthy school food environments ..... 51
2.3.1.2 Factors that facilitated healthy school food environments: ..... 54
2.3.2 Factors associated with comprehensive school health (CSH) framework implementation and other nutrition promotion: ..... 56
2.3.2.1 Supportive factors associated with comprehensive school health (CSH) framework implementation and other nutrition promotion..... 57
2.3.2.2 Challenges for comprehensive school health framework implementation and other nutrition promotion ..... 60
2.3.3 Introduction to implementation science and its scope in this research ..... 61
2.3.4 Consolidated framework for implementation research as a conceptual framework ..... 62
2.4 Logic for this research:..... 68
3 Chapter 3: Methods ..... 71
3.1 Research Design..... 73
3.1.1 Research questions ..... 74
3.1.2 Study propositions..... 75

3.1.3 Unit of analysis ..... 76
3.2 Development of data collection tools ..... 77
3.2.1 Observation checklist for food and beverage items (see Appendix A) ..... 80
3.2.2 Observation checklist for food environment (see Appendix B) ..... 81
3.2.3 Guide for individual interviews (individual program leaders and person in charge overall school food) ..... 83
3.2.4 Interview guide for focus group interview: ..... 88
3.2.5 School self-assessment survey ..... 88
3.3 Selection and recruitment of schools ..... 90
3.4 Selection of participants within schools ..... 94
3.5 Data collection methods ..... 96
3.5.1 Observations ..... 98
3.5.2 Semi-structured interviews ..... 100
3.5.2.1 Semi-structured individual interview ..... 100
3.5.2.2 Focus group interview ..... 101
3.5.3 School self-assessment survey ..... 101
3.6 Ethical considerations ..... 102
3.7 Storage of data ..... 104
3.8 Analysis ..... 104
3.9 Trustworthiness of Data ..... 107
3.10 Characteristics of the researcher ..... 111
3.11 Research Dissemination ..... 112
4 Chapter 4 ..... 113
4.1 Abstract ..... 113

4.2 Introduction ..... 115
4.3 Method ..... 118
4.3.1 School selection ..... 118
4.3.2 Data collection method ..... 118
Observations ..... 119
School self-assessment survey ..... 119
Semi-structured interviews ..... 120
4.3.3 Data analysis ..... 121
4.4 Results ..... 121
4.4.1 Social and physical environment ..... 121
4.4.1.1 Available food program ..... 121
4.4.1.2 Food supports for students in need ..... 130
4.4.1.3 Eating environment ..... 130
4.4.1.4 Fundraising activities ..... 131
4.4.1.5 Other food practices ..... 131
4.4.2 Policy ..... 132
4.4.3 Teaching and learning ..... 133
4.4.3.1 Topics taught in the classroom ..... 133
4.4.3.2 Activities outside the classroom ..... 134
4.4.4 Partnerships ..... 139
4.4.4.1 Monetary support ..... 140
4.4.4.2 Donated food items ..... 140
4.4.4.3 Volunteer supports ..... 140

4.4.5 Highlights of positive aspects of food environments across exemplary schools ..... 141
4.5 Discussion ..... 145
4.5.1 Principal findings ..... 145
4.5.2 Strengths of this study ..... 145
4.5.3 Limitations of this study ..... 146
4.5.4 Relation to other studies ..... 147
4.5.5 Implication of this research ..... 156
4.6 Conclusion ..... 157
5 Chapter 5 ..... 158
5.1 Abstract: ..... 158
5.2 Introduction ..... 160
5.3 Method ..... 163
5.3.1 Selection of schools ..... 164
5.3.2 Selection of participants ..... 164
5.3.3 Data collection method ..... 164
Semi-structured interview ..... 165
School self-assessment survey ..... 165
5.3.4 Data analysis ..... 166
5.4 Results ..... 166
5.4.1 Types of relationship with supportive organizations and community: ..... 167
Formal partnership ..... 167
Supportive relationship ..... 168
5.4.2 Types of organizations ..... 169

Non-profit charitable organizations ..... 169
Private for-profit organizations ..... 170
Other community institutions ..... 170
5.4.3 Available support from the different supportive organizations ..... 171
Financial support ..... 171
Food donations ..... 179
Volunteer support ..... 180
5.4.4 Sustainability of supports ..... 183
5.4.5 Management of partnerships ..... 184
5.4.6 Monitoring of the programs funded by the partner organization ..... 185
5.5 Discussion ..... 186
5.5.1 Principal findings ..... 186
5.5.2 Strengths of this study ..... 187
5.5.3 Limitations of this study ..... 187
5.5.4 Relation to other studies ..... 187
5.5.5 Implications of this research ..... 193
5.6 Conclusion ..... 193
6 Chapter 6 ..... 195
6.1 Abstract ..... 195
6.2 Introduction ..... 197
6.3 Method ..... 200
6.3.1 School selection process ..... 200
6.3.2 Selection of participants ..... 201
6.3.3 Data collection ..... 201

6.3.4 Data analysis ..... 203
6.4 Results ..... 203
6.4.1 Characteristics of school food environments ..... 204
6.4.1.1 Explicit program purpose ..... 204
6.4.1.2 Clarity in cost structure ..... 205
6.4.1.3 Adapting resources to need ..... 206
6.4.1.4 Non-stigmatizing nature ..... 207
6.4.2 Internal setting ..... 209
6.4.2.1 Support from the school staff ..... 209
6.4.2.2 Sustainable leadership ..... 210
6.4.3 Outer setting ..... 212
6.4.3.1 Outsourcing of funding ..... 212
6.4.3.2 Complementary workforce from community ..... 213
6.4.4 Individual characteristics ..... 214
6.4.4.1 Constructive attitude ..... 215
6.4.4.2 Optimistic views ..... 216
6.4.5 Implementation process ..... 217
6.4.5.1 Flexibility in food selection ..... 218
6.4.5.2 Customized approach ..... 219
6.5 Discussion ..... 221
6.5.1 Principal findings ..... 221
6.5.2 Strengths of this research ..... 222
6.5.3 Limitations of this research ..... 222

6.5.4 Relevance of consolidated framework for implementation research (CFIR) (2022) to study 3 ..... 223
6.5.5 Relation to other studies ..... 225
6.5.6 Recommendations for schools ..... 229
6.5.7 Implication of this research for others and future research ..... 231
6.6 Conclusion ..... 233
7 Chapter 7: Discussion ..... 234
7.1 Principal findings ..... 235
7.2 Strengths of this research ..... 238
7.3 Limitations of this research ..... 239
7.4 Policy compliance of exemplary schools ..... 240
7.5 Relation to other studies ..... 243
7.6 Implications for practice and policy ..... 250
7.7 Implications for research ..... 252
7.8 Recommendations for a national school food program ..... 253
7.9 Conclusion ..... 255
Bibliography ..... 256
Appendix 1 ..... 273
Appendix 2 ..... 285
Appendix 3 ..... 289
Appendix 4 ..... 293
Appendix A ..... 296
Appendix B ..... 305
Appendix C ..... 309

Appendix D ..... 315

Appendix E ..... 321

Appendix F ..... 324

Appendix G ..... 364

Appendix H ..... 370

Curriculum Vitae

# List of Tables

**Table 1 Summary of comprehensive school health (CSH) framework**…….. …13

**Table 2 Food-related aspects of comprehensive school health (CSH) framework**...14

**Table 3 Examples of organizations that contribute to school food across Canada**…….34

**Table 4 Summary of nutrition curriculum for grades K-2** .....43

**Table 5 Summary of nutrition curriculum for grades 3-5** .....44

**Table 6 Summary of nutrition curriculum for grades 6-8** .....45

**Table 7 Summary of nutrition curriculum for grades 9-12** .....47

**Table 8 Examples of school food partner organizations**.....49

**Table 9 Summary of factors influencing school food environments**…….55

**Table 10 Summary of data collection tools** .....79

**Table 11 Relevance of consolidated framework for implementation research (CFIR) to this research** .....85

**Table 12 Data collection methods** .....98

**Table 13 Comprehensive list of food items available in different food programs across schools**……126

**Table 14 Summary of the food service/program for the social and physical environment**……128

**Table 15 Summary of the education activities on food**……..136

**Table 16 Available supports for school food programs**…….173

**Table 17 Relevance of consolidated framework for implementation research (CFIR) (2022) to study 3**…….224

**Table 18 Policy compliance of exemplary school food environments**……..241

# List of Figures

**Figure 1 Four pillars of comprehensive school health (CSH) framework** (Joint Consortium of School Health, 2019) ..... 12

**Figure 2 Consolidated framework for implementation research (CFIR) model** (Ament et al., 2012) ..... 65

**Figure 3 Sample page of observation checklist for food and beverage items** ..... 81

**Figure 4 Sample page of observation checklist for food environment** ..... 83

**Figure 5 Sample page of school self-assessment survey** ..... 89

**Figure 6 Types of relationship with different organizations community……..** 169

**Figure 7 Collective supports to school food-related activities from partnership**…… 180

**Figure 8 Factors associated with success in exemplary schools** ..... 204

# 1 Chapter 1: Introduction

Healthy eating behaviours contribute to a healthy body weight and promote health among young people. Maintaining and supporting a healthy body weight has become a challenge in Canada over recent decades. In 2015, the Canadian Community Health Survey showed that 31.8 % of children aged 5 to 17 years were overweight or obese (Public Health Agency of Canada, 2024). Excess body weight has long-term health consequences, including an increased risk of diabetes, high blood pressure and heart disease. Healthy eating helps prevent non-communicable diseases such as heart diseases and certain types of cancer (World Health Organization, 2021a) and supports the overall development of children, including their bones, muscles, and brain development, and boosts immunity (Centers for Disease Control and Prevention, 2021a). Healthy children learn better and achieve better academically (Centers for Disease Control and Prevention, 2021b).

Schools play an important role in supporting healthy eating in young people due to the amount of food they consume during school hours, and the education provided by schools in relation to food and nutrition. In Canada, the average school day is six hours (Ontario Council of Agencies Serving Immigrants, 2020; World Population Review, 2024) and students consume approximately 34% of their daily calorie intake during that time (Tugault-Lafleur et al., 2017). In addition, the knowledge students gain in school about food and health can influence their life-long behaviours (Albuquerque et al., 2018). Students' energy intakes during school hours and the potential for this age group

to develop positive behaviours increase the important role of schools in supporting healthy eating behaviours.

According to the World Health Organization (2026) “Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity”. In this research, healthy food refers to food items and beverages selected or prepared with reference to the Canadian dietary guidelines and New Brunswick’s school nutrition policy (Employment and Social Development Canada, 2024; New Brunswick Department of Education and Early Childhood Development, 2018). Canada’s dietary guidelines recommend the consumption of a variety of nutritious food every day, such as fruits and vegetables, whole grain foods, and protein foods including plant-based protein; and drinking plain water. The guidelines also recommend the consumption of less processed food items, and food prepared with less sugar, salt and saturated fat (Health Canada, 2026). In the New Brunswick policy, food items and beverages that contain higher amounts of nutrients and lower amounts of saturated fats, sugar or salt were identified as food with higher nutritional value and recommended to offer and serve in schools (New Brunswick Department of Education and Early Childhood Development, 2018). Overall, healthy food has two key aspects:  being nutrient-rich and avoiding excess sugar, sodium, and saturated fats (Critch, 2020; New Brunswick Department of Education and Early Childhood Development, 2018).

Healthy school food environments have the potential to promote healthy eating behaviours among children. The comprehensive school health (CSH) framework was developed to assist schools with improving student health. The framework outlines four

major, interrelated sets of initiatives: 1) creating a healthy social and physical environment, 2) healthy school policy, 3) teaching and learning about health, and 4) partnerships and services with appropriate stakeholders (Joint Consortium of School Health, 2019). These pillars comprise the health environment of a school. While there is no specific definition of school food environments, when considered within the CSH framework, a school food environment encompasses all aspects of school food: it is not limited to only the food items available at school cafeterias and other food outlets.

Provincial school nutrition policies and research articles on school food frequently describe common features of school food environments. Collectively, they encompass the four pillars of the CSH framework, focused on food. The first pillar, social and physical environment, includes all the physical and social aspects of food, such as breakfast and lunch programs, cafeterias and other food outlets, food preparation facilities and equipment; and food-related activities that impact the physical and social environment of the school, such as food and fundraising, food marketing, and food celebrations. The second pillar, food and nutrition related policies (external or internal), include all policies that affect food-related programs and practices in and near the school. In Canada, for example, every province plus the Yukon territory has a policy or guidelines for school food and/or nutrition. The third pillar, nutrition and food education, encompasses food literacy and student engagement. Food literacy refers to food-related skills, abilities, knowledge, actions, and critical analyses pertaining to the origins of food, its procurement, preparation, consumption, food loss and waste, and food systems, food experiences, and effects of food. It includes food and nutrition curricula, and gardening and cooking classes (Truman et al., 2017). Actions to engage students may

entail seeking their input in food-related decisions such as menu development and involving students in leadership roles, which may help them with taking responsibility, speaking in public, and becoming positive role models for health (Gutuskey et al., 2016). Lastly, partnerships encompass the parents and volunteers and other stakeholders who play a role in school food and nutrition, such as partnerships with community and charitable organizations, government agencies, and local food producers.

The focus of this research is on comprehensive healthy school food environments, which for the purpose of this research entails multi-component food-related actions (environments, policy, education and partnerships) that promote, educate, enable, model, and maintain students' healthy eating and development over time. Healthy food environments and positive food environments were used in this dissertation interchangeably. The terms positive state, positive initiative or positive aspect or positive change refer to the improved situation that facilitates and is associated with healthy school food environments.

Research evidence indicates that the overall quality of school food and other food activities have yet to achieve the desired standard, though some positive aspects were identified (McIsaac et al., 2015a; Taylor et al., 2011; Morin et al., 2012; Watts et al., 2014). A number of studies assessed the quality of school food in Canadian provinces. Research results illustrate the diversity in food availability in schools. For example, a study examining schools in Nova Scotia found around 60% of sample schools (elementary schools) implemented the provincial school nutrition policy (SNP) or a healthy eating policy (McIsaac et al., 2015b). Another study found 52% of the school

lunch menu items (from elementary schools) were of maximum nutritional value, although the preparation method and specific ingredients were not examined (McIsaac et al., 2015a). In Quebec, some schools reduced fried food items (Morin et al., 2012). In some schools in British Columbia, less healthy foods such as hot dogs and hamburgers were still available sometimes, but schools served more whole grain bread and more vegetables and fruits (Watts et al., 2014).

Another stream of research focuses on factors influencing school food environments. One group of studies identified factors related to implementation of SNPs (e.g., Downs et al., 2012; Taylor et al., 2011) while other studies assessed the implementation of the CSH framework related to healthy eating (e.g., Storey et al., 2011; McIsaac et al., 2017; Stolp et al., 2015). Both groups of studies found factors that facilitated change along with challenges. The common facilitating factors include champions; engagement of students, parents and stakeholders; support from stakeholders; appropriate communication with stakeholders; and policy. Challenges included financial issues, parental resistance, lack of facilities, and priority of academic responsibilities.

Every province and the Yukon Territory have SNPs or guidelines to guide school food services and, in many cases, food-related activities. These SNPs vary, with some addressing food only, whilst others are broader and include nutrition education, provision of local foods, and other aspects of school food; some policies are mandatory to follow, and some are guidelines that are recommended only (Roy and McKenna, unpublished). Several non-governmental organizations in Canada partner with schools to support and promote healthy school food environments at all levels, from individual

schools to national initiatives. Some of the activities of these organizations include financial support to school food programs (e.g., Breakfast Club of Canada, FoodShare, Heart and Stroke Foundation of New Brunswick). Some organizations promote and supply local fruits, vegetables, and other local foods in schools (e.g., Ontario Edible Education, FoodShare). As a part of supporting and promoting healthy school food environments, these organizations promote nutrition education through farm visits, gardening, and cooking classes (e.g., FoodShare, Farm to Cafeteria Canada, Fresh Roots). These organizations also support networking among schools to share knowledge regarding healthy food issues (e.g., Ontario Edible Education Network, Reseau de cafeteria); and advocacy for different initiatives relevant to healthy eating in schools (e.g., Coalition for Healthy School Food).

Although innovative and multi-component initiatives exist, to date, no studies have systematically examined exemplary schools. Exploration and sharing knowledge from exemplary cases and success stories can identify best practices and promote adherence to a practice (Levinthal et al., 2022; Harb, 2018; Lester, 2018). This research focuses on exemplary schools in New Brunswick (NB). The exemplarity of the selected schools is contextual to the overall scenario of school food in NB and selection was based on recommendations from school food personnel. An exemplary school provides predominantly healthy food and beverages, curricular and extracurricular nutrition education programs, promotes healthy food choices, and collaborates with other relevant organizations to improve school food. All programs and activities in an exemplary school might not be equally strong but overall, they demonstrate positive actions that could be useful to others. The food-related activities and quality of food items in the

exemplary school might not fit the provincial policy document completely but are in alignment with the intent of the policy.

Implementation science examines elements of implementation of an evidence-based practice (including process) and identifies issues and potential solutions related to practice (Bauer, et al. 2015), with the goal of promoting positive practices. The consolidated framework for implementation research (CFIR), is a frequently used framework in implementation science (Skolarus et al., 2017). CFIR provides guidance to study the process of implementation while identifying associated factors under five major domains: characteristics of intervention, inner setting, outer setting, characteristics of individuals and implementation process (Damschroder et al., 2009; Breimaier et al., 2015). Each domain contains multiple constructs.

The CSH framework and the CFIR (2009) guided this research to study positive school food environments in exemplary schools in NB. The objectives of this research are to:
i) Document key food-related components (environments, policy, education, and partnerships) of schools, describing similarities and differences, using CSH as a framework;
ii) Examine the roles, contributions and dependence of schools on food partners in schools, and the perceptions of students on school food and its impact on them, and
iii) Use CFIR to analyze positive initiatives by schools, documenting common themes identified by school personnel about the process and factors that influenced change.

This research aims to assist decision-makers in education and health to better understand characteristics of healthy school food environments and the process of positive change. Additionally, insights from exemplary school food environments may be useful for the recent national school food program in Canada.

The research questions are:

1) What are the components of positive food environments in exemplary schools?
2) What roles do partnerships play in exemplary school food environments?
3) What are the factors associated with success of school food environments in exemplary schools?

This research consists of one case study in six schools in New Brunswick. The data are primarily qualitative, collected through interviews, observations, and a school survey. The results are presented in three chapters structured in the form of publishable journal articles.

This research is the first academic, in-depth examination of exemplary school food environments in NB. While documentation of some successful schools occurred in the past (New Brunswick Medical Society, 2015a), data were collected colloquially and the descriptions were brief. A number of partner organizations in the province support positive school food environments and it is important to gain clearer insights into the nature of partnerships with schools and their impact on school food. As examples, Farm to Cafeteria Canada, Breakfast Club of Canada, and the Heart and Stroke Foundation of New Brunswick are partner organizations that support schools. Collectively, they aim to increase the availability of local foods in schools, support school food programs that

provide meals or snacks free of charge and organize curricular and extra-curricular initiatives in schools related to food.

Exploration of success stories guided by implementation science can provide robust evidence about key features of successful schools. This research aims to provide practical information on strategies that may support successful school food environments and help fill gaps in knowledge – providing positive evidence on school food that is potentially useful to other schools. The results can help further research into school food and nutrition while assisting practitioners. This research is especially timely as the federal government announced an allocation of $1 billion over five years for the National School Food Program in its 2024 fiscal budget (The Coalition for Healthy School Food, 2024), which is now a permanent program (Government of Canada, 2025). Additionally, the provincial government committed to increase funding to school food programs (breakfast and lunch) from $2 million to $27.5 million per year (Poitras, 2024). The exploration of exemplary school food environments can inform program and policy decision-making for effective use of these additional funds.

The remaining chapters of this dissertation review relevant literature, including the conceptual framework, and a chapter on research methods. Another three chapters then provide the findings related to each research question, in the format of a publishable article; and a final chapter provides an overall discussion and summary of the research.

# 2 Chapter 2: Literature Review

This dissertation focuses on healthy school food environments in NB schools; thus, it is important to examine existing literature pertaining to school food environments to determine what aspects have been examined and how, and with what findings. To obtain information relevant to NB schools, research articles examining the Canadian context were reviewed; most were written after 2010. Canadian literature was chosen because financial and infrastructure factors regarding school food differ among countries, which can influence the strategies and activities for successful school food environments. School food environments have different components and the implementation process for school change is multifaceted. The reviewed literature also includes documents focused on school-level activities.

Due to the breadth of this research topic, a large quantity of literature exists, and this review focuses on findings primarily related to three themes, which together, address the objectives of this research. The first theme provides an overview of SNP and its implementation status across Canada, physical environments of school foods, comprehensive school food environments organized according to the four pillars of the CSH framework, school food in other parts of Canada and school food in NB. The second theme examines factors associated with healthy food initiatives in schools. The third theme provides an overview of a conceptual framework used in this research – the consolidated framework for implementation research (CFIR). The chapter ends with a summary of the logic for this research.

## 2.1 The review of evidence for school food environments (Chapter 4)

### 2.1.1 Introduction to the comprehensive school health (CSH) framework

The CSH framework considers health as a factor that plays an important role in children's educational outcomes. It emphasizes the promotion of health, both physical and emotional, in school settings to improve students' educational outcome (Joint Consortium of School Health, 2019). The framework is based on the concept of the World Health Organization's (WHO) Ottawa Charter for Health Promotion (1986). Similar models guided by this concept exist in other jurisdictions such as 'Health Promoting Schools' and 'Coordinated School Health' (Joint Consortium of School Health, 2019). Health Promoting School (HPS) is a concept introduced by the WHO that refers to schools that act as healthy settings for living, learning and working. In general, the key initiatives that the schools take include: fostering health and learning, engaging health and educational authorities/officials and, community members/leaders with schools, creating awareness about the community's role in health promotion, developing supportive environments through programs and services such as nutrition and safety programs for school staff, health promotion programs, and counselling services. The schools also implement policies and practices for individuals' wellbeing and facilitate their good efforts and intentions (World Health Organization, 2021b).

The Joint Consortium of School Health (JCSH) states: "CSH is an approach rather than a program or initiative. An internationally recognized framework, CSH addresses school health in a planned, integrated, and holistic way in order to support improvements in student achievement and well-being." (Joint Consortium of School Health, 2019). The

four pillars of this framework provide conceptual directions on how the health of students can be addressed in schools in a coordinated manner (see Figure 1).

**Figure 1 Four pillars of comprehensive school health (CSH) framework (Joint Consortium of School Health, 2019)**

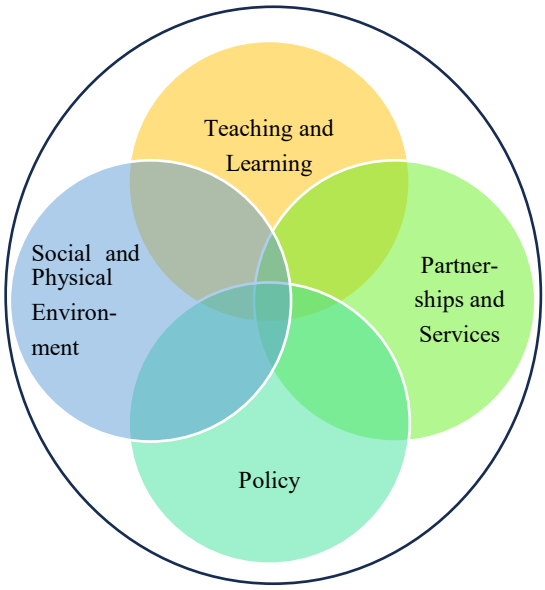



Table 1 summarizes the four pillars; and although they are presented as distinct entities, they overlap and are interlinked. For example, when related to food environments, the existence of school gardens can reflect all the CSH framework pillars as gardens can serve as an educational resource for science and other subjects, while school food programs can use the vegetables grown in gardens by students. Decisions made by school administrators to build and maintain a garden for health promotion may be part of a healthy school policy and maintaining the garden may need assistance from local partners.

**Table 1 Summary of comprehensive school health (CSH) framework**

| Pillars | Representations/Description |
|---|---|
| Social and physical environment | Social environment: denotes the emotional wellbeing of students and relationships among and between students, staff, parents and community.<br>Physical environment: infrastructure facilities such as food preparation and eating areas, gardens, sanitation equipment, etc. that are safe and accessible to all members of the school community. |
| Healthy school policy | Incorporating health promotion in all aspects of a school - (administration, decision-making, rules, policy, etc.) to create a respectful and caring environment. |
| Teaching and learning | Providing resources, age-appropriate education (curricular and extra-curricular) to build students' skills for better health and wellbeing. This pillar includes resources for professional development. |
| Partnerships and services | Ensuring a working relationship among stakeholders and school-based programs that provides support and opportunities for the wellbeing of the school community, such as health and education sectors working together and local groups assisting with food programs and/or school gardens. |

(Joint Consortium of School Health, 2019; Orava et al., 2017).

### 2.1.2 The comprehensive school health (CSH) framework applied to school food

The CSH framework may also be used to identify key elements of healthy food in schools. Table 2 provides examples of how the framework can be applied to school food.

**Table 2 Food-related aspects of comprehensive school health (CSH) framework**

| Social and physical environment | Healthy school policy (standards/guidelines) | Teaching and learning | Partnerships and services |
|---|---|---|---|
| • Food programs and food outlets in and near schools (e.g., breakfast programs, lunch programs, canteens, tuck shops)<br>• Facilities and equipment such as a kitchen, refrigerator etc.<br>• Safe and pleasant dining area<br>• Non-stigmatizing procedures in free and subsidized food programs<br>• Traditional/ culturally appropriate foods in food outlets,<br>• Ceremonies and celebrations with food<br>• Fundraising with food<br>• Food marketing<br>• Signage and messaging to promote and reinforce healthy eating | • Food safety<br>• Selection of food service providers<br>• Nutritional quality and types of food available and standards for food programs<br>• Food pricing<br>• Priority of local food procurement<br>• Not using food as a reward or punishment<br>• Policy implementation, resources, and monitoring<br>• Communication among students, parents and school personnel regarding school food (regular meetings, committee) | • Developing food literacy<br>• Developing other food skills and knowledge in health and other courses (curricula, extra-curricular activities, gardening, farm visits, cooking classes etc.)<br>• Environment-al awareness about food and food systems<br>• School based positive role modelling<br>• Professional development for those teaching about food and nutrition | • Partnerships with organizations, governments, and/or the private sector to support healthy school food (e.g., funding programs, and/or providing volunteers)<br>• Services for students with chronic food-related diseases |

The CSH framework emphasizes multicomponent interventions or approaches for healthy school food. A number of Canadian projects that attempted to improve school food environments used the CSH framework to inform their actions. In Vancouver, for example, a partner-based project about school food that included teachers, community partners, and chefs was supported with funding and professional development events. The components of the Think&EatGreen@School project included offering students the opportunity to participate in food growing, harvesting, food preparation and waste management; activities coordinated between school cafeterias and school curriculum; and promoting policy changes. This project was found to increase the number of gardens and the availability of healthy foods in schools (Rojas et al., 2017).

A study that assessed effects of Canadian school food programs on students' food behaviour stated that out of 11 programs, six included elements of CSH, namely policy, education, food provision, and involvement by students, parents, and the community (Colley et. al, 2019). Fung et al., (2012) found that adopting a CSH framework approach for school food improved students' dietary behaviour. It is more common for research to address different pillars of CSH than to address the four pillars simultaneously, as the next sections illustrate.

### 2.1.3 Research on physical and social environments

A number of Canadian studies addressed school food environments. For example, research on the quality of school food in different provinces found limited compliance with the standards from school nutrition policies (SNPs)/ guidelines (McIsaac et al.,

2015a; Taylor et al., 2011). Other studies identified challenges to the provision of healthy food, such as insufficient access to vegetables and fruits due to cost and availability; continued availability of foods and beverages of low nutritional value (Downs et al., 2012); lack of facilities and/or human resources (MacLellan et al., 2010); and parents' resistance (Quintanilha et al., 2013).

A national study by Browning et al. (2013) assessed 436 schools across Canada, except PEI and NB. The study found that 67% of schools offered healthy lunch programs and 57% of schools had healthy breakfast programs. Other health initiatives included accessibility to fruits and vegetables in 39% schools, stopping selling junk food in 54% of schools, and having junk food free days in 18% of schools.

Because Canada only announced funding for a national school food program in 2024 (Government of Canada, 2024), there is significant variation among school food programs. All provinces and territories offer school food programs, usually focused on breakfast, but program uptake by students varies considerably between provinces (Ruetz & McKenna, 2021). Overall, at least 38% of schools in Canada offer some form of school food program (Ruetz & McKenna, 2021). In the absence of programs, students may either bring food from home, buy food at school, not eat, or (if permitted) may leave the school grounds to eat.

Research on programs offers a number of insights. One study interviewed 22 program coordinators from elementary, secondary, public and Catholic schools who run school food programs (primarily funded by the Ministry of Child and Youth Services) in

Ontario. It reported that all programs except one were open to all students and free of charge. Most programs (n=14) were breakfast programs, and one served snacks only. Others had a combination of programs, such as offering breakfast and lunch. Most schools served food every day and a few served food two to three days a week, depending on the support and resources available. In general, food items included eggs, toast, granola bars, salad, wraps, pizza and apple sauce. Some coordinators were satisfied with the diversity of food items they offered whereas others struggled to select affordable food items according to guidelines set for these free food programs (Valaitis et al., 2014).

A case study (Ruetz et al., 2024) identified and examined 15 health promoting food programs offering food aligned with the Canada's Food Guide (Health Canada, 2019) across Canada including breakfast, lunch and snack programs. The case study reported on the food offered in the programs, cost structure, program models, and sources of funding. The study showed that one of the common objectives of the programs was to increase the students' access to fresh fruits and vegetables and other healthy food. Nine programs served food to students free of cost. In four programs students paid as a 'pay as you can' model and in two programs students paid full prices. The programs offered a single meal (e.g., only breakfast or lunch) or multiple meals (e.g., breakfast, lunch and snacks). Most of the programs offered lunch. Some of the programs served multiple schools. The programs were operated through central kitchens and individual school kitchens. The meals included a wide variety of food that was freshly prepared including, for lunch, a grilled cheese sandwich with vegetables; vegetarian bean chili baked with cheese and served on brown rice and/or with whole grain bread; chicken Caesar wraps

and broccoli salad. Breakfast food items included cereals, such as porridge, and fruit. Snack items included yogurt with berries; cut vegetables (e.g., carrots and cucumbers); and cheese and crackers.

### 2.1.4 Overview of school nutrition policy (SNP) in Canada

SNP is a fundamental pillar of the CSH framework, providing a guiding framework by which schools can plan, implement, and evaluate nutrition-related actions using a coordinated approach that reflects current dietary guidance (McKenna, 2010). All provinces and the Yukon territory have nutrition policies or guidelines for schools. The Northwest Territories does not have a territorial policy for school food, while Nunavut has a territorial "Framework for Action'' (Nunavut Department of Health and Social Services, 2007), which addresses food security, healthy eating, and food-related health concerns in communities.

The purposes or goals of SNPs are to promote healthy eating behaviour among school students through offering healthy food during school hours and in some cases, providing nutrition education or other food-related programs or actions. Policies or guidelines in Canada differ in their titles, content, mandate and organization but the core purpose and fundamental ideas are similar. Generally, the policy (or guidelines) establishes standards or recommendations for schools when selecting food items and beverages to offer to students.

Collectively, the policies and guidelines provide standards on different aspects of school food environments. All provinces provide nutrition standards for food items and beverages and Yukon territory refers to the Canada's Food Guide (Roy and McKenna, unpublished). All provinces and Yukon emphasize nutrition education and partnerships (with students, parents, external groups/organizations). Other common components (eight to nine provinces and territory) include food safety, special event celebrations, fundraising, meal scheduling, and using food as rewards. Some policies address pricing, local food procurement, advertising and promotional materials, environmental concerns, cultural and religious aspects and the eating environment. A few policies (three provinces) contain requirements or recommendations for emergency food arrangements and food service contracts (Roy & McKenna, unpublished).

British Columbia (BC), NB, Nova Scotia (NS), Ontario (ON), and Prince Edward Island (PEI) have provincial nutrition policies for schools that require mandatory compliance. In Manitoba (MB) and Saskatchewan (SK), schools are required to develop district-level individual policies, informed by provincial guidelines; district policies require mandatory compliance. Alberta (AB), Newfoundland and Labrador (NL) and Quebec (QC) recommend nutrition guidelines for schools to follow, i.e., the guidelines are not mandatory for schools. Most policies or guidelines were developed by Departments of Education and in some cases jointly with Departments of Health. Variations exist in the writing styles and organization of the policies (or guidelines). Some are written formally, with definite requirements (e.g., NS, NB) whereas others are written as suggestions (e.g. QC, NL).

In recent years, Canada developed a national school food policy (Employment and Social Development Canada, 2024) to inform the new national food program. Policy components include that the program is to comply with Canada's Food Guide (Health Canada, 2019) and corresponding provincial SNPs, will be accessible to all students and underserved communities will get priority. The policy also prioritizes knowledge and hands-on learning about nutrition and the food system, aiming to create awareness about food marketing and safeguarding against marketing of less healthy food, food safety, promoting a positive attitude towards food and eating, provision of culturally inclusive food, and elimination of stigma. The policy has the objectives of sustainable resources for the program, consistent and transparent evaluation and monitoring of the program, creating opportunities for local communities, and consideration of environmental sustainability.

### 2.1.5 Status of school nutrition policy (SNP) implementation in provinces

Several studies have examined the extent to which schools comply with school nutrition policies. The research provides insights into the status of food environments. For example, in Nova Scotia, a survey was conducted in 242 schools including elementary, middle and high schools (McIsaac et al., 2018). The survey studied the level of adherence to the school food and nutrition policy using indicators such as the availability of food with minimum nutritional value and promotion of food with maximum nutritional value. Thirty seven percent of schools promoted food with maximum value through pricing; 86% of schools reported affordability is considered in setting price of food. Most schools (75%) reported promoting healthy options during meal programs. A

small number of schools did not serve food with minimum nutritional values in lunch (21% of schools) and breakfast programs (29% of schools). Many schools reported avoiding activities prohibited or discouraged by the guidelines such as: not promoting food and beverages with minimum nutritional values through posters and signage (52% schools); not using food or food coupons to reward students (48% schools). One third of the schools did not use food with minimum nutrition value for fundraising. Half of the schools offered few foods with minimum nutrition value during special occasions.

In the same province, a study reviewed 110 lunch menus from elementary schools using the provincial policy as a guide (McIsaac et al., 2015a). The study found that 52% of commonly served food items were of maximum food value, 22% of moderate maximum value and 21% of minimum nutritional value. In reaching these conclusions, they did not sample the foods, rather they assumed that healthy ingredients and cooking methods were used (e.g., lean meat, whole grains). A province-wide evaluation of health promoting school policies (McIsaac et al., 2015b) in Nova Scotia (n= 236 schools) found that 59.8% of schools were implementing a healthy eating policy or SNP.

Another study analyzed a total of 1100 food items available throughout the week in breakfast, lunch, and snack programs in 25 schools in Nova Scotia (McIsaac et al., 2019a). The study found that overall, 81% of food items were permissible (maximum and moderate nutrition value) according to the provincial SNP and 19% were not permissible (minimum nutrition value). A more detailed analysis showed that 37% of breakfast items, and 44% of lunch items were of maximum nutrition value; and 55% of

breakfast items, and 47% of lunch items were of moderate nutrition value. Snacks and vending machine items were of moderate and minimum nutritional value.

Another study in Nova Scotia (McIsaac et al., 2019b) conducted an online survey in 237 schools to assess implementation of the provincial SNP where participants reported on how frequently they served different food items. The level of policy adherence of different food programs was found to be achieved in a limited number of schools: 25% of schools' breakfast program, 22% of schools' snack program, and 19% of schools' lunch program were policy adherent. In terms of types of available food items, 64% of schools served 'quick-service foods' such as French fries and garlic fingers. However, 89% of schools served 'slow-service foods' such as cooked or raw vegetables and baked dishes such as chicken, pasta.

A survey (Watts et al., 2014) conducted twice (2007-2008 and 2011-2012) included approximately 500 schools in British Columbia and investigated the implementation of the provincial school food policy. Schools reported serving more fruits and vegetables at the time of the second survey. More than 50% of the schools switched to whole wheat bread or buns. There was no change, however, in the availability of meat pizza, hamburgers and hot dogs in elementary, middle, or high schools.

In Quebec, a cross-sectional survey was conducted between November 2008 and June 2009 in 207 schools (Morin et al., 2012). The study took place after the implementation of a policy framework in 2007 as part of the Government Action Plan (launched in 2006) to promote healthy lifestyles and prevent weight related issues. It recommended to

include low fat dishes, fruit-based snacks, and whole grain products and emphasized removing fried foods and sweet and sweetened beverages from the schools. The study indicated that dessert items, cookies, muffins, salty food, chewing gum, throat lozenges, and sweetened beverages were still available in some schools. However, when compared with the previous Quebec survey conducted in 2002, it showed improvement. The study concluded that positive changes were noticed in terms of promotion of healthy eating.

In PEI, lists of food and beverages sold in all food programs at elementary schools (with data provided by 41 principals) showed that in 39.5% cases, foods were "always" and in 47.4% cases "mostly" compliant with the provincial policy. When food items offered specifically in lunch programs were considered, 74% were policy compliant (Taylor et al., 2011).

A longitudinal study in PEI (McComber T. et al., 2015) examined the lunch intake of students (lunch from school and home) through a class survey completed by the students in 2007 (n= 1992), 2010 (n= 1625) and 2012 (n= 1564). The findings were inconclusive and indicated limited adherence to SNP. The findings showed that the intake of low-fat whole grain food from school increased over five years. At the same time the intake of high-fat refined grain products increased, while intakes of fruits and low-fat vegetables decreased over time. The study indicated that schools complied with some aspects of the SNP and some aspects needed further adherence.

In Ontario, a study (Orava et al., 2017) described the activities of 25 schools (eight elementary and 17 secondary schools) to implement the SNP within the CSH

framework. Eleven schools offered breakfast programs of which 10 were free of charge. Three schools served lunch programs; one of them offered a universal free lunch program. Two schools had free snack programs. All the schools showed strong support for eating environments such as the number of tables and chairs, access to drinking water, allocated time for meals, and cleanliness.

The school environments featured promotional materials such as advertisements of local farms and cards that promoted seasonal food. All secondary schools (n=17) organized events including ‘sing for a salad’, ‘rap for a wrap’ and healthy eating quizzes to promote healthy food (Orava et al., 2017). Healthy eating was viewed as a high priority in six schools. Those schools reported several actions, including formation of a student food nutrition council, hosting ‘nutrition month’ activities, and communicating to parents about healthy food (Orava et al., 2017). Sixteen schools were found to have policies other than the provincial SNP. As examples, some schools had written policies for reasonable or subsidized pricing for healthy food, not using sugary candy as rewards, and non-food fundraising (Orava et al., 2017).

A longitudinal study (Vine et al., 2017) collected observational data on food and beverages sold in vending machines in Ontario and Alberta schools (n= 24 to 79 over the years in Ontario; n=10-9 in Alberta) and found overall limited adherence to the corresponding provincial SNP. Over the three years (Y1-Y3), there was a decrease in the number of schools having policy compliant snacks and drinks in vending machines. In Ontario, 25% (Y1) to 22% (Y3) of schools were found to have policy compliant snacks. In the case of drinks 31% (Y1) - 6% (Y3) of schools had policy compliant drinks. The

number of schools having non-compliant snack items increased from 67% (Y1) to 76% (Y3). In Alberta, 40% (Y1) - 22% (Y3) of schools had policy compliant snack items and more than 80% schools had noncompliant drinks.

A follow-up to the study by Vine et al. (2017) collected data from Ontario schools (n=50) and Alberta (n=8) and its longitudinal analysis found continuity of noncompliance in food and beverages sold in vending machines (Y4-Y7) (Vine et al., 2021). In Ontario, 56% of schools had snack items; and over 50% of school had drinks in their vending machines that were noncompliant to the provincial SNP. In Alberta, 80% of schools had noncompliant snacks, drinks and beverage in their vending machines.

The quality of school food was focused in two types of research. The first was conducted to evaluate or describe a particular food program or overall school food. The second assessed the implementation of whole school nutrition policies. Both types of research showed some positive aspects in school food but indicated that the overall standard was often not met. The positive aspects of school food included the availability of fruits and vegetables, avoiding sugary drinks and deep-fried food items, using whole grain products, promotion of healthy food options, avoidance of food as rewards, and avoidance of food with low nutrition value for fundraising. However, the compliance to provincial guidelines of food and beverages available in schools was often limited.

### 2.1.6 Nutrition education/food literacy in Canadian schools

An additional key pillar of the CSH framework is teaching and learning. Researchers conceptualize food and nutrition literacy differently, using terms such as “nutrition literacy”, ‘food literacy’ or “food and nutrition literacy” (Anderson and Falkenberg, 2016), as well as the term nutrition education. Collectively, food and nutrition literacy emphasizes three types of skills - first, the ability to read and understand labels on food (e.g., fresh, frozen, canned, processed food) and make a decision about it; secondly, the ability to participate effectively in selecting, purchasing, preparing, handling, disposing, storing, and eating food and; third, the awareness of the food system, which includes food sources, availability of food, literacy, income and employment, and youth engagement. (Anderson and Falkenberg, 2016).

Due to the relevance to a healthy life and personal wellbeing, food and nutrition literacy is a common aspect of the Canadian school curriculum. In this dissertation, the terms “nutrition education” or “food education” are used interchangeably to describe food and nutrition literacy taught in schools. Nutrition education serves as a pillar of the CSH framework (Teaching and Learning). The following section provides an overview of Canadian school curriculum, which varies by province, and examples regarding nutrition education.

#### 2.1.6.1 Class curriculum:

A study that reviewed the concepts covered by Canadian nutrition curriculum in schools (K-12) showed that primarily the curriculum is focused on the link between nutrition and

an individual's health (Anderson and Falkenberg, 2016). Additional concepts that were common were understanding food labels and acting accordingly, and engagement with food such as planning, preparing and eating. Different curricula reflected these concepts to different degrees. The least common concept was 'critical literacy', which relates food to issues such as the wellbeing of people and communities, ethical issues, and social justice (Anderson and Falkenberg, 2016). Nutrition education curriculum is embedded generally in four subject areas - science, health education, physical education, and home economics. The curriculum of home economics, which is often offered as an elective course, covers topics related to healthy eating such as food selection, preparation, management, and eating. Other curricula are designed to teach cell nutrition, the relationship between nutrition and health, and physical wellbeing (Anderson and Falkenberg, 2016).

Another study (Robertson and Scheidlers-Benns, 2016) that analyzed Canadian policies for curricula showed that collectively they address components essential for healthy food behaviours such as food groups, Canada's Food Guide (Health Canada, 2019) balance and moderation about food, food safety, the importance of healthy food, and food-related to disease conditions. The authors noted that there was no direction about food security, food origins, food manufacturing and marketing.

#### 2.1.6.2 Teaching and learning initiatives

A case study including 15 promising food programs across Canada (Ruetz et al., 2024) found that four schools involved students in food preparation as curricular activities and

two schools involved students in other food services such as distribution of food and cleaning the tables in the cafeteria.

A quasi-experimental study examined the efficacy of professional cooking classes (18 weeks) offered as elective courses for students (n=124) in five Francophone high schools in NB (LeBlanc et al., 2022). It found that students participating in this course had an increase in their cooking and food preparation skills compared with the control group; but there was no difference in their intake of fruits and vegetables or other food behaviours.

Another quasi-experimental study examined the impacts of school-based 6-week culinary courses among 9-10-year-old students in grades 4 and 5 (n= 88 in intervention group and n=82 in control group) in six francophone elementary schools in NB (Labbé et al., 2023). The data, collected through a self-administered questionnaire, showed that the culinary course increased cooking skills and food knowledge such as information about food, nutrition and health among students participating in cooking classes, especially among the boys. It did not show any positive impacts on other food skills and food behaviours such as planning and preparing a balanced meal without a recipe, consumption of fruits and vegetables, or regular breakfast consumption.

A survey conducted in 242 schools in Nova Scotia, including elementary, middle and high schools (McIsaac et al., 2018), reported that most provided (85%) opportunities for students to develop practical skills related to nutrition literacy (85%) but fewer (61%) reported incorporation of nutrition education into other subjects.

A study comprised of 436 Canadian schools indicated that the majority (67% to 59%) offer media literacy on healthy eating topics and cooking classes (Browning et al., 2013). Gardening activities were present in only 15% of schools while 26% to 30% of schools arranged for student field trips.

In Ontario, a study that included 25 schools showed that seven highly supported educational aspects of healthy eating while 17 provided moderate support and one provided low support (Orava et al., 2017). The activities included media literacy on topics related to healthy eating, visits to farmers' markets, and groceries. Additional initiatives offered opportunities to students for gardening, discussions on gardening in eco clubs, participation in 'food education day', and regional specialty snack days for skill development.

Another study in Ontario assessed the impacts of food literacy programs (interventions) on students participating in fruit and vegetable programs (eight weeks) in grade 5 students ($n$ = 139 intervention and $n$ = 148 control) (Woodruff et al., 2020). The analysis of data collected through pre and post intervention online surveys showed that there was an increase in fruit and vegetable intake in students but no impact on students' knowledge of food groups and their daily requirements.

Action Schools! BC (AS! BC) is a program available in British Columbia that promotes healthy eating education activities (e.g., taste testing, food preparation and storing, and a fruit and vegetable challenge, including multiple lessons on fruits and vegetables every

term) in the classroom, school and community on a regular basis (Naylor et al., 2016). It supports teachers with resources including materials such as cutting boards, knives, and ice bags, and guidance to develop lesson plans and conduct lessons. When implementation was assessed after one year, the results showed that 42% of teachers who registered for the program used the AS!BC. Thirty-nine percent of the teachers using AS!BC, delivered classroom healthy eating activities weekly and 28% did so monthly.

A cross-sectional study assessed the integration of healthy and environmentally sustainable food initiatives in public schools in Vancouver according to six domains including food gardens, composting and food preparation initiatives (Black et al., 2015). The research included 33 elementary and secondary schools from the Vancouver Board of Education. Researchers developed and used a scoring system (0 to 4) according to different stages of action of a particular initiative where '0' indicated no initiative was present and '4' meant that the initiative was highly developed and a significant part of school activities. The results indicated that 75% of schools had gardens though six had just started. The gardens varied in size, scope and purpose, such as being used for teaching activities related to healthy eating, cooking, plant science and agriculture. In the study, 27 schools had some form of composting system; the composting systems were operational in 20 schools, with the engagement of school personnel. Most schools (91% of schools, n=30) offered food preparation activities; 18 were just in the initial stages; and 10 had regular activities for students.

Studies also examined different initiatives to promote learning about food, food skills and environmental sustainability, with positive outcomes (e.g., the Think&EatGreen@School project). The project was initiated by the Vancouver Board of Education to promote awareness, knowledge and skills about food and the environment. A cross-sectional survey was completed by 937 students from grades 6 to 8 in 26 schools in Vancouver Board of Education (Stephens et al., 2016). The results found that students' participation in the project's food and nutrition education activities was relatively limited. Overall, fewer than 50% of the students participated in nutrition education activities. In 2011- 2012, the researchers assessed the extent to which students learned about a number of food-related topics and/or activities (e.g., gardening, composting and food preparation). Over half (51%) of the students learned about recycling, 45% about Canada's Food Guide, 36% food preparation, 35% food grown in BC, 32% composting, 27% tasting/choosing healthy food and 21% gardening activities. It was evident that excluding recycling, the participation rates were less than 50%. Only 2% of students participated in all measured activities and 20% of students had no engagement in any kind of activity. In terms of engaging students in practical learning, these initiatives showed limited success. In the case of composting, for example, there were more responses to 'I learn how to do composting' than 'I did composting on my own'.

Research on nutrition education in different provinces of Canada showed that schools addressed food literacy including media literacy and took initiatives to provide hands-on experience on food preparation and food growing including gardening and composting. Other initiatives included visits to farmer's markets and celebrating 'nutrition education

day'. Research on nutrition education provided an overview and outcomes of different programs including food preparation lessons and food growing programs. Overall, these initiatives increased students' knowledge and skills but their impact on the students' intake of fruits and vegetables were mixed. Most studies did not confirm the level of universal students' participation, while a few studies showed limited participation. In some cases, the initiatives were just in initial stages.

## 2.2 Review of evidence relevant for both school food environments and partnerships (Chapters 4 and 5)

### 2.2.1 Overview of organizations that work in partnership with schools regarding school food

Partnerships are a key component of school food. Several non-governmental organizations in Canada partner with schools to support and promote healthy school food environments at all levels, from individual schools to national initiatives. Organizations may provide financial support to school food programs (e.g., Breakfast Club of Canada, FoodShare). Some organizations promote and supply local fruits, vegetables, and other local foods in schools (e.g., Ontario Edible Education). As a part of supporting and promoting healthy school food environments, some organizations promote nutrition education through farm visits, gardening, and/or cooking classes (e.g., Farm to Cafeteria Canada, Fresh Roots). Some organizations also support networking

among schools to share knowledge regarding healthy food (e.g., Ontario Edible Education Network).

Relatively little literature exists on this specific topic, however, a recent pan-Canadian case study of 15 promising school food programs showed that eight schools received financial donations from community organizations (Ruetz et al., 2024).

The Orava et al. (2017) study in Ontario found that partners assisted schools by training personnel to teach the nutrition curriculum (Orava et al., 2017). The majority of schools (n=25) in the study participated in training and consultation, which was organized by the public health unit during the initial phase of SNP adoption. Public health departments shared resources and information with school staff and assisted in program development and problem solving. The study also found that schools worked with the Heart and Stroke Foundation of Canada, the Canadian Cancer Society, Boys and Girls Clubs and other groups.

A wide variety of partners are engaged with influencing school food environments, including charities at all levels, (national, provincial/territorial, regional, and municipal); government partners from a variety of departments, including health and agriculture; the private sector, such as businesses at all levels, farmers and the food companies; and parents and community members. Private organizations including food companies support school food frequently through charitable organizations. As an example, Breakfast Club of Canada donors include Walmart, Breakthru Beverage Canada, and Tim Hortons (Breakfast Club of Canada, 2022). However, the involvement of food

companies in school food received criticism from other research on food marketing (Kent et al., 2020; Velazquez et al., 2017). Table 3 provides examples of a number of organizations that work in partnership with schools to promote healthy food. Their common contributions include access to healthy food items through funds and food donation; information and sharing skills.

**Table 3 Examples of organizations that contribute to school food across Canada**

| **Name of the organization** | **Mandate** | **Activities** |
|---|---|---|
| Breakfast Club of Canada (National) | Fostering health and educational performance of Canadian children through promoting food security, improving emotional wellbeing and helping children from high needs communities | Provides funds, food items, equipment, and support for schools to set up free breakfast programs.<br><br>The program meets the standards of provincial nutrition policies and Canada's Food Guide recommendations. (Breakfast Club of Canada, 2020a)<br><br>Funded 1809 breakfast programs across Canada and 46 in New Brunswick (NB) in the year 2019-2020. (Breakfast Club of Canada, 2020b)<br><br>Encourage a welcoming and attentive atmosphere for all students during breakfast.<br><br>Encourage schools to engage students in the program to promote their leadership skills. |

| | | |
|---|---|---|
| | | Encourage programs to include volunteers from parents and communities to increase community engagement.<br>(Breakfast Club of Canada, 2020a) |
| Ontario Edible Education Network<br>(Provincial) | Coordination among existing organizations and groups that work for healthy food environments to share resources, ideas, and information<br><br>The goal is to provide children and youth with access, knowledge and skills about healthy and sustainably produced food.<br><br>Working with the government or others to facilitate these opportunities through policy and programs. | Shares organization's success stories, challenges, and contacts through a website and newsletter.<br><br>Development of local food action hub that supplies local food to school.<br><br>Development of a searchable repository that facilitates information sharing, resources, mentorship etc.<br><br>Advocacy for universal student nutrition programs with food literacy.<br><br>Development of a detailed scenario of nutrition programs across Ontario.<br>(Ontario Edible Education Network, 2014) |
| Nourish<br>(Nova Scotia) | Promote health of youth through supporting school food programs and related activities. | School Healthy Eating Program- supports school breakfast, lunch and snack programs with fundraising, capacity building with self-assessment and planning resources |

| | | |
|---|---|---|
| | | (Nourish, 2018a).<br><br>Nourish your Roots program facilitates the supply of fresh food ingredients produced by local farmers to the community. The funds are used to support school food programs. (Nourish, 2018b)<br><br>Provide resources for school gardens and food literacy. (Nourish, 2018c; Nourish, 2018d) |
| Fresh Roots (Vancouver, BC) (Municipal) | Promote healthy eating, ecological wellbeing and community engagement through gardening and related programs (schoolyard market, educational farm etc.). | Mentor youth leaders through a garden club.<br><br>Provide internships for students to build their capacity to strengthen the local food system.<br><br>Arrange outdoor experiential learning with teachers and students.<br><br>Sell food they grow to the school community and neighbouring community.<br><br>Work with schools to set up school market gardens and related programs. (Fresh Roots, n.d.) |
| FoodShare (Toronto) (Municipal) | Vision of ensuring healthy food for all through a sustainable food system. They emphasize access, consumption and knowledge about fruits and vegetables. | In partnership with others in Toronto, they support over 750 school meal programs every year (healthy breakfast, snack, lunch programs).<br><br>They deliver fresh fruits |

| | | |
|---|---|---|
| | | and vegetables to schools.<br><br>Educate students in growing and preparing food through the 'Field to Table' food literacy program.<br><br>Their school year garden project provides training and employment to students. They employed 30 students in 2017.<br><br>Establish other food-related programs for different groups in the community (e.g., hospital clients, breast cancer survivors, parents or caregivers).<br><br>Run mobile food markets and community markets to increase the accessibility of healthy food in the community. (FoodShare, n.d.) |

In the case of partnerships, little academic research or documentation exists. In general, partner organizations work with schools to increase their capacity to promote healthy food environments. They support food-related activities in school as a part of promotion of health or overall wellbeing of students including food security. Some organizations had the mandate to support environmental aspects of food. Collectively, partners provide support for food activities including food programs, nutrition education programs and promotional activities with funds, resources materials, food items and advocacy.

Sometimes schools receive help with program design and its implementation and relevant consultation.

### 2.2.2 School food in New Brunswick

Because this research occurred in NB, it is important to review information relevant to school food in the province as it relates to the CSH framework; relevant research, however, is limited. This review draws on documents from different organizations such as government agencies, community groups, and nonprofit organizations that address food programs and activities in schools.

#### 2.2.2.1 Policy

NB adopted its first SNP in 1991, the first province in the country to do so. The policy was revised in 2008 and the latest revision occurred in May 2018 by the Department of Education and Early Childhood Development, with some aspects rescinded in December 2018. This policy is required to be followed in all public schools and provides specific nutrient standards. Foods from four major groups (grains, meat and alternatives, milk and alternatives, fruits and vegetables), mixed entrees, beverages, and à la carte items are divided into 'higher nutritional value' and 'lower nutritional value' categories according to their nutritional content. Only foods of higher nutritional value are permitted. The nutrition standards are applicable to all foods, including those used in school food programs and for fundraising, except breakfast programs. Because breakfast programs may rely on donations that vary in their nutritional value, schools are required to serve the healthiest possible food items. The policy requires schools that offer lunch

to price a meal that at least includes vegetables, fruits, whole grain products, milk or alternatives and meat or alternatives. The policy requires a safe, pleasant, and supervised eating environment. It requires schools to inform students and parents about available free or subsidized food programs and to serve students in a non-stigmatizing manner. It prohibits the use of food as rewards or punishments. Schools are required to create opportunities for the involvement of parents and students in nutrition activities (New Brunswick Department of Education and Early Childhood Development, 2018). Other policy requirements address healthy food in celebrations, role modeling for healthy eating, profit margins from school food, monitoring, and communication with stakeholders. The policy also addresses goal setting for healthy school environments and provides specific guidelines for school food service contracts and advertisements (New Brunswick Department of Education and Early Childhood Development, 2018). The policy suggests minimally processed, locally grown food and environmental awareness in the school food system. In the May 2018 policy revision, chocolate milk and 100% juice were banned, which led to debate among some stakeholders, including dairy farmers (Fraser, E., 2018). After a provincial election and a change in government, the new government revised the policy: chocolate milk and 100% juice were once again allowed for sale in schools, although districts could retain the May version if they chose (New Brunswick Department of Education and Early Childhood Development, 2018; Lau, R., 2018).

#### 2.2.2.2 Status of implementation of school nutrition policy (SNP) and food environments in NB

Although the policy is intended as a requirement (not guidelines, which is the case in some provinces), implementation has been problematic. Research on the 1991 policy indicated that it was unsuccessful due to lack of motivation of schools and capacity for change (McKenna, 2000). The research concluded that successful implementation requires resources such as time, money, and expertise as well as active engagement of school personnel and recognition of school food as part of their professional responsibility (McKenna, 2000).

In 2016, the government conducted its first comprehensive evaluation of policy implementation in 25% of schools in NB (randomly selected) (New Brunswick Department of Education and Early Childhood Development, 2016). The evaluation consisted of school visits by dietitians who computed scores on policy components representing different domains. The two domains that reflected key components of the scoring structure and encompassing score were: 1) foods available on the day of the visit – 30%, and other food mentioned in interviews – 10%) and 2) available support for healthy eating (e.g., communication, committee) – 35%. The other domains were 3) organization (food safety, etc.) – 5%, 4) eating environment (adequate space, supervision during eating, etc.) -10%, and 5) food security (subsidized food programs, etc.) – 10%. The results were that the overall score of schools was 73 (Grade C). In the domain of food available on the day of visit, the score was 67 (grade D+) and support

for healthy eating was 76 (Grade C+). The Department did not report results from individual schools.

An informal survey led by the NB Medical Society, where dietitians evaluated the lunch menus from 100 schools, found that 27% of them were compliant with the provincial SNP, 54% of them did not meet the policy standards and compliance was inconclusive for the remaining menus (New Brunswick Medical Society, 2015b). Subsequently, the Medical Society initiated a project to recognize schools that provided healthy food to students. They selected five schools and one organization/group that offered foods that were healthy. The results were summarized in an online document, 'Where to Eat in New Brunswick Schools'. Positive actions in these schools and the organization included food made from scratch, the use of whole wheat grain products, and the use of water and white milk as beverages. The publication included photographs of meals that contained vegetables and fish; however, it did not provide detailed information (New Brunswick Medical Society, 2015a).

#### 2.2.2.3 Teaching and learning

Similar to other provinces, NB developed school curricula to teach students about healthy eating and food. Food and nutrition literacy topics are taught from grade K-12 as part of health and physical education (see Tables: 4, 5, 6 and 7). The Atlantic science curriculum teaches the scientific health aspects of nutrition, which includes the role of nutrition in the maintenance of the body. The school curriculum in NB focuses on the importance of healthy eating, food group basics and nutrients (their functions and

metabolism), and the promotion of nutrition. Students learn about the importance of regular and healthy eating for healthy life, proper hydration, and food safety. In advanced grades, they learn about food technology, advertising or marketing, related government regulations, links between food and certain chronic disorders and their prevention. As well, students are taught about environmental factors that affect food choices and to identify strategies to improve their diets and to plan for their long-term wellness.

**Table 4 Summary of nutrition curriculum for grades K-2**

| Grades | Subjects | Topics |
|---|---|---|
| | Health Education | |
| Kindergarten | You and your world | 1. Practicing hand washing as a part of a healthy lifestyle.<br>2. Description of 'healthy food choices' as a part of behaviours that support a healthy lifestyle. |
| 1 | You and your world | 1. Contribution of good eating habits to health and wellbeing.<br>• identification of four food groups with examples.<br>• importance of regular meals including breakfast.<br>• food safety (handling, storage of food). |
| 2 | You and your world | 1. Understanding, developing and maintaining a healthy lifestyle.<br>• explain that types of food eaten have an effect on health.<br>• importance of eating a complete breakfast.<br>(Department of Education, 2005a) |

**Table 5 Summary of nutrition curriculum for grades 3-5**

| Grade | Subjects | Topics |
|---|---|---|
| | Health Education | |
| 3 | Personal Wellness | 1. Importance of healthy eating for a healthy lifestyle.<br>• what healthy eating is.<br>• four food groups.<br>• Canada's Food Guide.<br>• food labels. |
| 4 | Personal Wellness | 1. Examining the benefits of healthy eating for a healthy lifestyle.<br>• benefits of healthy eating and proper hydration.<br>• four food groups.<br>• identification and using food labels to make healthy choices. |
| 5 | Personal Wellness | 1. Assessment of personal health habits and relation to wellness.<br>• basic functions of carbohydrates, protein and fat.<br>• assessment of eating habits with the help of Canada's Food Guide.<br>(Department of Education, 2005b) |

**Table 6 Summary of nutrition curriculum for grades 6-8**

| Grades | Subjects | Topics |
|---|---|---|
| 6 | Health | 1. Identification of strategies for promoting nutrition<br>Teaching suggestions/e.g.:<br>• creating and analysis of a food diary.<br>• comparing the diary with Canada's Food Guide and developing a plan to improve personal nutrition.<br>• using food labels to plan better nutrition.<br><br>2. Influence of environments on health choices<br>Teaching suggestions/e.g.<br>• using Canada's Food Guide to assess school lunch or a snack.<br>• discussing results to identify sources of support and suggestions for improvement.<br><br>3. Use of advertisements for health promotion.<br>• students will analyze two advertisements on food to identify types of food sold, key messages, age and sex of target group and key techniques (fun, rewards etc.).<br>• from the group discussion, students individually or in pairs, will create effective advertisements to promote healthy food choices. In groups, they can prepare campaigns for healthy food choices.<br>(Department of Education, 2005c) |
| 7 | Health | 1. Identification of needs pertaining to student wellness in school. Teaching suggestions:<br>● students can conduct a needs assessment of an aspect of the school environment such as healthy food choices.<br>● from the review of the assessment, they will explain the purpose of the assessment, the main issues about healthy food choices and a plan for improvement.<br>● develop a plan for improvement of the situation that includes a timeline, support system, evaluation and monitoring system.<br>2. Implementation and evaluation of an initiative that promotes students' wellness in school.<br>• students implement and evaluate their action plan for improvement of healthy food choices. |

| | | |
|---|---|---|
| | | • students identify the significance of community participation (community advocacy) and collective action to make individual choice (healthy food choices) easier.<br>• Lunch time cruiser- someone who provides non-food rewards to students who choose healthy food options.<br>• from the review of the assessment, they will explain the purpose of the assessment, the main issues about healthy food choices and a plan for improvement.<br>• develop a plan for improvement of the situation that includes a timeline, support system, evaluation and monitoring system.<br>(Department of Education, 2005d) |
| 8 | Health | Students review their fruits, vegetables and water intake as a part of the wellness wheel. They review their previous goals for personal wellness and set new goals for personal wellness.<br>(Department of Education, 2005e) |

**Table 7 Summary of nutrition curriculum for grades 9-12**

| Grade | Subjects | Topics |
|---|---|---|
| | Health and physical Education | |
| 9/10 | Physical Education and Health Grades 9-10 | Concepts of a balanced diet.<br>Understanding and incorporating Canada's Food Guide in their personal plan.<br>(Department of Education, 2005f) |
| High School | Nutrition for healthy living | 1. Factors that determine long-term health and wellness.<br>• definition of wellness.<br>• guidelines to promote wellness (e.g., Canada's Food Guide).<br>• developing a personal plan for wellness.<br>2. Roles of nutrition in the body- digestion, absorption, transportation and metabolism.<br>• identification of six categories of nutrients (carbohydrate, fat, protein, vitamins, minerals and water).<br>• role of each category of nutrient in the body.<br>• calculation of required amount of nutrients for wellness.<br>3. Identification of chronic conditions and relevant discussion for prevention.<br>• identification of chronic conditions and their risk (e.g., diabetes, obesity).<br>• relevant topics such as glycemic effect, vegetarian diet, role of energy balance in overweight, underweight, eating disorders.<br>4. Marketing issues related to food.<br>• effects of advertisements on food choices.<br>• government regulations on using additives in food.<br>• food handling procedures.<br>• food technologies (organic, genetically modified food etc.).<br>5. Available post-secondary programs for |

| | | |
|---|---|---|
| | | careers in nutrition.<br>(Department of Education, 2005g) |

The curriculum includes basic knowledge on the importance of healthy eating, Canada's Food Guide, different groups of food and their functions, food safety, and metabolism. These topics are taught broadly under the subject of health education. The curriculum provides opportunities for schools to teach students practical skills such as calculating their calorie requirement, evaluation of their diet, and planning for improvement that could promote healthy food behaviours. Some of the subjects, specially in higher grades, could be electives and all students might not learn these subjects.

#### 2.2.2.4 Partner organizations and activities on school food in New Brunswick

A number of organizations in Canada partner with schools regarding food (see Chapter 1, 2.2.1 in this Chapter and 5.1 in Chapter 5 for additional details). Similar to other provinces, a variety of groups partner with schools in NB, and may work at the national, provincial, territorial, or municipal level. They support schools with resources such as funds and tools. Other contributions include support for hands-on nutrition education such as cooking classes and farm visits; and advocacy for relevant initiatives. Table 8 indicates some of the organizations that are active in NB.

**Table 8 Examples of school food partner organizations**

| Organization | Mandate | Activities |
|---|---|---|
| Heart and Stroke Foundation of Canada and Heart and Stroke Foundation of New Brunswick (NB) (national and provincial) | Improve the health of Canadians by decreasing the risk of stroke and heart disease through health promotion. | 'Heart Healthy Schools' provide tools and resources to schools to promote fruits and vegetables and water intake among students along with other healthy behaviours (Heart Healthy Schools, n.d.).<br><br>Advocates for restriction of marketing of less healthy food to children. (Heart and Stroke Foundation, 2020) |
| Farm to Cafeteria Canada (national with provincial activities) | Network to facilitate the availability of locally grown food to schools, which also supports the local economy and food system. | Provides grants to schools to set up salad bars using fresh, locally grown vegetables and fruit.<br><br>Promotes educational components such as cooking classes, farm field trips, and greenhouse and garden facilities for schools.<br><br>Organizes Farm to School Month campaign. (Farm to Cafeteria Canada, 2019) |
| NB Medical Society (provincial) | Advocacy for health of NB citizens. | Project to assess school menus in NB (New Brunswick Medical Society, 2015b).<br><br>Project to recognize exemplary schools in NB that offer healthy school food (New Brunswick Medical Society, 2015a).<br><br>Promote healthy foods in children and teens and |

| | | |
|---|---|---|
| | | families through messages, free summer breakfast programs and family wellness events including healthy BBQ parties (5-2-1-0 A way of Life, n.d.) |
| Chefs! Getting a start for healthy living (An initiative from the Government of New Brunswick) (provincial) | Toolkit to engage children in learning about healthy eating, physical activity and cooking skills to choose a healthy lifestyle. | This toolkit helps educators, parents, youth leaders, health care educators to teach children (8 - 12 years) in an interactive way about - healthy eating, food safety, cooking, nutrients, and physical activity. (Government of New Brunswick, 2019) |

## 2.3 The review of evidence for implementation (Chapter 6)

### 2.3.1 Factors associated with healthy school food environments

Research focuses on factors influencing school food environments addressed factors related to implementation of SNPs (e.g., Downs et al., 2012; Taylor et al., 2011), and implementation of the CSH framework and programs related to healthy eating (e.g., Storey et al., 2011; McIsaac et al., 2017; Stolp et al., 2015). These studies found factors that facilitated a positive state along with challenges. The research that exists is often based on interviews with principals, students and parents. The studies identified a number of challenges and facilitators (see Table 9 for a summary).

#### 2.3.1.1 Challenges for healthy school food environments

Historically, the low priority of healthy food in schools is an overall challenge, which is influenced by a number of factors.

**Cost of healthy ingredients:** A study that examined factors affecting students' decisions to buy food in Ontario schools sought the views of 20 secondary students; the results indicated that the price of food is an important factor in their purchasing choices (Vine et al., 2014). Cost is also reported consistently as one of the most common and strongest barriers faced by school personnel when they try to improve school food menus (McIsaac et al., 2019c; Cornish et al., 2016; Taylor et al., 2011; Downs et al., 2012, Ausenhus et al., 2023). The cost of healthy food ingredients is often higher than prepackaged food. Having a cook make fresh and healthy food increases wage costs because of extra work (Downs et al., 2012). As a result, the price of food in school cafeterias increases. It is noteworthy that one school authority reported that if the school does not need to make a profit from school food, then healthier food items can be provided to students without extra cost (New Brunswick Medical Society, 2015a).

**Loss of revenue:** A related challenge is that increased prices for food often result in decreased food purchases by students. This situation becomes problematic because some schools or districts use school food sales as a source of revenue. In one study, some principals admitted that due to a loss of revenue they stopped serving healthy food and returned to their previous menu (Taylor et al., 2011). In many cases, making profit from school food is viewed as important as children's nutrition and the generated profit supports other activities in schools (McIsaac et al, 2019c). An earlier study from NB

found that some schools viewed sacrificing profit for the purpose of health or providing policy compliant food was an “unrealistic” and “impractical” idea (McKenna, 2003).

**Off campus competitive food:** Food services in schools often compete with less healthy food (not policy compliant) that is available at off-campus food outlets at a relatively low price (Reeve et al., 2018; Vine et al., 2014). One Canadian study found that the presence of three or more fast food outlets within one kilometer of any school increased the intake of less healthy food of its students when compared to a school that did not have any fast-food outlets nearby (Heart and Stroke Foundation, 2005). Schools located in an area near food outlets that offer less healthy fast foods are disadvantaged. When they remove less healthy food items from cafeterias, students purchase those items off campus. This response means that schools that offer policy compliant food may not see positive changes in food consumption because of the availability of less healthy food in surrounding areas (Downs et al., 2012).

**Lack of communication:** Communicating with students and parents is an important part of the change process (McIsaac et al., 2019c; Everitt et al., 2023). Without it, removing food from the school cafeteria gives a poor impression to the students about changes towards healthy food in cafeterias (Vine et al., 2014). In one study, most parents stated they were not informed properly by the schools. In another study, one parent thought that providing tips on healthy snack items in the school newsletter might be the sole purpose of the policy (MacLellan et al., 2010). In the same article, students’ reluctance was also reported by schools as a challenge. Students felt they were not informed or asked about their preferences when planning new menus.

**Parents' resistance:** A number of studies identify resistance from parents as a factor that affects the introduction of a healthy menu. Some parents perceive that guiding or modifying school food as manipulating the students' choices and diminishing their autonomy (Quintanilha et al., 2013; Downs et al., 2012). Another group of parents were concerned about the safety of their children who leave campus to buy food of their choice (in most cases food of low nutrient value that schools try to eliminate) (Quintanilha et al., 2013). Due to lack of knowledge and financial resources, parents are not fully aware of the significance of good nutrition and do not support healthy food practices (McIsaac et al., 2019c; Quintanilha et al., 2013; Downs et al., 2012). In many cases, students bring less healthy lunches from home and birthdays are celebrated in classes with cupcakes (Downs et al., 2012).

**Lack of facilities and access to healthy food:** Lack of facilities such as kitchens and equipment to prepare food and staffing/volunteers is also a vital issue (McIsaac et al., 2019c; Taylor et al., 2011; MacLellan et al., 2010). Because of this issue, many schools depend on prepackaged food, local vendors or fast-food chain restaurants that supply food to schools (MacLellan et al., 2010). Access to healthy food or food ingredients is another issue, especially for those who are located in rural and remote areas (McIsaac et al., 2019c; Downs et al., 2012).

**Lack of education and skills:** Lack of education, skills and training about nutrition among staff responsible for food management in schools is a challenge (Downs et al., 2012; Taylor et al., 2011; McKenna, 2003). The policy itself is sometimes unclear for

school personnel to interpret properly (Downs et al., 2012, McKenna, 2003). Schools may be more focused on academic pursuits than promotion of health and healthy eating habits (Aydin et al., 2021). In some provinces, policy adoption and implementation are not mandatory and even if they are mandatory, there is not always accountability for implementation (McIsaac et al., 2015a)

#### 2.3.1.2 Factors that facilitated healthy school food environments:

Although significant challenges exist to improving school food environments, research indicates there are also factors that influence change positively.

Support from stakeholders such as students, parents, principals, teachers, and community members is an important factor for improvement of school foods (McIsaac et al., 2019c; Taylor et al., 2011). Personal enthusiasm from principals or staff members who are actively involved in school food improves the quality of food and implementation of SNP (New Brunswick Medical Society, 2015a; Quintanilha et al., 2013).

Having a school champion who is solely dedicated to organizing and coordinating nutrition related activities is identified as a facilitator for school food programs (Quintanilha et al., 2013). For better implementation of the policy and healthy school food environment, involvement of students and parents is essential. For involvement to occur, effective communication is crucial. Examples of involvement include student and parent involvement in menu planning and providing opportunities for volunteering in

school cafeterias and school food services (MacLellan et al., 2010; Taylor et al., 2011; Downs et al., 2012; Vine et al., 2014). Respondents from schools with gardens reported that it was economically beneficial and helpful to engage students in school food initiatives (Vine et al., 2014). Farm to school activities involving students in field trips and growing food can create student interest for fresh natural ingredients such as fruits, vegetables, and herbs and can become a source of healthy ingredients for school meals (Graham and Zidenberg-Cherr, 2005).

A few studies considered pricing strategies as a potential facilitator in promoting healthy food. This strategy entails keeping the price of healthy food items at a minimum while increasing the price of less healthy food. In high schools in the Netherlands, increasing the availability of healthy food items combined with a pricing strategy increased the students' purchases of healthier items from vending machines (Kocken et al., 2012). In NB, one school priced chocolate milk much higher than white milk (New Brunswick Medical Society, 2015a).

**Table 9 Summary of factors influencing school food environments**

| Challenges | Facilitating factors |
|---|---|
| High price of healthy food<br>Loss of revenue<br>Access to off campus competitive food<br>Parents' resistance<br>Lack of cooking facilities and staff<br>Lack of education and skills<br>Giving less priority to nutrition than other pursuits within the school | Support from stakeholders<br>Enthusiasm and dedication of principals or school staff<br>Having a champion<br>Communication with students and parents and their involvement in school nutrition activities<br>School garden<br>Pricing strategy to encourage students to buy healthy food |

### 2.3.2 Factors associated with comprehensive school health (CSH) framework implementation and other nutrition promotion

Promoting healthy food is a part of CSH, and the NB policy mentions the CSH framework approach as part of SNP implementation (New Brunswick Department of Education and Early Childhood Development NB, 2018); a number of other Canadian jurisdictions use the CSH framework to inform their school food decisions. This research project is guided by the CSH framework to collect and analyze the data.

As an example, the CSH framework is integral to interventions to promote healthy eating and physical activity in Alberta's APPLE schools' project. A study on the perceptions of teachers in these schools highlights the outcomes and factors influencing implementation (Storey et al., 2011). Teachers reported different positive outcomes in the school community, including students' interest in trying new healthy foods, being proud of healthy food, and bringing healthier food from home. Other positive changes included implementation of cross curricular healthy eating and physical activity topics, serving healthier snacks in the classroom, using non-food items as rewards, parents' appreciation of healthier food for celebration of events, and parents' interest and participation in health initiatives.

#### 2.3.2.1 Supportive factors associated with comprehensive school health (CSH) framework implementation and other nutrition promotion

Healthy eating is a component of overall health promotion in schools, including the CSH framework. In some schools, this framework is adopted for the promotion of health and better educational outcomes. Exploration of the implementation process of this framework provides insights about important factors that are relevant to a healthy school food environment. This section explains factors that influence the process of implementation of the CSH framework.

**Building support:** Creating ongoing support through communication, organizational support and professional development opportunities facilitated the implementation of the APPLE Schools project in Alberta. It created enthusiasm and a sense of ownership about the project among the teachers (Storey et al., 2011).

Because of the existing academic workload, some principals and teachers preferred to use extra staff instead of professional development and curricular resources for health promotion activities (Colley et. al, 2019). In fact, school champions or lead people are often noted as important human resources. Other supports include funding, materials, and partnerships (Stolp et al., 2015).

**Defined roles:** Well-defined responsibilities related to health or healthy eating between teachers and School Health Facilitators was also important in Alberta. Teachers stated that sometimes there is confusion about their roles and responsibilities. Moreover,

teachers have different levels of perception about their responsibilities as they have other academic responsibilities (Storey et al., 2011). Strong relationships among school champions, teachers and families is key (Stolp et al., 2015).

**Leadership:** Leadership is considered a vital aspect of health promotion in schools (Ausenhus et al., 2023; Machado et al., 2022; McIsaac et al., 2017). According to teachers in APPLE Schools, School Health Facilitators were the key leaders. Support from the principal and administration are also essential for better implementation (Storey et al., 2011).

In some schools, principals are identified as important champions to support health-promoting activities in schools. They also recognize the benefit of hired staff (McIsaac et al., 2017). For long-term maintenance, a committee consisting of stakeholder members will be more beneficial than leadership from a single person. It will reduce the workload of the champion and minimize the effects of employee turnover (Stolp et al., 2015).

**Embedding in the school culture:** Accepting healthy eating or health promotion activities as a part of daily activities in schools instead of a special agenda is helpful. The APPLE Schools considered it as a positive outcome regarding initial activities and was also an important factor for further progression (Storey et al., 2011). Health initiatives embedded in or consistent with the school culture can gain more support from the school (McIsaac et al., 2017).

**Engagement of stakeholders:** Engaging all stakeholders such as students, teachers, other school staff, parents, appropriate community members, and relevant jurisdictional partners is an essential step as it will create a support system within the school community (Ausenhus et al., 2023; Storey et al., 2011; McIsaac et al., 2017; Stolp et al., 2015). Participation of stakeholders can result in a positive shift in the perceived value of health promotion in schools (Gleddie, 2012). Coordination and communication among stakeholders can help schools accept health initiatives into their culture. As an example, 'Learning Circles', a community participatory program from Farm to Cafeteria, includes community organizations, community members, and schools to promote local food in indigenous communities. The activities and their impacts in schools and communities include increased access to local and traditional foods, opportunities to build youth knowledge, skills and practices on traditional food, and fostering leadership and community relationships (McEachern et al., 2022a; McEachern et al., 2022b).

**Policies:** External policy for health promotion or healthy eating justifies school initiatives for healthy eating (Ausenhus et al., 2023; McIsaac et al., 2017, Gleddie, 2012). In APPLE Schools, teachers suggested an organizational level (school) policy for the implementation of the CSH framework (Storey et al., 2011). Another study identified school health policy as a contributing factor for sustainability of school health initiatives; the researcher noted that it plays a secondary role for current activities (Stolp et al., 2015)

Other strategies outlined in the research for implementation of health promotion initiatives include alignment between health initiatives and academic priorities in a school, flexibility of the intervention (Gleddie, 2012; Storey et al., 2011), incremental implementation (Stolp, et al., 2015), and a coordinated approach (Gleddie, 2012; McIsaac et al., 2017)

#### 2.3.2.2 Challenges for comprehensive school health framework implementation and other nutrition promotion

The challenges of health promotion include academic responsibilities, financial issues and unfavourable cultural norms, especially in the case of food management (McIsaac et al., 2017). School personnel agree with the importance of student health but struggle to balance it with other priorities such as academics. Similarly, parents also prioritize academics over health (Aydin et al., 2021; McIsaac et al., 2017). Unhealthy cultural norms (Aydin et al., 2021) and changes in family dynamics affect the message for healthy eating (McIsaac et al., 2017). Engaging parents in school health promotion is important. Appropriate communication and education of families can help gain their support. Confusion about the role of school personnel in health promotion makes engagement challenging (Storey et al., 2011).

Research on factors that influenced school food were identified under two broad circumstances. First, factors that influenced the healthy school food environments, and second, factors that influenced the implementation of the CSH framework and other nutrition promotion. In both cases, the barriers and facilitators were similar. Research

emphasized proper communication and cooperation among stakeholders (students, parents, teachers and partners) to build a support system for school food. Leadership or a champion and defined roles of this leadership and other teachers and staff can promote improvement of school food. Challenges included financial issues, competitive food, perceived priority and academic workload, and a lack of facilities.

### 2.3.3 Introduction to implementation science and its scope in this research

Existing research indicates many schools struggle in terms of healthy school food; however, there is evidence of success in a small number of cases. In the health sector, researchers emphasize the role of implementation science in promoting evidence in routine practice (Bammer, 2005). Translating research knowledge into routine practice is not spontaneous but demands focused effort (Bauer et al., 2015). Implementation science is defined as "the scientific study of methods to promote the systematic uptake of research findings and other EBPs [Evidence Based Practices] into routine practice, and, hence, to improve the quality and effectiveness of health services" (Eccles and Mittman, 2006 as cited in Bauer, et al., 2015 p. 3). Implementation research can examine any aspect of implementation such as process, influencing factors, outcomes, potential solutions to any issue at any point and sustained practice of solutions on a large scale. In fact, the goal is to understand what, how and why an intervention works in the real-world setting and apply that knowledge for further improvement (Peters et al., 2014). With guidance from implementation science, a systematic exploration of school food in successful schools can help identify key factors behind their success. Making this information available to other schools in a success story format may help them

improve. Success stories about a program or intervention may capture its progress over time, value and impact. Stories based on data collected in detail and in a systematic way can be a useful instrument to attract participants and funders (Lavinghouze and Price, 2007).

Some success stories already exist, such as Where to Eat in New Brunswick Schools (New (Brunswick Medical Society, 2015a) and Putting Local School Wellness Policies into Action (Centers for Disease Control and Prevention, 2014); however, none is based on systematic study nor guided by a theory or framework. A study of successful cases based on academic research findings could help struggling schools improve their situation.

### 2.3.4 Consolidated framework for implementation research as a conceptual framework

The goal of this research was to explore multiple aspects of healthy school food environments, including how they implement or execute food-related programs and/or services, food/nutrition education, policies, and other food-related activities; as well as studying management, underlying policy, partnerships and coordination, supports, and challenges. Implementation science helps to understand the process of implementation; thus, the conceptual framework selected for this research is the consolidated framework for implementation research (CFIR) (Damschroder et al., 2009).

The CFIR is a comprehensive framework for implementation research (Damschroder et al., 2009). To develop it, the authors reviewed 19 other frameworks and arrived at five major domains - 1) characteristics of intervention, 2) outer setting, 3) inner setting, 4) characteristics of individuals and 5) implementation process (Damschroder et al., 2009). Each domain contains several constructs (see Figure 2). The CFIR was updated in 2022. However, this research had begun before the CFIR was updated and is guided by the CFIR (2009). The updated version was available when the data collection for this was in progress. This section describes the CFIR (2009); and at the end of this section the types of changes in CFIR (2022) are highlighted.

Frequently, the CFIR is applied within the healthcare system and so not every construct aligns with this research but most of them are applicable. In general, the five domains were used as a base from which to capture data and perceptions about creating healthy school food environments. These include factors from inside and outside the school related to school food, personal beliefs and views of key people about food and how they created the healthy school food environments, including plans, leadership, partnerships, policies, evaluation and descriptions of existing activities. This section contains an overview of the CFIR; its relevance to this research and the data collection tools are summarized as Table 11 in Chapter 3.

Many implementation theories exist to help understand and explain the implementation of an intervention and promote better implementation of a particular intervention. When compared with each other, they define and describe similar constructs but use different names and terminology; however, each of them lacks one or more key constructs.

Damschroder et al. (2009) combined 19 published theories on implementation science into the CFIR, which provides a single platform to assess and understand the implementation process (Breimaier et al., 2015). The reasons to choose this theory for this research were: 1) it is comprehensive, covers key constructs from multiple disciplinary domains and has the potential to explain the implementation of a complex program (Damschroder and Lowery, 2013); 2) it is a valuable tool to study the state and process of implementation while identifying influencing factors (Breimaier et al. 2015); and 3) it can guide the analysis and interpretation of research findings (Kirk et al., 2016). The framework guided the development of the data collection tools, such as the interview questions and an observational tool.

CFIR is considered a meta-theoretical framework. It is a repository of standardized constructs related to implementation. Studies select constructs from CFIR relevant to any particular setting (Damschroder et al., 2009). Thus, not all of the constructs fit every study. The major domains, where relevant, were interpreted and applied to this study as follows.

**1. Characteristics of the intervention:** this domain has eight constructs to describe the intervention to be implemented, which are:

*Source* - whether the intervention is developed internally, i.e., within the school or externally, i.e., school district or provincial policy.

*Evidence strength and quality* - perception about the evidence that is the basis of development of the intervention.

*Relative advantage* - advantage of present intervention compared to previous one.

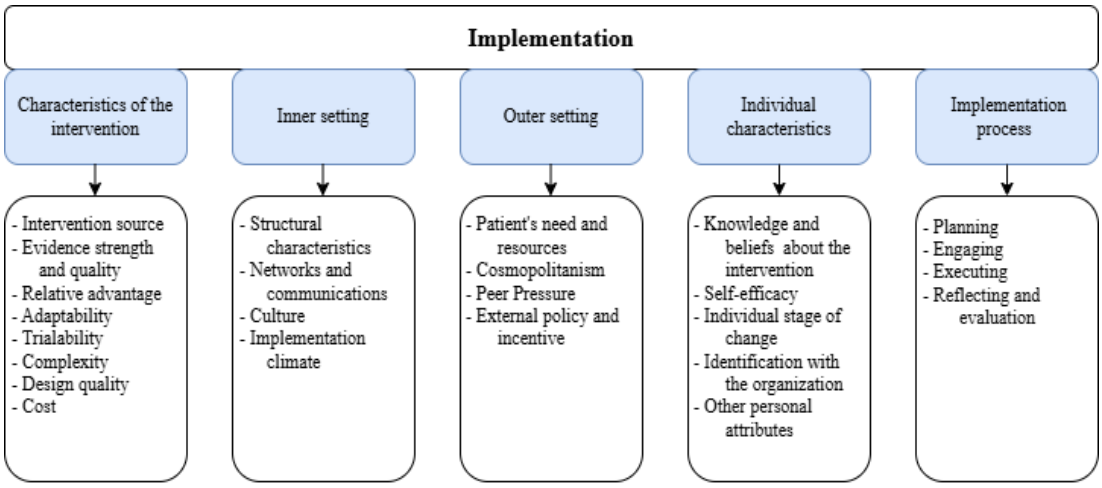
*Adaptability* - the degree to which the intervention can be adapted or tailored to meet the local need within a particular setting.

*Trialability:* ability to test the intervention on a small scale within the setting.

*Complexity* - perceived challenges during implementation of the intervention including number of steps to implement.

**Figure 2 Consolidated framework for implementation research (CFIR) model**

(Amet et al., 2012)




*Design quality and packaging* - perceptions about the organization and delivery of the intervention, which in this case is the overall school food system including its management in a school.

*Cost* - amount of money needed to implement the intervention and associated costs.

**2. Inner setting**

*Structural characteristics* - refers to social architecture, age, maturity and size of an organization.

*Networks and communication* - degree of networking, formal and informal communication within the school.

*Culture* - the value and norms of an organization. In this research, the overall roles of food in the school as well as specific aspects such as fundraising with food and using food as a reward can be considered as part of the school culture.

*Implementation climate* - absorptive capacity or readiness for change of an organization.

**3. Outer setting**

*Student needs and resources* - the extent to which schools know the needs of the students including associated challenges and resources and prioritize accordingly.

*Cosmopolitanism* - networking with other external organizations.

*Peer Pressure* - feeling of competitive pressure by the organization to implement the intervention.

*External policy and incentive* - whether the organization is abiding by a policy or receiving an incentive from outside to implement the intervention.

**4. Individual characteristics**

*Knowledge and beliefs about the intervention* - refers to the individual's (i.e., key personnel) attitudes and beliefs about the intervention.

Self-efficacy - confidence to execute the course of action to achieve the implementation goals.

*Individual stage of change* - refers to the stage of an individual in the process of moving toward sustained implementation.

*Identification with the organization* - means the perception of an individual about the organization, i.e., his or her relation and commitment towards it.

**5. Implementation process**

*Planning* - development of a plan in advance to implement the intervention.

*Engaging* - involving appropriate people in the implementation.

*Executing* - actually implementing the intervention.

*Reflecting and evaluation* - this is the final construct of the framework and consists of the evaluation and reflection of progress of the implementation process to promote improvement and knowledge sharing.

The CFIR was updated in 2022 based on recommendations of the authors who used CFIR in their studies (Damschroder et al., 2022). The purpose of the updates was to make the framework applicable to address implementation of a wide variety of ideas, goals, and practices in different settings, accommodate more themes, and develop more constructs. It has five domains: 1) innovation, 2) outer setting 3) inner setting 4) individuals and 5) implementation process. The updated version includes 48 constructs and 19 subconstructs across five domains (with one domain including two subdomains). The 'individual' domain is divided in two subdomains – 'roles of individuals' and 'characteristics of the individuals'. While having the same number of domains, the updates resulted in renaming and redefining of constructs, and the addition of new constructs and subconstructs. As examples, CFIR (2022) adopted the term 'innovation' instead of 'intervention' to make it applicable to different types of programs, practices and contexts. 'Peer pressure', a construct of the 'outer setting' in CFIR (2009) is named as 'external pressure' under the same domain in CFIR (2022) but has three subconstructs such as societal pressure, market pressure and performance measurement pressure to consider the different layers of the outer setting. The implementation process domain in

CFIR (2022) has additional constructs including assessing context, tailoring strategies, and adapting.

## 2.4 Logic for this research:

This literature review indicates that many of the formal studies that examine school food in Canada are designed to assess the implementation status of SNP. Formal studies show a small number of successful schools in terms of policy compliant food, while informal studies also show some positive results, although the role of policy in these changes is unclear (New Brunswick Medical Society, 2015a).

Different studies examined different aspects of school food, such as the quality of school food, nutrition education - both curricular and extracurricular, factors related to the implementation of school food policy, and promotion of healthy eating. Some of the studies on SNP implementation assess other policy actions, not only the quality of food. Details about all aspects of healthy school food environments are not available in a single comprehensive study; nor do any research studies focus on schools with healthy food environments that are considered successful.

Both formal and informal evidence supports that some schools in NB have healthy food programs and related activities. A number of studies identified barriers and facilitating factors to achieve implementation – again, without specific reference to successful schools (e.g., New Brunswick Medical Society, 2015a; Taylor et al., 2011; Downs et al., 2012; Vine et al., 2014). A systematic and comprehensive exploration of schools with

successful school food environments has not occurred so far in Canada. This study will extend current research due to its closer examination of key components and associated factors for successful school food environments.

Canada has now initiated a national school food program, and significant resources have been allocated by the federal government (The Coalition for Healthy School Food, 2024). The funds will be used to enhance existing food programs and establish new food programs to increase students' access to nutritious food (Employment and Social Development Canada, 2024). This research provides details on school food programs and related activities in exemplary schools and can inform decisionmakers' plans for the program.

There were several reasons to choose NB for this research. First, NB has a long-standing history of a SNP, which evolved over time and implementation of the policy is mandatory. As the first province in Canada to develop a nutrition policy in 1991, with the latest revision completed in 2018, the research was able to obtain a clearer perspective of the role of policy in positive changes. Second, the province lacks sufficient research on its own school food environments. The only evaluation occurred in 2016 in 60 schools, conducted by the government (New Brunswick Department of Education and Early Childhood Development, 2016). No academic research on school food environments in NB was completed after 2000. Third, there appeared to be a sufficient base of positive schools from which to draw. For example, the project of the NB Medical Society in 2015 indicated a number of potential schools. Overall, research on exemplary schools in NB has the potential to contribute to the body of knowledge

about school food and implementation of positive change. It can provide important insights into details of healthy school food environments in NB and key contributing factors, which in turn, may assist other schools in the future.

# 3 Chapter 3: Methods

This study used qualitative methods, which permit researchers to explore a phenomenon in a natural setting. With qualitative methods, researchers seek to understand what happens, how it happens, and participants' perceptions (Teherani et al., 2015). The in-depth exploration of exemplary school food environments included perspectives, processes, supports, and resources, all of which were complementary to qualitative research.

A variety of methods are associated with qualitative research. A researcher needs to consider three conditions to choose a research method: 1) the nature of the research questions; 2) how much control the researcher has over actual behavioural events; and 3) whether the research is focused on contemporary or historical events (Yin, 2009). According to Yin (2009), when the research questions ask 'how' and 'why', the research does not need control over actual behavioural events and is focused on the present situation, the case study can be a choice of method.

This research used the case study method (Creswell, 2007; Yin, 2009) and addressed contemporary aspects of school food, conducted in school settings. The research question started with 'what,' i.e., what are the components and influencing factors of positive school food environments in exemplary schools in NB. It also described processes (how) and factors (why) of success of a positive school food environment. This research topic, setting and questions were conducive to case study methods.

Yin (2009) defined the case study method as: "….an empirical inquiry that investigates a contemporary phenomenon in depth and within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident'' (p. 18). Some social scientists consider case study research only appropriate for exploratory study. A broader view, however, is that like any other research method, a case study can be descriptive, exploratory and explanatory (Yin, 2009). The classification boundaries of these types of case studies are not always sharp though each type of case study has distinct properties (Yin, 2009). This research project has both descriptive and exploratory properties and aims to describe and analyze exemplary school food environments, and explore processes and key influencing factors.

Though case study research is commonly known as a qualitative method it can also use quantitative or mixed methods (Starman, 2013; Merriam & Tisdell, 2015). While this case study was primarily qualitative, some of the data, such as the number of food-related programs and activities, number of student participants, and cost of food items were numerical in nature. These numerical data, used in a descriptive way, contributed to a clearer understanding of the school's food environment.

Collection of data from multiple sources including interviews, observations, documentation, archival records, and physical artifacts is an important and recommended strategy for a case study (Creswell, 2007; Yin 2009) as it increases the reliability of the evidence (Yin, 2009). Every type of evidence or data collection method has its distinct advantages and disadvantages, and they can be complementary to each other. A careful combination of different data collection methods or sources, and

triangulation of data provides the researcher an opportunity to study broader aspects of an issue or phenomena (Yin, 2009). Triangulation of data means using data collected from different methods or sources to corroborate the same phenomena (Yin, 2009; Patton, 1999).

The aim of this study was to explore a successful (exemplary) healthy school food environment and the process behind its success. School food environments are multicomponent and multifaceted. As mentioned in Chapters 1 and 2, this research was guided by implementation science, which sought to explain what interventions (as examples, food programs in schools) were working, and how and why they were working (Peters et al., 2014). This approach required the researcher to examine what types of food programs were in a school, including nutrition education/food literacy programs; what food items were served; what food-related practices occurred in the school; and what types of policies informed decision-making (what). This approach also examined the journey including, how the process was managed and led, including partnerships, motivation, supports, outcomes; and resources (who, when, why, and how).

## 3.1 Research Design

Research design is the logical planning for the forward journey of a researcher from research questions to conclusions. The main purpose of the design is to guide the researcher to gather relevant data that will address the initial research questions (Yin, 2009). Case study methods can be designed and used in different ways. A single case study is applied to only one case whereas multiple case study methods include more than

one case (Creswell, 2007; Yin, 2009; Merriam & Tisdell, 2015). A single case study is often used to test a theory, or when a case is unique or typical.

Yin described important components of a research design including research questions, research propositions, unit of analysis, linking data to study propositions and criteria for interpreting the findings (Yin, 2009). The aspects that were considered during the design of this research were: i) research questions, ii) study propositions and iii) unit of analysis. They are discussed in the following paragraphs.

### 3.1.1 Research questions

This research addressed three questions:

1. What are the components of positive food environments in exemplary schools?
2. What roles do partnerships play in exemplary school food environments?
3. What are the factors associated with successful school food environments in exemplary schools?

As indicated at the outset of this chapter, these research questions lent themselves to the chosen research method. Another aspect of research questions is 'content'. The research questions should be exclusive to the particular study and should address significant parts of an issue or problem. A review of key literature on the topic of interest, considering research questions from the literature and outstanding questions from the studies' conclusions can help formulate research questions. For this dissertation, the researcher started with the literature about the status of school food and environments in Canada and then focused on literature about positive findings (see Chapter 2). This step led to a

review of articles written on factors influencing school food and these results stimulated questions about how positive school food programs and activities work, including roles of partners and which factors play vital roles in implementation.

### 3.1.2 Study propositions

Study propositions refer to the components that researchers should examine related to their study, which guide the researcher to collect relevant data (Yin, 2009). The sources of these propositions can be literature, theory or prior knowledge of the researcher (Baxter and Jack, 2008).

Study propositions of this research were guided by its conceptual framework the consolidated framework for implementation research (CFIR) (Damschroder et al., 2009), the literature review, and the researcher's school visits conducted as a volunteer during a provincial review of NB school food programs and attendance at school food and nutrition conferences. The research propositions are:

1) Motivation behind the initiatives of positive food activities. Discussions during some conference sessions on school food attended by the researcher and the literature review suggested there could be factors other than school nutrition policy (SNP) that initiated positive school food activities. Examination of this aspect was done with a view to understand important factors that influenced positive changes.

2) Existing resources in terms of funds, staff, and facilities that schools use for school food. These issues were reported as challenges by many schools for serving healthy food to students, so it was explored to see how they were addressed by these schools.

3) Partnerships among stakeholders, relevant organizations and sectors to support school food. Partnerships are common in school food. They are a pillar of the CSH framework and are considered an important aspect of the implementation of any intervention in the CFIR framework. Examination of this aspect was done with a view to understand better the nature of these partnerships within successful schools and to consider how they influenced the current situation and long-term maintenance or sustainability.

4) Coordination among different food activities within the school. The literature often recommends a multi-component or whole school approach. This research provided an opportunity to examine if there were any possible synergistic effects vis-à-vis school food, as well as the extent to which students might have received consistent messaging and positive reinforcement about healthy eating.

### 3.1.3 Unit of analysis

This case study was a single case study with embedded units of analysis. Defining the primary unit of analysis or case of a case study is an important step; well formulated research questions help to identify and define cases. These research questions and study propositions guided the researcher to decide what information to seek within the case. Individuals, programs, system, processes, etc. can be a ‘case’ of a case study depending on the content (Yin, 2009; Creswell, 2007, Merriam & Tisdell, 2015).

In this study, the overall aim was to study exemplary school food environments. This was the 'case' or primary unit of analysis of this case study. The researcher collected data from six schools in NB that had healthy school food environments and analyzed data across the selected schools; the schools were the secondary units of analysis.
In terms of the number of primary units (case) and its embedded unit of analysis, this research is a single case study with multiple units of analysis (embedded single case study). In total, case studies can be four basic types:

- Single case study with single unit of analysis (holistic single case study)
- Single case study with multiple units of analysis (embedded single case study)
- Multiple case study with single unit of analysis (holistic multiple case study)
- Multiple case study with multiple units of analysis (embedded multiple case study) (Yin, 2009).

## 3.2 Development of data collection tools

The researcher developed six data collection tools:

- Observation checklists for food and beverage items
- Observation checklists for the food environment
- Guides for individual interviews for person in charge of school food
- Guides for individual interviews of individual program leaders
- Interview guide for student focus group interviews
- School self-assessment survey

Additionally, photographs and documents complemented the data collection tools. The data collection tools are described in the following paragraphs and summarized in Table 10.

**Table 10 Summary of data collection tools**

| Name of tool | Examples of types of information gathered |
|---|---|
| Observation checklist for food and beverage items | Food and beverage items offered and sold in different food programs and outlets, including prices. |
| Observation checklist for food environment/ activities | Food outlets and programs, student purchases/participation, amount of time to buy and eat food, eating area locations and surroundings, such as space, light, level of supervision.<br><br>Health promoting food activities, such as gardens or food growing equipment and state of use; posters, murals, displays of student food-related work, nutrition/food information, and other food-related information; facilities for food preparation. |
| Individual interview guide for person in overall charge of school food (principal or designate) | Food practices- food-related fundraising, food and celebration of special events, food policies and programs.<br><br>Description of changes and motivations behind the positive changes.<br><br>Management of school food – e.g., committee, partnership, policy, monitoring; relationships with other schools, and other groups vis-à-vis school food.<br><br>School outcomes/assessments/evaluations of school food-related activities.<br><br>Overall journey – leadership, challenges, resources, future plans. |
| Individual interview guide for program leader (food service provider and other leaders of food-related activities) | General questions for all leaders, such as details of the program they lead, challenges, supports, student participation/involvement and questions specific to the program/activity they lead.<br><br>Program specific questions such as details about the food programs and outlet they operate (e.g., questions about menu planning, student involvement, promotion of healthy food items). |
| Student focus group interview guide | Questions on their involvement with school food; views on school food; intake of school food; and impact of their involvement in school food in their lives (if any). |

| | |
|---|---|
| School self-assessment survey | Details about existing food programs- frequency of service, cost, sites for preparation and eating,<br>Food education - curricular and extracurricular activities, management authority |

### 3.2.1 Observation checklist for food and beverage items (see Appendix A)

Observation methods are important to understand people's actions, roles and behaviour and how they respond to change (Walshe et al., 2012). Observations by researchers may help assemble a different array of information (Barrett and Twycross, 2018). Often, observational data provide additional information that is relevant to the research topic (Yin, 2009).

The researcher developed an observation checklist for food and beverage items adapted from the tools used by the New Brunswick Department of Education and Early Childhood Development for their evaluation of the SNP implementation in schools in 2016. Those evaluation tools were designed to analyze the nutrient value of food items according to the school nutrition policy and assessed other nutrition activities mentioned in the policy. As one of the objectives of this research was to explore food programs; and document and describe food and beverage items available in the exemplary schools rather than conduct an evaluation per se, the researcher modified the tools accordingly. As an example, the original checklist for food and beverage items contained columns to categorize the available food items according to the standards of the SNP. On the basis of the categorized food items, the evaluators calculated a grade of the implementation status of the SNP. In this research, the observation list for food items noted the food items and its price (if applicable) for describing the food and beverage items found in

exemplary schools (see Figure 3). The checklist included all food and beverage items offered in different food programs and outlets, such as breakfast programs, school cafeteria, and vending machines.

**Figure 3 Sample page of observation checklist for food and beverage items**

School name: Date:

Breakfast program (Free):

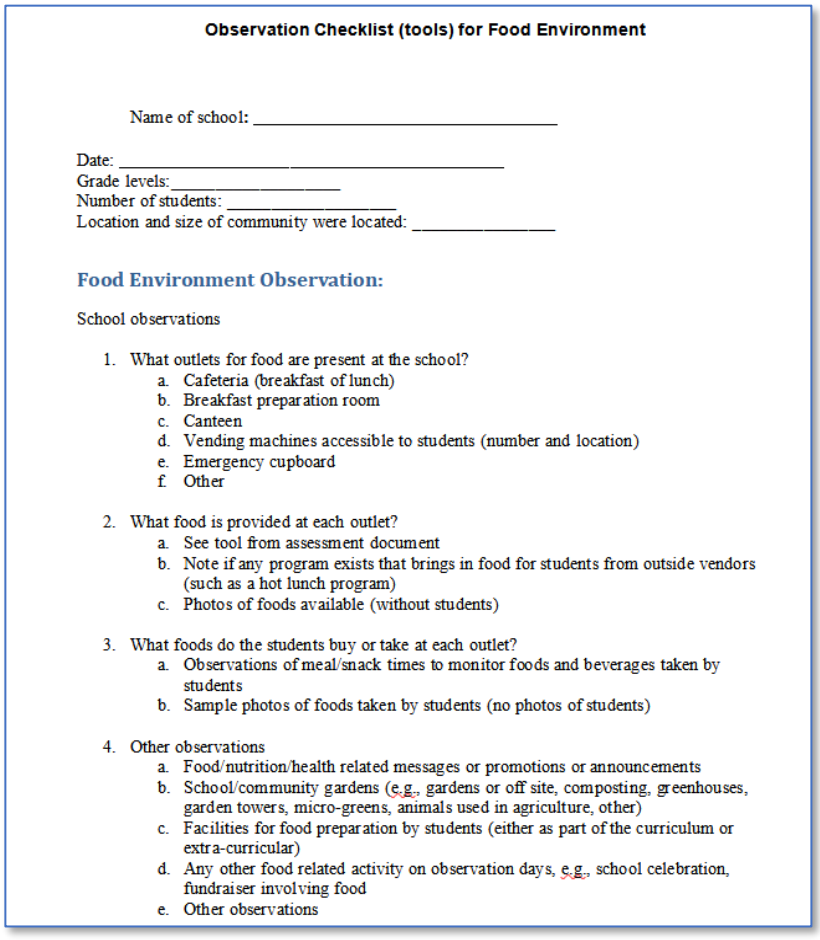
| Food Items | Price | Details; comments |
|---|---|---|
| Sandwiches | | |
| Eggs | | |
| Meat | | |
| Cereals | | |
| White Refined Grain Products | | |
| Whole Grain Products | | |
| Granola bar/cereal bar | | |
| White Milk | | |
| Chocolate Milk | | |
| Cheese | | |
| Fruits | | |
| Juice | | |
| Pastry | | |
| Cookies | | |

### 3.2.2 Observation checklist for food environment (see Appendix B)

The observation checklist for the food environment was also developed by modifying a tool used by the New Brunswick Department of Education and Early Childhood Development for their 2016 evaluation. The original observation list included instructions to document components of the eating environment relevant to the SNP, such as cleanliness and level of supervision during eating. As the aim of this research was to explore the overall food programs and activities in exemplary schools, the

observation checklist for food environment additionally included instructions to document observable programs and food outlets, positive food activities within a school (e.g., health/nutrition promoting messages, availability of a school garden or other food-growing equipment/activity, food-preparation facilities for students) (see Figure 4). These additional potential aspects of school food programs and activities were drawn from a number of sources, including the Healthy School Planner (Joint Consortium of School Health, 2019), New Brunswick Medical Society (2015a), and Putting Local School Wellness Policies into Action (Centers for Disease Control and Prevention, 2014).

**Figure 4 Sample page of observation checklist for food environment**



**Observation Checklist (tools) for Food Environment**

Name of school: _____

Date: _____
Grade levels:_____
Number of students: _____
Location and size of community were located: _____

**Food Environment Observation:**

School observations

1. What outlets for food are present at the school?
   a. Cafeteria (breakfast of lunch)
   b. Breakfast preparation room
   c. Canteen
   d. Vending machines accessible to students (number and location)
   e. Emergency cupboard
   f. Other
2. What food is provided at each outlet?
   a. See tool from assessment document
   b. Note if any program exists that brings in food for students from outside vendors (such as a hot lunch program)
   c. Photos of foods available (without students)
3. What foods do the students buy or take at each outlet?
   a. Observations of meal/snack times to monitor foods and beverages taken by students
   b. Sample photos of foods taken by students (no photos of students)
4. Other observations
   a. Food/nutrition/health related messages or promotions or announcements
   b. School/community gardens (e.g., gardens or off site, composting, greenhouses, garden towers, micro-greens, animals used in agriculture, other)
   c. Facilities for food preparation by students (either as part of the curriculum or extra-curricular)
   d. Any other food related activity on observation days, e.g., school celebration, fundraiser involving food
   e. Other observations

### 3.2.3 Guide for individual interviews (individual program leaders and person in charge overall school food)

Individual interviews provide detailed insights of a participant's experiences and feelings on a topic or event (Morgan, 1998 as cited in Guest et al., 2017). A semi-structured interview is conducted within a flexible interview protocol supplemented by follow-up questions and/or probes. The purpose of this format is to collect data from a

person who has experience, information, personal thoughts and feelings on a topic relevant to the research (DeJonckheere and Vaughn, 2019).

The individual interview guide was developed for semi-structured interviews. It contained several open-ended guiding questions alongside follow-up questions and probes depending on responses (DeJonckheere & Vaughn, 2019). To develop the interview guide, the researcher reviewed and used questions in the interview tool used by the Department of Education and Early Childhood Development for their evaluation as well as websites for the Healthy School Planner (Joint Consortium for School Health, 2013) and the School Health Index (Centers for Disease Control and Prevention, 2017). These two websites have been used previously in studies on school food to develop interview questions. These tools cover a variety of health topics, however, the researcher included only food-related questions. In addition, the researcher developed new questions on the basis of the conceptual framework and literature on school food environments. The relevance of the content of the interview guide to the CFIR was shown in Table 11. The table shows the five domains of CFIR and provides examples that indicate their relevance to some of the question topics of the interview guide. Each domain of CFIR has multiple constructs as described in Chapter 2. During the development of the interview guide the topic of the questions was not linked to each construct of a domain rather the broad and collective meaning of a domain was considered.

**Table 11 Relevance of consolidated framework for implementation research (CFIR) to this research**

| **Domains of CFIR Framework** | **Samples of topics covered in interview guides** | **Sample questions from interview guides** |
|---|---|---|
| *Characteristics of program* | Motivation for the program<br>Cost structure<br>Advantage(s) of the programs | How did the program start?<br><br>What are the main outcomes of your program/activity? |
| *Inner setting* | Support system within the school<br>Culture of the school regarding food activities | If you ended your involvement with this program/activity, what do you think would happen to it?<br><br>In your view, how dependent is the school on one person or group for this program /activity?<br><br>What supports for the program/activity were available during this time of change? |
| *Outer setting* | Support and relationship with community | Do any external groups or organizations partner with the school on food-related programs or activities (e.g., community organizations, government agencies)? |
| *Individual characteristics* | Views of program leaders and students on their school food and relative activities | Overall, what role(s) does food play at this school?<br>Have food programs and activities at this school resulted in changes for you? |
| *Implementation process* | Role of leaders<br>Input from students<br>Evaluation and monitoring | What steps does the school take to maintain school food programs and activities?<br><br>Are there any sources of information (people or documents) about food and nutrition that you use when making decisions about school food? |

| | | |
|---|---|---|
| | | Does the school obtain input from students about school food programs or activities?<br><br>Does the school monitor any of its food-related programs or activities? |

The overall organization of the interview guide was influenced by the template for success stories from the Centers for Disease Control and Prevention (Lavinghouze and Price, 2007). The main themes used to organize the questions were:

- What is done now (e.g. available food programs in school, food offered)?
- How is it done (e.g. management system, committee for school food)?
- Why were the changes made and when, what were the changes and who made them and what were the outcomes, challenges, supports?

The interview questions were designed for individuals who were in two types of positions – individual program leaders and persons in charge of overall school food (see Appendix C and D). Interview guides for individual food program leaders and individuals in charge of overall school food overlapped to some extent: examining available resources, monitoring, and participant's views on the success of the program; but differed in relation to their overarching roles on different aspects, more specific for the individual leader and more general for the person in charge of overall school food. As examples, an individual food program leader was asked 'what support do you have for your program?' while the person in charge of overall school food was asked 'What support does this school have for school food environments?'. Additionally, the person in charge of overall school food was asked about the priority of food in schools such as 'What role does food play in the school?'; 'Does the school use food for fundraising?'.

### 3.2.4 Interview guide for focus group interview:

A focus group interview captures collective voices on a particular topic along with the participant's own views and provides an opportunity for 'sharing and comparing' of views among participants in a research project (Morgan, 1997; Gill et al., 2008). The synergy and spontaneity of the discussion can add information to the research topic, which might be missed in individual interviews (Tausch & Menold, 2016).

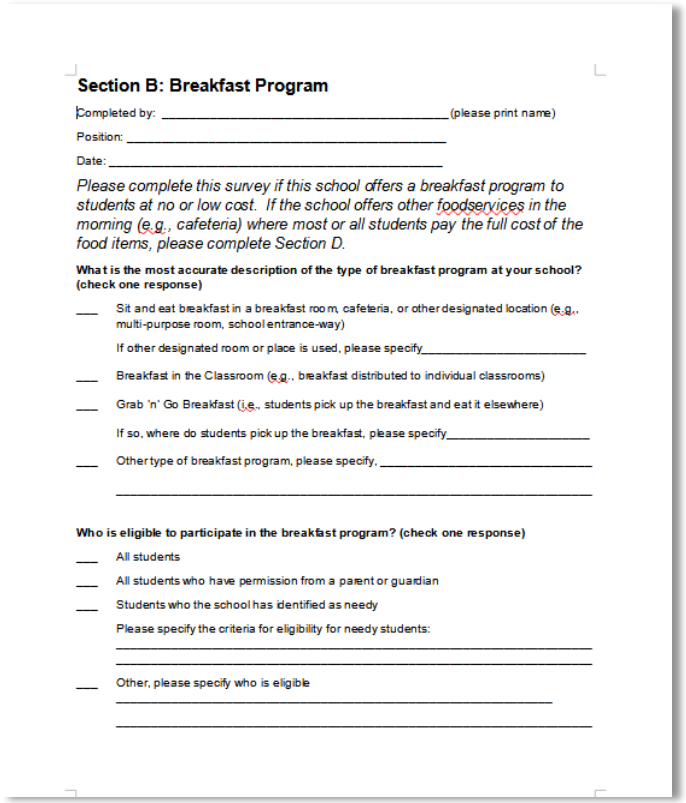
Though spontaneous and open discussion is a key feature of a focus group, it can be guided by the questions relevant to the research topic (Tausch & Menold, 2016). The researcher intended to explore students' involvement in school food, its implications in their life and their thoughts regarding school food. Relevant questions were created for this purpose. As an example, students were asked 'If you were telling someone from another school about food at this school, what would you say about it, in a few words? The interview guide is included in Appendix E.

### 3.2.5 School self-assessment survey

This dissertation had the aim to explore schools with healthy school food environments, which required a detailed description of school food programs and other activities. Some of these questions are structured naturally (e.g., How many days per week do they serve breakfast?). To keep the length of interviews reasonable, a school self-assessment survey was developed for this study where these structured questions with answer options were organized. This survey questionnaire was developed according to the research questions of this study. Questions regarding a particular program (e.g., breakfast program, hot

lunch program) were organized in separate sections. For example, section B contains questions for a breakfast program (see Figure 5).

**Figure 5 Sample page of school self-assessment survey**



**Section B: Breakfast Program**

Completed by: _____(please print name)

Position: _____

Date: _____

*Please complete this survey if this school offers a breakfast program to students at no or low cost. If the school offers other foodservices in the morning (e.g., cafeteria) where most or all students pay the full cost of the food items, please complete Section D.*

**What is the most accurate description of the type of breakfast program at your school? (check one response)**

___ Sit and eat breakfast in a breakfast room, cafeteria, or other designated location (e.g., multi-purpose room, school entrance-way)

If other designated room or place is used, please specify_____

___ Breakfast in the Classroom (e.g., breakfast distributed to individual classrooms)

___ Grab 'n' Go Breakfast (i.e., students pick up the breakfast and eat it elsewhere)

If so, where do students pick up the breakfast, please specify_____

___ Other type of breakfast program, please specify. _____

_____

**Who is eligible to participate in the breakfast program? (check one response)**

___ All students

___ All students who have permission from a parent or guardian

___ Students who the school has identified as needy

Please specify the criteria for eligibility for needy students:

_____

_____

___ Other, please specify who is eligible

_____

_____

In each section, program-related questions addressed types of food programs (is the program free or paid or subsidized?), program accessibility (is this program open to all students?), program management (is there any committee for this program), and nutrition curricula (what are the topics taught in the classroom?) (see Appendix F).

### 3.3 Selection and recruitment of schools

The ‘case’ of this case study is healthy school food environments. The different components of a school food environment have been described through the CSH framework in Chapter 2. There were a number of aspects to consider in selecting the secondary units of analysis, i.e., the schools the researcher visited.

‘Healthy school food environments’ and the CSH framework that the researcher used to describe 'the case’ are conceptual. Studying this concept in schools required identifying schools that created healthy school food environments. Given that schools differ in terms of size, location, and age group of students, the healthy school food environment of six schools could not be identical to each other. The researcher considered inclusion of different types of Anglophone schools to showcase diversity. For example, schools with different grades – elementary, middle and high schools, and urban and rural schools were considered for inclusion.

To gain sufficient knowledge about this research topic, the researcher needed to select schools with multiple positive school food programs, facilities and activities. As an example, schools with multiple school food programs (e.g., breakfast, lunch, and snack, school gardens and/or cooking classes) were preferable to schools that had only a hot lunch program. To satisfy the research propositions, schools needed to work with at least one partner organization. The researcher developed the following selection criteria to identify schools for this study:

1) English speaking schools (language of the researcher).

2) Have at least three food or food-related programs (e.g. breakfast program, lunch program, garden, food or nutrition education program, other extra-curricular activities).
3) Have on-site cafeteria or kitchen (food preparation site).
4) Work with at least one external partner.
5) Recommended by persons working in the Department of Education, the Heart and Stroke Foundation of New Brunswick, or other organization during consultations or documented to offer healthy school food.

Purposive sampling can be used to identify information-rich objects, which facilitates a better understanding of the research topic (Freeman et al., 2007). This research used the purposive sampling technique for school selection. A limited number of evaluations have assessed the school food environment in NB. The only formal evaluation was completed by the government in 2016, which assessed the implementation of school nutrition policy (New Brunswick Department of Education and Early Childhood Development, 2016). They selected schools randomly and examined school characteristics in relation to the provincial SNP and names of individual schools were not available. Furthermore, schools that performed well might not have been selected for that study. There was no formal and comprehensive list of schools with a healthy school food environment in NB.

The recruitment process started with informal virtual meetings and email messages with individuals in the province (school experts) who worked with school food and who were well positioned to identify schools that made positive changes in food environments

compared to existing school food environments in schools in NB (e.g., representatives from partner organizations that work with schools, individuals appointed by school districts). The basis of identification of exemplary schools in this research was their general professional judgement. The identified positive state or exemplary status of the schools in this study were contextual within the overall scenario of school food in NB. These schools were identified as exemplary without direct reference to the policy, rather, they were viewed as exemplary by those familiar with schools and their food activities. They indicated that the food environments in these schools were positive relative to other schools. An evaluation in 2016 indicated that collectively, NB schools received a C grade for policy compliance and D+ for the nutritional quality of selected food items (New Brunswick Department of Education and Early Childhood Development, 2016). A survey conducted in 1989-1990 showed French fries, cakes and pastries, Jell-O and pudding were available in 73% to 76% of participating schools and 81% of schools sold soft drinks (McKenna, 2000).

On the basis of their input from school experts, information and recommendations, nine potential participating schools were identified, and the principals of the schools were contacted via email. One school was not interested; two schools did not meet the other requirements of the study (i.e. the number of food programs). On the basis of their responses, six schools were selected on a preliminary basis and an initial meeting (in-person meeting in two schools; virtual meeting in four schools) was scheduled with the principal (two schools) or designate decided by the school (four schools). During this conversation the researcher explained the research project, asked about their food activities or programs, mentioned ethical points, discussed potential dates for school

visits and addressed if they had questions (see Appendix 1 for an outline of the conversation). After confirmation that the schools met the selection criteria and were interested in participating in this study, a formal invitation letter and school level consent forms were sent to the schools. Ultimately, six schools participated in the study: three elementary schools (K-5), two consolidated schools (K-8) and one high school (9-12). One school was situated in an area listed as a rural district by NB's local governance system (Government of New Brunswick, 2022). The other schools were situated in urban areas. Socio-economic data from the communities was available from 2017. At that time, the median provincial household income was $52, 835 (New Brunswick Health Council, 2017), while the median household income of the communities of schools was between $45,000 and $50,000 in three communities, between $60,000 and $65,000 in two communities, and between $50,000 and $55,000 in one community. Four percent of the families with children at home in the study communities received Social Assistance or Welfare benefits (New Brunswick Health Council, 2017).

In 2017/2018 the food insecurity rate among families with or without children in Canada was 3.4%-7.3% (Statistics Canada, 2020) and in NB was 9% (New Brunswick Health Council, 2017). During that period, the prevalence rates of moderate to severe food insecurity among families with or without children were 6% in three communities, 11% in two communities, and 8% in one community (New Brunswick Health Council, 2017). In NB, 22% of residents had a university degree or certificate or above. In five communities where the schools were situated, 15% to 20% of residents had a similar level and in one community, the level was 40% to 45% of residents. NB had 35% of its

population with a non-university certificate or diploma such as trade college. Five communities had a similar level (35% to 40%) and one community had between 25% and 30% (New Brunswick Health Council, 2017).

Four schools had school community coordinators. These individuals, working in cooperation with their district and principal, act as the prime liaison between the school and the community (Anglophone West School District, 2026). They promote, create, and coordinate community partnerships to support school needs, including support for school food. Their work includes developing strategies to recruit volunteers, and researching and applying for grants to support the needs of schools (Anglophone West School District, 2026).

Four schools had licensed kitchen with a cafeteria/eating area for students. Another two schools had kitchen without a cafeteria where they could prepare food for educational purposes.

Based on the initial conversation with each school, the researcher completed a brief questionnaire (see Appendix 1) on its food and related programs. The completed questionnaire provided a list of activities or programs occurring in each school and informed the data collection plan for each school.

### 3.4 Selection of participants within schools

During participant selection, ‘information rich’ and ‘in depth understanding’ were key considerations. Purposeful sampling supports the collection of data that fit the purpose of the study (Reybold et al., 2013). At each school, the principal or person in charge of

school food (e.g., community school coordinator) was asked to identify potential adult and student participants – all of whom currently or previously occupied leadership roles in relation to school food. The number of individual adult participants from each school was four to six, depending on each school's food and related programs. In some schools, the same person led multiple programs with different purposes, structures and/or resources. Related to that, 21 participants were selected for 31 individual interviews as program leaders or as the person in charge of overall school food. The 21 participants were teachers (n=10), community school coordinators (n=4), principal/vice principal (n=3) and managers of external food service (n=3) (cafeteria, non-profit food service), and a person from a parent volunteer group involved with school food (n=1). Principals/vice principals and school community coordinators in three schools were in the position of person in charge of overall school food. School community coordinators, teachers (elementary class teachers, physical education teachers, resources teachers, language and art teachers), external food service managers and the person from the volunteer groups participated as individual program leaders. External food service managers worked under the supervision of their corresponding organizations with little or no involvement by the person in charge of overall school food.

A total of 12 student participants for three focus groups were selected from the three schools that contained students of grade 6 and above – one focus group in each school. Students who were involved in one or more school food-related activities were selected as participants. Each focus group included three to five students. Eight students were from grades 6-8 and four students were from grades 9-12.

### 3.5 Data collection methods

The data were collected in two waves during April - June 2022 (three schools) and April - June 2023 (three schools). Some of the schools were under varying degrees of public health restrictions due to the Covid-19 pandemic. In addition, several schools had made Covid-19 related adaptations to their previous food activities, such as sending breakfast to classrooms instead of serving it in the cafeteria or shifting to bagged lunches from hot lunches. The research collected and presented data on the available food items, activities and environments present at the time of the school visits. Efforts were made to schedule visits so that seasonal activities such as some cooking classes, and/or gardens could be observed in as many schools as possible. However, in a few schools some of these activities were already completed prior to the visits, and some garden activities had not started due to the weather. Relevant documents such as recipe books used in cooking classes were collected and photos of garden harvests from that year were requested during visits. All the three schools with gardens sent photos via email.

In this case study, the researcher collected data from different sources within the selected schools and triangulated the data during analysis. The researcher had two in-person day- visits in five schools; and a one day in-person visit and a one-day virtual interaction in one school. After the visits, the researcher communicated with the schools when further information was needed. During the visits, data were collected through observation, individual interviews, student focus group interviews (with students of grade 6 and above), and the school self-assessment survey. Relevant photographs and field notes were taken. After completion of the data collection from the first school, it was noticed that participants talked about the resources and support for food programs

and activities all together (for the past and present situation). This situation resulted in combining the questions about the past and present situation into one question rather than two in the rest of the interviews. Data collection methods are described in the following paragraphs and corresponding data collection tools and participants are summarized in Table 12.

**Table 12 Data collection methods**

| Method | Participants | Tools |
|---|---|---|
| Observation | N/A – completed by researcher | Observation checklist for food and beverage items<br><br>Observation checklist for eating environment<br><br>Fieldnotes – notes on cooking classes, gardens and overall visits<br><br>Photographs – photos of relevant aspects of the school food environment (taken without students) |
| Individual semi-structured interview | Person in charge of school food (principal or designate)<br><br>Person in charge of food-related activity (e.g., food service manager) | Individual interview guide for person in overall charge<br><br>Individual interview guide for program leader |
| Focus group Interview | Student focus group | Focus group interview guide |
| School self-assessment survey | Person/people in charge of school food, program leaders together with the researcher | School self-assessment survey tool<br>(this tool was completed by more than one person) |

### 3.5.1 Observations

In research, the nature of observations can vary in terms of the type of arrangement (formal or informal), flexibility (structured to open-ended) and the role of the researcher. In participant observation, for example, the researcher takes the role of an active participant in the events being studied. In non-participant observation, the researcher plays a passive role (Walshe et al., 2012; Yin, 2009). In this research the researcher was a non-participant observer.

Studying phenomena in a 'real world context' or 'natural setting' is an important characteristic of case study research and creates the scope for observation (Yin, 2009). To explore different aspects of healthy school food environments, the researcher observed available food and beverage items in all regular food programs (i.e. breakfast programs, hot lunch programs, cafeteria service) and prices (where applicable), and documented findings using the observation checklist for food and beverage items (see Appendix A). The researcher documented general observations about the food environment such as the cleanliness of the eating area and promotional signs regarding healthy food using the observation checklist for food environments (see Appendix B).

The researcher observed cooking classes where possible, gardens and noted the observations as field notes. In each school, the researcher noted overall observations as field notes.

The researcher took photographs of food items served or sold in the food programs, posters or signs that promote healthy food choices, and places where food is grown or prepared. Permission was requested before taking photographs and students or other participants were excluded from photographs. To maintain school anonymity, photos avoided distinguishing characteristics of schools (e.g., name of the school) as much as possible.

### 3.5.2 Semi-structured interviews

In this research, semi-structured individual interviews and focus group interviews were conducted. Data collection through interviews is a characteristic feature of many qualitative studies and case studies. The strength of this method is that it can provide rich and detailed data but at the same time can be tailored according to the nature of research questions and characteristics of the participants (Smith, 2005).

#### 3.5.2.1 Semi-structured individual interview

A total of 31 individual interviews were conducted, and the average interview length was approximately 22 minutes. The researcher conducted all the interviews and each of them was one to one. The interviews took place in the schools during the in-person visits and were held in the participant's office, cafeteria area, kitchen, classroom, or gym depending on the preference of the participants. The interviews were scheduled at the beginning of the first day of the school visit. The person in charge of overall school food introduced the researcher to other participants. The interviews were scheduled according to the convenience of the participants, avoiding interference in their daily activities during school hours. Prior to the start of the interview, the research and its non-judgemental nature were explained to the participants and they provided written consent. The interviews started with a general question, for example, 'Can you tell me about your program?'; 'What role does food play in the school?'. The interview took place as a conversation and participants were asked follow-up questions and probes. All the interviews were audio recorded with the permission of the participants. During the interviews the researcher asked program leaders for relevant documents of the programs they led (e.g., recipe books for cooking classes, menus of lunch or breakfast programs,

photos of garden harvests). Most of the documents were collected during the school visit, at the end of the interview. Some of them were sent by the person in charge of overall school food via email.

#### 3.5.2.2 Focus group interview

A total of three focus group interviews were conducted in three schools. The average length of interview was 15 minutes. Students expressed their views on school food and their involvement in food activities. The focus group interviews took place in rooms in schools suitable for having group conversations (e.g., study room). For two interviews, only the student participants and the researcher were present and in one interview, the PhD co-supervisor was also present. At the beginning of the discussion, the research, its purpose and the students' importance were explained. The researcher mentioned the confidentiality and non-judgemental nature of this research. The students signed the assent form (parents signed a consent form in advance of the focus group). The researcher asked each interview question and encouraged students to express views on that question. Each student was engaged in the discussion on each question. All the focus group interviews were audio recorded with permission of the students.

### 3.5.3 School self-assessment survey

The survey contained several sections, depending on the programs and initiatives at each school. In general, individual program leaders (e.g., breakfast program leader, lunch program leader) completed the corresponding sections of the school self-assessment survey with the assistance of the researcher. Some general questions (e.g., celebrations with food) and questions on nutrition education were completed by the person in charge

of school food in five schools – community school coordinator (three schools), principal (two schools); in one school, it was completed by a program leader (teacher). During the observations, interviews and informal conversations, program leaders provided information regarding their programs that was relevant to some of the questions in the self-assessment survey, so the researcher completed those questions. Other questions regarding a particular program or activities were completed by the corresponding program leaders and/or the person in charge of overall school food at the end of his or her individual interview.

### 3.6 Ethical considerations

Schools were invited to participate in this research based on their current positive actions regarding school food. The process of inviting and selecting schools was described in 'selection and recruitment of schools' section in this chapter and followed all ethical procedures. This project received approval from school districts and the Research Ethics Board of UNB before the school was contacted. Relevant documents (e.g., a summary of the research proposal, data collection tools) were sent to each corresponding school district. Approval from each corresponding school district was a prerequisite for the district specific approval of the university research ethic board. Once each school district approved the research project, an application for that school district was submitted to the research ethics board. The research ethics board approved three separate applications for three school districts. Throughout this research project, the required steps were taken to comply with the Tri-Council Policy Statement 'Ethical Conduct for Research Involving Humans'.

Schools chose to participate or not without any consequences. As an honorarium, each participating school received $1000 to use only for school food. This offer of an honorarium was mentioned to the school only after the data collection was completed. Likewise, participation in this research was voluntary for all individual participants, including students. At the outset of the research, an informed consent was sought formally from the principal on behalf of each participating school, as well as other adult individual participants at the school plus a parent/guardian of students who were invited to participate in the focus groups. Student participants provided written assent to participating in the focus groups. A copy of each of the informed consent forms and the assent form has been attached as Appendices 1-4. At the beginning of the focus group interview, this research project was explained to the student participants. Students were told that the information that was shared was to be considered anonymous, and not to be shared outside the group. At the same time, the researcher acknowledged that abiding by this request was dependent on the students following it and that anonymity could not be guaranteed. Participants had the option to withdraw from this research project if their mind changed. No participants withdrew from this research.

Data collected from this research only contained the participants' views and thoughts about food and related programs in their schools, i.e., no information that was readily identifiable. To keep track of data, schools and participants, the consent forms required the name of schools and participants. Once the data from each school was completed, the researcher assigned a number (e.g., S1, S2) to each school. The transcription of the interviews and the spreadsheet that summarized the data from the survey sheet did not include the names of the participants. The document that links numbers to real names of

schools was stored in a secured cabinet at the researcher's home office. The PhD dissertation, articles, presentations or any other dissemination of this research did not include the real name of any school or participant. Attention was paid to the data to minimize any ability for people to identify any of the project participants, for example, no identifying personal characteristics; all photographs excluded students, teachers or other staff; and did not contain other identifiable probes such as signboards that included names of schools or food service providers.

### 3.7 Storage of data

All data were stored electronically in a personal laptop protected by secure passwords. As a backup, a copy of the data was also stored in detachable media (USB). The detachable media, other paper documents including audio transcripts of interviews, completed school self-assessment surveys and menus were stored in a secured cabinet at the researcher's home office. Only the researcher and supervisors had access to the data and it will be stored for a maximum of seven years.

### 3.8 Analysis

Data from the survey sheet and observation checklist (food items) were entered into Microsoft Excel. Photographs were downloaded and labeled. Audio recordings of all interviews were transcribed and uploaded to NVivo 14 qualitative data analysis software. The transcripts went through the coding process. 'Code' is often an assigned word or phrase that refers to a summarized portion of language based and verbal data including interview transcripts, observation notes, literature (Saldaña, 2016). In an inductive coding system, the code emerges directly from the words and phrases used by

the participants (Skjott Linneberg & Korsgaard, 2019). Initially, coding was done inductively to understand the depth and complexity of participants' responses (Skjott Linneberg & Korsgaard, 2019). In the subsequent phases of data analysis, depending on the use of the conceptual framework and the research questions, Chapters 4 and 6 included a deductive process of analysis. Initial codes were related to existing literature and the conceptual framework (Skjott Linneberg & Korsgaard, 2019). A second researcher (a co-supervisor of this research project) reviewed the whole coding process and analysis. A code book was created (see Appendix G).

The analysis of data is the least developed segment in case study research (Yin, 2009). There is no fixed formula to qualitative data analysis. It depends on the researcher's style of thinking, research propositions and questions (Yin, 2009). Following the theoretical proposition is the most preferred strategy. Aspects that strengthen the analytic segment of the research include linking data to the propositions, developing a descriptive framework to present the data, and using both qualitative and quantitative data (Yin, 2009).

This research was primarily qualitative with some quantitative elements. It followed two different analytic methods specific to research questions – cross case descriptive synthesis (Bethel and Bernard, 2010; Cruzes et al., 2015) and thematic analysis (Lochmiller, 2021; Kiger & Varpio, 2020). The original intent of cross case descriptive synthesis was to apply it to multiple case studies (Cruzes et al., 2015). In this study, data was synthesized across multiple embedded units (schools) while identifying patterns (Cruzes et al., 2015) relevant to each research question. Thematic analysis is used

frequently to analyze qualitative data and consists of identifying recurring patterns to develop themes or generalized statements (Lochmiller, 2021).

The research was guided by two conceptual frameworks. Initial codes were linked to the frameworks. The findings from the research questions were described as three academic articles to publish. The research objectives, and relevant analytic method of each publishable article are summarized here-

Chapter 4 describes the components of school food environments according to the four pillars of the CSH framework. This study analyzed data from the observation checklists, self-assessment survey, fieldnotes and individual interviews. The analytic method was cross case descriptive synthesis (Bethel and Bernard, 2010; Cruzes et al., 2015). As a part of data reduction and display, data from the observation checklists, survey sheets and relevant inductive codes were entered in Microsoft excel sheet under columns for each of six schools. Patterns from the data were identified (Cruzes et al., 2015) based on the four pillars of the CSH framework. The names of the components were informed from the language used in available research and relevant documents of school food, such as fundraising and milk program.

Chapter 5 describes the role of partnership in school food environments in the exemplary schools. It analyzed data from the self-assessment survey, field notes and individual interviews; and cross case descriptive synthesis was conducted (Bethel and Bernard, 2010; Cruzes et al., 2015).

Chapter 6 describes the factors associated with success in school food. Thematic analysis (Lochmiller, 2021; Kiger & Varpio, 2020) was conducted guided by CFIR. The thematic analytic method included a combination of inductive and deductive processes.

Some of the data relevant to the same aspect of the school food environment were relevant to different research questions. Using different analytic methods and frameworks helped to minimize the overlap of data.

### 3.9 Trustworthiness of Data

'Trustworthiness' is an essential aspect that a researcher needs to address to prove the quality of the research. Lincoln and Guba (1985) termed four components of trustworthiness as credibility, dependability, confirmability and transferability. There are different techniques to address these components, however all techniques are not distinct to relevant components as there is some overlap among the components of trustworthiness. The following paragraphs describe how this research addressed different components.

1) Credibility is the confidence in the truth of the results or findings of a study. It is the most essential aspect to address trustworthiness (Lincoln and Guba, 1985). Selection of appropriate methods, providing a thick description of the phenomena under study; showing familiarity with the participating settings (Shenton, 2004), and applying triangulation can enhance the credibility of a research project. In this research, food programs and activities in schools were described in detail. Some aspects of exemplary school food such as types of food, price, student engagement, sustainability of the

positive states of food programs and activities were related to other studies and discussed.

*Triangulation* refers to the convergence of methods and data sources to enhance understanding of a phenomenon (Patton, 1999). This research applied triangulation in four ways:

*Method triangulation* - different methods (e.g. interviews, observation) are used for data collection (Patton, 1990). The method of this research included observations, assessments, interviews - individual and focus group interviews; complemented with documents and photographs for data collection. The triangulation of different methods for data collection contributed to trustworthiness of data.

*Investigator triangulation* - multiple researchers provide observations and conclusions in the same study; a co-supervisor was present during some of the school visits and corroborated researcher observations. Another co-supervisor reviewed the codes and analysis.

*Data source triangulation* – the researcher collects data from different sources for one study such as from different people or groups (Patton, 1999).This study collected data from different sources within a school, i.e., different key leaders of food activities and students. These data, along with documentation and researcher observations and field notes, helped to ensure triangulation of data sources. The information from field notes included participants' remarks and information, and attitude towards school food before or after interviews; emphasis on certain aspects; and attitudes towards the non-Caucasian researcher.

*Theory triangulation* - more than one theory is used to analyze and interpret data (Patton, 1999). Because of the nature of the research questions, this research was guided by two conceptual frameworks – CSH framework and CFIR.

Other techniques to achieve credibility are ensuring and supporting participants' honesty during data collection; peer scrutiny, debriefing between researcher and supervisors and the qualifications and experience of the researchers (Shenton, 2004). The non-judgemental nature of this research and neutral attitude of the researcher throughout data collection supported honest responses from participants. There were frequent discussions between the researcher and co-supervisors about the research during data collection, data analysis and reporting.

2) Dependability refers to the fact that if the study is repeated in the same contexts, with the same method, it will show the same findings; which is a challenge in qualitative research because of the changing nature of the phenomena. In depth coverage of the research design- what was planned and how it was executed and minute details of the data collection process can help a researcher repeat the project; though the same results cannot be expected (Shenton 2004). This research followed the Consolidated Criteria for Reporting Qualitative research (COREQ) checklist for its optimum reporting, which can enhance the trustworthiness and strengthen potential implications of a qualitative research project (O'Brien et al., 2014). The research followed the guidelines of the COREQ checklist, which was developed by Tong et al. (2007) to assess qualitative studies. This checklist consists of 32 items grouped into three domains: i) Research team and reflexivity- refers to the researcher's attributes such as educational background,

training; and relationship between researcher and participants. ii) Study design- includes conceptual framework, selection and numbers of participants, settings of interviews, interview guide, etc. iii) Analysis and findings – includes number of coders, description of coding system, and presented quotations. A copy of this documentation is included as Appendix H.

Credibility and dependability are closely related; better addressing of credibility can help to increase dependability. Triangulation of methods, sources of data, and theory support the dependability of this research (Lincoln and Guba, 1985).

3) Confirmability is ensured when it is evident that the findings came from the responses of the participants, not from bias or preferences of the researcher. Triangulation, optimum reporting, and details about the method of this research addressed this aspect (Shenton, 2004).

4) Transferability means that the findings of the study can be applicable to other situations. As findings of a qualitative case study represent a particular setting, generalised application of the findings is not possible (Shenton, 2004). Including contextual details and description of the phenomena can help to identify other similar settings or situations where the findings can be applied (Lincoln and Guba, 1985). 'Field notes' are highly encouraged by researchers to increase the depth of contextual information. They help current researchers of a particular study and future researchers to understand the phenomena properly (Phillippi & Lauderdale, 2018). This study intended to provide detailed descriptions about healthy school food environments in the selected schools in New Brunswick. It included data on each school food-related program and

interviews with each program leader. Additionally, field notes were taken, which provided further details on the programs and their management system. This extensive data collection helped the in-depth understanding of the food environments and helped with analysis and reporting the findings.

### 3.10 Characteristics of the researcher

The researcher was fully committed to this research. Her awareness of healthy eating and healthy food started to develop during her childhood. Her parents' encouragement and their own food habits played an initial and vital role. Having a Bachelor's Degree in Medical Science, her perspectives on healthy eating were mainly based on science. She considered healthy school food environments as a way of health promotion and took an interest to become involved in this area of research. She did not have experience regarding Canadian school environments as she was born and went to school in another country. Prior to this research, she visited a number of schools in NB to become familiar with the school setting, especially food environments, which helped to shape the research design and develop the data collection tools. The researcher had regular meetings with the co-supervisors of this project. Having work experience in the health sector, she was aware of the significance of dealing with one's concerns, opinions and emotions in a respectful but unbiased manner. To ensure that the participants could provide information honestly, the non-judgmental nature of this research was explained to the participants. The researcher was aware that her memories of school food in her home country might have influenced her impressions about Canadian school food. The researcher conducted the school visits and interviews with a friendly and neutral attitude.

### 3.11 Research Dissemination

The outcomes of the research consisted of three articles for publication. Participating schools received a summary report, electronically, about their school's food-related environment. The schools were asked for their feedback. One school district provided its initial approval to approach schools with a prerequisite that the findings of this research be shared with them. An electronic copy of the main findings of this research was sent to that school district.

# 4 Chapter 4

**Study 1:** Components of exemplary school food environments

## 4.1 Abstract

**Introduction:** Existing research and relevant documents on school food in Canada indicate that the school food environment is multicomponent. Research that explores food environments with a whole school approach is limited particularly in exemplary schools. This research addressed this gap: examining and identifying components of exemplary school food environments using a whole school approach (comprehensive school health (CSH) framework), with the potential to inform widespread future action by schools.

**Method:** Data were collected during two days of in-person visits to each of six purposefully selected exemplary schools through observation, self-assessment survey, and individual interviews (n=31). Cross case descriptive synthesis was conducted.

**Results:** While schools often had similar programs and initiatives, their structures varied. All schools offered free breakfast programs, lunch programs (mostly paid), and milk programs (free or subsidized). Common nutrition education activities included cooking classes (n=6) and gardens (n=3). All schools aimed to follow the provincial nutrition policy, and all worked with partner organizations to support food activities. Collectively, positive aspects of food environments across schools included the availability of fresh fruits and vegetables, food support to students in financial need, involvement of students in food activities, and avoidance of stigma in free food services.

**Conclusion:** The exemplary schools showed diverse program structures and different positive aspects regarding school food. Still, there is scope for further improvement and concern regarding program sustainability. The results may help other schools improve school food and inform decision makers as they continue to implement the national school food program.

## 4.2 Introduction

A healthy school food environment is considered important for promoting healthy eating among school children, which has positive effects on their health and educational outcomes (World Health Organization, 2021a; Centers for Disease Control and Prevention, 2021a; Centers for Disease Control and Prevention, 2021b). School nutrition policy documents, research and other relevant documents indicate that the school food environment is multifaceted. Recommendations from provincial school nutrition policies include but are not limited to standards for food selection, food support for students who face financial challenges, and nutrition education (Roy and McKenna, unpublished). The comprehensive school health (CSH) framework, which frequently guides healthy food promotion in Canadian schools, consists of four interrelated pillars. They are: 1) Social and Physical Environment – denotes relationships between students and school staff, emotional well-being; facilities and other amenities conducive for the promotion of health. 2) Healthy School Policy – rules and practices for health promoting behaviours and activities. 3) Teaching and Learning - includes resources, curriculum, formal and informal activities to improve knowledge and skills for health and well-being. 4) Partnership and Services – communication and collaboration among stakeholders and services provided by schools and the community to promote health (Joint Consortium of School Health, 2019; Orava et al. 2017). While there is no specific definition of school food environments available, when considered within CSH, a school food environment encompasses all aspects of school food. It is not limited to the food items available at school cafeterias and other food outlets but includes nutrition education and promotion activities, engagement of stakeholders and community, and policy and practices conducive for promoting healthy food.

Research indicates the existence of different food programs across schools including some positive changes in the school food environment (Ruetz et al., 2024; Watts et al., 2014; Morin et al., 2012). However, the overall standard of school food in Canada has not achieved the desired level to reap its potential benefits (McIsaac et al., 2015a; Taylor et al., 2011). At least 38% of schools in Canada offer some form of school food program, commonly breakfast programs (Ruetz & McKenna, 2021). Other food programs include lunch and milk programs (Ruetz et al., 2024; Ismail et al., 2022; Morin et al., 2012; Watts et al., 2014), and fruit and vegetable programs (Public health - Sudbury and districts, 2024; BC Agriculture in the Classroom Foundation, 2024).

A policy, external or at the school level, can justify and support healthy eating and health promoting activities within schools and help with their sustainability (Ausenhus et al., 2023; McIsaac et al., 2017; Gleddie, 2012; Storey et al., 2011; Stolp et al., 2015). Every province and the Yukon Territory in Canada has a policy or guideline to guide school food services and food-related activities (Roy and McKenna, unpublished).

A number of studies indicate that schools offer healthy eating related topics including relevant media literacy (Browning et al., 2013; Orava et al., 2017). Schools offer opportunities for the development of practical skills such as food preparation and storing; (Bailey et al., 2019; Naylor et al., 2016; Browning et al., 2013); gardening (Bailey et al., 2019; Browning et al., 2013; Orava et al., 2017); students' visits to farmer's markets and field trips (Browning et al., 2013; Orava et al., 2017). Other promotional activities include taste testing, fruit and vegetable challenges, celebrations

of ‘food education day’, and regional specialty snack days (Orava et al., 2017; Naylor et al., 2016).

Canadian food programs depend heavily on partners such as non-governmental organizations (Ruetz and McKenna, 2021). For example, non-profit organizations support school food programs with funds (e.g., Breakfast Club of Canada, FoodShare, Heart and Stroke Foundation of New Brunswick) and supply local fruits, vegetables, and other local foods (Ontario Edible Education, FoodShare); and promote nutrition education through farm visits, gardening, and funds (Canadian Feed the Children, 2022; Breakfast Club of Canada, 2020a; Farm to Cafeteria Canada, 2019; Fresh Roots, n.d.; President’s Choice Children’s Charity, 2022).

Existing Canadian research focuses on a particular component of the food environment of schools. Some studies evaluated or provided overviews of food programs or nutrition education programs. Others evaluated the implementation status of school nutrition policies, commonly the nutrition guidelines (Ruetz et al., 2024; Watts et al., 2014; Morin et al., 2012; McIsaac et al., 2015a; Taylor et al., 2011). An overview that provides details on all existing food programs and relevant aspects of the food environment of a school, specifically an exemplary one, is not available. An exemplary school in this study is defined as having a positive state of school food within the context of the overall school food scenario in New Brunswick (NB). It provides predominantly healthy food and beverages, curricular and extracurricular nutrition education programs, promotes healthy food choices, and collaborates with other relevant organizations to improve school food. While being in alignment with the intent of the school nutrition

policy, that is the promotion of healthy eating, all programs and activities within an exemplary school may not be equally strong but overall, they demonstrate positive practices reflecting healthy food environments. This study explored and identified different components of school food environments in exemplary schools; and provides an overview of the components under the CSH framework.

## 4.3 Method

This qualitative case study was conducted in six exemplary schools in New Brunswick.

### 4.3.1 School selection

Using a purposeful selection method, six schools participated in this study - three elementary schools (K-5), two consolidated schools (K-8) and one high school (9-12) (see Chapter 3 for further details on the school selection process). Five schools were situated in urban areas and one school was situated in a rural area. The research received the approval from the corresponding school district and the Research Ethics Board of UNB.

### 4.3.2 Data collection method

Data were collected during two days of in-person visits to five schools and a one day in-person visit in one school. Data were collected through observations, a self-assessment survey, and individual interviews.

***Observations***

Available food items and beverages in all regular food programs (breakfast programs, lunch programs, cafeteria service) were observed and documented, and photographs were taken. A checklist for food and beverage items guided the documentation of food items with their prices, where applicable (see Appendix A).

The researcher documented her general observations on food environments such as cleanliness of eating areas, use of promotional signs of healthy food and healthy eating using the observation tool for food environments (see Appendix B).

***School self-assessment survey***

The school self-assessment survey was conducted with a questionnaire on available food programs, nutrition education programs and other food activities. It consisted primarily of structured, close-ended questions with multiple answer options; and a few open-ended questions. The survey had multiple sections including sections for breakfast programs, cafeteria services, and nutrition education. In each section, questions on particular programs addressed types of food programs (e.g., Is the program free or paid or subsidized?), accessibility of programs (e.g., Is this program open to all students?), management of programs (e.g., Is there any committee for this program), nutrition curricula (e.g., What are the topics taught in classroom?) (see Appendix F). The individual program leader (e.g., breakfast program leader, cafeteria manager) completed the questions pertaining to the program that he or she led, together with the researcher. The person in charge of over all school food (e.g., principal) completed the survey

questions on nutrition education and celebration days with food (see Appendix F) together with the researcher.

***Semi-structured interviews***

A total of 31 individual interviews were conducted. The number of individual interviews from each school varied across schools depending on the food and related programs they had. This study interviewed individual program leaders and the person in charge of overall food activities from each school. In four schools, a single person led multiple programs, and they were interviewed multiple times separately - one interview for each program. Overall, 21 participants took part in 31 interviews. Six interviews were with the person in overall charge of school food and 25 were with individual program leaders. Participants included teachers (n=10), school community coordinators (n=4), principals/vice principals (n=3), and managers of external food service (n=3) (cafeteria, non-profit food service), and a person from a parent volunteer group (n=1).

Individual interviews were approximately 22 minutes long. Two separate interview guides were used for the individual program leader and person in overall charge of school food (see Appendix C and D). Overall, participants were asked about key program aspects, such as available resources for programs, guidelines for programs (e.g., What role does policy 711 [provincial SNP] play?), program management (e.g., Has there been any monitoring or evaluation for this program?), partnerships (e.g., Do you have partnerships with other organizations?), and/or support systems (e.g., What support do you have for your program or food activities?).

### 4.3.3 Data analysis

The researcher entered data from the observations and survey sheet into Microsoft Excel, organizing data from each school side by side. Interview recordings were transcribed and uploaded to qualitative data analysis software, Nvivo 14, and coded inductively. Cross case descriptive synthesis (Bethel and Bernard, 2010; Cruzes et al., 2015) was done to describe different components and aspects of school food. Data analysis included triangulation of data from observations, interviews and the self-assessment survey to support and complement the findings (Yin, 2009). Analytic findings were informed by the four pillars of the CSH framework and described accordingly. Additionally, on the basis of existing literature and provincial school nutrition policies, positive aspects of school food across participating schools were described.

## 4.4 Results

### 4.4.1 Social and physical environment

#### 4.4.1.1 Available food programs

All six schools offered multiple food programs including breakfast, lunch and milk programs and two schools offered smoothie programs. The food programs are summarized in Table 14 and described in detail bellow.

**i) Breakfast programs**

Breakfast was offered in every school everyday free of cost. Five schools offered a free breakfast program to all students without restrictions. One school offered breakfast free

to students identified by teachers, based on need. Three schools sent breakfast to the classroom, delivered by student volunteers. Two schools served breakfast using a 'grab and go' format. One school combined a 'grab and go' and a 'sit and eat' format; selected food items and the serving site were different for both.

Food items served were similar across schools and included foods from different food groups (e.g., fruits, milk products) and snack items. They included fresh fruits (e.g., apples, bananas, kiwi); grain products (e.g., cereal, toasted bread with spreads); milk products (e.g., yogurt, cheese); meat and eggs (e.g., boiled eggs and sliced ham); and snack items (e.g., apple sauce, granola bars)

**ii) Lunch programs**

All schools had lunch programs, with the number of days per week primarily dependent on the grades taught by the school. Elementary schools usually offered lunch four days a week except one elementary school, which offered it three days a week (some of the elementary schools had instruction four afternoons rather than five). The consolidated and high schools offered lunch five days a week. The types of lunch programs were - i) hot lunch prepared in the schools; ii) bagged lunch ordered from a non-profit organization; iii) lunch ordered from a fast-food outlet (e.g. pizza); or iv) lunch prepared and served by the cafeteria service (managed by an outside organization) in the school.

a) Hot Lunch: Two schools (S1 and S2) offered a hot lunch prepared in the school. The program offered a single food option. The price was $2 (including milk) in S2 and $3 (excluding milk) in S1. The food prepared on site for hot lunches contained mixed

entrees (e.g., taco wraps (beef or ham) or macaroni and cheese); fruits and vegetables (e.g., grapes, carrots); milk. One school (S1) offered hot lunch two days per week, where the school community coordinator (person in charge of overall school food and lunch program leader) prepared lunch with the help of parent volunteers. One day per week, this school ordered food (i.e. pizza) from a fast-food outlet.

In the other school (S2), a volunteer group operated the hot lunch program four days per week. Meal planning, grocery purchasing and food preparation were managed by the volunteers.

b) Bag lunch: Two schools (S4 and S5) ordered food from the same non-profit organization three days a week with a price between $ 2-2.20 per bag. The bag included grain products (e.g., popcorn); fruits (e.g., apples); fresh vegetables (e.g., pepper, peas with dip); milk products (e.g., yogurt, cheese); and other snack items (e.g., apple sauce, granola bar).

This non-profit organization had a faith group background and was led by paid employees. They recruited volunteers for service delivery, including assembling the lunches. The organization received grants and donations from churches. Volunteer staff, grants, and donations from churches enabled the organization to keep the price affordable. The lunch bags were assembled in a central kitchen and sent to the schools (a total of nine schools) that ordered online.

Other days of the week, schools ordered food (e.g., pizza, chicken fingers) from a fast-food outlet for one or two days of the week. The price of this meal was between $1.70 to 2.50. In one school, student volunteers delivered the lunch to the classrooms.

c) Lunch in cafeteria: Two schools (S3 and S6) had a cafeteria service offering lunch everyday, with one service also open for a snack break. In one school, the cafeteria was run by a for profit organization and in other by a nonprofit organization. The cafeteria run by the for-profit organization, which operated in multiple schools, offered a variety of food items. The cafeteria service manager reported that foods were prepared in healthier ways such as baking instead of frying and using less fat and sugar. Items available for snack and lunch included – mixed entrees (e.g., macaroni and cheese, chicken wrap, burgers, pizza slices) priced between $4 -$5.50; fresh fruits or fruit bowl; vegetables with dip ($ 2.75); milk (e.g., white and chocolate for $0.60); and snack items-(e.g. apple crisp, banana loaf, 100% juice, baked chips) priced around $2.00 per item.

The cafeteria run by the non-profit organization offered fewer food options; it operated two cafeterias in the school district. The food included mainly mixed entrees (e.g., beef taco wraps (whole wheat) with soup, burgers ($5-6)); vegetables (e.g., salad for $3-4), milk (white milk for 50 cents); snacks (e.g., cookie made with less sugar, $1). This organization was established by a group of people with a background in health promotion and they acted as the board of directors. In the cafeteria, paid staff prepared and served the food to the students. The cafeteria was operated on a cost recovery basis. The cafeteria leader developed the menu, which required the approval of the dietitian associated with the organization.

In addition to a cafeteria service (run by a for profit organization), one school (S3) offered free food during the lunch hour. Food items included fresh fruits (e.g., apples, oranges), milk products (e.g., yogurt, white milk) and other snack items (e.g., granola bars, apple sauce) and some sandwiches.

A comprehensive list of available food items in different food programs is included as Table 13.

**Table 13 Comprehensive list of food items observed in food programs across schools**

| **Fruits and vegetables** | **Milk and milk products** |
|---|---|
| Apples<br>Banana<br>Pears<br>Oranges<br>Kiwi<br>Strawberry<br>Plums<br>Grapes<br>Fruit salad<br>Carrots<br>Fresh vegetables (e.g., pepper, peas or cucumber and carrot) with dips<br>Vegetable bowl | White milk<br>Chocolate milk<br>Yogurt<br>Yogurt tubes<br>Yogurt drinks<br>Cheese sticks<br>Cheese strings<br>Smoothie |
| **Grain products** | **Meat and eggs** |
| Cereal with/without milk<br>Toasted bread with spread<br>Croissant<br>Bagel with cream cheese<br>Popcorn | Boiled eggs Sliced ham<br>Chicken fingers |
| **Mixed entrée** | **Snack items** |
| Taco wraps (beef or ham) with white or whole grain tortilla<br>Chicken wrap<br>Soup<br>Macaroni and cheese<br>Chicken burgers<br>Hamburger<br>Pizza slices<br>Potato wedges<br>Sandwich (egg, tuna and vegetables) | Apple sauce<br>Granola bar<br>Blueberry cake<br>Hummus and crackers<br>Apple crisp<br>Banana bread<br>Cinnamon bun<br>Baked chips<br>100% juice<br>Cookie made with less sugar and butter |

**iii) Milk programs**

All schools had milk programs. Four schools (S1, S2, S3 and S6) offered milk during lunch time at a subsidized price of $0.40 - 0.60 (under the provincial School Milk Program of NB supported by provincial dairy farmers and processors). Two schools (S4

and S5) had a free milk program. One school offered free milk to elementary grades every Monday morning. Four schools (S2, S4, S5 and S6) offered only white milk; and two schools (S1 and S3) offered white milk and chocolate milk. Additionally, three schools (S3, S4 and S6) that sold milk at a subsidized price offered free milk with cereal in their free breakfast programs.

**iv) Smoothie programs**

Two schools (S1 and S5) offered free smoothies to students, usually every two weeks. Smoothies were made with yogurt, fresh and frozen fruits such as strawberries, and without adding any free sugar. In one school, members of a students group took part in preparation and distribution of smoothies.

**Table 14 Summary of the food service/program for the social and physical environment**

| **Food programs Dimensions** | **School 1** | **School 2** | **School 3** | **School 4** | **School 5** | **School 6** |
|---|---|---|---|---|---|---|
| *Breakfast program* | | | | | | |
| Available | Yes | Yes | Yes | Yes | Yes | Yes |
| Approximate % of students participating every day | 10% | 50% | 3% | 27% | 7% | 27% |
| Price | Free | Free | Free | Free | Free | Free |
| Restrictions to participation | None | None | None | None | Yes - to students identified as in need | None |
| Frequency | Every day | Every day | Every day | Every day | Every day | Every day |
| *Lunch program* | | | | | | |
| Available | Yes | Yes | Yes | Yes | Yes | Yes |
| Approximate % of students participating | 40% | 70% | 15% | 22% | 9% | 20-23% |
| Cost | Paid by the student | Paid by the student | Paid by the student | Paid by the student | Paid by the student | Paid by the student |
| Restrictions | None | None | None | None | None | None |

| | | | | | | |
|---|---|---|---|---|---|---|
| Frequency | Three days/ week | Four days/ week* | Five days/ week | Four days/ week | Five days/ week | Five days/ week |
| Types of service | Hot lunch | Hot lunch | Cafeteria service | Bag lunch | Bag lunch | Cafeteria service |
| Onsite preparation | Yes (two days) | Yes (four days) | Yes (five days) | No | No | Yes (five days) |
| Outside delivery | Yes (one day) | No | No | Yes (four days) | Yes (five days) | No |
| Fast food outlet lunch | Yes (one day) | No | No | Yes (one day) | Yes (two days) | No |
| *Milk program* | | | | | | |
| Availability | Yes | Yes | Yes | Yes | Yes | Yes |
| Restrictions | None | None | None | None | K-5 | None |
| Price | Subsidized | Subsidized | Subsidized | Free | Free | Subsidized |
| *Smoothie program* | | | | | | |
| Availability | Yes, Biweekly | No | No | No | Yes, Biweekly | No |
| Restrictions | None | N/A | N/A | N/A | None | N/A |
| Price | Free | N/A | N/A | N/A | Free | N/A |

* School serves food every day when possible. One day is a half day where no lunch food can be provided.

#### 4.4.1.2 Food supports for students in need

All schools provided food support to students in financial need. In addition to the free school breakfast program in all schools, four schools (S1, S2, S4 and S5) sponsored lunches for students, identified by classroom teachers, in need of free lunch. The students received the same lunch as the students who paid, in a manner not identifiable to their peers. The number of the sponsored lunches ranged from 7 to 20 per day. Three schools (S3, S4 and S5) offered a backpack1 program. Every week, 5 to 15 students received a backpack to take home to their families. The pack included non-perishable items such as pasta, canned beans, canned tuna, and/or noodles. One school (S2) provided money/subsidy to three families ($15/month).

#### 4.4.1.3 Eating environment

Students either ate their meals in the cafeteria area or the classroom. In the cafeteria area, there was adequate supervision by the teachers or school food leaders according to the grades. Overall, in terms of cleanliness and adequacy of sitting space the environment was rated as 5/5. In the classroom, students were supervised by their class teacher.

In some schools the eating area (when food is served outside the classroom) showed different posters or signs promoting healthy food options. Common posters were based

[1] A food support initiative for students who are financially challenged that provides a bag of food items, usually nonperishable, to take home every week.

on Canada's Food Guide, different fruits (such as apples) and vegetables. Some posters encouraged drinking water and/or milk.

All schools had water fountains for drinking. Schools where food was prepared onsite from scratch for lunch (two cafeterias and two hot lunch programs) had licensed kitchens and food safety was practiced.

#### 4.4.1.4 Fundraising activities

Three schools (S1, S4 and S5) reported not selling food to raise funds. Two schools (S2 and S3) reported selling food as a fundraising activity. One school (S2) sold popcorn once a week and chocolate once a year. Another school (S3) sold candy once a year and cupcakes during sports events. Two schools (S3 and S6) sold food prepared in the cooking classes (e.g., cookies, cakes) to recover the cost, and one of them (S6) sold salsa prepared from the garden crops.

#### 4.4.1.5 Other food practices

Five schools (S2, S3, S4, S5 and S6) included food as a part of celebratory events such as Christmas or the year end party for all students or particular groups. One school offered a fruit tray during a celebration. Other food items served included a turkey dinner, a barbeque, and pizza. No school reported the use of food as rewards or punishment. However, in a few cases different student groups that volunteered in school activities throughout the year received a 'treat' such as a party with food that students prefer.

Two schools (S4 and S5) conducted challenges to promote healthy eating once a year such as a water challenge and a fruit and vegetable challenge. Students that conducted the water challenge described that students who are interested received pieces of fruit such as lemon, berries and oranges to add to their water bottle to create fruit flavoured water. The purpose of this challenge was to encourage students to drink more water. One school (S3) had two vending machines near the cafeteria that offered bottled water, 100% juice ($2.50), and baked chips ($1.75). These items were sold at their full price.

### 4.4.2 Policy

All schools reported that they adopted the provincial SNP (policy 711). The cafeteria service of one school (S6) managed and delivered by a non-profit organization reported that their policy was stricter than policy 711. In a few cases, partner organizations that provided grants had guidelines to follow, such as offering food from different food groups. In addition, data from the self-assessment survey showed that other factors such as the cost of food, student preferences and convenience in preparation played a role in food selection. According to most of the leaders of food programs such as breakfast, lunch or cooking classes, schools tried to be compliant to the policy during food selection as much as possible.

In terms of monitoring, the cafeteria service of one school (S3) managed by a for profit organization was monitored by the school district. According to the staff in charge (cafeteria manager), an employee of the school district visited the cafeteria annually. No other school or program reported any formal in-person monitoring or evaluation of food

served or sold. The cafeteria managed by a non-profit organization was monitored informally by its own board of directors. As examples, the monthly menu needed to be checked and approved by their dietitian. Schools (e.g., S1, S5, S6) that received grants were required to submit reports to the partner organization that provided the grant. The reports included how the grant money was spent. However, most schools (e.g., S1, S2, S3, S6) monitored their food programs informally in terms of what types of food student prefer. The purpose was to improve students' uptake.

### 4.4.3 Teaching and learning

#### 4.4.3.1 Topics taught in the classroom

All school taught various topics related to nutritious eating and food. There were few variations in nutrition topics taught in the classroom across schools. The schools taught about -

i) healthy food behaviour - its importance, and how to monitor and improve the student's own food behaviour;

ii) general knowledge about food selection - different food groups, Canada's Food Guide, food safety;

iii) metabolism - effects of different types of food on the body; and

iv) food system - the environment and growing food, food marketing and advertisements.

#### 4.4.3.2 Activities outside the classroom

Schools practised a variety of activities relevant to food education to promote students' knowledge and skills on growing and preparing food. The activities are summarized in Table 15 and described below.

**i) Cooking classes**

All schools offered cooking classes for students. The cooking classes were offered to different grades and the structure of the classes varied. The classes can be divided as follows:

a) Cooking classes as a part of the curriculum: Two schools (S2 and S4) offered classes as a part of the curriculum. The number of sessions provided to each class varied according to the school and grade level. On average, two to three sessions were provided to each class. All students of the schools had the opportunity to participate in the cooking classes. In one of the sessions, students cooked with their family at home. Every year, every class had the opportunity to take a recipe and ingredients (provided by the school) to take home and cook with their families. In each school, the length of each session was around 1 – 2 hours.

Fruits, vegetables and other healthy food options were introduced in the classes. The recipes (e.g., beans rice, fruit parfait, and taco soup) were chosen to reflect healthy food choices, basic food skills, and cultural diversity. One school (S4) reported incorporating its cooking curriculum into other subjects such as science, social studies, math and literacy. For example, in a recipe that indicated that half of cup of rice will make one cup of boiled rice, students calculated how much rice they would need to make two cups of boiled rice.

b) Cooking classes as extracurricular (S1) or exploratory with in the curriculum activities (S5 and S6): Students needed to register separately for these classes. The cooking classes were available to specific grades. The number of students who participated in each class was 10 to 30. Three to six sessions were provided to every group; each session was one to two hours long depending on the structure of the program. In two schools, students could share the food they prepared at school with their families. In general, the purpose of these classes was to provide basic cooking skills, promote healthy eating and create interest in cooking. Collectively, recipes included fruits and vegetable dishes (e.g., Caesar salad, fruit cups); chicken dishes (roasted chicken and potatoes, chicken stir fry, chicken alfredo); and treat items (e.g., oatmeal cookies, chocolate bar, brownie).

c) Cooking classes as course curriculum: One school (S3) offered a core culinary course that provided students with hands-on experience. Students attended this course similar to other taught subjects and received grades for their performance. In this course, students learned advanced culinary skills such as making pizza from scratch, pastry, or jam. In some recipes healthier alternatives such as apple sauce or honey instead of sugar were used.

**Table 15 Summary of the education activities on food**

| **Activities** | **School 1** | **School 2** | **School 3** | **School 4** | **School 5** | **School 6** |
|---|---|---|---|---|---|---|
| *Cooking class* | | | | | | |
| Available | Yes | Yes | Yes | Yes | Yes | Yes |
| Types/nature of classes | Extracurricular | Curricular | Curricular Two culinary tech courses | Curricular | Extracurricular (electives) | Curricular (exploratory) |
| Eligible grades | Grade 4 and 5 | Grade K-5 | Grade 11 and 12 | Grade K-5 | Grade 6 and 7 | Grade 6-8 |
| Number of students participating | 25-30 students | All students from the above grade | 520 | All students from the above grades | 30 students | 10-20 students |
| Number of sessions per year | Four sessions | Two sessions for each group | Regular weekly classes through out the year | Two to three sessions | Three sessions | Six sessions |
| Length of sessions | 2 hours | 2 hours | Same length as other subjects | 40 minutes | 1 hour and 45 minutes | 1 hour |
| *Garden activity* | | | | | | |
| Available | No | Yes | No | No | Yes | Yes |
| Nature of activity | | Curricular | | | Extracurricular | Curricular |
| Number of students participating | | All students | | | 5 to 10 students | All students |

| | | | | | | |
|---|---|---|---|---|---|---|
| *Fishing program* | | | | | | |
| Available | No | No | No | No | No | Yes |
| Nature of the activity | | | | | | Curricular |
| Number of students participating | | | | | | All students |

**ii) Garden activities**

Three schools (S2, S5 and S6) had gardens that offered opportunities for students to grow food. The cultivated plants included vegetables (e.g., tomatoes, bell pepper, beans) and herbs (e.g. green onion, chives, oregano). The garden activity started and completed in May to June, depending on the weather. During the summer vacation the school gardens were taken care of by either the person in charge of the garden (e.g., teacher, school community coordinator) or community volunteer involved with the garden. In the fall, when the students returned to the school, the garden became ready for harvest. Students took part in harvesting, and the collected vegetables and herbs were cooked and served to the students separately or used in making food served in the lunch program or made into salsa and sold.

Garden activities were integrated into the curriculum in different ways. Two schools (S6, S2) reported incorporating garden activities in their curriculum while another school's garden activities were extracurricular. As a part of the curriculum different classes took part in sowing, planting and harvesting. One school reported that as a part of the curriculum students spent time in the garden and reflected what they observed in their drawings and garden journals. This activity was assessed as art lessons and nature lessons. One school (S5) had a separate garden club including 5 to 10 (this year 10) students that was a part of extracurricular activities. The garden was accessible to all students, but the club members took primary responsibility, guided by the program leader in planting and harvesting crops.

**iii) Fishing activity**

One school (S6) had a fishing program. Students learned about fish and took part in fishing while being outside as a group. The programs included all students, and the program leaders took out each class in turn. This activity was related to science; as students learned about the life cycle of fish. Additionally, there was a fishing club for students who were more interested in fishing. Interested students registered for this club as an elective.

Other common food activities included growing vegetables in classrooms (four schools - S2, S4, S5 and S6); garden towers (four schools - S1, S2, S3 and S4), using lights to grow microgreens (four schools- S2, S4, S5 and S6); composting (three schools - S1, S2 S6), field trips to farms (three schools - S3, S4 and S5), raising fish in the classroom to study their life cycle (two schools - S2 and S6); and guest speaker visits for awareness of healthy eating (three schools - S2, S5 and S6). In most cases, these activities were part of curricular activities.

### 4.4.4 Partnerships

All schools had partners that supported schools in terms of food environments. Partners included non-profit charitable organizations, private for-profit business organizations, churches, individual donors, and community members. The most common and consistent contributions included:

#### 4.4.4.1 Monetary support

Four schools (S1, S2, S5, S6) received grants to buy food items. The grants could be specific to a particular program or overall food activities depending on the conditions of the grant. Two schools (S1 and S2) received grants for cooking classes. Schools received yearly monetary grants from charitable organizations. In addition, private organizations (e.g., travel agency, car dealers), churches and individuals (community members, ex-students) donated money (e.g., S3, S6, S5) without any formal protocol or accountability. Two schools (S4 and S5) provided free milk programs with monetary support from the community.

#### 4.4.4.2 Donated food items

Private organizations and individuals donated food items (e.g., S3) to schools such as apples. A few schools received food from a food bank. Schools received food items from churches such as cereal and muffins (S1, S4, S5). Schools used these food items in breakfast programs and for snacks and in some cases for backpack programs.

#### 4.4.4.3 Volunteer supports

Community volunteers took part in the preparation of breakfast programs (S1, S4, S6); hot lunch (S1 and S2) and smoothie programs (S1). In one school (S2), the hot lunch program was primarily maintained by a group of volunteers – menu development, grocery purchasing and food preparation. Two schools (S2 and S5) reported support from community volunteers in the maintenance of the school garden during summer vacation.

### 4.4.5 Highlights of positive aspects of food environments across exemplary schools

The food environments of these six exemplary schools included different components indicating different food programs and practices, and curricular and extracurricular nutrition education activities that have the potential for positive effects on students' food behaviour. The food programs, practices and activities varied across schools in terms of how they were conducted and practiced. Not all of them had the same standard and potential for positive effects on student's food-related behaviours. The following sections highlight some of the most positive aspects.

One of the most common positive aspects was offering fresh fruits and vegetables in breakfast, hot lunches and bag lunches. Breakfast programs offered fruit; hot lunch and bag lunch programs included fruits or vegetable or both. In cafeterias where there were multiple options, fruits or vegetables were offered as side dishes but not included in all food items. Fresh fruits and vegetables are recommended by the NB school nutrition policy, other provincial school nutrition policies and Canada's Food Guide. The school nutrition policy of NB listed fresh fruits and vegetables as foods with higher nutritional value. Overall, the policy mandated that all food items served and sold in schools were to be from higher nutritional value category (New Brunswick Department of Education and Early Childhood Development, 2018).

A breakfast program of one exemplary school (S6) provided a free breakfast program as a 'sit and eat' in the cafeteria (not served by the cafeteria service) plus a 'grab and go' option. The student could have food from both options. This arrangement provided students with a broader selection of food choices as well as the opportunity to have

breakfast together with different age groups. These factors promote students' acceptance of school meals (Cohen et. al, 2021).

A few exemplary schools (e.g., S1and S2) were able to offer lunches at a reasonable price ($2, including milk, to $3) prepared onsite (including wraps or macaroni and cheese). Both meals included fruits or vegetables. The meat filling of the wrap was prepared onsite from ground meat. Similarly, the sauce for the macaroni and cheese was prepared from scratch and included vegetables such as sweet potatoes. The provincial school nutrition policy emphasizes keeping the price of food close to cost and that a lunch meal should include food from all food groups - fruits and vegetables, grain products, milk and alternatives and meat and alternatives (New Brunswick Department of Education and Early Childhood Development, 2018). In spite of the challenge of the higher cost of healthy food ingredients and food preparation from scratch (Cornish et al., 2016; Downs et al., 2012), these schools were able to keep their prices low.

A dominant component of these schools was food support for students in financial need. Efforts were taken to provide the support in a non-stigmatized way. Students who did not have breakfast could have breakfast at school with others as breakfast programs were open to all students in all schools but one. In the case of sponsored lunches by the schools, students who needed support were identified by the class teachers and lunches for these students were paid by the school (e.g., S1, S2, S5). The students who received free lunch were not identified by others except the class teachers. One school (S3) had a free food program that offered breakfast and lunch to students who were in financial need. This school communicated that anyone who did not have food for breakfast or

lunch for any reason could have food from this program. As part of the school observation, the researcher noted that students who received food from this program were quite comfortable and did not have any hesitation to participate. Stigmatization is a barrier in acceptance and participation in school food programs and creating a non-stigmatized environment for students is recommended (New Brunswick, Department of Education and Early Childhood Development, 2018; Government of Canada, 2022; Everitt et al., 2023).

Three schools (e.g., S1 and S4) avoided food in fundraising. This is a positive aspect that promotes healthy food environments and is also a requirement of the SNP.

Students were involved in the delivery of food programs depending on their grade and the scope of the programs. In a few schools with higher grades there were groups of students that took responsibility in food and related programs (e.g., S3, S5, S6). One school (S5) had a group of 25 students that delivered breakfast and lunches to the classroom. The group conducted water challenges and sometimes helped to assemble food packets for breakfast or lunch. Another school (S3) had a group of 120 student volunteers that delivered a free food program, including breakfast and lunch. The student volunteers organized the food items and served them to students, helped to raise funds, and managed the schedule of the volunteers. A group of students in another school (S6) took part in recycling activities. Overall, the students of these groups had the opportunity to develop leadership skills and gained insights regarding the purpose of a particular program for which they volunteered.

Students and parents are considered important stakeholders of school food. It is recommended to create opportunities for students' engagement in school food (Government of Canada, 2023; New Brunswick Department of Education and Early Childhood Development, 2018; MacLellan et al., 2010; Taylor et al., 2011; Downs et al., 2012; Vine et al., 2014). Schools offered cooking classes to students. Most cooking classes provided the students the opportunity to share food that they prepared during the class with their family. Two schools (S2, S4) provided students a recipe of a food plus the ingredients to take home so that the students could cook with their family. The schools reported that they received a very positive response from both students and families.

Working with a partner organizations was a common aspect of school food environments in exemplary schools. Engagement of stakeholders such as parents, students, and community groups in the school food environment facilitate a support system for school food. Their involvement promotes a holistic approach to school food (Ausenhus et al., 2023; Taylor et al., 2011; Storey et al., 2011; Gleddie, 2012; McIsaac et al., 2017; Stolp et al., 2015). Working with partner organizations and community members enabled exemplary schools to have access to resources such as money, staff, and other requirements. These resources helped schools to build their capacity to start, expand or maintain of food programs, practices and nutrition education activities.

## 4.5 Discussion

### 4.5.1 Principal findings

The aim of this study was to identify different components of school food environments in exemplary schools and positive aspects and practices across schools. All schools had multiple food programs, which collectively included breakfast programs, lunch programs, milk programs, food supports for students in financial need and other activities. Schools had similar programs and activities, but the structure of the food and related programs was diverse across schools, especially for the lunch programs. All schools worked with partner organizations and received funds, food items and volunteer supports. The positive aspects of the school food environments across schools included inclusion of fresh fruits and vegetables, food support to the students in need, involvement of students in food activities, and efforts to avoid stigma in free food services.

### 4.5.2 Strengths of this study

This study provides a comprehensive description of whole food environments in exemplary schools based on in-person visits to each school. It documented all the food programs and available food items and included the nutrition activities – topics taught in the classroom, and other hands-on activities such as cooking classes and garden activities. This study provided a description of these activities - length of sessions, participation rates, and recipes. In-depth descriptions were beneficial to identify similarities and differences in programs and in their structures, which indicated dominance of a school specific approach to school food environments. The

comprehensive description was helpful to identify more positive aspects of school food environments across schools.

The use of the CSH framework helped to identify important aspects of multicomponent food environments. As an example, relationships with community organizations are not a food-related program but exploring this aspect showed that it was an important resource for food activities.

### 4.5.3 Limitations of this study

Most schools in this study included elementary grades. Due to challenges in identifying exemplary schools, inclusion of schools with all grade level equally was not possible. The predominance of elementary grades might have influenced the findings regarding available food items, program structures and students' participation in programs. This study could not observe directly all the cooking classes or garden activities, as the schedule of those activities could not always match the schedule of school visits. However, all relevant data was collected through the school self-assessment survey and interviews. This study collected data from program leaders. Data from multiple participants from each program might have provided different or additional information and more schools would have potentially provided additional complimentary information. In a few schools, breakfast was sent to the classroom, which meant it was not possible to count the exact number of participating students; these numbers were approximate.

### 4.5.4 Relation to other studies

*Diversity in program structures:* The findings of this study showed that food programs, especially lunch programs, had structures that varied across schools. Schools arranged lunch meals from different sources – hot lunches prepared onsite, or hot lunches from external providers including some food sourced from fast food outlets. This diverse scenario of school food programs is similar to findings from other studies at the national level (Ruetz and McKenna, 2021; Ruetz et al., 2024). Diverse policies and funding sources and not having a national food program were mentioned as factors that contributed to this diversity. Facilities and staff are influencing factors in preparation and serving healthier food (McIsaac et al., 2019b; MacLellan et al., 2010). In this study, the types of meals (breakfast vs. lunch), bulk of the ordered meal, the existing cooking facilities and available staff and volunteers might contribute to different food program structures across schools. The results indicate that even with the same provincial school nutrition policy other factors played roles. Schools adopted structures that matched their facilities, staff (including volunteers), and the school's needs. These aspects of school food can inform the allocation of funds to schools for the national school food program. All schools may not have the same capacity to use the national program funds to deliver healthier meals.

Some schools chose an external food service provider for their lunch program. Some of these services also adopted a nonprofit strategy to promote the health of children. There is evidence that this kind of vendor exists that provide healthy food items according to a nutrition policy. Little research is available on these services (Reeve et al., 2018). Fostering these services can support school food programs especially in schools where

there is a lack of facilities and staff. Improving the capacity of these food services can help schools avoid ordering food from fast food outlets.

*Positive foods and scope for further improvement:* The inclusion of fresh vegetables and fruits were found in all school food programs. The results did not show any availability of deep-fried food or sugary drinks. Thus, the results indicated that these exemplary schools excluded those kinds of food items. These findings were identified by prior studies as positive aspects in school food (Morin et al., 2012; Watts et al., 2014). At the same time, there was food from fast food outlets (e.g., pizza), and chocolate milk and croissants on a limited basis. According to the nutrition requirements of the provincial SNP these food items are not usually acceptable because of their fat, sugar and/or salt content. In some cases, snack items together with fruits and vegetables were offered as lunch. Canadian literature and information promote the use of local foods in schools (McEachern et al., 2022a; McEachern et al., 2022b; Hernandez et al., 2018; Blomley et al., 2023). Although three schools had gardens, it would appear there is an opportunity for these schools to increase the priority of using local foods. All these findings indicate that schools made efforts to provide heathier food, however for different reasons schools were sometimes flexible in their food provision. There is still scope for improvement, which would require additional support.

*Affordability of school lunch:* The price of lunch also varied across schools. 'Affordable' healthy food was the goal of school food programs, and governments including the Canadian government promote the uptake of healthy food among school children (Hernandez et al., 2018; McKenna, 2010). The findings of this study indicated that an

affordable price is ‘relative’. Previous research stated that extra staff, the cost of healthy food ingredients, and the types of facilities act as crucial factors in serving healthy food options, which affect the price (Cornish et al., 2016; Downs et al., 2012). The schools in this study had different student population sizes and locations (urban vs rural). Additionally, the results showed volunteers took part in some of the lunch programs and it is possible this factor played a role in price differences across schools.

*Student participation:* In Canadian provinces the participation of students in school food programs varies across the country (Ruetz and McKenna, 2021, Carducci et al., 2024). Not every province documented the rate of participation. From the available data, one study calculated that in Canada, Atlantic Canada has the highest program prevalence, with 90-96% of schools running one or more food programs (e.g., breakfast or snack); with student participation rates ranging from 31% to 51% (no data were available from New Brunswick because at the time of data collection, there was no provincial funding) (Ruetz and McKenna, 2021). In this study, participation in breakfast and lunch programs varied across schools. The breakfast program, which was a free program, had a participation rate that ranged from 3% to 51%. In Canada, the student participation rate in free food programs (breakfast and lunch) is approximately 5% (Hock et al., 2022). In the case of students with food insecurity, the participation rate was 25 % (Hock et al., 2022). In breakfast programs for secondary students, the participation rate was 16% (Godin et al., 2018). There was limited research on factors that influenced student participation in school food programs. Based on the available research, factors were cost, stigma, types of food, food insecurity, and timing of the program (Everitt et al., 2023; Lopez-neyman & Warren, 2016; Cohen et al., 2021). In this study, breakfast

programs were free and, in most cases, open for all. The results showed that schools worked to avoid stigma, which was a positive aspect. Additional factors, such as different socio-economic conditions of neighborhoods, types of food, and/or breakfast times might have affected the participation rates.

In the case of paid lunch programs, the participation rate ranged from 9% to 70%. Additionally, the price varied across schools though program providers worked with no or low profit margins. Schools that had a similar price for lunch showed different participation rates. It was unclear the extent to which price was a factor in students' participation. Other factors such as the types of food (full meal vs. snack-based lunch), could play a role in students' participation.

*Student engagement:* Student engagement in food-related decision making promotes healthy food intakes among students (MacLellan et al., 2010; Taylor et al., 2011; Downs et al., 2012; Vine et al., 2014; McIsaac et al., 2019c). This study shows there was involvement of students in food activities such as delivering food to the classroom, organizing snack items, fundraising for free food programs, and managing water and fruit challenges. Because of the age group of students, and the structure of food programs (ordering the food from outside organizations) there was little scope for involvement of students in lunch preparation and menu selection. The students in this study have the potential to learn about leadership skills and increase their awareness of the significance of food security but little scope to discuss menu development to improve the uptake of healthy food. It indicates that involvement of students does not

depend solely on a school's policy but also the structure of food programs that are adopted according to facilities and staff.

*Role of policy:* It is evident that schools paid more attention to food programs, including free food programs and supporting students in need (addressing food insecurity), in comparison to nutrition education and other healthy food promotion activities. Most of the available resources appeared to be directed to the food programs. Almost all schools had a free breakfast program everyday of the week that was open to all students. All schools had lunch programs that were open to all students and in many cases provided free lunch to students in financial need. Some schools also provided backpack programs. Although healthy school food is considered important for improved nutrition and the development of healthy eating behaviours in children, these findings indicate that the schools addressed food insecurity as a priority issue. Ensuring access to healthy food in schools is an objective of provincial school nutrition policies and the national school food policy (Employment and Social Development Canada, 2024). This aspect of school food aligns with existing school nutrition polices. On the other hand, in terms of nutrition standards, the schools reported that while they aimed to follow the policy, other factors such as cost of food, student preferences, convenience of preparation and preparation site played roles. An external or school level policy justifies healthy eating and health promoting activities and can help maintain its sustainability (Ausenhus et al., 2023; McIsaac et al., 2017, Gleddie, 2012; Storey et al., 2011; Stolp et al., 2015). A few studies showed that the complexity of nutrition guidelines and their interpretation could be a factor for reduced policy compliance and recommended simpler guidelines (McIsaac et al., 2019a; Vine et al., 2021). In this study, although schools reported to

adopt the policy the participants indicated it was a reference guide for food provision, with other contextual factors also playing a role. Without addressing contextual factors in schools, only revising nutrition guidelines might not result in the desired changes in school food.

*Intensity of nutrition education*: The schools in this study offered food and nutrition education programs as part of promoting healthy eating behaviours. In terms of nutrition education, the topics taught in classes and some of the hands-on teaching (e.g., composting, garden towers) across schools showed little variability. The topics in general reflected the New Brunswick curriculum (Department of Education, 2005a-g). As a method of hands-on teaching of food and nutrition, cooking classes were the most common and then gardens. Collectively, the number of hours the students got to engage in cooking was similar among schools. However, the total time that students participated in cooking was quite low, around 4 to 6 hours a year. In the case of the garden programs (in three schools), due to Canadian weather and summer vacation, students' involvement and exposure to these activities was limited. It raises the question that if the time is sufficient to create awareness and promote healthy food preparation and consumption. A few research articles indicated that consistent involvement in food and nutrition activities had positive effects on students' eating behaviours (Fife et al., 2020; Ballam, 2018; Chan et al., 2022; Triador et al., 2015; Hanbazaza et al., 2015). One study recommended that the practical part of food education should be at least 12 hours per year (Ballam, 2018).

The schools in this research undertook positive initiatives to promote healthy food behaviours but the intensity may be insufficient to achieve all desired effects. Literature suggested that limited resources and lack of professional training created a number of challenges for nutrition education (Aydin et al., 2021; Myers et al., 2018; Esdaile et al., 2024). The results indicated that schools were highly dependent on financial resources from community and partner organizations. Additionally, every school had regular free food programs and food supports for students, which required a significant portion of resources. These financial issues and other challenges such as cooking facilities and extra responsibilities to offer the classes could be causes of limited time for cooking classes.

*Additional support for nutrition education:* One of the objectives of the provincial school nutrition policy is to support nutrition education. As mentioned above, the provincial curriculum was reflected in the classroom curriculum. Recommendations regarding the general structure and hours of cooking classes and garden activities from provincial policy or curriculum documents could be helpful, as support from government organizations. As an example, registered dietitians from public health could help with cooking classes. Allocation and use of funds from the national food program could consider providing support to expand existing facilities for nutrition education along with food programs.

*Role of partnerships in decision making:* Engagement of stakeholders in decision making was recommended by other studies to improve school food activities (Ausenhus et al., 2023; Taylor et al., 2011; Storey et al., 2011; Gleddie, 2012; McIsaac et al., 2017;

Stolp et al., 2015). This study showed that schools received support from different community organizations, charitable organizations, and private organizations. The common supports were money, food items and volunteers. The results also showed that schools sent reports to the organizations that provided grants. There was no evidence of involving these organizations in decision making. On the other hand, the volunteers basically assisted the program leaders, except one program. Overall, the partner organizations and other community organizations or members were a source of resources but had a limited role in decision making. One of the possible causes is there is no separate committee for school food. Each program was managed by a program leader and decisions were taken separately. Inclusion of partner organizations in decision making for each program separately is difficult at a practical level, however, a committee could assist with broader decision-making and could potentially enhance coordination.

.

*Need for evaluation and monitoring:* Evaluation and monitoring is essential for sustainable healthy food promotion in schools (Reeve et al., 2018; Hernandez et al., 2018). This research showed that most of the schools did not conduct evaluation or monitoring, which is a risk for program sustainability. The schools only observed the students' food preferences to increase student participation. The results indicated that the provincial SNP played a partial role in food provision by the schools as did other factors such as cost of food, convenience (storage and preparation facilities). A few studies examined food items to evaluate policy compliance (McIsaac et al., 2018; Orava et al., 2017; Vine et al., 2021). The recent national school food policy emphasizes evaluation and monitoring of the national food program (Employment and Social Development

Canada, 2024). The minimal evaluation and monitoring that exists now underscores the need for schools to receive assistance to determine standards for monitoring and evaluation and support with data collection and follow-up.

*Overall atmosphere*: The CSH framework that guided this research recommends four broad and interlinked pillars that schools should address for food or health promotion activities. All schools in this study addressed the pillars but to different extents. Overall, the schools had similar kinds of food programs and activities with diverse structures, indicating a school-specific approach. Schools included healthier food items, but some less healthy food items were still available. Other practices in schools conducive for healthy food environments included no or minimal use of food items for fundraising and engaging students in food activities. All schools adopted the provincial SNP as a guide for food provision but applied it in a flexible way. In nutrition education, apart from the curriculum taught in the classroom, there were cooking classes and gardens, although the allocated time was limited. The participation in food programs and cooking classes was average – not higher than other studies. Schools developed partnerships with other organizations mainly with the purpose of finding resources for food activities. The findings of this study showed that exemplary schools efforts to offer healthier food items and created an atmosphere where students could get synchronized messages to some extent about healthy eating habits. At the same time, students could also perceive that for different reasons eating habits could be liberal and include less healthy food as well.

The findings show that there is scope for improvement in exemplary school food environments in terms of food provision, intensity of the hands-on nutrition education

teaching, and the number of participating students. Another aspect is program sustainability to exert its effect in the long run. The schools are highly dependent on external resources specifically financial resources from the community, which made them potentially less sustainable.

The evidence from this research indicates that the whole responsibility of school food is on individual schools with minimal support and monitoring from any jurisdiction. The supports that schools receive from the community are the results of schools' networking efforts.

The diverse structures of food programs (e.g., breakfast programs, lunch programs), schools' needs of supports and resources, and the current lack of formal regular monitoring can inform the ongoing implementation of the national food program.

### 4.5.5 Implication of this research

This study provided details of components of exemplary school food environments including the structure of food and related programs. These findings can inform and encourage other schools to adopt or develop food and related programs according to their resources and needs as initial steps for positive changes in school food. The findings of this study reflected the diverse structure of food environments, specifically lunch programs. These findings can inform strategies for the ongoing implementation of the national food program and its monitoring system.

The overall school food scenario in Canada is changing because of the national food program and the funds allocated to the program from the federal government. In the

future, this research could serve as a point of reference of food environments in exemplary schools from the pre-national school food program era.

## 4.6 Conclusion

This study explored different components of school food environments in exemplary schools under the four pillars of CSH framework and identified positive aspects across the schools. The findings of this study showed that schools provided different food programs and offered nutrition education programs. Schools used the provincial nutrition policy as a point of reference, plus considered other factors when deciding what foods to offer. Schools worked with partner organizations which provided important resources for school food. The schools conducted limited evaluation and monitoring. Though the school food environments of exemplary schools had different positive aspects there is still scope for further improvement. The findings of this study provided a comprehensive picture of school food activities, its resources and management. This study can inform other schools in developing food-related programs. The description of exemplary school food environments in this study further highlighted the diversity of school food scenarios in Canada. This study can inform decision makers regarding implementation of the national school food policy and allocation of funds within the national food program.

# 5 Chapter 5

**Study 2:** Role of partnerships in exemplary school food environments

## 5.1 Abstract:

**Introduction:** Partnerships are considered important and recommended to support and promote healthy food environments. Available research and documents regarding school food indicate various organizations work with schools to support school food in different ways with positive outcomes, however, no research has examined these roles specifically. This study examines and describes these partnerships relationships, their contributions and significance in exemplary school food environments.

**Method:** As a part of a qualitative case study of exemplary schools, data were collected during two days of in-person visits to each of six purposefully selected schools through a school self-assessment survey and individual interviews (n=31). Data were analysed as cross case descriptive synthesis.

**Result:** Schools (n=6) had formal partnerships and less formal supportive relationships with different types of organizations including non-profit charitable and private organizations, other community organizations (e.g., faith groups), and community members. Schools received financial assistance (n=6) (grants or regular donations), volunteer service (n=6) and food donations (n=4) to support school food. The financial assistance was used in breakfast programs (n=6), free lunches to students in need (n=3), milk programs (n=2), cooking classes (n=4), and gardens (n=3). Donated food was used

primarily in the breakfast programs, as snacks and in backpack programs. Volunteers supported food programs (n=4), garden activities (n=2) and cooking classes (n=1).

**Conclusion:** Partner organizations and communities played critical roles in school food in exemplary schools. The yearly renewable grants and voluntary donations were a potential barrier to sustaining the schools' positive initiatives. However, current financial assistance and volunteer service from partnerships can complement the new funds for the national food program through directing their support to expand other food and related activities.

## 5.2 Introduction

School food is an important aspect in health promotion in children because of its potential positive impacts on healthy eating behaviours. Schools are encouraged to promote health, including nutrition, in a holistic way due to the established link among health, nutrition and learning outcomes (World Health Organization, 2021a; Centers for Disease Control and Prevention, 2021a; Centers for Disease Control and Prevention, 2021b).

Conceptually, partnerships are integral to health promotion in schools (World Health Organization, n.d.; Bassett-Gunter et al., 2016; Joint Consortium of School Health, 2019). Existing research indicates that the involvement of partners in school food is crucial for schools (Ausenhus et al., 2023; Taylor et al., 2011; Storey et al., 2011; Gleddie, 2012; McIsaac et al., 2017; Stolp et al., 2015). The definitions of partnership by different organizations and groups reflect that partnership is an understanding and association among schools and other stakeholders, including the community. The purpose is to develop working relationships and coordination of services, resources and expertise among schools and stakeholders for creating opportunities for improvement (Joint Consortium of School Health, 2019; Ontario Ministry of Education, 2022; The Ontario Healthy Schools Coalition, 2022; Government of Prince Edward Island, 2014). Others define partnerships as multiple connections or coordination between schools, students, families and the school community (Ontario Ministry of Education, 2022; Government of Prince Edward Island, 2014).

In addition to academic responsibilities, health promotion is one of the priorities of schools, which requires extra resources for healthy school food initiatives. In most cases, insufficient resources (Sepanik and Brown Jr., 2021) is a significant barrier to promote healthy schools (National Association of Chronic Disease Directors, n.d.). Through partnerships with community partners and other groups, schools can have access to funding and other resources such as services and knowledge, which are essential supports for sustainable health promotion activities and initiatives (Klassen et al., 2023; Cygan et al., 2020; Sepanik and Brown Jr., 2021; National Association of Chronic Disease Directors, n.d.). Research indicates that schools work frequently with partners to support school food programs and nutrition education (Gonçalves et al., 2015;Weitkamp et al., 2013; Francis et al., 2022; Carla Rosane Paz Arruda Teo, 2017). In Canada, provincial and territorial school nutrition policy documents recommend working with partners for healthy food environments in schools (Roy and McKenna, unpublished).

Schools partner with diverse groups to conduct food-related activities and sometimes they are interconnected. Charitable organizations at all levels, (national, provincial/territorial, regional, and municipal); government organizations from a variety of departments including health and agriculture; the private sector at all levels including food companies, farmers; and parents and community members support school food (Simovska and McNamara, 2015; Center for Mental Health in Schools at UCLA, n.d.; Government of Prince Edward Island, 2014; Klassen et al., 2023; Michnik et al, 2025). Government and private organizations including food companies support schools frequently through charitable organizations (Ruetz & McKenna, 2021; Breakfast Club of

Canada, 2022). In some cases, private business organizations establish charitable organizations that support school food such as Dairy Farmers of Canada and The President's Choice Children's Charity (Dairy Farmers of Canada, n.d.; President's Choice Children's Charity, n.d.). The support from food companies to school food has the potential risk of marketing less healthy food in schools (Velazquez et al., 2017; Kent et al., 2022; Rachel, 2017).

At least 38% of schools in Canada offer some form of school food program and many programs are financially dependent on government and non-government organizations and other partners (Ruetz & McKenna, 2021). The Public Health Agency of Canada has provided funds of approximately $12 million for four healthy eating projects in Canadian schools. Agriculture and Agri-Food Canada's Emergency Food Security Fund of approximately $12 million supported over 800 food projects in schools across the country during the pandemic (Government of Canada, 2022). Partner organizations, including non-government organizations, provide supports for these programs including financial supports for food and equipment, and food supports (e.g., Breakfast Club of Canada, Fresh Roots) (Breakfast Club of Canada, 2020a; Fresh Roots, n.d.; Michnik et al, 2025). Research shows that schools offered programs supported by partner organizations that promote healthy food (e.g., taste testing, fruits and vegetable challenges); and provide hands on experiences in nutrition education and the food system (e.g., food growing, food preparation, food storage, waste management - recycling and composting) (Michnik et al, 2025; Rojas et al., 2017; Naylor et al., 2016). Schools work with public health units and community health organizations for staff

training and consultation to assist with implementing nutrition policy and promoting healthy eating (Orava et al., 2017).

Available research and relevant documents indicate the importance and frequent existence/occurrence of partnerships in school food. Though partners are recognized as an important aspect of school food, little is documented in Canada about them and their contributions (e.g., Michnik et al, 2025). Some of the research explored the program supported by any partnership including the outcome of the programs. There is no research in the Canadian context that describes the nature of this relationship and how it plays its positive roles in school food environments. This study aims to explore the role of partnerships in exemplary schools. An exemplary school in this study refers to a positive state in school food that is contextual to the overall school food scenario in New Brunswick (NB). It provides predominantly healthy food and beverages, curricular and extracurricular nutrition education programs, promotes healthy food choices, and collaborates with other relevant organizations to improve school food; and has the similar intent for health promotion as school nutrition policy.

## 5.3 Method

A qualitative case study was conducted that used multiple data collection methods in six exemplary schools. This study analyzed data collected through a school self-assessment survey, individual interviews and complementary field notes.

### 5.3.1 Selection of schools

Six exemplary schools were selected out of nine initially identified schools in NB Brunswick using purposeful sampling: three elementary schools (K-5), two consolidated schools (K-8) and one high school (9-12). As part of the selection criteria for the larger research project, all schools had partnerships with external organizations; five schools were located in urban areas and one was in a rural area. The corresponding school district and the Research Ethics Board of UNB approved this research.

### 5.3.2 Selection of participants

At each school, the person in charge of overall school food (e.g., principal, community school coordinator) was selected as a participant and was asked to identify other potential participants (individual program leaders) for interviews. A total 21 participants were selected as individual program leaders or as the person in overall charge of school food. The number of participants varied across schools as it depended on their number of food programs. Participants were teachers (n=10), school community coordinators (n=4), principals/vice principals (n=3), managers of external food service (n=3) (cafeteria, non-profit food service), and a person from parent volunteer group (n=1).

### 5.3.3 Data collection method

Data were collected during two-day in-person visits in five schools, and a one-day in-person visit in one school.

### *Semi-structured interview*

A total of 31 individual semi-structured interviews were conducted with 21 participants. On average, each interview was 22 minutes long. In four schools, a single participant was the leader of multiple food and related programs and so was interviewed multiple times. Two separate interview guides were used to interview individual program leaders (25 interviews) and persons in charge of overall school food (six interviews). The interview guide for individual program leaders included program specific questions on the types of partners and their contributions. As an example, participants were asked "do you partner or rely on other individuals or groups in order to offer the program or activity, within or outside the school?" with probes regarding names and contributions. The interview guide for the person in charge of overall school food contained broader questions regarding collective school food activities, such as the types of partners, their significance and alternate plans if partners were not available. For example, participants were asked "Do any external groups or organizations partner with the school on food-related programs or activities?" with probes such as names, supported food programs, contributions; "How important are school partners in providing food programs and activities?".

### *School self-assessment survey*

The self-assessment questionnaire had multiple sections pertaining to different food programs and activities (e.g., breakfast program, lunch program, nutrition education activities, celebration days). Individual program leaders and the person in overall charge of school food with the assistance of the researcher, completed the corresponding sections. The structured questions for each program asked about sources of funding,

program delivery and contained answer options for partner organizations and categories (charitable vs. private for profit). As examples, questions were “How is the program funded (monetary donations from charitable groups or monetary donations from private companies)?”; and “Who is involved in the direct delivery of the program (teachers or students or volunteers)?” (see Appendix F).

### 5.3.4 Data analysis

Data from the survey sheet were entered into Microsoft Excel. Interview recordings were transcribed and uploaded to qualitative data analysis software NVivo and coded inductively. Cross case descriptive synthesis (Bethel and Bernard, 2010; Cruzes et al., 2015) was conducted and included triangulation of data from interviews and the survey. Due to the nature of the research objective, most of the data were from individual interviews, which were complemented by the data from the self-assessment survey. This chapter presents data relevant to the partnerships.

## 5.4 Results

Although the literature identifies a number of different types of potential partners in school food, the following results are based on the different types of organizations and community partners that participants mentioned and identified as having supportive roles while working together with the school. Thus, the results exclude government agencies, colleges and universities as partners as participants did not mention them.

Organizations that deliver food services (profit and non-profit, but not free food programs) to the schools are considered to be 'food service providers.' They work independently with limited involvement of school authority in menu selections, financial management and other decision making. There is very little scope of development of understanding and working relationship with schools, which is the foundation of partnerships. These organizations were not viewed as school food partners in this research.

### 5.4.1 Types of relationship with supportive organizations and community:

Schools received support from diverse sources for their school food environment. The relationships schools had with these diverse groups and people can be described in two ways as i) formal partnerships, and ii) supportive relationships (see Figure 6). A school can receive supports from both types of relationships concurrently. In some cases, one type of organization such as a private for-profit business can serve as both a formal partnership and a supportive relationship in different schools.

#### *Formal partnership*

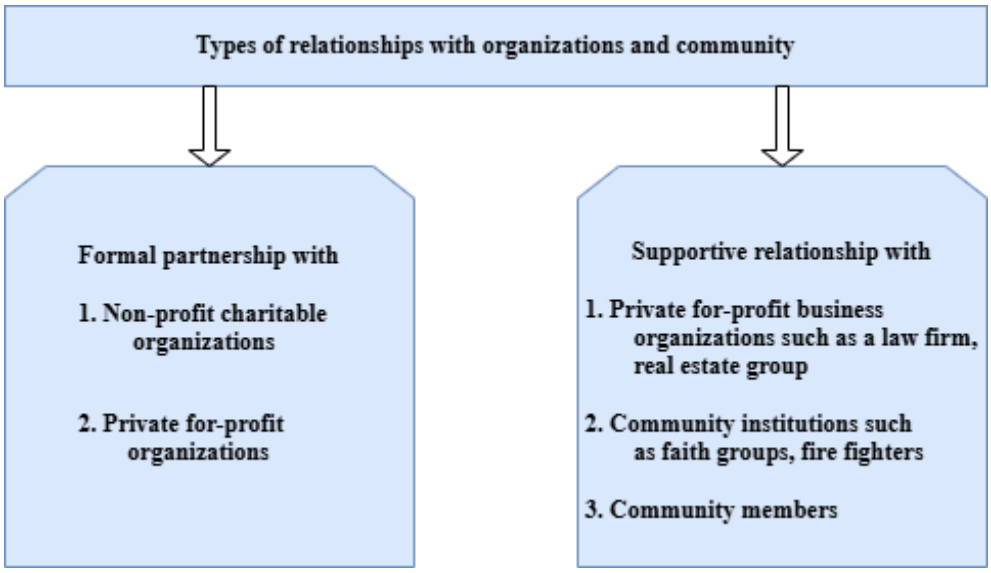
Formal partnerships were between the schools and an organization or group of organizations where the organization(s) provided certain types of supports, primarily financial support or services to the school on a regular basis for a particular period of time as a part of their commitment and required schools to fulfill certain conditions (one common example was providing reports on expenditure of financial support). These organizations were identified at "partner organizations" by the participants.

### *Supportive relationship*

Supportive relationships were between schools and the community including its organizations and members. In this type of relationship, the community organizations and individuals supported school food in a voluntary way according to their convenience; there was not any formal commitment. Schools might expect the contributions, but it was not guaranteed.

These community organizations and members might support school food on both a regular and variable basis depending on their contributions. Schools mentioned them as "supportive". As an example, four schools recruited community members for volunteer services in food and food education related programs. These community members provided service according to a schedule and the school identified them as volunteers.

**Figure 6 Types relationship with different organizations and community**




### 5.4.2 Types of organizations

Organizations that supported school food had different characteristics. The formal partner organizations and supportive organizations were divided into three broad groups: i) non-profit organizations, ii) private, for-profit organizations, and iii) other community institutions.

***Non-profit charitable organizations***

Non-profit charitable organizations were non-government organizations working at national and regional levels to support school food. As examples, participants mentioned Breakfast Club of Canada, Big Brothers Big Sisters of Canada, and President's Choice Children's Charity. Non-profit organizations comprised a major part of the organizations that were in formal partnership with schools. Four schools (S1, S2, S5 and S6) identified

non-profit organizations as their major source of financial support for breakfast programs and cooking programs.

### *Private for-profit organizations*

A diverse group of private for-profit business organizations, primarily local, supported school food with resources. As examples, participants mentioned a travel agency, a real estate group, and a law firm. One school identified a group consisting of a number of private for-profit business organizations as formal partners. Two schools (S3 and S4) recognized donations from private organizations as their primary source of financial support to sustain and maintain free food programs and activities, including breakfast programs.

### *Other community institutions*

Other community institutions referred to different community groups and organizations active in the community including those that were non-government or affiliated with the government; excluding the non-profit charitable organizations and private for-profit organizations. As examples, local faith groups, health authorities, a recycling service provider, fire fighters, and a community kitchen belonged to this category. All schools received different types of supports from community institutions either during the initial phase of the activity or program, or on an ongoing basis. The types of relationship with these institutions depended on the nature of the supports and conversations between the school and institution. As an example, a community food group prepared food for a free lunch program in a school regularly and the leader of the free lunch program identified

the group as a partner. On the other hand, local churches, firefighter were mentioned as donors or as being supportive.

### 5.4.3 Available support from the different supportive organizations

All schools received different types of support from the partner organizations and other community organizations and community members, sometimes on a regular basis and other times occasionally. However, the most common and consistent supports were financial support, food donations and volunteer support. The supports and their use are summarized in Table 16 (by individual school) and Figure -7 (all schools) and described in the following paragraphs.

Note that a non-profit organization that prepared food outside the school and delivered the lunch to schools was supported by partner organizations and the community with monetary and food donations, and volunteer service. As it was working outside the school and had separate authority, Table 16 does not reflect it.

***Financial support***

All six schools reported that they received financial support from organizations and community members. Schools received this support in two ways: i) through grants, and ii) voluntary donations (regular and occasional). There were schools that received both kinds of financial support. Schools reported that charitable organizations provided funds as grants, and often required schools to complete applications for the money.

*"We apply for grants so there's a few grants that we have in place right now."* (School community coordinator, S5)

Donations from private organizations and the community were found to be committed (decided after conversations between the school and the organization) and, in some cases, that were not committed, only voluntary. Committed donations was found to be the main source of money for a school.

"*We have a law firm in the area, and the real estate board has been very generous to us."* (Free program leader, S3)

**Table 16 Available supports for school food programs**

| **Food programs** | **School 1** | **School 2** | **School 3** | **School 4** | **School 5** | **School 6** |
|---|---|---|---|---|---|---|
| *Breakfast programs* | | | | | | |
| Grant from charitable organizations | Yes (primary source) | Yes (primary source) | No | No | Yes (primary source) | Yes (primary source) |
| Donations from private organizations and individuals | Not significant | Not significant | Yes (primary source) | Yes (primary source) | Yes (complementary) | Yes (complementary) |
| Food donations | No | Yes | Yes | Yes | Not significant | No |
| Volunteer service | Not at post pandemic state | Not at post pandemic state | No | Yes | No | Yes |

| | | | | | | |
|---|---|---|---|---|---|---|
| *Lunch programs* | | | | | | |
| Financial support | No | No | Yes (the free food program only) | Yes (the free lunch sponsored by the school) | Yes (the free lunch sponsored by the school) | No |
| Food support | No | Not mentioned | Yes (the free food program only) | No | No | No |
| Volunteer support | Yes | Yes | No | No | No | No |
| *Milk program* | | | | | | |
| Financial support from community | No | No | No | Yes | Yes | No |
| *Backpack program* | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Supported by community | N/A | N/A | Yes | Yes | Yes | N/A |

Other volunteer monetary donations were regular or occasional. Those donations complemented the existing sources of money. In some cases, community organizations and community individuals donated money whenever, and whatever amount they preferred.

***Use of financial support***

Schools used the money they received from partner organizations in two ways – i) in food programs and ii) nutrition education programs.

**i) Food programs**

All six schools reported that they bought food items for their free breakfast programs and other free food programs (e.g., smoothie programs, milk programs, free lunch program). In breakfast programs in four schools (S1, S2, S5, S6), the grants from charitable organizations were the main source of funds.

> *"*[Charitable organization] *provides a small cheque for the operating expenses of the kitchen. And then they deliver food to the door every two weeks and I as coordinator, order the food two weeks in advance. So, it's the financial part from organization X and organisation Y* [two charitable organizations] *that are the main source of dollars, the financial support."* (Breakfast program leader, S2)

In two schools (S3 and S4), financial donations from private organizations were the primary source of funding for breakfast programs.

"*…our biggest funding supports would be organizations that are in our neighborhood that are committed to being our partners*." (Breakfast program leader, S4)

Three schools (S3, S4 and S5) mentioned that they used money from the partner organizations and community for free lunches to students who otherwise did not have lunch. One school (S3) used donations on food items offered in a free food program that offered both breakfast and lunch (most of the food items were snack items). Two schools used donations (S4 and S5) to pay for the meals in the paid lunch program for some students, who were financially challenged. Two schools (S4 and S5) provided free milk programs with the financial support that they received from individuals within their community directed specifically to these programs.

Other food activities included smoothie programs, fruits and vegetable challenges, water challenges. Schools managed the costs for these initiatives from their grants and other monetary donations.

**ii) Nutrition education programs**

Schools used financial support that they received from the partner organizations to purchase required equipment and ingredients for nutrition education activities such as cooking classes, gardens, fishing and recycling programs.

Four schools (S1, S2, S4 and S5) reported that they used financial support to buy food ingredients for cooking programs. Two schools (S1 and S2) reported that they received a grant every year particularly for cooking classes.

"*I get financial support for it from the* [Name of Foundation] *and that's just to buy the food that we need to prepare."* (Cooking class leader, S1)

Two schools (S4 and S5) reported that they spent financial resources on the cooking classes from different sources, including community donations and grants.

"[Funds for the cooking class come] *from donations from different partners. They* [partners] *are private businesses."* (Cooking class leader, S4)

Three schools (S2, S5 and S6) that have a garden program reported that they had some level of support from the community. One school reported that they needed to find donors to fund the activity. The other two schools received some financial support in the initial phases of the garden.

*"We did receive a grant, and I would have to check if it was like something […] I forget what it is, but we did receive a grant (in the first year only)."* (Garden leader, S5)

***Significance of financial support***

The food and related programs benefitted from the community partnerships and community supports. In some cases, grants were specific for a program and in some cases, schools were free to use the financial support or residual resources in any food activities. Participants considered financial support from organizations and community as a vital aspect of many food and related programs they offered.

*"I guess* [the key factor] *is having the monetary funds there to be able to provide these opportunities for kids."* (School community coordinator, S5)

Additional funds from the partner organizations enabled schools to add more food options and healthier options (e.g., fresh fruits). Financial support from partner

organizations gave more stability and eased the delivery of the food and related program.

***Food donations***

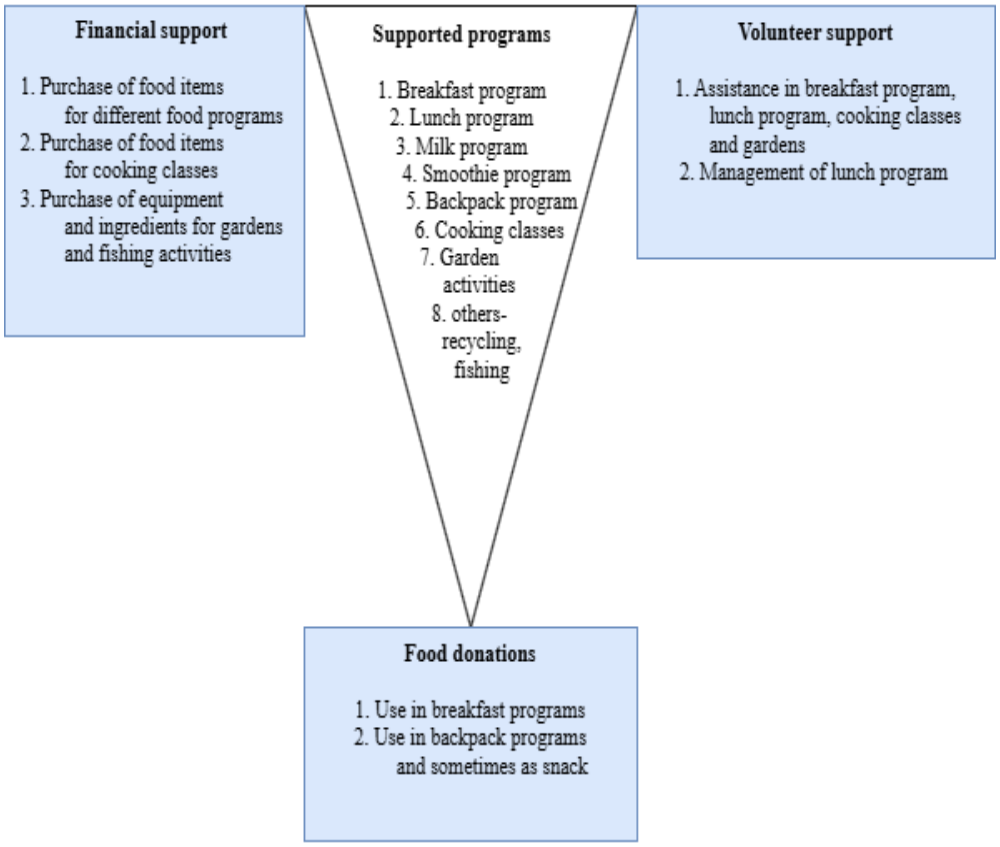
Four schools (S2, S3, S4 and S5) reported that they received food donations from the community. These donations came directly from community individuals (e.g., parents) or community organizations (e.g., private business, food bank and faith groups).

> *"We have parents who will donate, you know, once in a while, a box of cereal just to supplement because they know their children are participating* [in the breakfast program]. *And then just sometimes a community member will donate."* (Breakfast program leader, S4)

Schools offered food items (schools were mindful of the nutrition guidelines during offering food from the donated food items) in breakfast programs and as snack items. Schools also used non-perishable donated food items in backpack programs.

> *"So when I think about the breakfast program, we get a donation each week (from a charitable organization), five dozen hard boiled eggs, and so that's a huge part of our breakfast program. It's a healthy protein for our kids."* (Principal, S2)

**Figure 7 Collective supports to school food-related activities from partnerships**




***Volunteer support***

In all schools, community members or individuals worked as volunteers in the school food programs (e.g., breakfast program, hot lunch program) and/or food education activities (e.g., cooking classes, garden activities). Programs leaders reached out to community volunteers to recruit them. In some cases, volunteers were engaged through volunteer organizations or through community organization such as local churches.

Volunteers helped to prepare and serve food in breakfast programs and lunch programs, and transported meals when that were prepared outside the school.

***Involvement of volunteers in school food***

Volunteers played vital roles in school food environments. Four schools (S1, S2, S4 and S6) had community volunteer supports in food programs (i.e., breakfast programs and lunch programs). Two schools (S2 and S5) had volunteer support for garden activities, and one school had a volunteer in its cooking class.

Volunteers were involved in school food service primarily in two ways: i) assisting with a program and ii) leading and delivering a program.

**i) Assisting a program**: The food program leaders (and person in charge of the school) recruited volunteers from the community and/or school families. The program leaders developed the schedule and other management activities for the program (e.g., financial management, grocery purchases). The volunteers took part in breakfast preparation and serving, hot lunch preparation, and the smoothie program on a regular basis.

> "*We're lucky enough to have enough volunteers to do that. We have 21 regular volunteers and then we have a few spares in case someone isn't able to come."*
>
> (Breakfast program leader, S6)

In the case of garden activities, volunteers assisted with planting, weeding and watering and looking after the garden during school vacation.

**ii) Leading and delivery of a program:** In one school, a group of volunteers managed the hot lunch program where the group was responsible for menu panning, monetary management, grocery, and food preparation.

*"[...] we have people that do the grocery- shopping. Another set of crews does what we call the track sheets and (keeps) track of that. Then we have another crew that does the menus and to see the money."* (Hot lunch leader, S2)

***Significance of volunteer service in school food***

Participants identified volunteer service as a part of the support system for school food. Volunteers supplemented the extra staff schools required to deliver the food and related programs. The leader of a breakfast program where two volunteers on rotation prepare and served breakfast to students everyday stated that:

*"It wouldn't run without the volunteers*." (Breakfast program leader, S6)

Volunteers' service had positive impacts on both free and paid food programs. Many participants viewed the volunteers as the key resource in the success of programs. The service provided by the volunteers reduced the expense of a program and for lunch programs, it kept the food price low.

"*I mean if we didn't have volunteers, it's a totally different program, if you have to go and hire staff […] it puts your prices up and then again you have the families like you know they can't afford a $5 meal every day." (*Hot lunch program leader, S2)

The community volunteer service in the school garden during the summer months helped to maintain the garden.

*"The volunteer support as well over the summer, so that helps*." (Garden program leader, S2)

In addition to these three resources (financial, food items, volunteers), schools received logistical support, and consultations for food and other food education programs, both on a regular basis and occasionally. As an example, one school reported that a community organization helps grow seedlings for the garden. One cooking class leader reported that they consulted a representative from a charitable organization regarding recipes, as needed. One school received bins from the community for their recycling program. All schools considered community support to be vital for their school food.

### 5.4.4 Sustainability of supports

Sustainability of contributions refers to the sustainability of financial support for programs and initiatives and can be described according to the nature of financial contributions from partners, including grants and donations from private organizations and community groups.

Grants were allocated for a one-year period and schools needed to re-apply every year. In some cases, schools received grants from an organization for a few consecutive years. Every year the amount of money provided by the grant changed, based on decisions by the granting organization.

> *"It's always mildly stressful every year when we reapply for funding, you know, what happens if the funders don't fund us to the same level."* (Breakfast program leader, S2)

Some of the monetary supports that schools received from private organizations and community individuals were regular for consecutive years but were not accompanied by documented agreements.

Some of the program leaders reported their food programs were highly dependent on monetary support from the partner organizations. The leaders indicated if funding from a partner ended, they would have to find other partner organizations to sustain the programs.

### 5.4.5 Management of partnerships

The person in charge of overall school food environment (principal and school community coordinator); and individual program leaders communicated with partner organizations, and other community organizations and members. In formal partnerships, specifically grants, in most cases the person in charge of overall school food wrote the applications, and later they submitted reports on how the money was spent. The grants were program specific (e.g., breakfast program or cooking class) or general for school food depending on which grant the school applied for.

> *"That was just a program (grant) that I heard about, knew that the students in the school would benefit from it, applied for it and was a successful recipient. […] you have to do a follow up report on the implementation of the program that they approved for the grant."* (School community coordinator S1)

In a few cases, sometimes, individual program leaders (teachers and school community coordinator) communicated with different organizations and community members based on their needs in informal ways. Personal networking played a role in communication.

> *"We have a fair bit of community support. As I say, there are a number of churches that will come on board. I've made those contacts myself and so the faith community in the area has been quite supportive."* (Free food program leader S3)

In terms of volunteer management, the individual program leaders (teachers, volunteer coordinator and school community coordinators) recruited them and maintained the schedule for their service. One school (S6) offered volunteers small gifts as a recognition of their service and students decorated the bags of the gifts.

> *"I coordinate with the I'll say parent volunteers, make sure their dates follow the calendar dates when there's school and when there's not school. If the person can't come, we make sure that someone is there."* (Breakfast program leader S6)

### 5.4.6 Monitoring of the programs funded by the partner organization

There was limited monitoring of the programs funded by the partner organizations. In programs funded by a grant (breakfast program or cooking class) schools usually were required to submit a year-end report on how the money was used and in some cases what types of food were selected in the food programs associated with the grant.

*"They have certain criteria in place, so we have to do reports back every year. Just part of the grant process is where they have their responsibilities outlined" (Breakfast program leader, S1)*

One school reported regular in-person visits from the funding organization at the administration level to track the expenditures of money and types of food.

## 5.5 Discussion

### 5.5.1 Principal findings

The purpose of this study was to examine the types and roles of partnerships/partner organizations in school food environments in exemplary schools. The findings showed partner organizations and other community organizations and community members played significant roles in school food. Exemplary schools received support from diverse groups of organizations including non-profit charitable organizations, private organizations and other community organizations (e.g., faith groups). Financial assistance, food items and volunteer (staff) service were found to be important supports from the community. Financial assistance was received as grants or regular donations. Schools also received occasional donations from community members and community organizations. The financial assistance was used in school food, especially in breakfast programs, providing free lunches to students in need, cooking classes, fruit and vegetable challenges, and gardens. Donated food items were used in breakfast programs, snacks and backpack programs. Volunteers provided service primarily in breakfast programs and lunch programs.

### 5.5.2 Strengths of this study

This study explored all the food and food-related programs in each school, which provided the opportunity to show the extent and diversity of working relationships (formal partnerships and supportive relationships) with community members and community organizations and the distribution of resources in different programs that allowed them to exist, underscoring the critical role of partners in school food.

### 5.5.3 Limitations of this study

This study did not include views from representatives from the partner organizations, which may have contradicted or confirmed the findings or extended evidence on factors essential for sustainable and effective partnerships. This study took place is NB and none of the schools in the study received funding from government for food and related programs. Including government-funded schools could show additional and different roles of partner organizations and communities. The informal nature of many partnerships made it difficult to triangulate data from the research.

### 5.5.4 Relation to other studies

*Influence of donors:* The findings showed that most schools in this study received one or more grants from nonprofit charitable organizations. The role of non-profit organizations in food activities, including school food received criticism due to some donors. The role of businesses, specifically food-related businesses, and their involvement with school food is questioned by some research (Brownell & Warner, 2009; Kent et al., 2020; Vandenbrink et al., 2020; Powell, 2019). Non-profit or charitable organizations

supporting school food may receive donations from for-profit businesses including food businesses (Pepsico, Tim Hortons). These food businesses may have a negative influence in promoting healthy food. Supporting charitable work, including funding for school food, is considered a public relation strategy of businesses in many cases (Brownell & Warner, 2009). There is concern that these business organizations may exert political and monetary power to influence policy and laws related to the food items they produce or sell, or that their other business products may have negative effects on health in the long term (Vandenbrink et al., 2020; Powell, 2019). A few schools in this study mentioned that as a prerequisite for a grant for a program, they needed to serve food from the four major groups. Others did not report any specific requirements or recommendations or requests regarding food choices. It is not conclusive, however, if the food companies had indirect influence on the food selections in these schools.

*Alignment among different missions of organizations:* The research findings showed that registered charitable organizations, private business organizations, and personal donations supported school food. The available information on charitable organizations that support school food in Canada shows that their overall mission is to improve the health of Canadian children by addressing nutrition and food security (Breakfast Club of Canada, 2020a; FoodShare, n.d.). Thus, their mission aligns with the goal of schools regarding food. On other hand, the private organizations (non-food organizations such as a real estate board, or law firm) may not have this same goal and may contribute to school food as an act of social responsibility, which ultimately supported healthy school food. This potential misalignment of motivation differed from the recommendation on partnership or cooperation between two organizations, which recommended having a

common purpose (Gross et al., 2015; The expanding learning and after school project, n.d.). In this research, organizations without any health agenda contributed to school food; at the same time, the schools did not report any requirements made by the private organizations. The school's awareness, motivation and initiatives for healthy school food activities played a role in achieving partner cooperation.

*Risk for sustainability:* Partnership is a continuous process with successes and challenges and requires long term commitment for better outcomes (Gross et al., 2015; Ngobeni, 2022). This research indicated that partner organizations often provide funds and other supports for a specific time (usually on a yearly basis). This finding is similar to another study that showed long-term sustainability in a partnership is challenging, especially securing funds that extend beyond a year (Klassen et al., 2023). One of the possible reasons is charitable organizations collect funds from different individuals and organizations, and it is an ongoing process. Grant allocations are made yearly and similarly; private organizations usually plan according to their annual budget. This made donations less guaranteed. Dependency on non-government organizations is a risk for sustainability of food programs (Ruetz and McKenna, 2021) as is dependency on community supports. In exemplary schools, financial supports from the partner organizations and community organizations were crucial resources for the positive food initiatives and activities. At the same time, the absence of secure financial sources and total dependency on those yearly grants and volunteer donations is a potential risk of sustainability of positive food activities and their benefits.

*Active engagement of partner organizations:* The findings showed there was little active involvement of the partner organizations in the use of their grant or donation, such as program design or management. In general, sharing a 'common purpose' and including partners in decision making are recommended for sustainable and effective partnerships (Gross et al., 2015; Expanding Learning and Afterschool project, n.d.; Ngobeni, 2022). The schools in this study received grants from charitable organizations and they sent reports to the organizations on their expenditure for the grant. Schools did not report active involvement by partner organizations in decision making in food and food-related programs. One of the possible causes of this limited active involvement of partner organizations could be a lack of time or staff at the partner organizations.

Schools received financial donations from non-food related private businesses. If their motivation was primarily due to social responsibility, they might not be interested in active participation. Sometimes a food programs received supports from multiple partner organizations. Engaging every partner might be an extra responsibility for a program leader. However, schools could consider a school-level committee on food such as a food and nutrition council for students (Orava et al., 2017). In this case that committee could include representatives from partner organizations and hold regular meetings, for example, once or twice a year. This would provide an opportunity to communicate with, inform and receive input from these organizations.

*Accountability in partnerships:* Research indicates that accountability plays a positive role in the sustainability of a partnership (Ngobeni, 2022). Partnerships without an accountability mechanism are less likely to create meaningful changes (Mindell et al.,

2012). Studies define accountability in a number of ways. In a partnership that is dedicated to implement a policy or program, accountability means performing according to the clear objectives of the partnership and outcomes of the project (Kraak et al., 2013). In this research, most of the schools received grants or guaranteed donations of varying amounts for food programs and food-related activities on a yearly basis. The commitment and the accountability on the donor side was only for one year regarding money; and on the school side, they provided reports on how the money was spent. It appeared that the long-term goal and sustainability of activities or programs were not a priority in the partnership. The uncertainty of the partner organization's financial condition could be one influencing factor, as finances are a challenge in organizations supporting school food (Michnik et al., 2025). A second possibility is unclear mutual benefits between a partner and the school. The findings of this study indicated that overall, the organizations that supported school food activities did not receive any tangible benefits from the school authority. Evidence shows that mutual tangible benefits help to maintain a sustainable partnership (Kinge, 2014, McCabe et al., 2021). Without benefits, the community organizations might not be interested in taking further accountability within the partnership.

*Partnership is a resource and a challenge:* The way that schools maintained formal partnerships and supportive relationships was broad. Apart from the grants allocated by the formal partnership, schools managed other supports from the community in informal ways. The supports were sometimes periodic or regular depending on the types of programs and their needs. Overall, the whole process, particularly the supportive relationships, did not conform to a single definition. The support from formal

partnerships appeared relatively stable once it was formed although it needed to be renewed each year. The supportive relationship appeared to be maintained by the networking capacity of a program leader or the person in charge of overall school food. Supports gathered through informal communication such as volunteer donations and services contributed significantly to the school food and related activities. This portion of community support and the resulting food and related activities could be even more fragile as it is solely dependent on the extra work of the person in charge of school food or a particular program. Partnerships, including formal partnerships and supportive relationships, were the main source of funding and other supports for school food. At the same time, initiating and sustaining them through networking and other means, is an extra responsibility for schools. So, partnerships were essential for school food yet it could be challenging to maintain the same rigor in developing and maintaining a partnership.

If the experiences of these six schools are indicative of what happens in other schools, the new national food program provides an opportunity to reorganize the roles of partnerships in school food. The existing resources from partnership can complement the new secured funding for the national school food program. There are two major options that schools can consider regarding partner resources. One, schools can engage partner organizations to use the government funds to deliver the national school food program such as for staff, logistical support, and/or expansion of facilities. Second, schools can use partnership resources in new programs, including food and nutrition education programs, which schools now provide in very limited ways.

### 5.5.5 Implications of this research

This research shows that diverse groups of organizations support school food, as formal partners or through supportive relationships. A school may consider similar or different organizations within its community to support school food. This research highlights the significance of funding support and support from community volunteers. Additional research could explore the challenges schools face in financial and volunteer management and their impact on school food environments.

In 2024, Canada announced a national school food program, with a significant amount of money allocated by the federal government (The Coalition for Healthy School Food, 2024). The Coalition for Healthy School Food, the primary advocacy group for the national program, recommended using the federal funding to expand provincial or territorial funding to initiate new food programs using a cost-shared model (The Coalition for Healthy School Food, 2018; Hernandez et al., 2018). This funding offers a more secure source for school food. Further research could examine how current support and the nature of school-food partnerships evolves and the impact on partners and schools: does it increase, is it maintained or does it decrease.

## 5.6 Conclusion

This study examined the role of partnerships in exemplary school food environments. The findings highlighted that schools received supports from diverse community organizations including non-food related private businesses. Overall, the partner organizations provided different resources more so than active involvement. The resources from the partnerships including financial assistance, food items and volunteer

service, played significant roles in exemplary school food environments. The yearly renewable grants and voluntary donations indicated that there was uncertainty in the sustainable resources from supporting organizations. This situation could be a barrier in sustaining positive initiatives in school food. The funds for the national school food program provide options for the distribution of resources from partnerships in the implementation of the national food program and/or the expansion of other food and nutrition education programs.

# 6 Chapter 6

**Study 3:** Factors associated with success of food environments in exemplary schools

## 6.1 Abstract

**Introduction:** The overall scenario of school food in Canada shows that the nutritional quality of school food is not up to the standard level with some exceptional cases. This study, guided by the consolidated framework for implementation research, examines exemplary school food environments to identify factors associated with their success.

**Method:** Data were collected during two days of in-person visits to each of six purposefully selected schools in New Brunswick through individual interviews (n=31) and student focus group interviews (n=3). Audio-transcripts were analyzed thematically.

**Results:** The identified factors associated with successful school food environments included awareness and optimism regarding school food, a low profit strategy, supportive environments within the schools, potential sustainability of leadership, outsourcing of resources from the community, and customized strategies in management.

**Conclusion:** Positive states of food in exemplary schools were primarily driven by the schools with community supports despite limited monitoring and support systems from other relevant jurisdictions. This study can inform schools for planning and decision making regarding their own school food. At the national level, this study can inform the

distribution of newly allocated money by the federal government for a national school food program.

## 6.2 Introduction

Although school food has the potential to positively influence students' eating behaviour, the overall quality of school food and other food-related activities have yet to achieve the desired standard (McIsaac et al., 2015a; Taylor et al., 2011). In Canada, research that assessed the quality of school food in different provinces showed mixed school food quality. Several studies assessed available food items in relation to standards from provincial nutrition policies/guidelines and found that in most cases schools did not achieve compliance (McIsaac et al., 2015a; Taylor et al., 2011). The research, however, noted positive practices such as the availability of more fruits and vegetables, removal of sugary drinks and beverages, and the availability of freshly prepared food with reasonable prices (Ruetz et al., 2024; Hock et al., 2022; Morin et al., 2012; Watts et al., 2014).

Research identified a number of factors that acted as facilitators and challenges for the provision of healthy food and promotion of healthy food activities in schools. A support system engaging all stakeholders such as students, teachers, other school staff, parents, appropriate community members, and relevant partners has been identified as important for the improvement of school foods (Ausenhus et al., 2023; Taylor et al., 2011; Storey et al., 2011; Gleddie, 2012; McIsaac et al., 2017; Stolp et al., 2015). Leadership is considered a vital aspect of health promotion including healthy eating in schools (Ausenhus et al., 2023; Machado et al., 2022; McIsaac et al., 2017). A hired staff or School Health Facilitators who is dedicated to nutrition activities; or a principal who has personal enthusiasm can serve as a champion to improve school food provision (Quintanilha et al., 2013; McIsaac et al., 2017; Storey et al., 2011). There is evidence

that a committee consisting of stakeholder members will be more beneficial than leadership from a single person for long-term maintenance, minimizing the effects of employee turnover (Stolp et al., 2015).

The inclusion of food activities as part of the school culture strengthens the support system and facilitates sustainable improvement (McIsaac et al., 2017; Storey et al., 2011). Communication with students and parents regarding healthy food promotion and involvement of students in food activities promote healthy food environments (Vine et al., 2014; MacLellan et al., 2010; Taylor et al., 2011; Downs et al., 2012). An external or school level policy can justify healthy eating and health promoting activities and maintain their sustainability (Ausenhus et al., 2023; McIsaac et al., 2017; Gleddie, 2012; Storey et al., 2011; Stolp et al., 2015).

Financial factors are commonly identified as challenges (Ausenhus et al., 2023; Cornish et al., 2016; Vine et al., 2014; Taylor et al., 2011; Downs et al., 2012). The cost of healthy food ingredients is often higher than prepackaged food (Cornish et al., 2016). Having a cook for preparing fresh and healthy food increases wage costs (Downs et al., 2012). However, the effects of introducing healthy food choices in school food programs on revenue were different in different studies. Some studies showed that schools lost revenue when they introduced a healthy food menu (Mâsse et al., 2013; Taylor et al., 2011) while a few studies mentioned that schools did not lose revenue (Wolfenden et al., 2017; Cohen et al., 2016). Other challenges included school personnel finding it challenging to balance the importance of student health with other priorities such as academic achievement (Aydin et al., 2021; McIsaac et al., 2017). Lack of

communications on healthy food promotion resulted in less acceptance of healthy menus by students and parents (Vine et al., 2014). Other challenges included lack of facilities and staff (MacLellan et al., 2010), lack of awareness in parents (Quintanilha et al., 2013; Downs et al., 2012), off campus competitive food (Reeve et al., 2018; Vine et al., 2014; Downs et al., 2012; Heart and Stroke Foundation, 2005) and unhealthy food norms (Aydin et al., 2021; McIsaac et al., 2017).

Overall, there were three main types of research that focused on influencing factors for food activities in schools: implementation of a particular policy (e.g., school nutrition policy); health promotion framework (e.g., comprehensive school health framework) or a project and food program. No study explored an exemplary food environment to identify influencing factors though exemplary case and success stories, which, if studied can promote best practices (Levinthal et al., 2022; Harb, 2018; Lester, 2018).

Consolidated framework for implementation research (CFIR) is comprehensive and focused on understanding the process of implementation while identifying influencing factors (Breimaier et al., 2015; Damschroder & Lowery, 2013). The five major domains of CFIR (2009) are: 1) characteristics of intervention, 2) outer setting, 3) inner setting, 4) characteristics of individuals and 5) implementation process (Damschroder et al., 2009). An exemplary school provides predominantly healthy food and beverages, offers curricular and extracurricular nutrition education programs, promotes healthy food choices, and collaborates with other relevant organizations to improve school food; and shares a similar intent with school nutrition policy- promotion of health through healthy eating habits in students. The exemplarity of selected schools referring to positive states

or success in school food are contextual to the overall school food scenario in New Brunswick (NB).

The components of food environments of these exemplary schools were described in Chapter 4. Guided by the CFIR (2009), this study aims to identify and explain factors beneficial to the success of exemplary schools in school food environments. This study can inform initiatives of individual schools and decisions by national level policy makers to improve school food environments.

## 6.3 Method

This research was conducted in NB. As a part of a qualitative case study, data were collected in exemplary schools. The research was reviewed and approved by the corresponding school districts and the Research Ethics Board of UNB.

### 6.3.1 School selection process

Six exemplary schools participated in this study. Participating schools were selected using purposeful sampling. Nine potential participating schools were identified and contacted, and six schools were selected and participated in this study: three elementary schools (K-5), two consolidated schools (K-8) and one high school (9-12). (see Chapter 3 for details on school selection process). Five schools were situated in urban areas, and one school was situated in a rural area.

### 6.3.2 Selection of participants

Within schools, the participants recruited included the person who was in overall charge of school food of a school, individual program leaders and students as part of focus groups (for students in grade 6 and above). In four schools, a single person led multiple programs and that person participated in multiple interviews as program leader – one for each program. Twenty-one participants were selected. Participants included teachers (n=10), school community coordinator (n=4), principal/vice principal (n=3), managers of external food service (n=3) (cafeteria, non-profit food service), and a person from parent volunteer group (n=1).

A total of 12 students involved in at least one school food-related activity participated in the three focus groups in three schools that extended beyond elementary grades – one focus group in each school. Each focus group included between three – five students. Eight students were from grades 6-8, and four students were from grades 9-12.

### 6.3.3 Data collection

As a part of a larger study, data were collected through semi-structured interviews, school self-assessment survey and observations. This chapter reports on relevant data from semi-structured interviews including individual interviews and focus group interviews. Overall, 31 semi-structured individual in-person interviews were conducted. Six interviews were with the person in overall charge of school food, and 25 interviews were with individual program leaders. In schools where one person was the leader of

multiple programs that person (program leader) was interviewed multiple times in different sitting – one interview for each program.

The average individual interview length was 22 minutes. Interview guides were tailored for two different types of roles: the person in charge of overall school food and individual food program leaders (see Appendix C and D). The person in charge of overall school food of each school was asked about the whole school food environment including communication on school food, role of food in the school and support systems such as “What role does food play in this school?” and “What support do you have for your school food activities in school?”. Individual program leaders were asked about the particular program including the program structure, management, resources and outcomes. As examples, questions included “How did this program start?”; “What are the resources available for your program?” (see Appendix C and D).

Three in-person student focus group were conducted. The average length of each focus group interview was 15 minutes. Students were asked about their views on school food, and their involvement and its implications. As examples, questions were “Has food and related activities at this school influenced how you eat or how you think about food?”; “Has it resulted in other changes for you?” (see Appendix E).

### 6.3.4 Data analysis

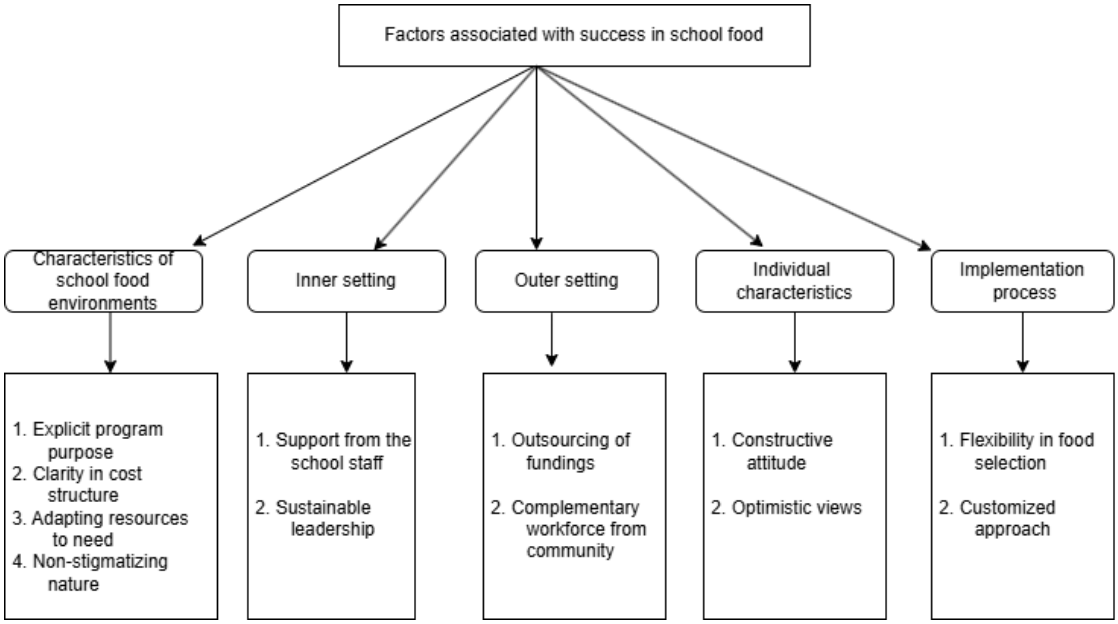
Qualitative thematic analysis (Lochmiller, 2021; Kiger & Varpio, 2020) was conducted to interpret the data. The data analysis involved a combination of both inductive and deductive approaches. As a first step, audio recordings of all interviews were transcribed and uploaded to NVivo 14 qualitative data analysis software. Sentences, paragraphs, and phrases of transcriptions were coded inductively using data analysis software. Relevant codes were then categorized according to the five domains of CFIR using a deductive process. Codes were categorized as characteristics of food environments, internal setting, outer setting, individual characteristics and implementation process. After discussion with the research supervisor the code framework was finalized.

In the next phase, the five domains of CFIR were considered the primary theme in a deductive way. From these, meaningful subthemes were developed in an inductive and interpretative way. This study, which was a part of larger study, followed Consolidated Criteria for Reporting Qualitative research (COREQ) checklist for its optimum reporting (O'Brien et al., 2014; Tong et al., 2007). A copy of this checklist is included in Appendix H.

## 6.4 Results

Five themes from the CFIR (2009) and twelve corresponding sub-themes were developed to present factors associated with the success or positive states in school food environments (see Figure 8).

**Figure 8 Factors associated with success in exemplary schools**




### 6.4.1 Characteristics of school food environments

**'**Characteristics of school food environments' are aspects of school food programs and activities that were identified as associated with positive states of school food environments. Four subthemes were developed: 'explicit program purpose', 'clarity on cost structure', 'adapting resources to need', 'non-stigmatizing nature'.

#### 6.4.1.1 Explicit program purpose

'Explicit program purpose' is a clear understanding by all of those involved in program provision as to the goal and purpose of the school food program. Participants frequently mentioned that schools were aware of the association between food and learning

outcomes. Breakfast programs were developed with the goal of providing food to students who did not have the opportunity to eat breakfast prior to school due to poverty or other reasons. One leader of a breakfast program stated:

> *"So, if a child, maybe they didn't have their food at home* […] *have something here or if they were too rushed,* […]*. they can have, a good start to their day."* (Breakfast program leader, S1)

Some participants mentioned that food programs were developed with the goal to offer access to nutritious food to students for better health and educational outcomes. One leader of a lunch program stated:

> *"I think it's the fact that children learn better when they're, when they have full tummies. And so that's our main goal is to make sure that kids have the nutrition that they need."* (Non-profit lunch service, S4 and S5)

Some participants (leaders of food education programs) reported that food education programs such as cooking classes or school gardens started with the purpose of introducing students to knowledge and basic skills for growing and preparing food.

> *"So, I mean it's just more of a hands-on approach to teaching them about healthy eating, which is in all the grades, health curriculum and math and literacy…."*. (Cooking class leader, S4)

#### 6.4.1.2 Clarity in cost structure

'Clarity in cost structure' describes an understanding of the program specific cost management strategies. Some participants mentioned that the cost of the free food and food-related education programs (e.g., cooking class, gardening) were covered by

money received from community organizations and community members (e.g., grants, donations), or funds from the school district.

> *"We've been lucky, really lucky. […] They've* [a charitable organization] *been assisting these* [breakfast programs]. *So, they provide us with quite a bit of money each year, which definitely helps. We do get a nutrition fund through the government, which is not very large, but it does help too."* (Principal. S6)

Some participants mentioned that in paid food programs the school sets a price for the food offered to the students to recover cost or generate low profit. One cafeteria leader in charge of a lunch program stated:

> *"*[We are] *nonprofit organization. We get paid out of like, our wages come out, […] our bills* [cost of food ingredients] *are paid from what we make* [amount of money from what they sell] *here."* (Cafeteria manager, S6)

#### 6.4.1.3 **Adapting resources to need**

'Adapting resources to need' describes the ability to maintain the food and related programs in schools within the available resources. The program leaders generally described that the maintenance of current food programs and activities were manageable with its available resources. Participants mentioned that proper planning and existing facilities made the programs manageable.

> *"I would think […] it's, it's very manageable because I assume the responsibility for the planning and implementation. […] we're very fortunate because we have the kitchen with everything that we need to safely prepare the food […] So, I'm*

*not saying it doesn't take a lot of work, that's why it's manageable in our schools."* (Breakfast program leader, S1)

Participants mentioned that with planning and multitasking they adapted to their situations and were able to maintain their programs in a consistent way.

*"I'm not saying it's difficult because we're getting used to it. We just work what we work with*." (Cafeteria manager, S3)

A few participants mentioned that successful securing of funds made the management of programs smoother.

*"When I first started (it) was more difficult. But now I've got the swing of it. Right? It was more difficult also because we didn't have much money […] but now it's well funded and I know what I'm doing."* (Breakfast program leader, S6)

#### 6.4.1.4 Non-stigmatizing nature

'Non-stigmatizing nature' describes participants' responses on how the schools attempted to avoided stigma in their free food services. Participants frequently mentioned that their free breakfast program was open to all students who wished to have breakfast in the school, which helped to avoid stigma for students who lacked adequate food at home.

*"I feel good as a teacher, knowing that it runs every day. […] it* [breakfast]*'s offered to every child. There's no stigma, test or anything."* (Breakfast program leader, S6)

Some participants mentioned that schools took steps to avoid stigma. Schools kept those students unidentified who received free lunch sponsored by the school in a paid lunch program.

> *"They* [students who get free lunch] *are not singled out,* [they were not served food separately] *[…]. They're like the [regular paid] food order, right? Yeah, we have a list* [of students who need free food] *and they're just added on to the [regular] order forms every day."* (Hot lunch leader, S1)

A few participants mentioned that in order to reduce the stigma, food programs that were initially dedicated to students who could not reliably access nutritious food were made available to all students irrespective of need. This change promoted the students' participation in the program.

> *"Whole school - at one class at a time* [cooking sessions were provided to all students in all grades]. *We're going to keep that model because it doesn't stigmatize anybody like the previous model* [cooking sessions were provided to families identified to have less nutrition knowledge]. *Perhaps those sixteen families were the most in need of foods literacy support, […] sometimes they didn't show up. […] So, we tried to figure out why and maybe stigma was part of it, so by doing the entire school we eliminate the stigma*." (Cooking class leader, S2)

### 6.4.2 Internal setting

'Internal setting' describes the factors within schools that created a conducive atmosphere for school food activities. Two subthemes were developed – 'support from the school staff' and 'sustainable leadership.

#### 6.4.2.1 Support from the school staff

'Support from the school staff' describes participants' views on the supportive attitudes of the school authority, teachers, and other staff and students in school food programs and related activities. Participants frequently mentioned that cooperation from the school administration, teachers and staff is essential for successful program delivery.

> *"I think just having the staff that buy in and are willing to give their own time to benefit the kids, that's been the key to the whole thing."* (School community coordinator, S5)

Participants mentioned the school administration (principal), teachers, and other staff such as educational assistants as well as some parents were supportive of school food and related activities. The school administration supported the programs with moral approval and logistical support.

> *"The administration is certainly very supportive. It was just last year that we moved into that [new] space. Before that, we just had carts and we would just go up in the hall of a cart and when the [new principal] arrived, she very quickly said you need your own space. And so, she made that room available for us*." (Free food program leader, S3)

Some participants mentioned that teachers and other staff were helpful and assisted with communication and delivery of the program.

> *"I have the school support to do it right I have teacher support to, you know, distribute, send home the permission slip* [students willing to participate in cooking class need permission from parents]. *And to collect them and that type of thing".* (Cooking class leader, S1)

Participants mentioned students' volunteer services with food and related programs was a part of the support system in school. Students helped with the organization and distribution of breakfast and lunch to students in some schools.

> *"I have student volunteers for smoothies. In the morning, I have student volunteers to deliver […] my student volunteers are an amazing resource."* (Breakfast program leader, S1)

Participants mentioned that the supportive environment provided them with confidence that if they needed any assistance anytime, they would get that from the school.

> *"I guess we do get a lot of support. Like I say, if I was not able to do it, I could call on some of my staff, they would do it [……] If I say I need this or that he's* [the principal] *like, OK, here's a bit of money I have left here or there. Go get it. Like so we have support that."* (Garden-recycling program leader, S6)

#### 6.4.2.2 Sustainable leadership

'Sustainable leadership' refers to the ability to maintain the leadership of different food programs. Overall, participants were positive about the sustainability of the programs and the leadership. Regarding a potential future replacement of current leadership, the

participants who were in designated positions for school food programs mentioned that new leaders would be hired in their positions by the school or by the authority in charge.

> *"'It* [the cafeteria] *would [continue]. They would just hire somebody else because it's a company that's outside of the school […]. So, the company that I work for, if something happened and I wasn't here, they would just put the position out there and somebody would come in and that person would have to follow the same rules that I'm following right now*." (Cafeteria manager, S6)

The school community coordinators who lead multiple food programs, and in some schools the person in charge of overall school food environment mentioned that food programs were position dependant rather than person dependant. Schools would be able to hire a replacement for those positions if the current holder is incapacitated or leaves.

> *Because my position is now unionized, then they have to replace me. When I'm injured, they have to provide a unionized employee or like […]. When last year I broke my foot, so they hired somebody to come while I was off with the broken foot."* (Breakfast program leader, S2)

A few participants who led a lunch program managed by volunteer groups mentioned that the group would be sustainable if the leader changed.

> *"I mean, there's always, I always say there's always somebody in life that will fill those shoes. So don't think you're not expendable."* (Hot lunch program leader, S2)

A few participants (leaders of food programs) who were teachers in schools mentioned that their colleagues would lead the program and the program would continue.

> *"I'm sure somebody would step up to take it. Where it's a group in the school that I think has a good reputation. [….] so, I'm sure that if I had to give it up for*

*whatever reason, that there would be somebody who would step in and take over."* (Free food program leader, S3)

In relation to food education and related programs (e.g., cooking classes, gardens) several participants were hopeful that the program would be led by others.

*"It probably wouldn't drop because the (lunch program) is so strong and well established and food is what they do. I think that in this building somebody could take it up…."* (Garden leader, S2)

### 6.4.3 Outer setting

'Outer setting' describes the role that community support for school food programs plays. Two subthemes were developed – 'Significant source of funding' and 'Complementary workforce'.

#### 6.4.3.1 Outsourcing of funding

'Outsourcing of funding' describes participants' responses to financial support received from the community such as grants or individual donations. Participants showed positive views on financial support from the community. Participants frequently considered their financial support as one of the key resources for their food activities. A participant who was the person in charge of school food said:

"*Well, [...] it has to come back to the funding. I mean, if we don't have the funding, [...] the schools do not have enough of their own money to supplement [...]. If they don't have enough money to provide food programs, then they can't do it. And parents aren't going to pay for breakfast program [...] then you can't. So funding is the number one priority."* (Community school coordinator, S1)

Funding (grants) from the community organizations were used to purchase food and other items such as soil or seeds for the garden program or to fund different food and related programs.

> *"We apply for grants, so there's a few grants that we have in place right now.* [Charitable organization] *takes care of our lunch program, our snack program and cooking groups, garden club [helped in the past] […]."* (School community coordinator, S5)

A few participants mentioned that they developed the program because of the availability of community funding.

> *"I get financial support for it from the* [grant name] *and that's just to buy the food that we need to prepare […] Well, yeah, if I don't get the funding we don't take the program. […]. The program is totally dependent on it, getting the funds.* (Cooking class leader, S1)

#### 6.4.3.2 Complementary workforce from community

'Complementary workforce from community' describes participants' responses to volunteer services by the community members in school food.

Participants mentioned volunteer services from community members as a support system to school food. Community members supplemented the extra staff schools required to deliver food and related programs. A leader of a breakfast program where on rotation two volunteers prepared and served breakfast to students everyday stated:

> *"It wouldn't run without the volunteers."* (Breakfast program leader, S6)

Volunteers' services had positive impacts on both free and paid food programs. Participants frequently mentioned that volunteers were critical to the success of programs. The service provided by the volunteers reduced the expense of a program and kept the price of food low. The leader of a hot lunch program that offered lunch priced at $2; and was managed and delivered by a volunteer organization said:

> "*I mean if we didn't have volunteers, it's totally different program if you have to go and hire staff, right? So, then it puts your prices up and then again, you have the families like, you know they can't afford a $5 meal every day*." (Hot lunch leader, S2)

Some participants mentioned that volunteers' knowledge about particular activities helped the program to be successful. A leader of a school garden stated:

> "*Definitely the community aspect. I love the garden. I'm not an expert by any means, but our community volunteer [...] is fantastic. Like, she can look at anything [...] that's this and that's that. And this is what we're going to do with this... I've learned so much from her [...] she's the mind."* (Garden leader S5)

### 6.4.4 Individual characteristics

'Individual characteristics' is the views, personal believes and self-esteem of participants regarding food programs and related activities in school. Two subthemes were developed: 'Constructive attitude' and 'Optimistic views'.

#### 6.4.4.1 Constructive attitude

'Constructive attitude' refers to participants' views on the sense of commitment to food in school. Participants frequently mentioned that they consider school food is a part of the education system because of the association of nutrition with learning outcomes.

> *"It's a very key component for education because again, hungry bellies will not focus as well."* (School community coordinator, S5)

A few participants reported that school food received priority in their schools in a consistent way. It became a part of the school culture and was integrated into the everyday schedule of the school.

> *"It's expected. It's something that our students expect and it's something that our school feels is a high priority."* (Community school coordinator, S1)

A few participants mentioned that their personal interest in healthy food and cooking was an additional factor for their commitment to school food.

> *"Well, I would say personally I have a significant interest in food so cooking and baking would be one of my hobbies. When I started here four years ago, it was a great fit because of our kitchen and the programs we were able to offer."* (Principal, S2)

Some participants saw their commitment to school food as a part of their job responsibilities. They found that it was part of their job to address the need of the family (community) as their role was to coordinate between schools and the community for the wellbeing of students.

> *"I think the food falls into our job description simply because of our relationship we have one with that community component, right, with that liaison between the*

*Community and the school, so we have the relationship with their families to know who, what the needs are."* (Community school coordinator, S4)

#### 6.4.4.2 Optimistic views

'Optimistic views' describes participants' views on the standards of their school food programs and activities and their impacts. Student participants' perceptions on school food were overall positive. They appreciated the food programs and thought that their school food was better when compared to other schools.

*"I feel our school like compared to other cafeterias from other schools that I've seen […] the lunches that she gets (her friend) from the cafeteria and it's always like really gross looking and like very unappetizing and like but I feel like our cafeteria food is not as bad as some others, and it's actually pretty nutritious and like quite filling.*" (Student focus group participant, S3)

Student participants frequently mentioned that their involvement in food activities had positive impacts on their personal life. It improved their understanding of the significance of food and related activities they were involved in. Additionally, it improved their organization and leadership skills.

*"Nothing for me changed for the bad (no bad experience), I just learned more things and how to keep the good diet and like money management about like foods."* (Student focus group participant, S5)

Most of the participants (program leaders) mentioned that their food programs and related activities were serving the goal that those programs and activities had. Leaders of

breakfast programs believed the programs had positive impacts on students' behaviour and learning outcomes.

> *"The outcome? Oh my God! So, you know there are kids who come without breakfast for many reasons […] So, eating (feeding) lots of the kids, lets the students focus and concentrate. […] It's not just about being able to sit and learn, it's about how they feel and how they can comport themselves for the morning […] So behaviourally, it's a huge outcome […]."* (Breakfast program leader, S2)

Participants mentioned that food programs and food education programs were able to increase students' basic understanding and skills required for a healthy diet.

> *"The students that choose to participate, they learn about healthy eating. They're excited about participating, and I think it's one of those things they learn valuable life skills […] I had one child in grade five, and when they were asked what did they like the most about elementary school? It was that cooking part. So, I think the impact is for a long time."* (Cooking class leader, S1)

### 6.4.5 Implementation process

'Implementation process' refers to strategies that were associated with successful delivery of food and related programs in schools. Two sub themes were developed: 'Flexibility in food selection' and 'customized approach'.

#### 6.4.5.1 Flexibility in food selection

'Flexibility in food selection' describes how schools balance policy compliance and student preferences. Participants mentioned that schools adopted the provincial SNP (policy 711), which is mandatory in New Brunswick (New Brunswick Department of Education and Early Childhood Development, 2018). Schools followed the nutrition guidelines from the policy as closely as possible when selecting food for different food and related activities.

> *"We do have, the district has policy 711, which is our nutrition policy, so we have to go by those guidelines."* (Breakfast program leader, S4)

Participants frequently mentioned that they accommodated the students' preferences in food selection within the policy compliant food items. The program leaders observed what students chose from the food offered and modified the menu accordingly.

> *"This year was the first year that I've gone for two to three days a week for cereal, OK. I used to have change it (food items for breakfast) up every day but […], they just like cereal. It's the most popular. And that could change next year".* (Breakfast program leader, S4)

Participants frequently mentioned the communication on students' preferences was done primarily informally. Sometimes students said if they liked any particular food items.

> *"Not formally. I mean, if I'm handing out a basket and the child says, I really like the gala apples [they] are my favorite, then I might purchase those apples right, but not a formal, no."* (School community coordinator, S1)

Some food program leaders mentioned that they observed the uptake of food items by the students (e.g., orders they make for lunches, choices they make in breakfast programs). They offered that kind of food more frequently.

> *"With our whole lunch programs, I mean we look at our orders, right? Our orders are made two weeks in advance. And so that gives us really good information of what families like."* (Principal, S2)

A few program leaders mentioned that they conducted a survey on students' and parents' preferences on the menu.

> *"Yes, last year we did the survey and then this year they're going to do it too, to kind of see if there's anything we can change for next year*." (Cafeteria manager, S6)

#### 6.4.5.2 Customized approach

'Customized approach' describes participants' diverse roles and responsibilities in the programs they led. Participants' responses reflected that the roles of program leaders were largely dependent on the program structure/design. Most of the program leaders mentioned that they managed the financial aspects of the programs.

> *"[…] we (the leader and an administrative assistant) kind of work together to think of programs and things like that we want the grants for or how can we get more, more money for the […] (food service)."* (Non-profit lunch service leader S4, S5)

Some participants mentioned that they outreached to their community and maintained the network with the community to receive financial and other supports. They wrote grant applications, program reports on how the grant money was spent, and maintained a communication network with community and partner organizations.

*"I will, for the most part, I apply for the grant. Once the funding is in, I'll give it to our admin team at the office […] I have my own credit card for our school, and then I go purchase stuff, get everything stacked away, and then it's pack everything after that."* (Breakfast program leader, S5)

Participants frequently mentioned that they made the food selections and purchased groceries in-person or online.

*"[…] because I'm employed here and part of my job is I have time to go to grocery stores and buy what we don't get (online). So, for example, I would go to the grocery store and buy bananas. We can't get bananas delivered".* (Breakfast program leader, S2)

Many participants mentioned that in addition to all the planning and implementation steps they took part in the preparation of food (lunch programs, cooking classes).

*"When I come in, the first thing I do is the baking […] I'll cook the chicken and I'll cook the hamburger […] Just kind of get everything prepped. [ …] I do, yeah (grocery shopping). So I will make monthly menu."* (Cafeteria manager, S6)

Participants mentioned that they recruited volunteers (community and student volunteers) and coordinate their work when programs were assisted by the volunteers.

"*I order all the food and I coordinate with the, I'll say parent volunteers. Make sure their dates follow the calendar dates when there's school when there's not school. If the person can't come, we make sure that someone is there."* (Breakfast program leader, S6)

A few participants mentioned that in the food programs where food was ordered from an outside organization the leader of that program in the school collected the online orders

from parents and sent the final orders to the outside organization online. Finally, they facilitated the delivery of food to the class through student volunteers or teachers.

> *"So, I would order online, I don't pack anything or anything like that. They would pack everything. So, for me it's just the ordering piece. And then the facilitation of delivery."* (Lunch program leader, S5)

A few participants (leaders of food education programs) reported that they developed the program design, selected the materials (e.g., recipes) for the class, organized the ingredients and directed the delivery of the sessions to the classes.

> *"So, I'm the one that developed the program. I just kind of found, I started with the recipe and then went from the recipe to find a book to be read during the program […]. And then each morning I come in and I'll set up. I'll be helping the class this afternoon because again it's a teacher who's not comfortable in the kitchen, so I don't mind."* (Cooking class leader, S4)

## 6.5 Discussion

### 6.5.1 Principal findings

The aim of this study was to identify factors that were associated with positive school food environments in exemplary schools. The identified factors included their awareness and optimism about school food, a low profit strategy, a supportive environment within the school, potential sustainability of leadership, outsourcing of resources from the community, customized strategies in management such as balancing between students' preferences and nutritional guidelines and differences in roles and responsibilities of program leaders, depending on the structure of the programs.

### 6.5.2 Strengths of this research

The guidance from CFIR helped this study to examine the associated factors of positive school food environments from different levels. This framework considered factors that are relevant to program characteristics (collectively), school level atmosphere, relations with the community, views of persons involved in food activities, and general strategies of implementation of food and other programs. Additionally, this study explored all the existing food programs and activities and interviewed the program leaders. This approach maximized the possibility to identify all relevant factors.

### 6.5.3 Limitations of this research

This study is not without limitations. This study analysed data across six different schools, and a larger number of schools could increase the trustworthiness of findings. As this study explored exemplary schools, the challenges regarding identification of existing exemplary schools resulted in a limited number of schools. Due to the absence of documented exemplary schools in NB this study relied on the unofficial identification of exemplary schools. Other exemplary schools may exist in the province. During the recruitment process the schools received a positive message regarding their food environments, which might add bias in participants' responses. One selection criterion was the school had a partner organization, which influenced the findings regarding the sources of money for food and related programs in exemplary schools.

### 6.5.4 Relevance of consolidated framework for implementation research (CFIR) (2022) to study 3

This study was guided by the CFIR (2009) (Damschroder et al., 2009), which played a role in the development of the research tools and the analysis of data. The updates to CFIR in 2022 (Damschroder et al., 2022) were of negligible relevance for this research for two reasons:

1. The CFIR is designed to study implementation of a single intervention that has a specific structure. The CFIR (2022) has more constructs suitable to study a single intervention in a comprehensive way. The school food environment had multiple components (programs) and the context and structure of programs varied across schools. This study did not follow exactly each construct of CFIR (2009). The CFIR (2009) domains and constructs informed the development of data collection tools, including interview guides.
2. This study used CFIR (2009) in data analysis. The hybrid thematic data analysis used the five domains of CFIR (2009) to develop themes deductively; it developed subthemes inductively. CFIR (2022) has the same domains as CFIR (2009) and there was no effect on the theme development of this study. As the interview guides were informed by the constructs of the CFIR (2009), the subthemes (developed inductively) were also relevant to some of the constructs of CFIR (2022) (see Table 17).

**Table 17 Relevance of consolidated framework for implementation research (CFIR) (2022) to study 3**

| **Domains of CFIR (2022)** | **Findings (sub themes) in study 3** |
|---|---|
| *1. Innovation Domain* | |
| Innovation Source | Explicit program purpose |
| Innovation relative advantage | Adapting resources to need |
| Innovation cost | Clarity in cost structure |
| *2. Inner setting Domain* | |
| Communications | Support from the school |
| Work infrastructure | Sustainable leadership |
| *3. Outer setting Domain* | |
| Local attitude | Complementary workforce from community |
| Financing | Outsourcing of funding |
| *4. Individual Domain* | |
| Motivation | Constructive attitude |
| Innovation recipients | Optimistic views |
| *5. Implementation Domain* | |
| Tailoring strategies | Customized approach |
| Assessing needs | Flexibility in food selection |

However, in a hypothetical scenario, if the CFIR (2022) were available to inform the development of data collection tools and subsequent analysis, it would have introduced additional research aspects of interest, such as the following:

1. In CFIR (2009), the construct 'cosmopolitanism' refers to networking with other external organizations without specifying particular groups. In CFIR (2022), 'partnerships & connections' refers to networking with external entities including referral networks, academic affiliations, and professional organization networks, and specified a few groups as examples. The new framework could have influenced the development of the interview guides to include questions or probes about specific groups identified as partners in

existing literature, for example, public health. Thus, there could have been additional information about the types of organizations as partners and their contributions.

2. A subconstruct 'human equality-centeredness' under the construct of 'culture' refers to the shared values, beliefs, and norms about the inherent equal worth and value of all human beings. It is relevant to addressing culturally and ethnically inclusive school food programs, which is recommended by existing research. Addressing this subconstruct could have captured participants' views on this aspect.

3. 'Individual' domain differentiates the positions of individuals according to their roles in implementation, such as higher level and mid level leaders. This research interviewed the people in charge of overall school food, individual program leaders and students involved in school food. The thematic analysis did not consider the positions of the leaders, which might have shown patterns in their views.

### 6.5.5 Relation to other studies

*Shift in strategy of revenue generation:* This study showed that in the cost structure of school food programs (especially lunch programs) there was a practice of cost recovery basis (no profit was generated) or very low profit margins. Literature shows that there is a practice of generating revenue for school from the food programs. The impacts of healthy menus on revenue are mixed as a few studies reported that offering healthy food or nutrition policy compliant food had negative impacts (Masse et al., 2013; Taylor et al., 2011) while some other studies showed that overall, there was no impact on revenue (Wolfenden et al., 2017; Cohen et al., 2021). However, the findings of this study showed a shift in strategy regarding generation of revenue; exemplary food programs in other

provinces showed a similar shift (Ruetz et al., 2024). This result raises the question of why the schools considered a non-profit or marginal profit strategy. There could be two possibilities. One is the provincial policy recommends a low profit margin and a second is that program leaders were motivated to provide affordable lunches and breakfasts for the health and wellbeing of the children.

*Avoidance of stigma:* Avoiding stigma is an important factor for the success of food programs especially in providing free food to students (Bailey-Davis et al., 2013; Cullen et al., 2013). The findings of this study showed efforts to avoid stigma, which are consistent with this evidence. Non stigmatization is considered a key feature of the national food program (Employment and Social Development Canada, 2024; Hernandez et al., 2018). The schools did not report using any external guidelines on stigma avoidance; it is possible that they learned from experience and practical knowledge.

*Risk for sustainability:* The findings of this study showed that schools received significant resources from different community organizations. Other studies showed that funding for food programs was a challenge for healthy food promotion due to the higher cost of food items (Ausenhus et al., 2023; Cornish et al., 2016; Vine et al., 2014, Taylor et al., 2011; Downs et al., 2012). At the same time, some studies support the evidence that schools are dependant on monetary help from non-government organization. School food programs are also dependent on community volunteers (Ruetz and McKenna, 2021). The findings of this study supported this evidence. It also showed how the money from non-government organizations was used and how crucial it was for the existence of food activities. For the sustainability of food programs, stability of funding and other

support systems are vital (Hernandez etal., 2018). Evidence showed that less guaranteed support from government and dependency on funding from non-government organizations created barriers in program sustainability (Ruetz & McKenna, 2021). In this study, the participants' responses on the potential sustainability of the leadership of the program were positive. Still, the sustainability of the programs of these schools was not conclusive because the findings did not highlight the stability of funding and volunteers from the community.

*Positive attitude is a strength:* The positive attitude of persons, including leaders and students, and the support of other staff members was one distinct finding in this study. Results from other research indicated that some school administrators did not think that food was part of the school's responsibility (Cornish et al., 2016). Participants in these schools, however, considered food to be part of education.

The schools developed different food and related programs from their own inspiration. Some aspects of school food implementation (e.g., nonprofit or marginal profit, avoiding stigma) are recommended in the provincial school nutrition policy (New Brunswick Department of Education and Early Childhood Development, 2018). Though schools mentioned that the provincial school nutrition policy was used as a guideline for selection of food; other activities of schools appeared to align with the policy naturally; they did not identify the policy as a point of reference. In most cases, the programs and their implementation strategies were focused on students and managed with internally developed strategies. This result indicates that food activities were included as a part of

school culture, which is a positive sign for sustainability (McIsaac et al., 2017; Storey et al., 2011).

*Flexibility, and school specific structure:* Students' preferences for less healthy food over healthy food items is a barrier for the promotion of healthy food programs (Cornish et al., 2016; Vine et al., 2014). In many cases, it was reported that this preference caused low revenues and healthy food menu was dropped (Masse et al., 2013; Taylor et al., 2011). This study showed that the food program leaders tracked student preferences formally or informally. There is a possibility that due to this strategy, healthy food offerings continue.

The different roles of leaders indicated that the program management structure was different across schools, and it developed according to the available resources in the schools. This study also shows that schools adopted two different monetary strategies for different activities depending on the types of programs – providing free food programs and education activities; and using a cost recovery strategy for lunch programs. There is some evidence that participants emphasize a school specific model for school food programs (van Kleef et al., 2022). Program sustainability depends on the adaptability of school food activities to changing situations (Hernandez et al., 2018). The ways the exemplary schools structured their programs according to their funding, available volunteers and their cooking facilities can be a role model for others.

*Need for standards for monitoring and evaluation:* The monitoring and evaluation system of food activities in schools of this study by any group or authority was very

limited. Monitoring and evaluation are required for the sustainable promotion of healthy food programs (Reeve et al., 2018; Hernandez et al., 2018). The provincial SNP provides nutrition guidelines and other guidelines for food programs and related activities. Considering policy as a framework of school food, a multilayered evaluation and monitoring tool could be developed. For preliminary evaluation and monitoring some of the core components of the policy such as the inclusion of fresh fruits and vegetables in all meals and snacks, avoidance of deep-fried food items and sugary drinks, avoidance of fundraising with food items could be included in a tool. Depending on the results of the preliminary evaluation, schools can go through further detailed evaluation (more policy components) and at the same time schools need to be supported for school food activities.

### 6.5.6 Recommendations for schools

There is an association between nutrition and well being, including learning outcomes. Due to this association, school food is an integral part of the education system and is a priority for schools as are other academic responsibilities. With an optimistic attitude towards the school food and on the basis of the findings of this study, schools can consider the following recommendations to improve their food and food-related programs.

1. Schools can develop their food initiatives according to their own needs and available resources. A match between needs and available resources results in easiness in the program delivery. The schools might not operate on a large scale or the highest standard in the beginning but can take an incremental approach. At

an initial stage the schools can start with as much as is feasible and balance their efforts with policy compliance, then take efforts to improve.

2. School food programs could be free or aim for a zero-to-low profit margin according to the available funding and other resources. Generating revenue from school food programs is a common practice in schools. However, there needs to be a shift in this practice.

3. In any free food service or support to the students, taking appropriate measures to avoid any stigma is important for students' participation. Avoiding stigma promotes participation in a program. Schools could make the free food service available for all students when possible, and in other cases, keep the students who receive support unidentified.

4. Schools can consider developing partnerships and communication with community individuals and different organizations for resources including financial assistance and volunteer services to school food.

5. Schools can consider a customized and flexible approach to develop structures for food and related programs. If there is an available facility such as a food preparation space, the program leader can consider onsite preparation of food with the help of staff or volunteers. Otherwise, contracts with outside vendors that offer healthier menus could be an option.

6. Schools can consider accommodating students' preferences within the nutrition guidelines. Informal conversations, and observation of their chosen food items from the food program would help to understand their preferences. This strategy can improve a student's participation in any program.

### 6.5.7 Implication of this research for others and future research

This research highlighted a number of strategies for healthy school food environments and indicated that food programs and activities, and their management were designed according to a school's need and available resources. These findings could inform schools and experts working with school food in making recommendations on promoting healthy food in schools. Research could follow up how the findings of this study are used when shared with authorities such as ministry of education and school districts. Future research with a larger sample, broadly categorized on the basis of context (e.g., size of school, location) could identify the types of strategies that might have more potential impact in different contexts. Usually, the CFIR is used to study implementation of a single innovation or intervention. This research used the CFIR to study the success factors associated with exemplary school food environments, which had multiple aspects or components, and which could inform other research intended for multicomponent innovation.

Canada is implementing a national food program with significant resources allocated by the federal government (The Coalition for Healthy School Food, 2024). The Coalition for Healthy School Food, the advocacy group for a Canadian national food program, recommended using the federal funding to expand provincial or territorial funding to initiate new food programs using a cost shared model (The Coalition for Healthy School Food, 2018; Hernandez et al., 2018). In another country, a cost shared model has led to challenges in the management of financial aspects of programs resulting in them being less beneficial to students; and a free universal model is recommended in Canada (Ruetz & Poppendieck, 2024). The amount that parents are willing to pay for school food

depends on several factors such as household income, household size and food security, and the price of school food (Gupta et al., 2023). Additionally, in the case of a cost shared model, if adopted, the diverse scenario of school food across the country needs to be considered.

There is no direction so far about what will happen to existing food programs where students paid full prices. This research showed that schools had different food programs including breakfast and lunch programs where lunch programs were fully paid by the students. If the newly allocated money is only to initiate new programs, then there is a question that if these programs or schools will be eligible to get funding. If not, the schools that made positive changes might be at risk of being unable to sustain these, as both this study and the literature showed that these programs were heavily dependent on funding from non-government organizations, which is a barrier for long term sustainability (Ruetz & McKenna, 2021). Additionally, government funding for only new programs might result in a school food scenario containing similar food programs with different cost structures, and consequently different food quality of similar food programs among schools. This potential situation can make monitoring, if planned, difficult. Another option could be considering allocating money to all schools considering their existing programs and facilities. This research could inform decision making about the distribution of allocated funds to the schools.

## 6.6 Conclusion

The purpose of this study was to identify factors that contributed to positive changes or success in the food environments of exemplary schools. The results showed that awareness and optimistic views within a school, outsourcing of financial resources and staff from the community and a customized approach for management played positive roles. These findings can inform planning and decision-making regarding school food in other schools. These results indicated that positive changes were primarily driven by the schools with community support and without sufficient monitoring and support systems from any relevant jurisdictions. The distribution of newly allocated money by the Federal government of Canada needs to consider sustainable support for existing positive changes in school food.

# 7 Chapter 7: Discussion

The aim of this research was to explore the healthy food environments in exemplary schools with the following objectives:

l) Identification and documentation of key food-related components (e.g., food programs, nutrition education programs) of exemplary schools using CSH as a framework; examining similarities, differences and exemplary practices across schools.

ll) Examining the roles and contributions of partnerships, the dependence of schools on partnerships and community support in these schools; and the views of students on school food and its impact on them.

lll) Analyzing the process of current positive states of school food using implementation science and documenting common themes to identify the factors influencing these positive states.

Three research questions were developed based on these research objectives. The research questions were: 1) What are the components of positive food environments in exemplary schools? 2) What roles do partnerships play in exemplary school food environments? 3) What are the factors associated with successful school food environments in exemplary schools?

The studies addressing the research questions were described in Chapters 4, 5 and 6, and are summarized and discussed in the following paragraphs.

## 7.1 Principal findings

The schools offered similar programs (food programs and nutrition education programs) and activities considered useful to promote healthy eating behaviour, but the structure of the food and related programs were diverse across schools, especially for lunch programs. The most common regular food programs were breakfast programs (free) and lunch programs (primarily paid). Common food education related activities included cooking classes and gardens. Positive aspects of school food environments across schools included the inclusion of fresh fruits and vegetables, food support to students in need, involvement of students in food activities, and efforts to avoid stigma in free food services.

All schools worked with partner organizations, which played significant roles in the food environments in these schools. Exemplary schools received support from a diverse group of organizations including non-profit charitable organizations, private organizations (e.g., a real estate board, travel agency) and other community organizations (e.g., faith group, firefighters). Schools maintained relationships with these organizations in both formal and informal ways. Financial assistance, volunteer service and donated food items were found to be important supports from the community. Financial assistance was received as grants or regular donations. Schools also received occasional donations from community members and community organizations. Financial assistance was used in food programs, especially in breakfast programs, free lunches to students in financial need, cooking classes, fruit and vegetable challenges, and school gardens. In all the breakfast programs and some of the cooking classes, grants and donated money were the main resources. Volunteers provided service

primarily in breakfast programs and lunch programs and those programs were heavily dependent on them. Outsourcing of resources from the community was one of the associated factors of exemplary school food environments. Other associated factors included their awareness and optimism regarding school food, a low profit strategy, a supportive environment within the schools, the potential sustainability of leadership of different programs, and flexible management strategies. The flexibility was found in food selection, which meant balancing between students' preferences and nutrition guidelines. Additionally, the roles and responsibilities of program leaders showed flexibility to some extent depending on the structure of the programs.

The findings of this research are distinct from other research as it presented whole school food environments including food programs, nutrition education programs and other food related activities of exemplary schools. Existing research focuses on particular aspects of food environments such as food programs including promising food programs (e.g., Ruetz et al., 2024), compliance with school nutrition policies (e.g., Taylor et al., 2011; Orava et al., 2017) and nutrition education programs (LeBlanc et al., 2022; Woodruff et al., 2020). This research provided a comprehensive scenario of exemplary schools, showing which programs received more attention and how resources were allocated, identifying positive aspects as well as aspects that could be improved, and indicating factors that played roles in the schools' success.

These research findings are significant for their potential practical applications. At a national level, they indicate the positive outcomes that accompanied diverse structures in food and related programs and a school specific approach in the development and

maintenance of food environments. These findings can help inform the funding allocation and monitoring system for the national food program. At the level of individual schools, the research identified factors associated with healthy school food environments in exemplary schools. These factors included prioritizing school food, developing partnerships with diverse organizations and balancing policy guidelines with students' preferences during food selections – all of which can inform school-based decision making.

The notable aspects of these findings included a school specific approach, including the structure of programs and management strategies. Schools developed the food environments from their awareness and arranged required resources through partnerships. Even the types of partnerships were variable according to the context of schools. A significant number of the partnerships worked in informal ways. In addition to charitable organizations, local private businesses contributed to school food. Schools were in charge of their food environments without any other institutional support system or monitoring system. The provincial SNP (policy 711) played a supportive role in food selections, even though the policy also provides additional recommendations for overall school food environments. Schools' awareness about the significance of healthy school food in learning outcomes and their recognition of school food as a part of education motivated them to take initiatives and develop partnerships to obtain supportive resources.

## 7.2 Strengths of this research

This research provided evidence (e.g., types of food) that was collected directly during in-person visits. Different methods were used to collect data and data were triangulated during analysis, which increased the robustness of evidence. This research explored each food and related program and interviewed leaders of each program from each participating school. On the visit days, schedules were organized in a way so that sufficient time was available to observe food programs and interview each participant. This study included the views of all the persons in a school who were in leadership positions for school food activities. Additionally, this study presented the views of students in older grades.

The selection and use of two different conceptual frameworks according to the nature of the research questions had complementary effects on this research. The school food environment is multicomponent. The CSH framework helped to identify different components of school food. The CFIR helped to analyze the implementation of school food initiatives in more detail and identify factors associated with the success of exemplary school food environments.

This research explored and focused on the positive initiatives in school food environments. The findings were relevant to the positive initiatives that happened in the exemplary schools. The research also explored school food in a comprehensive way. It documented different aspects of school food in exemplary schools providing insights into different food programs, food-related activities, support systems, and strategies taken by schools. It highlighted what were the resources, how they were used and the

resulting food activities. Practically, it showed the use of available resources to create a healthier school food environment.

## 7.3 Limitations of this research

This research is not without limitations. It was limited to one province of Canada when the country did not have a national food program and consequently, had a diverse school food scenario across provinces. It showed some positive states of school food developed at the grassroots level; government support for school food in NB was limited at the time of data collection so it was not possible to examine schools receiving adequate government funding for school food. This study only included schools that worked with partner organization for school food. Thus, it is unknown how schools without partnerships function in positive school food environments. The number of participating schools is not large due to challenges in identifying schools that met the research criteria, time constraints, and lack of response from one Anglophone school district. Most of the data were collected from participants who were in leadership roles in different programs. Information and views from other persons involved in different food programs could complement or contradict the data. However, observations of food programs and nutrition education activities by the researcher confirmed the authenticity of data.

The CFIR is designed to examine implementation of an individual innovation or intervention. This study examined the implementation of food environments in exemplary schools. Each school had multiple food and related programs (e.g., breakfast

programs, lunch programs, cooking classes, gardens) and some of the associated factors were programs specific. The thematic analysis using the CFIR identified the general factors relevant to overall school food environments and may have missed some program specific factors. Use of the updated CFIR, had it been available, would have expanded data collection and analysis, thus enriching the research results further.

### 7.4 Policy compliance of exemplary schools

The exemplary schools of this study were selected on the basis of their existing healthy food and related activities without documented evaluations of their policy compliance. The findings showed that the nutrition guidelines of the provincial SNP played a role in food selections by schools for different programs. The SNP contains other requirements for the promotion of heathier school food environments. Though this research was not an evaluation, particularly not an evaluation of policy compliance of schools, the findings indicated schools' natural alignment to SNP. The food activities of the exemplary schools were compliant with most of these policy requirements, such as the opportunity for the development of food skills and offering free and subsidized food programs in a non-stigmatizing manner, though the degree of their compliance varied across schools. A few requirements of the policy were not relevant to this study such as food service contracts and encouragement of traditional First Nations food, so data were not available. Table 18 shows schools' compliance with the policy.

**Table 18 Policy compliance of exemplary school food environments**

| Aspects of policy requirements and Recommendations | Level of compliance of schools | Exemplary practices |
|---|---|---|
| Eating environment | All schools were compliant | |
| Role modelling of healthy behaviours | N/A | |
| Using food as rewards and punishment | Four schools were fully compliant, two schools were partially compliant | |
| Opportunity for students and parents to provide input | Two schools compliant partially. | Cafeteria service sent survey sheet to families monthly |
| Opportunities to develop food skills and knowledge | All schools were compliant to some extent | Two schools offered cooking classes to all students and included healthier recipes.<br>Two schools include all students in garden activities |
| Access to free and subsidized food programs in a non stigmatizing manner | All schools were compliant | One school offered two breakfast options: sit and eat and garb and go, and offered a variety of foods |
| Avoiding promotion of food brands | N/A | |
| Nutrition guidelines for all food programs (except breakfast program) | All schools were compliant to some degree | |
| Healthiest possible food options in breakfast program | All schools were compliant | |
| Celebration of special events | One school was compliant | One school served fruit tray at its Halloween Party |
| Pricing of food | Five schools were compliant | One lunch program offered lunch at $2, including white milk |
| Content of lunch meal (food from four food groups) | All schools were compliant to some degree | Chicken or beef wrap with or without milk<br>Macaroni and cheese with fruits, carrots and milk |

| | | |
|---|---|---|
| Guidelines for À La Carte items | Two cafeteria service were compliant to some degree | Fruit bowl, veggies and dip |
| Access to portable drinking water | All schools were compliant | |
| Fund raising activities | Three schools were compliant | School did not sell food to raise money |
| Guidelines for management of food services | N/A | |
| Food service contract guidelines | N/A | |
| Food safety | All schools were compliant | |
| Monitoring of school food environments | Not compliant | |
| Minimal processing and healthier preparation of food and beverages | All schools were compliant to some degree | Whole grain bread<br>Fresh fruits and vegetables<br>Smoothie without added sugar |
| Using locally grown food | N/A | |
| Environmental considerations | N/A | |
| Evaluation and plans for improvement | Minimal efforts in schools | |
| Encouraging traditional First Nation foods in school events | N/A | |
| Additional district policy | No schools | |

The alignment of exemplary schools to the policy requirements indicates the exemplary schools were compliant with different aspects of the policy to different degrees though the schools did not develop their food programs and activities because of policy requirements. This fact reflects the schools' understanding of the promotion of healthy school food environments, at the same time supports the evidence that SNP can guide the healthy school food environment. Having a policy regarding healthy food in schools or other institutions contribute to a healthy food environment (Ausenhus et al., 2023; McIsaac et al., 2017; Kennedy et al., 2025). The mandatory nature of polices encourage

stakeholders to make efforts for implementation in some cases (Packer et al., 2024; Levay et al., 2020). Schools' use of nutrition guidelines from the policy and taking efforts to comply with that is possibly the outcome of mandatory school nutrition policy in the province. It is a question why schools did not reference the policy for other food related activities, although many of their activities aligned with the policy. One reason could be that schools did not receive significant resources from the Department of Education and Early Childhood Development for school food.

Complexity in the nutrition guidelines of provincial SNPs and its diversity across provinces are considered as challenges for its implementation and evaluation countrywide. In general, SNPs can work as overarching frameworks or standards for school food activities while considering the school level contexts which could be helpful for ground level implementation, evaluation and monitoring. In that case, government needs to support schools with resources for policy implementation and maintenance.

### 7.5 Relation to other studies

*Need for balanced combination of top down and grassroots approaches:* The food programs and activities across the exemplary schools showed that schools adopted and developed different programs and activities in a flexible way that matched their resources and needs. Adopting different structures of lunch programs and cooking classes indicated that the same structure might not work for all schools. This supports the diversity in school food programs in Canada (Ruetz and McKenna, 2021; Carducci et al., 2024). One reason for the diversity was the absence of a national food program

(Ruetz and McKenna, 2021). Another possible reason is there is no specific directions and guidelines for the structure of nutrition education programs (Roy and McKenna, unpublished). Additionally, there are differences in locations, facilities, and types of staff across schools. These factors influence food activities in schools (Downs et al., 2012, Taylor et al., 2011; MacLellan et al., 2010; Aydin et al., 2021). However, the diverse and customized structure of programs in schools can work as a positive message for school food in Canada as schools can start working according to their capacity to align with the SNP as much as possible even with few resources. This diversity also indicated that positive changes in schools' food emerged from the grassroot levels. These grassroots initiatives have a positive impact on health promotion (Srinivasan et al., 2019). Grassroots initiatives showed benefits especially in low resource areas (Srinivasan et al., 2019), but their effect on the whole problem depends on different factors. In the long term, sustainable positive cultures need a balance of grassroots and top-down approaches (Cheney et al., 2024; Feola & Nunes, 2014). The national school food program fund and policy can play a 'top down' role and support the grassroots positive initiatives in school food in Canada.

The national school food policy objectives (Employment and Social Development Canada, 2024) indicate the intention to diversify the government's support in different programs, including snacks, breakfast, and lunch; nutrition education programs; and relevant infrastructure. It is interpreted that either funds will be transferred to a particular program in a school or a common fund will be transferred to a school to enhance their current capacity of the programs according to need. However, there is no clear statement if every school will receive funds. The policy states that underserved and marginalized

populations will get priority (Employment and Social Development Canada, 2024). As a hypothetical scenario, the schools that already have a positive state of school food environment but do not have secured funds might not sustain their positive state in the long run. Additionally, the findings of this research indicated that there is still scope for improvement in terms of participation rates of students and length of education programs. These exemplary schools have the awareness and supportive environment within the school and potential sustainable leadership, which are important factors for sustainable positive changes. Secure funding can support further improvement and sustainability of healthy food programs in these schools. Another aspect is that if only the schools in underserved communities receive priority in funding allocations, students who live outside the underserved area but are financially challenged will not benefit from this national program.

*Development of awareness in school is a driving force:* The findings of this research indicated that schools are aware of the significance of school food to address food insecurity and nutrition, and its link to the wellbeing and educational outcomes of students. In the case of behaviour changes, awareness can in some situations lead to positive changes and relevant policy changes directly or indirectly when supported (Napora, 2017; Cogut et al., 2019). The internal atmosphere of schools in this study showed that they had a sense of responsibility and optimistic views on school food environments and confidence about potential sustainable leadership, which could be influenced by their awareness. This research showed schools' outreach to the community to receive supports for school food programs. This proactive attitude is possible due to the influence of schools' motivation and awareness.

*Challenges regarding a national school food program:* The findings of this research showed that students' participation rate varied across schools. In Canada, the overall participation rate of students in school food programs is not that high (Ruetz and McKenna, 2021; Hock et al., 2022). Free food programs increase student participation. Two possibilities for the national school food program are that it will be subsidized or pay as you can. In another country, both these models resulted in less success in terms of students' benefits and management of financial aspects; a free universal model is recommended (Ruetz & Poppendieck, 2024).

The goal of the national food program is to offer healthy school food to more students. Schools in this study organized the lunch programs in different ways, such as food prepared onsite or ordering from outside vendors. A few schools engaged volunteers in food preparation. More participation by students in food programs will require the expansion of existing facilities, staff and volunteers in schools. The distribution of funds for the national food program needs to assess the extent to which schools are ready to use this fund.

Additionally, the national school food policy stated that the allocated budget will support school food infrastructure to expand food programs. The policy raises the question of how they will assess the schools' needs. One of the possible options is inviting reports from the school regarding food preparation sites and facilities for existing food programs.

The schools of this study provided practical nutrition education programs for a brief period and in some schools, programs were offered to a limited number of students. Some of the school relied on grants and donations from community organizations and community members for these programs. The limitation of resources and staff is a barrier for nutrition education programs (Aydin et al., 2021; Ballam, 2018; Myers et al., 2018; Esdaile et al., 2024). It is possible that the same factors played roles in the schools in this research. If the schools receive a secured fund from the government, there could be increased opportunity to spend some of the existing resources (used in food programs) in curricular and extracurricular hands-on nutrition education programs focusing on food growing and healthy food preparation. In that case, schools need the extra initiatives to conduct expanded food programs and to maintain communication with partner organizations simultaneously. These efforts may also enable schools to procure more local foods for schools, which was limited in the exemplary schools in this study.

*An overarching evaluation and monitoring policy and tool is needed:* Evaluation and monitoring are fundamental for ongoing improvements in school food and health promotion programs and their sustainability (Reeve et al., 2018; Bodkin and Hakimi, 2020; Hernandez et al., 2018; Carstensen et al., 2019). This research showed that the food programs and activities of the schools had little or no evaluation and minimal monitoring. The findings of this study are similar to overall findings of other studies. The diverse landscape of school food in Canada made evaluation challenging (Carducci et al., 2024). One of the reasons is complexity with different policies and policy mandates across the country (Carducci et al., 2024). Some of the provinces (e.g.,

Manitoba, Saskatchewan) provide guidelines to develop nutrition policies at the school district level. In some provinces (e.g., NB, Ontario) the policy is mandatory and, in some provinces (e.g., Alberta, Newfoundland and Labrador), it is recommended (Roy and McKenna, unpublished). The provinces have different nutrition standards (Roy and McKenna, unpublished). Additionally, provincial funding to school food, the number of food programs adopted by schools and participation rate of students are different. At the provincial level, not all the relevant data are available (Ruetz and McKenna, 2021). This research indicated that even in the same province the evaluation or monitoring could be challenging in the existing situation. The food programs and nutrition education programs were structured according to the school need and available resources. The schools of this study reported that they followed the nutrition standards as closely as possible according to their context. On the other hand, there is no criteria to evaluate nutrition education programs and strategies for implementation of the provincial school nutrition policy though it was recommended in the policy documents. A national school food program is now underway in Canada. Like any other programs or intervention, evaluation and monitoring are recommended (Reeve et al., 2018; Hernandez et al., 2018)). The national school food policy emphasized evaluation and monitoring (Employment and Social Development Canada, 2024). The policy statement indicates that the supported program will be aligned with provincial nutrition policies or nutrition guidelines. What is unclear, however, given that many schools have multiple food and related programs (breakfast programs, lunch programs and nutrition activities), is which programs will be evaluated and monitored. It could depend on how the government identifies eligible schools or programs for funding. Evaluation and monitoring of only

funded programs countrywide will have less impact and could impede the motivation of evaluating other food activities and programs in a school.

The national school food policy states its long-term objectives for sustainable and universal healthy school food program in Canada. The policy statement indicates that the national school food program will include expansion and enhancement of existing food programs and will reflect the Canada's Food Guide and provincial nutrition guidelines. Canada's Food Guide recommends the types of food and their portion size in a generalized way through a proportionate plate of three groups of food. On the other hand, some provinces (e.g., Alberta, Prince Edward Island) recommended food items from four food groups according to its nutrient content. So, there is still some misalignment between Canada's Food Guide and provincial nutrition guidelines. In monitoring and evaluation, to assess the nutrition quality of food it is important to set more straightforward nutrition standards for school food.

*Strength and risk for sustainability:* Sustainability is an important aspect for achieving potential benefits of a program or initiative. The definition of sustainability is broad and sometimes different among authors. However, collectively it refers to the continuity of program activities beyond initial funding allocation for a particular program and being consistent in the goal of the program (Bodkin and Hakimi, 2020). The findings of this research showed that paid persons in schools (e.g., school community coordinators, cafeteria manager) for food programs and internal staff of schools who led different food activities were confident and hopeful their role will be continued by others. This result indicated the potential continuity of leadership. Schools also reported very supportive

attitudes from school staff and participants in this study, who showed optimism and program ownership, including volunteer supports from the community. All these qualities reflect potential strength for sustainability (Bodkin & Hakimi, 2020; Flynn et al., 2022; Carstensen et al., 2019). Regarding the financial aspect, schools' main sources were grants (which had to be secured every year) from nonprofit charitable organizations and donations from private organizations. So, the stability of finances was an issue for sustainability of the program. Dependence on different organizations other than government is a barrier for sustainability of school food programs (Ruetz and McKenna, 2021). Schools did not report any active plan for alternate sources of funding. This situation could be a potential risk for long term maintenance or sustainability.

## 7.6 Implications for practice and policy

This study described the existing food and related activities in exemplary schools. It described the structure of breakfast and lunch programs and nutrition education programs (e.g., cooking classes). It highlighted positive aspects of school food practises across schools such as inclusion of fresh fruits and vegetables in food menus, efforts to avoid stigma, reasonable prices, student involvement, and involvement of partner organizations. This research found similar programs with diverse structures across schools, which indicates that a school specific approach was beneficial. These findings can inform other schools to adopt practices according to their capacity to improve school food. This research also highlighted that community members and different community organizations including non-food related private organizations were the source of finance, volunteer staff, and expertise to run a food or related programs. This finding

indicates potential resources for school food in their community, which could be helpful for other schools to overcome challenges regarding resources to improve their school food environments. The findings of this study highlighted strategies that could inform decision-making by other schools, such as using a non-profit or marginal profit strategy for food programs where students pay, considering the students' preferences, customizing the structure of food programs and considering the responsibilities of leaders of those programs.

The findings of this research indicated that though schools reported adopting the provincial school nutrition policy (SNP) they only referenced the policy to select food items. Their awareness regarding the need for healthy food for better health and its impact on learning outcomes played an important role and directed positive food-related initiatives. This finding can inform the future revision of policy, especially the national school nutrition policy, where creating awareness would be emphasized.

This research discussed the strength and potential risk of sustainability of positive food initiatives in exemplary schools. The lack of monitoring, specifically who will do the monitoring and what standards will be used for monitoring, are an issue. Considering and addressing monitoring for the national school program will be helpful to achieve the benefits of the program.

## 7.7 Implications for research

There is general lack of data and research on school food in Canada (Employment and Social Development Canada, 2025). Additionally, research on school food in Canada is inconsistent across provinces. A few provinces (e.g., British Columbia, Ontario) had more research on school food (Carducci et al., 2024) whereas New Brunswick has very limited academic research on school food. This research addressed this gap to some extent. This research explored exemplary school food environments in NB, adding to the body of research on types of food served and sold in schools, other related activities, support systems and implementation strategies.

There is limited research evidence to identify best practices. The federal government has prioritized a number of research topics including cost structure or payment models, sustainability of financial sources, need for school level-infrastructure, and program delivery models appropriate for positive school food environments (Employment and Social Development Canada, 2025). This research explored exemplary schools and described program and cost structures, their source of funds and their sustainability, adding evidence to existing research.

Research on school food typically focuses on the implementation of a particular policy or intervention or a program. This research focused on grassroots positive changes initiated by the schools with the support of community. This study identified factors that contributed to positive states in these schools in a practical manner. This study included a few schools in NB. A country wide larger sample size can identify factors that

contributed to positive changes in different contexts and will strengthen existing evidence.

The studies outlined in this dissertations showed scope for additional future research. As there is a potential risk for sustainability, further research that explores schools at two different time points can identify positive or negative changes, challenges or opportunities in the long run and subsequent school strategies and modifications.

This study provided insights into the role of partnerships and community in school food. A dominant role was provision of financial support when schools did not have any financial support from government. Future research could explore the roles of partnerships and community in the presence of secured financial assistance from the government.

This research documented the components of food environments, roles of partnerships and factors playing roles in food environments in exemplary schools when schools did not have secured funding from the federal government. Future research in a potentially changed school food scenario can use this research as a reference of exemplary schools during the pre-national school food program period.

### 7.8 Recommendations for a national school food program

The current policy for the national food program indicates its commitment to expand students' access to healthy food in school and the enrichment of existing program.

Considering the existing scenario of school food and findings of this research in Canada, the following recommendations are relevant.

1. All schools including exemplary schools need to be funded. The exemplary schools of this study made positive initiatives without significant financial assistance from the government. A secured fund from government can help to sustain the positive initiatives.

2. The evaluation and monitoring system of school food under-developed in Canada. The national food program is an opportunity to bring the school food activities to regular evaluation and monitoring. The diverse nature of school food scenarios is a challenge for a single evaluation and monitoring system, which the national program is well positioned to address.

3. The national food program needs ongoing collaboration and discussion between schools and government for identification of the target programs or required infrastructure in schools. A person hired by the government (e.g., school district) can work as a school food leader in schools that do not have a hired person.

4. A committee at the national level can collect evidence across provinces and monitor the funding allocations and their use in schools. The committee can also promote knowledge sharing among provinces regarding school food activities to identify and share promising practices.

## 7.9 Conclusion

This research explored the exemplary school food environments and identified food-related activities (e.g., breakfast programs, hot lunch programs, cooking classes) in schools, highlighted positive aspects across schools, available resources, the role of provincial SNP, roles of partnership and support from the community, and factors that were associated with positive states of school food environments. The findings indicated diversity in the structure of food-related activities across schools and scope for further improvement. Important factors associated with the positive state of school food environments included a non-profit strategy, financial and staff support from the community and partner organizations, awareness about school food, flexibility and a customized approach to management according to need and available resources. Schools' dependence on supports from the community including partner organizations and lack of monitoring introduced risk regarding sustainability. The national school food program has the scope to support the exemplary schools while expanding and enhancing school food programs and developing a regular monitoring system for overall school food activities in this country. Careful identification of criteria to decide the amount of funding for schools is essential to support the existing exemplary school food environments and improvement of other food environments simultaneously. For sustainable improvements of school food activities including the national school food program, a well-planned system for monitoring is essential.

# Bibliography


Albuquerque, P., Brucks, M., Campbell, M. C., Chan, K., Maimaran, M., McAlister, A. R., & Nicklaus, S. (2018). Persuading children: A framework for understanding long-lasting influences on children's food choices. *Customer Needs and Solutions*, *5*(1), 38-50.

Ament, S. M. C., Gillissen, F., Maessen, J. M. C., Dirksen, C. D., Van Der Weijden, T., & Von Meyenfeldt, M. F. (2012). Sustainability of healthcare innovations (SUSHI): Long term effects of two implemented surgical care programmes (protocol). *BMC Health Services Research*, *12*(1). https://doi.org/10.1186/1472-6963-12-423

Anderson, H., & Falkenberg, T. (2016). The role and status of food and nutrition literacy in Canadian school curricula. *Alberta Journal of Educational Research*, *62*(1).

Anglophone West School District. (2026). *Community Schools Coordinator – Operations.* Retrieved on May 12, 2026, from https://www.sbeu-spas.com/wp-content/uploads /2026/04/ASD-W-Requisition-15805-Community-Schools-Coordinator-Operations-Permanent-Closing-April-16-2026.pdf

Ausenhus, C., Gold, J. M., Perry, C. K., Kozak, A., Wang, M. L., Jang, S. H., Leong, J., Rodriguez, E., Duggan, C., & Ko, L. K. (2023). Factors impacting implementation of nutrition and physical activity policies in rural schools. *BMC Public Health*, *23*(1). https://doi.org/10.1186/s12889-023-15176-y

Aydin, G., Margerison, C., Worsley, A., & Booth, A. (2021). Parents' and teachers' views of the promotion of healthy eating in Australian primary schools. *BMC Public Health*, *21*(1). https://doi.org/10.1186/s12889-021-11813-6

Bailey, C. J., Drummond, M. J., & Ward, P. R. (2019). Food literacy programmes in secondary schools: A systematic literature review and narrative synthesis of quantitative and qualitative evidence. In *Public Health Nutrition* (Vol. 22, Number 15). https://doi.org/10.1017/S1368980019001666

Bailey-Davis, L., Virus, A., McCoy, T. A., Wojtanowski, A., Vander Veur, S. S., & Foster, G. D. (2013). Middle School Student and Parent Perceptions of Government-Sponsored Free School Breakfast and Consumption: A Qualitative Inquiry in an Urban Setting. *Journal of the Academy of Nutrition and Dietetics*, *113*(2). https://doi.org/10.1016/j.jand.2012.09.017

Ballam, R. (2018). Where next for food education? In *Nutrition Bulletin* (Vol. 43, Issue 1). https://doi.org/10.1111/nbu.12303

Bammer, G. (2005). Integration and implementation sciences: Building a new specialization. *Ecology and Society*, *10*(2). https://doi.org/10.5751/ES-01360-100206

Barrett, D., & Twycross, A. (2018). Data collection in qualitative research. *Evidence-based nursing*, *21*(3), 63-64.

Bassett-Gunter, R., Yessis, J., Manske, S., & Gleddie, D. (2016). Healthy school communities in Canada. *Health Education Journal*, *75*(2). https://doi.org/10.1177/0017896915570397

Bauer, M. S., Damschroder, L., Hagedorn, H., Smith, J., & Kilbourne, A. M. (2015). An introduction to implementation science for the non-specialist. *BMC Psychology*, *3*(1). https://doi.org/10.1186/S40359-015-0089-9

Baxter, P., & Jack, S. (2008). Qualitative case study methodology: Study design and implementation for novice researchers. *The qualitative report*, *13*(4), 544-559.

BC Agriculture in the Classroom Foundation. (2024). *BC School Fruit & Vegetable Nutritional Program.* Retrieved Oct 2, 2024, from https://www.bcaitc.ca/bc-school-fruit-vegetable-nutritional-program#program-resources

Bethel, E. C., & Bernard, R. M. (2010). Developments and trends in synthesizing diverse forms of evidence: Beyond comparisons between distance education and classroom instruction. *Distance Education*, *31*(3). https://doi.org/10.1080/01587919.2010.513950

Black, J. L., Velazquez, C. E., Ahmadi, N., Chapman, G. E., Carten, S., Edward, J., Shulhan, S., Stephens, T., & Rojas, A. (2015). Sustainability and public health nutrition at school: Assessing the integration of healthy and environmentally sustainable food initiatives in Vancouver schools. *Public Health Nutrition*, *18*(13). https://doi.org/10.1017/S1368980015000531

Blomley, E., Soma, T., Callihoo, C., Han, R., Páez-Varas, C., Bodnar, C. & Li, B. (2023). The Role of Food System Planning in Facilitating Local Food Procurement for Schools. *Canadian Planning and Policy/Aménagement et politique au Canada*, 2023, 133–159. https://doi.org/10.24908/cpp-apc.v2023i1.16561

Bodkin, A., & Hakimi, S. (2020). Sustainable by design: A systematic review of factors for health promotion program sustainability. *BMC Public Health*, *20*(1). https://doi.org/10.1186/s12889-020-09091-9

Breakfast Club of Canada. (2020a). *School Breakfas*t. Retrieved April 5, 2021, from https://www.breakfastclubcanada.org/school-breakfast/

Breakfast Club of Canada. (2020b). *Serving Children from coast to coast*. Retrieved April 5, 2021, from https://www.breakfastclubcanada.org/our-reach/

Breakfast Club of Canada. (2022). *Our Commitment to Children, Stronger than Ever.* Retrieved May 25, 2023, from https://www.breakfastclubcanada.org/wp-content/uploads/2023/05/2021-2022-Breakfast-Club-of-Canada-Activity-Report.pdf

Breimaier, H. E., Heckemann, B., Halfens, R. J., & Lohrmann, C. (2015). The Consolidated Framework for Implementation Research (CFIR): a useful theoretical framework for guiding and evaluating a guideline implementation process in a hospital-based nursing practice. *BMC nursing*, *14*(1), https://doi.org/10.1186/s12912-015-0088-4

Brownell, K. D., & Warner, K. E. (2009). The perils of ignoring history: Big tobacco played dirty and millions died. how similar is big food. *Milbank Quarterly*, *87*(1). https://doi.org/10.1111/j.1468-0009.2009.00555.x

Browning, H. F., Laxer, R. E., & Janssen, I. (2013). Food and eating environments: In Canadian schools. *Canadian Journal of Dietetic Practice and Research*, *74*(4). https://doi.org/10.3148/74.4.2013.160

Canadian Feed the Children. (2022). *Supporting children's nourishment through the following programs.* Retrieved March 6, 2022, from Canadian Feed The Children | CFTC | Canadian Children's Charity.

Carducci, B., Dominguez, G., Kidd, E., Oh, C., Jain, R., Khan, A., & Bhutta, Z. A. (2024). Promoting healthy school food environments and nutrition in Canada: a systematic review of interventions, policies, and programs. *Nutrition Reviews*, nuae030. https://doi.org/10.1093/nutrit/nuae030

Carla Rosane Paz Arruda Teo. (2017). The partnership between the Brazilian School Feeding Program and family farming: a way for reducing ultra-processed foods in school meals. *Public Health Nutrition*, *21*(1), 230–237.

Carstensen, K., Brostrøm Kousgaard, M., & Burau, V. (2019). Sustaining an intervention for physical health promotion in community mental health services: a multisite case study. *Health & social care in the community*, *27*(2), 502-515.

Centers for Disease Control and Prevention. (2021b, January). *CDC Healthy Schools: Health and Academics.* Retrieved May 3, 2022, from https://www.cdc.gov/healthyschools/health_and_academics/index.htm

Centers for Disease Control and Prevention. (2021a, May). *Nutrition: Benefits of Healthy Eating.* Retrieved May 3, 2022, from https://www.cdc.gov/nutrition/resources-publications/benefitsof-healthy-eating.htlm

Centers for Disease Control and Prevention. (2014). *Putting Local School Wellness Policies into Action.* Atlanta, GA: US Dept of Health and Human Services. Retrieved June 6, 2023, from https://www.cdc.gov/assessing-improving-school-health/media/pdfs/ SchoolWellnessInAction.pdf

Centers for Disease Control and Prevention. (2017). *School Health Index: A Self-Assessment and Planning Guide.* Middle school/high school version. U.S. Department of Health and Human Services. Retrieved Feb 23, 2023, from https://www.cdc.gov/assessing-improving-school-health/media/pdfs/Middle-High-Total-2017.pdf

Center for Mental Health in Schools at UCLA. (n.d.). *School-Community Partnerships: A Guide*. Retrieved April 5, 2022, from https://www.smhp.psych.ucla.edu/pdfdocs/guides/schoolcomm.pdf

Chan, C. L., Tan, P. Y., & Gong, Y. Y. (2022). Evaluating the impacts of school garden-based programmes on diet and nutrition-related knowledge, attitudes and practices among the school children: a systematic review. *BMC Public Health*, *22*(1). https://doi.org/10.1186/s12889-022-13587-x

Cheney, A. M., Vázquez, E., & Chobdee, J. (2024). Creating Cultures of Health in the Academy: Bringing Together Top-Down and Ground-Up Approaches. *Health Education and Behavior*, *51*(3). https://doi.org/10.1177/10901981231151628

Coalition for Healthy School Food. (2018). *Our guiding principles*. Retrieved on February 10, 2020, from https://www.healthyschoolfood.ca/guiding-principles

Cogut, G., Webster, N. J., Marans, R. W., & Callewaert, J. (2019). Links between sustainability-related awareness and behavior: The moderating role of engagement. *International Journal of Sustainability in Higher Education*, *20*(7). https://doi.org/10.1108/IJSHE-09-2018-0161

Cohen, J. F. W., Gorski, M. T., Hoffman, J. A., Rosenfeld, L., Chaffee, R., Smith, L., Catalano, P. J., & Rimm, E. B. (2016). Healthier Standards for School Meals and Snacks: Impact on School Food Revenues and Lunch Participation Rates. *American Journal of Preventive Medicine*, *51*(4). https://doi.org/10.1016/j.amepre.2016.02.031

Cohen, J. F. W., Hecht, A. A., Hager, E. R., Turner, L., Burkholder, K., & Schwartz, M. B. (2021). Strategies to improve school meal consumption: A systematic review. *Nutrients*, *13*(10). https://doi.org/10.3390/nu13103520

Colley, P., Myer, B., Seabrook, J., & Gilliland, J. (2019). The impact of Canadian school food programs on children's nutrition and health: A systematic review. *Canadian Journal of Dietetic Practice and Research*, *80*(2). https://doi.org/10.3148/cjdpr-2018-037

Cornish, D., Askelson, N., & Golembiewski, E. (2016). "Reforms looked really good on paper": rural food service responses to the Healthy, Hunger-Free Kids Act of 2010. *Journal of School Health*, *86*(2), 113-120.

Creswell, John W. (2007). *Qualitative Inquiry and Research Design - Choosing Among Five Approaches*. 2nd Edition. Sage publications

Critch, J. N. (2020). School nutrition: Support for providing healthy food and beverage choices in schools. In *Paediatrics and Child Health (Canada)* (Vol. 25, Number 1). https://doi.org/10.1093/pch/pxz102

Cruzes, D. S., Dybå, T., Runeson, P., & Höst, M. (2015). Case studies synthesis: a thematic, cross-case, and narrative synthesis worked example. *Empirical Software Engineering*, *20*(6). https://doi.org/10.1007/s10664-014-9326-8

Cullen, K. W., Thompson, D. I., & Watson, K. B. (2013). Exploring Strategies to Promote Middle School Student Participation in the School Breakfast Program. *Journal of Child Nutrition and Management*, *36*(I).

Cygan, H., Tribbia, C., & Tully, J. (2020). School Health Policy Implementation: Facilitators and Challenges. *Journal of School Nursing*, *36*(5). https://doi.org/10.1177/1059840519846089

Dairy Farmers of Canada. (n.d.). *This is dairy, the Canadian way.* Retrieved April 25, 2023, from https://dairyfarmersofcanada.ca/en/who-we-are

Damschroder, L. J., Aron, D. C., Keith, R. E., Kirsh, S. R., Alexander, J. A., & Lowery, J. C. (2009). Fostering implementation of health services research findings into practice: A consolidated framework for advancing implementation science. *Implementation Science*, *4*(1). https://doi.org/10.1186/1748-5908-4-50

Damschroder, L. J., & Lowery, J. C. (2013). Evaluation of a large-scale weight management program using the consolidated framework for implementation research (CFIR). *Implementation Science*, *8*(1). https://doi.org/10.1186/1748-5908-8-51

Damschroder, L. J., Reardon, C. M., Widerquist, M. A. O., & Lowery, J. (2022). The updated Consolidated Framework for Implementation Research based on user feedback. *Implementation science*, *17*(1), 75.

DeJonckheere, M., & Vaughn, L. M. (2019). Semistructured interviewing in primary care research: A balance of relationship and rigour. *Family Medicine and Community Health*, *7*(2). https://doi.org/10.1136/fmch-2018-000057

Department of Education. (2005a). *You and your world curriculum*. Retrieved May 5, 2023, from https://www2.gnb.ca/content/dam/gnb/Departments/ed/pdf/K12/curric/Health-PhysicalEducation/YouandYourWorldK-2.pdf

Department of Education. (2005b). *Personal wellness*. Retrieved May 15, 2023, from https://www2.gnb.ca/content/dam/gnb/Departments/ed/pdf/K12/curric/Health-PhysicalEducation/PersonalWellness3-5.pdf

Department of Education. (2005c). *Health Education Curriculum-grade 6*. Retrieved May 15, 2023, from https://www2.gnb.ca/content/dam/gnb/Departments/ed/pdf/K12/curric/Health-PhysicalEducation/Health-Grade6.pdf

Department of Education. (2005d). *Health Education Curriculum grade 7*. Retrieved May 15, 2023, from https:// www2.gnb.ca/content/dam/gnb/Departments/ed/pdf /K12/curric/Health-PhysicalEducation/Health-Grade7.pdf

Department of Education. (2005e). *Health Education Curriculum grade 8*. Retrieved May 13, 2023, from https:// www2.gnb.ca/content/dam/gnb/Departments/ed/pdf/ K12/curric/Health-PhysicalEducation/Health-Grade8.pdf

Department of Education. (2005f). *Physical Education and Health grade 9/10*. Retrieved May 11, 2023, from https://www2.gnb.ca/content/dam/gnb/ Departments /ed/ pdf/K12/curric/Health-PhysicalEducation/PhysicalEducationAndHealth-Grade9-10.pdf

Department of Education. (2005g). *Nutrition for healthy living 120*. Retrieved May 11, 2023, from https://www2.gnb.ca/content/dam/gnb/Departments/ed/pdf/K12/curric/TechnologyVocational/NutritionForHealthyLiving120.pdf

Downs, S. M., Farmer, A., Quintanilha, M., Berry, T. R., Mager, D. R., Willows, N. D., & McCargar, L. J. (2012). From Paper to Practice: Barriers to Adopting Nutrition Guidelines in Schools. *Journal of Nutrition Education and Behavior*, *44*(2). https://doi.org/10.1016/j.jneb.2011.04.005

Employment and Social Development Canada. (2024). *National School Food Policy*. Retrieved January 10, 2025, from https://www.canada.ca/content/dam/esdc-edsc/images/programs/school-food/reports/national-policy/4624National_School_Food_Policy-E.pdf

Employment and Social Development Canada. (2025). *Engagement on School Food Data and Research Priorities (2025): What We Heard.* Retrieved December 23, 2025, from https://www.canada.ca/content/dam/canada/employment-social-development/programs/school-food/reports/data-research-priorities/what-we-heard-report-2025.pdf

Esdaile, E. K., Wharton, L., Vidgen, H., & Gallegos, D. (2024). Teacher perspectives on the socio-ecological barriers and enablers to food and nutrition education in primary schools: a scoping review. *Public Health Nutrition*, *27*(1), e175. https://doi.org/10.1017/S1368980024001812

Everitt, T., Ward, S., Martin, W., & Engler-Stringer, R. (2023). Factors contributing to school food program acceptance: A Review of Canadian literature. *Health Promotion International*, *38*(1). https://doi.org/10.1093/heapro/daac160

Expanding Learning and Afterschool Project. (n.d.). *The expanding Learning and Afterschool: Opportunities for Student Success.* Retrieved on August 21, 2024, from https://www.expandinglearning.org/about_us.html

Farm to Cafeteria Canada. (2019). *Farm to School Canada*. Retrieved March 20, 2019, from https://www.farmtocafeteriacanada.ca/our-work/farm-to-school-canada/

Feola, G., & Nunes, R. (2014). Success and failure of grassroots innovations for addressing climate change: The case of the transition movement. *Global Environmental Change*, *24*(1). https://doi.org/10.1016/j.gloenvcha.2013.11.011

Fife, D., Slater, J., Fordyce-Voorham, S., & Worsley, A. (2020). Food literacy education in Manitoba, Canada and Victoris, Australia: a comparative pilot study. *International Journal of Home Economics*, *13*(2).

Flynn, R., Stevens, B., Bains, A., Kennedy, M., & Scott, S. D. (2022). Identifying existing approaches used to evaluate the sustainability of evidence-based interventions in healthcare: an integrative review. *Systematic reviews*, *11*(1), 221.

5-2-1-0 A way Of Life. (n.d.). *About 5210.* Retrieved April 2, 2022, from https://www.5210.ca/5-2-1-0/

FoodShare. (n.d.). *Programs*. Retrieved April 5, 2021, from https://foodshare.net/program/

Francis, L., Patel, A., Hasan, A., Kylander, O., Williams, L., Levin, M. B., & Sharps, P. W. (2022). Lessons learned from implementing SNAP-Ed in a nursing/K-8 partnership school during the pandemic. *Public Health Nursing*, *39*(3). https://doi.org/10.1111/phn.13031

Fraser, E. (2018, June 13). New Brunswick bans chocolate milk, juice sales in schools. *CBC News*. Retrieved Feb 3, 2024, from https://www.cbc.ca/news/canada/new-brunswick/milk-chocolate-juice-new-brunswick-schools-1.4704011/

Freeman, M., Demarrais, K., Preissle, J., Roulston, K., & Pierre, E. A. (2007). Standards of Evidence in Qualitative Research: An Incitement to Discourse. *Educational Researcher*, *36*(1). https://doi.org/10.3102/0013189X06298009

Fresh Roots. (n.d.). *Good food for all*. Retrieved March 20, 2019, from https://freshroots.ca/about/our-vision/

Fung, C., Kuhle, S., Lu, C., Purcell, M., Schwartz, M., Storey, K., & Veugelers, P. J. (2012). From "best practice" to "next practice": the effectiveness of school-based health promotion in improving healthy eating and physical activity and preventing childhood obesity. *International Journal of Behavioral Nutrition and Physical Activity*, *9*. https://doi.org/10.1186/1479-5868-9-27

Gill, P., Stewart, K., Treasure, E., & Chadwick, B. (2008). Methods of data collection in qualitative research: Interviews and focus groups. *British Dental Journal*, *204*(6). https://doi.org/10.1038/bdj.2008.192

Gleddie, D. (2012). A journey into school health promotion: District implementation of the health promoting schools approach. *Health Promotion International*, *27*(1). https://doi.org/10.1093/heapro/dar053

Godin, K. M., Patte, K. A., & Leatherdale, S. T. (2018). Examining Predictors of Breakfast Skipping and Breakfast Program Use Among Secondary School Students in the COMPASS Study. *Journal of School Health*, *88*(2). https://doi.org/10.1111/josh.12590

Gonçalves, H. V. B., da Cunha, D. T., Stedefeldt, E., & de Rosso, V. V. (2015). Family farming products on menus in school feeding: A partnership for promoting healthy eating. *Ciencia Rural*, *45*(12). https://doi.org/10.1590/0103-8478cr20150214

Government of Canada. (2022). *School meal programs in Canada*. Retrieved December 3, 2022, from https://www.canada.ca/en/employment-social-development/programs/school-food/consultation-school-food/discussion-paper.html#h2.03

Government of Canada. (2023). *National School Food Policy Engagements – What We Heard Report*. Retrieved January 5, 2023, from https://www.canada.ca/en/employment-social-development/programs/school-food/consultation-school-food/what-we-heard-report-2023.html

Government of Canada. (2024). *A National School Food Program to set kids up for success.* Retrieved January 20, 2025, from https://www.pm.gc.ca/en/news/news-releases/2024/04/01/national-school-food-program-set-kids-success

Government of Canada. (2025). *Prime Minister Carney announces new measures to lower costs for Canadians and help you get ahead*. Retrieved December16, 2025, from https://www.pm.gc.ca/en/news/news-releases/2025/10/10/prime-minister-carney-announces-new-measures-lower-costs

Government of New Brunswick. (2019). *Chefs! Getting a Start on Healthy Living.* Public Health. Retrieved on March 20th, 2019, from https://www.wellnessnb.ca/resources-for-you/page/2/?tag=take-action

Government of Prince Edward Island. (2014). *Healthy School Communities- Programs, Partnerships and Services.* Retrieved June 5, 2023, from https://www.gov.pe.ca /healthyschoolcommunities

Government of New Brunswick. (2022). *Rural Districts: New Brunswick's reformed local governance system.* Retrieved June 5, 2025, from https://www2.gnb.ca /content/dam/gnb/Corporate/Promo/ localgovreform/rural-districts.pdf

Graham, H., & Zidenberg-Cherr, S. (2005). California teachers perceive school gardens as an effective nutritional tool to promote healthful eating habits. *Journal of the American Dietetic Association*, *105*(11). https://doi.org/10.1016/j.jada.2005.08.034

Gross, J. M. S., Haines, S. J., Hill, C., Grace, L., Blue-banning, M., & Turnbull, A. P. (2015). Strong School – Community Partnerships in Inclusive Schools Are "Part of the Fabric of the School …. We Count on Them ." *School Community Journal*, *25*(2).

Guest, G., Namey, E., Taylor, J., Eley, N., & McKenna, K. (2017). Comparing focus groups and individual interviews: findings from a randomized study. *International Journal of Social Research Methodology*, *20*(6), 693-708

Gupta, S. D., Pahwa, P., & Engler-Stringer, R. (2023). An examination of willingness to participate and willingness to pay for a universal school food program in the Canadian context. *Public Health Nutrition*, *26*(12), 3266-3277.

Gutuskey, L., McCaughtry, N., Shen, B., Centeio, E., & Garn, A. (2016). The role and impact of student leadership on participants in a healthy eating and physical activity programme. *Health Education Journal*, *75*(1). https://doi.org/10.1177/0017896914561878

Hanbazaza, M. A., Triador, L., Ball, G. D. C., Farmer, A., Maximova, K., Nationd, A. F., & Willows, N. D. (2015). The impact of school gardening on cree children's knowledge and attitudes toward vegetables and fruit. *Canadian Journal of Dietetic Practice and Research*, *76*(3). https://doi.org/10.3148/cjdpr-2015-007

Harb, N. M. (2018). *The Effect of Success Stories on Exercise Adherence to Newly Enrolled Cardiovascular Patients in Cardiac Rehabilitation Program.* [Doctoral dissertation, Kent State University]. OhioLINK Electronic Theses and Dissertation Center. Retrieved June 3, 2024, from http://rave.ohiolink.edu/etdc/view?acc_ num=kent154237772997746

Health Canada. (2026). *Canada's Dietary Guidelines: Section 1 Foundation for healthy eating.* Retrieved June 15, 2026, from https://www.canada.ca/en/health-canada/services/food-guide/explore/dietary-guidelines/section-1-foundation-healthy-eating.html

Health Canada. (2019). *Canada's Food Guide: Food Classification System.* Retrieved April 5, 2025, from https://www.canada.ca/en/health-canada/services/publications/food-nutrition/2019-canada-food-guide-food-classification-system-development-validation.html

Heart and Stroke Foundation. (2020). *Fighting for prevention*. Retrieved April 5, 2021, from https://www. heartandstroke.ca/what-we-do/our-impact/fighting-for-prevention

Heart and Stroke Foundation of Canada. (2005). *Position Statement on Overweight, Obesity, and Heart Disease and Stroke*. Retrieved April 5, 2021, from https://www.heartandstroke.ca/-/media/pdf-files/canada/2017-position-statements /obesity-ps-eng.ashx? la=en&hash =E02733A55849E27F47F82314C389F55C57771E6D

Heart Healthy schools. (n.d.). *A Heart Healthy School Supports and Promotes.* Retrieved April 1, 2021, from http://www.hearthealthyschools.ca/

Hernandez, K., Engler-Stringer, R., Kirk, S., Wittman, H., & McNicholl, S. (2018). The case for a Canadian national school food program. *Canadian Food Studies / La Revue Canadienne Des Études Sur l'alimentation*, *5*(3). https://doi.org/10.15353/cfs-rcea.v5i3.260

Hock, K., Barquera, S., Corvalán, C., Goodman, S., Sacks, G., Vanderlee, L., White, C. M., White, M., & Hammond, D. (2022). Awareness of and Participation in School Food Programs in Youth from Six Countries. *Journal of Nutrition*, *152*. https://doi.org/10.1093/jn/nxac052

Ismail, M. R., Gilliland, J. A., Matthews, J. I., & Battram, D. S. (2022). School-Level Perspectives of the Ontario School Nutrition Program. *Children*, *9*(2). https://doi.org/10.3390/children9020177

Joint Consortium of School Health. (2019). *What is Comprehensive School Health?* Retrieved May 7, 2021, from https://www.jcsh-cces.ca/en/concepts/comprehensive-school-health/

Joint Consortium for School Health. (2013). *Healthy School Planner: Learning how to assess the health of your school.* Joint Consortium for School Health and Propel Centre at the University of Waterloo. Retrieved September 3, 2025, from https://www.jcsh-cces.ca/images/CAP-T0213_-_8-10.pdf

Kennedy, L. J., Sim, M., Parsons Leigh, J., Kirk, S. F. L., & Mah, C. L. (2025). Exploring the barriers and facilitators of continuous quality improvement for health promotion within healthcare food environments. *Health Promotion International*, *40*(2). https://doi.org/10.1093/heapro/daaf020

Kent, M. P., Pauzé, E., Guo, K., Kent, A., & Jean-Louis, R. (2020). The physical activity and nutrition-related corporate social responsibility initiatives of food and beverage companies in Canada and implications for public health. *BMC Public Health*, *20*(1). https://doi.org/10.1186/s12889-020-09030-8

Kent, M. P., Hatoum, F., Wu, D., Remedios, L., & Bagnato, M. (2022). Benchmarking unhealthy food marketing to children and adolescents in Canada: a scoping review. *Health Promotion and Chronic Disease Prevention in Canada: Research, Policy and Practice*, *42*(8), 307.

Kiger, M. E., & Varpio, L. (2020). Thematic analysis of qualitative data: AMEE Guide No. 131. *Medical teacher, 42*(8), 846-854.

Kinge, J. (2014). Testing times: the development and sustainability of partnership relationships. *International Journal of Human Resource Management*, *25*(6). https://doi.org/10.1080/09585192.2013.763847

Kirk, M. A., Kelley, C., Yankey, N., Birken, S. A., Abadie, B., & Damschroder, L. (2016). A systematic review of the use of the Consolidated Framework for Implementation Research. In *Implementation Science* (Vol. 11, Issue 1). https://doi.org/10.1186/s13012-016-0437-z

Klassen, D., Champion, C., Montemurro, G., Flynn, J., Raine, K., & Storey, K. (2023). It takes a community: Exploring APPLE Schools' impact within and beyond school walls in Canada. *Health Promotion International*, *38*(3). https://doi.org/10.1093/heapro/daac050

Kocken, P. L., Eeuwijk, J., Van Kesteren, N. M., Dusseldorp, E., Buijs, G., Bassa-Dafesh, Z., & Snel, J. (2012). Promoting the purchase of low-calorie foods from school vending machines: a cluster-randomized controlled study. *Journal of School Health*, *82*(3), 115-122.

Kraak, V. I., Swinburn, B., Lawrence, M., & Harrison, P. (2013). An accountability framework to promote healthy food environments. In *Public Health Nutrition* (Vol. 17, Issue 11). https://doi.org/10.1017/S1368980014000093

Labbé, C., Ward Chiasson, S., Dupuis, J. B., & Johnson, C. (2023). Effectiveness of a school-based culinary programme on 9-and 10-year-old children's food literacy and vegetable, fruit, and breakfast consumption. *Nutrients*, *15*(6), 1520.

Lau, R. (2018, December 5). Chocolate milk back on the menu: N.B. ends ban on flavoured milk and juice in schools. *Global News*. Retrieved June 3, 2024, from https://globalnews.ca/news/4731939/new-brunswick-chocolate-milk-ban/

Lavinghouze, S.R. and Price, A.W. (2007). *Impact and Value: Telling your Program's Story.* Centers for Disease Control and Prevention. https://stacks.cdc.gov/view/cdc/46501

LeBlanc, J., Ward, S., & LeBlanc, C. P. (2022). An elective high school cooking course improves students' cooking and food skills: a quasi-experimental study. *Canadian Journal of Public Health*, *113*(5), 764-775.

Lester, P. (2018). *Evidence-Based Comprehensive School Improvement: How Using Proven Models and Practices Could Overcome Decades of Failure*. Social Innovation Research Center. https://files.eric.ed.gov/fulltext/ED592884.pdf

Levay, A. V., Chapman, G. E., Seed, B., & Wittman, H. (2020). Examining school-level implementation of British Columbia, Canada's school food and beverage sales policy: A realist evaluation. *Public Health Nutrition*, *23*(8). https://doi.org/10.1017/S1368980019003987

Levinthal, C., Kuusisto, E., & Tirri, K. (2022). Exemplar Parents' Practices of Engagement with Their Children's Learning in Finland and Portugal: A Multiple-Case Study. *Education Research International*, *2022*(1), 2991438.

Lincoln, Y. S. & Guba, E. G. (1985). *Naturalistic Inquiry*. Newbury Park, CA: Sage Publications.

Lochmiller, C. R. (2021). Conducting thematic analysis with qualitative data. The qualitative report, 26(6), 2029-2044.

Lopez-neyman, S. M., & Warren, C. A. (2016). Barriers and Advantages to Student Participation in the School Breakfast Program Based on the Social Ecological Model : A Review of the Literature. *The Journal of Child Nutrition &*

*Management*, *40*(2).
Machado, S. S., Brewster, A. L., Shapiro, V. B., Ritchie, L. D., Magee, K. S., & Madsen, K. A. (2022). Implementation Leadership in School Nutrition: A Qualitative Study. *Journal of Nutrition Education and Behavior*, *54*(1). https://doi.org/10.1016/j.jneb.2021.08.011
MacLellan, D., Holland, A., Taylor, J., McKenna, M., & Hernandez, K. (2010). Implementing school nutrition policy: Student and parent perspectives. *Canadian Journal of Dietetic Practice and Research*, *71*(4). https://doi.org/10.3148/71.4.2010.172
Mâsse, L. C., Naiman, D., & Naylor, P.-J. (2013). From policy to practice: implementation of physical activity and food policies inschools. *International Journal of Behavioral Nutrition and Physical Activity*, *10*(1), 71. https://doi.org/10.1186/1479-5868-10-71
McCabe, E. M., Kaskoun, J. R., Murphy, E. L., Polkinghorn, M., & Elkind, J. A. (2021). An Evidence-Based Framework for Implementation of a School–Community Partnership. *NASN School Nurses*, *36*(3). https://doi.org/10.1177/1942602X20964765
McComber T, T., Montelpare W, W., Veugelers, P., & Taylor, J. (2015). Changes in children's lunch-time food group intakes over 5 years of school nutrition policy implementation: Differences according to food source. *Canadian Journal of Dietetic Practice & Research*, *76*(3).
McEachern, L. W., Yessis, J., Yovanovich, J., Crack, S., Zupko, B., Valaitis, R., & Hanning, R. M. (2022a). Implementation of the learning circle: local food to school initiative in the Island Communities of Haida Gwaii, British Columbia, Canada—a descriptive case study. *Current Developments in Nutrition*, *6*(6), nzac090.
McEachern, L. W., Yessis, J., Zupko, B., Yovanovich, J., Valaitis, R., & Hanning, R. M. (2022b). Learning circles: an adaptive strategy to support food sovereignty among First Nations communities in Canada. *Applied Physiology, Nutrition, and Metabolism*, *47*(8), 813-825. https://doi.org/10.1139/apnm-2021-0776
McIsaac, J. L. D., Ata, N., & Kirk, S. F. L. (2019a). Describing food availability in schools using different healthy eating guidelines: Moving forward with simpler nutrition recommendations. *Canadian Journal of Dietetic Practice and Research*, *80*(1). https://doi.org/10.3148/cjdpr-2018-030
McIsaac, J. L. D., Chu, Y. L., Blanchard, C., Rossiter, M. D., Williams, P. L., Raine, K. D., Kirk, S. F. L., & Veugelers, P. J. (2015b). The impact of school policies and practices on students' diets, physical activity levels and body weights: A province-wide practicebased evaluation. *Canadian Journal of Public Health*, *106*(2). https://doi.org/10.17269/CJPH.106.4743
McIsaac, J. L. D., Kontak, J. C. H., & Kirk, S. F. L. (2018). Moving from policy to practice: A report of school nutrition policy adherence in Nova Scotia. *Canadian Journal of Dietetic Practice and Research*, *79*(4). https://doi.org/10.3148/cjdpr-2018-017
McIsaac, J. L. D., Penney, T. L., Mâsse, L., & Kirk, S. F. L. (2019b). The association between perceived adequacy and capacity for school food policy implementation with food availability and policy adherence in Nova Scotia, Canada. *International Journal of Environmental Research and Public Health*, *16*(11). https://doi.org/10.3390/ijerph16111974

McIsaac, J. L. D., Read, K., Veugelers, P. J., & Kirk, S. F. L. (2017). Culture matters: A case of school health promotion in Canada. *Health Promotion International*, *32*(2). https://doi.org/10.1093/heapro/dat055

McIsaac, J. L. D., Shearer, C. L., Veugelers, P. J., & Kirk, S. F. L. (2015a). Moving forward with school nutrition policies: A case study of policy adherence in Nova Scotia. In *Canadian Journal of Dietetic Practice and Research* (Vol. 76, Issue 4). https://doi.org/10.3148/cjdpr-2015-017

McIsaac, J. L. D., Spencer, R., Chiasson, K., Kontak, J., & Kirk, S. F. L. (2019c). Factors Influencing the Implementation of Nutrition Policies in Schools: A Scoping Review. In *Health Education and Behavior* (Vol. 46, Number 2). https://doi.org/10.1177/1090198118796891

McKenna, M. (2000). *Implementation of a Policy to Promote Healthy Eating In Schools: The Case of New Brunswick.* [Unpublished doctoral dissertation]. University of Nottingham, United Kingdom.

Mckenna, M. L. (2003). Issues in implementing school nutrition policies. In *Canadian Journal of Dietetic Practice and Research* (Vol. 64, Issue 4). https://doi.org/10.3148/64.4.2003.208

McKenna, M. L. (2010). Policy options to support healthy eating in schools. In *Canadian Journal of Public Health* (Vol. 101, Issue SUPPL. 2). https://doi.org/10.1007/bf03405619

Merriam, S. B., & Tisdell, E. J. (2015). *Qualitative research: A guide to design and implementation*. John Wiley & Sons.

Michnik, K., Blischak, H., Castro-Zunti, C., McGreavey, A., Kang, E., Brown, C., Thomas, M., & Engler-Stringer, R. (2025). Partnerships and knowledge sharing for sustainable school food systems in Saskatchewan. *Canadian Food Studies / La Revue Canadienne Des Études Sur l'alimentation*, *12*(1). https://doi.org/10.15353/cfs-rcea.v12i1.703

Mindell, J. S., Reynolds, L., Cohen, D. L., & McKee, M. (2012). All in this together: The corporate capture of public health. In *BMJ (Online)* (Vol. 345, Issue 7888). https://doi.org/10.1136/bmj.e8082

Morgan, D. (1997). *The focus group guidebook (Focus group kit).* Thousand Oaks:SAGE Publications.

Morin, P., Demers, K., Gray-Donald, K., & Mongeau, L. (2012). Foods offered in Quebec school Cafeterias: Do they promote healthy eating habits? results of a provincial survey. *Canadian Journal of Public Health*, *103*(4). https://doi.org/10.1007/bf03404229

Myers, G., Wright, S., Blane, S., Pratt, I. S., & Pettigrew, S. (2018). A process and outcome evaluation of an in-class vegetable promotion program. *Appetite*, *125*, 182-189. https://doi.org/10.1016/j.appet.2018.01.023

Napora, L. (2017). A contemplative look at social change: Awareness and community as foundations for leading. *Journal of Contemplative Inquiry*, *4*(1).

National Association of Chronic Disease Directors. (n.d.). *School Health*. Retrieved November 20, 2024, from https://chronicdisease.org/cahc/school-health/

Naylor, P. J., McKay, H. A., Valente, M., & Mâsse, L. C. (2016). A mixed-methods exploration of implementation of a comprehensive school healthy eating model one year after scale-up. *Public Health Nutrition*, *19*(5). https://doi.org/10.1017/S1368980015001482

New Brunswick Department of Education and Early Childhood Development. (2016). *Evaluation of Compliance With Policy 711*[unpublished]. Government of New Brunswick.

New Brunswick Department of Education and Early Childhood Development [New Brunswick]. (2018). *Policy711 - Healthier School Food Environment.* Retrieved Feb 3, 2024, from https://www2.gnb.ca/content/dam/gnb/ Departments/ed/pdf/ K12/ policies/politiques/e/711A.pdf

New Brunswick Medical Society. (2015a). *Where to eat in New Brunswick schools.* Retrieved May 15, 2020, from https://www.nbms.nb.ca/wp-content/ uploads /2019/10/Guide-English.pdf

New Brunswick Medical Society. (2015b). *Make Menus Matter- Menu Assessment.* Retrieved August 15, 2019, from https://www.nbms.nb.ca/new-brunswick-doctors-dietitians-release-school-menu-analysis/

New Brunswick Medical society. (2013, December 12) *'Make Menus Matter' finds everything from salads to soda in New Brunswick schools*. Retrieved March 13, 2019, from https://www.nbms.nb.ca/make-menus-matter-finds-everything-from-salads-to-soda-in-new-brunswick-schools/

New Brunswick Health Council. (2017*). My Community at a Glance 2017*. Retrieved October 13, 2025, from https://nbhc.ca/community-profiles

Ngobeni, S. T. (2022). Establishing and maintaining school-community partnerships: a challenge for school management teams. *International Journal of Leadership in Education*. https://doi.org/10.1080/13603124.2022.2117414

Nourish. (2018a). *School healthy eating program.* Retrieved April 5, 2021, from https://www.nourishns.ca/shep.

Nourish. (2018b). *Nourish Your Roots.* Retrieved April 5, 20121, from https://www.nourishns.ca/nourish-your-roots.

Nourish. (2018c). *Grow Eat Learn.* Retrieved April 5, 2021, from https://www.nourishns.ca/grow-eat-learn.

Nourish. (2018d). *Food Literacy resources.* Retrieved April 5, 2021, from https://www.nourishns.ca/food-literacy.

Nunavut Department of Health and Social Services. (2007). *Nutrition in Nunavut: A Framework for Action.* Government of Nunavut. Retrieved March 11, 2024, from https://circhob.ichr.ca /item/nutrition-in-nunavut-a-framework-for-action/

O'Brien, B. C., Harris, I. B., Beckman, T. J., Reed, D. A., & Cook, D. A. (2014). Standards for reporting qualitative research: A synthesis of recommendations. *Academic Medicine*, *89*(9). https://doi.org/10.1097/ACM.0000000000000388

Ontario Council of Agencies Serving Immigrants. (2024, May). *When do children begin and end school each day?* Retrieved November 5, 2024, from https://settlement.org /ontario/education/elementary-and-secondary-school/general-information/when-do-children-begin-and-end-school-each-day/

Ontario Edible Education Network. (2014). *Ontario edible education network action plan.* Retrieved July 7, 2021, from https://sustainontario.com/custom/uploads /2013/06/EdibleEducationActionPlan_Jan2014.pdf

Ontario Ministry of Education. (2022). *Foundations for a healthy school: a companion resource to the K-12 school effectiveness framework.* Retrieved June 25, 2025, from https://www.ontario.ca/page/foundations-healthy-school-companion-resource-k-12-school-effectiveness-framework

Orava, T., Manske, S., & Hanning, R. (2017). Support for healthy eating at schools according to the comprehensive school health framework: Evaluation during the early years of the Ontario school food and beverage policy implementation. *Health Promotion and Chronic Disease Prevention in Canada*, *37*(9). https://doi.org/10.24095/hpcdp.37.9.05

Packer, J., Michalopoulou, S., Cruz, J., Dhar, D., Stansfield, C., Kaczmarska, H., Viner, R. M., Mytton, O., & Russell, S. J. (2024). The Impact of Non-Fiscal Mandatory and Voluntary Policies and Interventions on the Reformulation of Food and Beverage Products: A Systematic Review. In *Nutrients* (Vol. 16, Number 20). https://doi.org/10.3390/nu16203484

Patton, M. Q. (1990). *Qualitative evaluation and research methods*. SAGE Publications, inc.

Patton, M. Q. (1999). *Enhancing the quality and credibility of qualitative analysis. Health Services Research*, *34*(5 Pt 2).

Peters, D. H., Adam, T., Alonge, O., Agyepong, I. A., & Tran, N. (2014). Republished research: Implementation research: What it is and how to do it. *British Journal of Sports Medicine*, *48*(8). https://doi.org/10.1136/bmj.f6753

Phillippi, J., & Lauderdale, J. (2018). A Guide to Field Notes for Qualitative Research: Context and Conversation. *Qualitative Health Research*, *28*(3). https://doi.org/10.1177/1049732317697102

Poitras, J. (2024). Liberals pledge free universal school breakfast program. *CBC News*. Retrieved January 20, 2024, from https://www.cbc.ca/news/canada/new-brunswick/liberals-free-universal-school-breakfast-1.7313135

Powell, D. (2019). The 'will to give': corporations, philanthropy and schools. *Journal of Education Policy*, *34*(2). https://doi.org/10.1080/02680939.2018.1424940

President's Choice Children's Charity (2022). *Power Full KidsTM at school- Kids who eat well, do well*. Retrieved June 10, 2025, from https://www.pcchildrenscharity.ca/power-full-kids-at-school/

President's Choice Children's Charity (n.d.). *Who we are?* Retrieved May 25, 2024, from https://www.pcchildrenscharity.ca/about-us/

Public health - Sudbury and districts. (2024). *Northern Fruit and Vegetable Program.* Retrieved October 2, 2024, from https://www.phsd.ca/professionals/educators-2/northern-fruit-vegetable-program/

Public Health Agency of Canada. (2024). *Obesity Statistics in Canada*. Retrieved July 20, 2025, from https://www.canada.ca/content/dam/phac-aspc/documents/services/publications/healthy-living/obesity-statistics-canada/obesity-statistics-canada.pdf

Quintanilha, M., Downs, S., Lieffers, J., Berry, T., Farmer, A., & McCargar, L. J. (2013). Factors and barriers associated with early adoption of nutrition guidelines in Alberta, Canada. *Journal of Nutrition Education and Behavior*, *45*(6). https://doi.org/10.1016/j.jneb.2013.04.002

Rachel, P. (2017). Food marketing to children in Canada: a settings-based scoping review on exposure, power and impact. *Health promotion and chronic disease prevention in Canada: research, policy and practice*, *37*(9), 274. https://doi.org/10.24095/hpcdp.37.9.03

Reeve, E., Thow, A. M., Bell, C., Engelhardt, K., Gamolo-Naliponguit, E. C., Go, J. J., & Sacks, G. (2018). Implementation lessons for school food policies and marketing

restrictions in the Philippines: A qualitative policy analysis. *Globalization and Health*, *14*(1). https://doi.org/10.1186/s12992-017-0320-y

Reybold, L. E., Lammert, J. D., & Stribling, S. M. (2013). Participant selection as a conscious research method: Thinking forward and the deliberation of "Emergent" findings. *Qualitative Research*, *13*(6). https://doi.org/10.1177/1468794112465634

Robertson, L., & Scheidler-Benns, J. (2016). Using a wider lens to shift the discourse on food in Canadian curriculum policies. *Cambridge Journal of Education*, *46*(2). https://doi.org/10.1080/0305764X.2015.1091440

Rojas, A., Black, J., Orrego, E., Chapman, G., & Valley, W. (2017). Insights from the Think&EatGreen@School Project: How a community-based action research project contributed to healthy and sustainable school food systems in Vancouver. *Canadian Food Studies / La Revue Canadienne Des Études Sur l'alimentation, 4(2)*. https://doi.org/10.15353/cfs-rcea.v4i2.225

Roy, S. and McKenna, M. L. (2021). *School nutrition policy in Canada: Analyzing current policies to inform future decision-making*. [Unpublished manuscript]. Interdisciplinary studies, University of New Brunswick.

Ruetz, A. T., & McKenna, M. L. (2021). Characteristics of Canadian school food programs funded by provinces and territories. *Canadian Food Studies / La Revue Canadienne Des Études Sur l'alimentation*, *8*(3). https://doi.org/10.15353/cfs-rcea.v8i3.483

Ruetz, A.T., Michnik, K., Engler-Stringer, R., et al. (2024). *School Food Programs in Canada: 15 Promising Cases*. University of Saskatchewan and Coalition for Healthy School Food. https://harvest.usask.ca/items/eeab1aed-37d9-4bf3-bd42-bb2916dd1f03

Ruetz, A. T., & Poppendieck, J. (2024). Opportunities and challenges for school food programs in Canada. *Canadian Food Studies / La Revue Canadienne Des Études Sur l'alimentation*, *11*(1), 157–170. https://doi.org/10.15353/cfs-rcea.v11i1.665

Saldaña, J. (2016). *The Coding Manual for Qualitative Researchers*. Sage Publications.

Sepanik, S., Kevin Thaddeus Brown, Jr., K.T. (2021). *School-Community Partnerships.* MDRC. Retrieved April 9, 2024, from https://files.eric.ed.gov/fulltext /ED616007.pdf

Shenton, A. K. (2004). Strategies for ensuring trustworthiness in qualitative research projects. *Education for Information*, *22*(2). https://doi.org/10.3233/EFI-2004 - 22201

Simovska, V., & McNamara, P. (2015). *Schools for Health and Sustainability: Theory, Research and Practice*. Springer.

Skjott Linneberg, M., & Korsgaard, S. (2019). Coding qualitative data: a synthesis guiding the novice. In *Qualitative Research Journal* (Vol. 19, Issue 3). https://doi.org/10.1108/QRJ-12-2018-0012

Skolarus, T. A., Lehmann, T., Tabak, R. G., Harris, J., Lecy, J., & Sales, A. E. (2017). Assessing citation networks for dissemination and implementation research frameworks. *Implementation Science*, *12*, 1-17. https://doi.org/10.1186/s13012-017-0628-2

Smith, E. M. (2005). Telephone interviewing in healthcare research: a summary of the evidence. In *Nurse researcher* (Vol. 12, Issue 3). https://doi.org/10.7748/nr2005.01.12.3.32.c5946

Statistics Canada. (2020). *Health Fact Sheets: Household food insecurity, 2017/2018.* Retrieved October 13, 2025, from https://www150.statcan.gc.ca/n1/pub/82-625-x/2020001/article/00001-eng.htm

Srinivasan, S., Ramadi, K. B., Ippolito, A., & Atun, R. (2019). Democratizing innovation through grass-roots entrepreneurship: Lessons from efforts to address the opioid epidemic in the United States. *BMJ Global Health*, *4*(6). https://doi.org/10.1136/bmjgh-2019-002079

Starman, A. B. (2013). The case study as a type of qualitative research. *Journal of Contemporary Educational Studies/Sodobna Pedagogika*, *64*(1).

Stephens, T.A., Black, J. L., Chapman, G. E., Velazquez, C. E., & Rojas, A. (2016). Participation in School Food and Nutrition Activities among Grade 6-8 Students in Vancouver. *Canadian Journal of Dietetic Practice and Research*, 77(3), 148-153 https: //doi.org/10.3148/cjdpr-2016-003

Stolp, S., Wilkins, E., & Raine, K. D. (2015). Developing and sustaining a healthy school community: Essential elements identified by school health champions. *Health Education Journal*, *74*(3). https://doi.org/10.1177/0017896914541818

Storey, K., Spitters, H., Cunningham, C., Schwartz, M., & Veugelers, P. (2011). Implementing Comprehensive School Health: Teachers' Perceptions of the Alberta Project Promoting active Living and healthy Eating in Schools - APPLE Schools. *PHENex Journal*, *3*.

Tausch, A. P., & Menold, N. (2016). Methodological Aspects of Focus Groups in Health Research: Results of Qualitative Interviews With Focus Group Moderators. *Global Qualitative Nursing Research*, *3*. https://doi.org/10.1177/2333393616630466

Taylor, J. P., MacLellan, D., Caiger, J. M., Hernandez, K., McKenna, M., Gray, B., & Veugelers, P. (2011). Implementing elementary school nutrition policy: Principals' perspectives. *Canadian Journal of Dietetic Practice and Research*, *72*(4). https://doi.org/10.3148/72.4.2011.e205

Teherani, A., Martimianakis, T., Stenfors-Hayes, T., Wadhwa, A., & Varpio, L. (2015). Choosing a Qualitative Research Approach. *Journal of Graduate Medical Education*, *7*(4). https://doi.org/10.4300/JGME-D-15-00414.1

The Ontario Healthy Schools Coalition. (2022, May 6). *Healthy Schools: Definition of a Healthy School and a Healthy Schools Approach.* Retrieved June 25, 2025, from http://www.ontariohealthyschools.com/healthy-schools.html

The Coalition for Healthy School Food. (2024). *Next step for a National School Food Program Post-Budget 2024: Look to the Premiers.* Retrieved February 5, 2024, from https://www.healthyschoolfood.ca/post/next-step-for-a-national-school-food-program-post-budget-2024-look-to-the-premiers

Tong, A., Sainsbury, P., & Craig, J. (2007). Consolidated criteria for reporting qualitative research (COREQ): A 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care*, *19*(6). https://doi.org/10.1093/intqhc/mzm042

Triador, L., Farmer, A., Maximova, K., Willows, N., & Kootenay, J. (2015). A School Gardening and Healthy Snack Program Increased Aboriginal First Nations Children's Preferences Toward Vegetables and Fruit. *Journal of Nutrition Education and Behavior*, *47*(2). https://doi.org/10.1016/j.jneb.2014.09.002

Truman, E., Lane, D., & Elliott, C. (2017). Defining food literacy: A scoping review. *Appetite*, *116*. 10.1016/j.appet.2017.05.007

Tugault-Lafleur, C. N., Black, J. L., & Barr, S. I. (2017). Examining school-day dietary intakes among Canadian children. *Applied Physiology, Nutrition and Metabolism*, *42*(10). https://doi.org/10.1139/apnm-2017-0125

Valaitis, R. F., Hanning, R. M., & Herrmann, I. S. (2014). Programme coordinators' perceptions of strengths, weaknesses, opportunities and threats associated with school nutrition programmes. Public Health Nutrition, 17(6). 10.1017/S136898001300150X

van Kleef, E., Dijkstra, S. C., Seidell, J., Vingerhoeds, M. H., Polet, I. A., & Zeinstra, G. G. (2022). Which factors promote and prohibit successful implementation and normalization of a healthy school lunch program at primary schools in the Netherlands? *Journal of Health, Population and Nutrition*, *41*(1). https://doi.org/10.1186/s41043-022-00328-4

Vandenbrink, D., Pauzé, E., & Potvin Kent, M. (2020). Strategies used by the Canadian food and beverage industry to influence food and nutrition policies. *International Journal of Behavioral Nutrition and Physical Activity*, *17*(1). https://doi.org/10.1186/s12966-019-0900-8

Velazquez, C. E., Black, J. L., & Potvin Kent, M. (2017). Food and beverage marketing in schools: a review of the evidence. *International journal of environmental research and public health*, *14*(9), 1054. https://doi.org/10.3390/ijerph14091054

Vine, M. M., Elliott, S. J., & Raine, K. D. (2014). Exploring implementation of the Ontario school food and beverage policy at the secondary-school level: A qualitative study. *Canadian Journal of Dietetic Practice and Research*, *75*(3). https://doi.org/10.3148/cjdpr-2014-003

Vine, M. M., Harrington, D. W., Butler, A., Patte, K., Godin, K., & Leatherdale, S. T. (2017). Compliance with school nutrition policies in Ontario and Alberta: An assessment of secondary school vending machine data from the COMPASS study. *Canadian Journal of Public Health*, *108*(1). https://doi.org/10.17269/CJPH.108.5701

Vine, M. M., Vermeer, J., Romano, L., Harrington, D. W., Butler, A. E., Patte, K. A., Godin, K. M., & Leatherdale, S. T. (2021). Secondary school nutrition policy compliance in Ontario and Alberta, Canada: A follow-up study examining vending machine data from the compass study. *International Journal of Environmental Research and Public Health*, *18*(7). https://doi.org/10.3390/ijerph18073817

Walshe, C., Ewing, G., & Griffiths, J. (2012). Using observation as a data collection method to help understand patient and professional roles and actions in palliative care settings. In *Palliative Medicine* (Vol. 26, Issue 8). https://doi.org/10.1177/0269216311432897

Watts, A. W., Mâsse, L. C., & Naylor, P. J. (2014). Changes to the school food and physical activity environment after guideline implementation in British Columbia, Canada. *International Journal of Behavioral Nutrition and Physical Activity*, *11*(1). https://doi.org/10.1186/1479-5868-11-50

Weitkamp, E., Jones, M., Salmon, D., Kimberlee, R., & Orme, J. (2013). Creating a learning environment to promote food sustainability issues in primary schools? Staff perceptions of implementing the food for life partnership programme. *Sustainability (Switzerland)*, *5*(3). https://doi.org/10.3390/su5031128

Wolfenden, L., Nathan, N., Janssen, L. M., Wiggers, J., Reilly, K., Delaney, T., Williams, C. M., Bell, C., Wyse, R., Sutherland, R., Campbell, L., Lecathelinais,

C., Oldmeadow, C., Freund, M., & Yoong, S. L. (2017). Multi-strategic intervention to enhance implementation of healthy canteen policy: A randomised controlled trial. *Implementation Science*, *12*(1). https://doi.org/10.1186/s13012-016-0537-9

Woodruff, S. J., Beckford, C., & Segave, S. (2020). Fruit and vegetable lesson plan pilot intervention for grade 5 students from southwestern ontario. *International Journal of Environmental Research and Public Health*, *17*(22). https://doi.org/10.3390/ijerph17228422

World Health Organization. (2026). *Constitution Of The World Health Organization*. Retrieved May 12, 2026, from https://apps.who.int/gb/bd/pdf_files/BD_49th-en.pdf#page=6

World Health Organization (n.d.) *Health promoting schools.* Retrieved April 5, 2022, from https://www.who.int/health-topics/health-promoting-schools#tab=tab_1

World Health Organization. (2021a). *Healthy Diet.* Retrieved April 5, 2022, from https://www.who.int/initiatives/behealthy/healthy-diet

World Health Organization. (2021b). *Health promoting schools.* Retrieved April 5, 2022, from https://www.who.int/health-topics/health-promoting-schools#tab=tab_1

World Population Review. (2024). *Average School Day Length by Country 2024.* Retrieved June 22, 2024, from https://worldpopulationreview.com/country-rankings/average-school-day-length-by-country

Yin, R. K. (2009). *Case study research: design and methods* (Fourth, Ser. Applied social research methods series, 5). Sage Publications.

# Appendix 1

(School Level: initial contact, invitation, consent, brief survey)

**Outline for Conversation during Initial Contact with School**

Prior to sending letters of invitation to schools, the researcher will contact the principal of the school by telephone or video call to informally chat with them to discuss the nature of the research and their school's possible participation in the research.

The conversation, which is anticipated to last about 20 minutes, will be guided by the following points:

- Researcher introduction and ask if this time is convenient for them to chat.
- How the researcher heard about this school and a brief description of the research, identifying its various components, estimated time commitment, and potential benefits.
- A general discussion about the type of ethics review required by educational authorities for the research to proceed.
- Preliminary questions from the researcher about their school food programs, services, and activities.
- Responses by the researcher about questions/comments from the principal about the research.
- Assessment of preliminary interest and if interested and for the researcher to send the formal letter of invitation, a few questions to have an initial snapshot of the school for research-planning purposes, and the school-level consent form.
- Plans for follow-up.

- Any other topics identified by the researcher or principal during the conversation.

**Invitation Letter to school**

Date:

Name of the school:

Address:

Subject: Participation in healthy school food environment research

Dear Principal,

Recognizing the work of your school in the area of school food, we invite your school's participation in a study titled, "Healthy school food environments in New Brunswick: Analysis of exemplary schools;" conducted by Suchitra Roy (PhD student at University of New Brunswick (UNB)), supervised by Dr. Mary McKenna Professor, Faculty of Kinesiology, UNB. The goal of this study is to understand the components and key factors of healthy school food environments.

Participation in this research by the school and by individuals invited to be interviewed is completely voluntary. The preferred plan is that researchers will collect data through interviews, and observations during two-day visits in the school. In the current pandemic situation, however, if required, an alternative plan is to conduct interviews online and collect other information by appropriate virtual means. I aim to collect comprehensive information about the food-related activities of this school. To that end, I request:

- Completion of a school self-assessment survey by relevant person or persons from your school (assisted by the researcher, as needed).
- Permission to observe each school food activity/program at the school during the two-day visits (e.g., breakfast, lunch, food-related promotions, student work).
- Permission to take photographs of food-related items, excluding any people or identifying signage specific to the school.
- Interviews with you or someone who can provide information about the overall nature of school food as well as interviews with individuals who lead food programs or food-related activities (interviews will last about 40-60 minutes).
- Your school's assistance in organizing a student focus group interview (with students of grade 6 and above only), maximum one hour.
- Your school's assistance in sharing relevant documents or policies pertaining to school food

This research project is not designed to evaluate school food; we are simply trying to capture the success story - the process, maintenance, support, challenges and keys to success. The potential benefits of this study for your school is that it will provide you with clear documentation of the food-related activities of your school (a school summary in electronic form), and will ensure that positive practices about school food are shared with others, who may in turn be influenced to improve their school food environments.

The research proposal was reviewed by the Research Ethics Board (REB) of UNB and it is on the file as REB 2022-031. The dissertation, articles or presentations from this study

will not mention the name of any participant or school. Because of the innovative school food and related programs that occur here, people who are familiar with the school may be able to identify it. Care will be taken to remove any identifying information about any participants.

The participation in this research is voluntary for the school and for every individual. If you have questions please do not hesitate to contact me. Attached, please find a consent form for this school's participation. As well, I have provided a brief questionnaire "An Initial School Snapshot" to complete, that will help with organizing this research.

Sincerely

Suchitra Roy,

PhD Student, UNB

Email: sroy10@unb.ca

**Initial School Snapshot (brief questionnaire)**

**Please answer the following questions to help organize this research:**

1.What is the name of the school?

_____

2. Please provide the following information in the box.

| Location (city, town) | Grades taught in the school | Number of Students |
|---|---|---|
| | | |

3. Is there any person who is overall in charge of food programs and food activities in the school (e.g., principal, champion)?

___ Yes, if yes, please indicate the name of the person and their position

_____

_____

___ No

4. Please complete the following table, answering the following questions:

What are the food programs and food-related activities available in the school? Is there any person in charge of each available program? Are any external partners involved with the program or activity?

| Program or activity | Check if this school offers the program/ service/ activity (□) | Person in charge (name, position) | Collaboration with external partners (e.g., Farm to Cafeteria, Breakfast Club of Canada) |
|---|---|---|---|
| Breakfast program | | | ___ Yes ___ No |
| Lunch program | | | ___ Yes ___ No |
| Cafeteria services | | | ___ Yes ___ No |
| Hot lunch program | | | ___ Yes ___ No |
| Snack program | | | ___ Yes ___ No |
| Fruit/vegetable program/salad bar | | | ___ Yes ___ No |
| Milk program | | | ___ Yes ___ No |
| Canteen | | | ___ Yes ___ No |
| Vending machines | | | ___ Yes ___ No |
| Any other food outlets | | | ___ Yes ___ No |
| Emergency cupboard | | | ___ Yes ___ No |
| Weekend backpack program | | | ___ Yes ___ No |
| Summer feeding program | | | ___ Yes ___ No |
| Cooking class | | | ___ Yes ___ No |
| Garden | | | ___ Yes ___ No |
| Green house | | | ___ Yes ___ No |
| Garden tower | | | ___ Yes ___ No |
| Farm animals (e.g., chickens) | | | ___ Yes ___ No |
| Raising fish on the school property | | | ___ Yes ___ No |

| | | | |
|---|---|---|---|
| Composting food waste | | | ___ Yes ___ No |
| Others (please specify) ---------- ---------- ---------- | | | ___ Yes ___ No |

**Informed consent form for school**

*(Completed by Researcher)*

*Date:*

*Name of the school:*

*Address:*

Subject: Participation in healthy school food environment research

Name of the study: Healthy school food environments in New Brunswick: Analysis of exemplary schools.

Principal Investigator: Suchitra Roy, PhD Student, Department of Interdisciplinary studies, University of New Brunswick (UNB), Tel: 5062381150, email: sroy10@unb.ca

Supervisor: Dr. Mary McKenna. Professor, Department of Kinesiology, University of New Brunswick (UNB), Tel: 1-506-451-6872, email: mmckenna@unb.ca

Dear Principal,

Thank you for your interest in participating in this research. This study consists of a number of activities and by providing formal consent in your school's participation you provide consent to the following:

1. Completion of a school self-assessment survey by relevant person or persons from your school (assisted by the researcher, as needed).

2. Permission for the researcher and supervisor to visit your school, observe food environments (e.g., food available in different food programs, gardens, cooking classes) and fill out an observation checklist.

3. Permission for the researcher and supervisor to take photographs (e.g., photos of food items, menus) that exclude people. Note, if the principal investigator or supervisor wish to take a photo of a food dish, e.g., a student's breakfast, they will ask permission first and clarify that it will not be a photo of the student.

4. Permission to invite individual leaders (and assistance with identifying the overall leader of school who can discuss school food and individual leaders of school food programs) to participate in interviews (by the researcher).

5. Assistance with organizing a focus group interview (e.g., identifying potential students, facilitating parental/guardian consent and student assent, assisting with logistics) conducted by the researcher and assisted by the supervisor with approximately five-seven students of grade 6 and above to ask about their involvement with school food.

6. Permission for the researcher to request the school's assistance in identifying and sharing documents, policies, or other relevant information pertaining to school food.

It is important to mention that in the pandemic situation, depending on the public health guidelines, we may need to do interviews and collect information virtually. There is no known or anticipated risk in this participation. Participation is completely voluntary. If you change your mind after you give consent, you can withdraw your school from the research. In that case, any information collected before withdrawal will be destroyed.

The dissertation, articles or presentations from this study will not mention the name of the participants or schools. Because of the innovative school food and related programs that occur here, people who are familiar with the school may be able to identify it. Care will be taken to remove any identifying information about any of the participants.

The information and audio script from this interview will be stored in a secured cabinet at the researcher's home office; the electronic version of data will be saved in a personal laptop protected by secure passwords. Only the principal investigator and the supervisor of this project will have access to the data. Data will be stored for a maximum of seven years. The potential benefits of this study for your school are that it will provide you with clear documentation of the food-related activities of your school (a school summary in electronic form), and the opportunity to share information with other schools, that may in turn by influenced to improve their school food environments. If you have any questions or comments about this research in general or particularly about your role in this research, please feel free to contact Suchitra Roy, email: sroy10@unb.ca.

We would like to assure that the Research Ethics Board of UNB reviewed this research proposal, and it is on the file as REB 2022-031. If you have any questions and concerns about this process and your participation in the research, please contact Dr. Renée Audet-Martel (REB Coordinator) at ethics@unb.ca. This research also obtained approval from the required groups within educational system.

---

---

Based on the information in this invitation, here is the statement pertaining to consent:

I (print name) _____ understand the nature of the research project titled Healthy school food environments in New Brunswick: Analysis of Exemplary Schools conducted by Suchitra Roy and give consent in participation of the (name of school) _____ school in the research. My signature below indicates my consent.

_____ _____

Signature of the principal Date

_____ _____

Signature of the principal investigator Date

# Appendix 2

**Invitation and informed consent form for adult participants in individual interviews**

*(Completed by Researcher)*

*Date:*

*Name of school:*

*Address:*Subject: Participation in an interview as a part of research on school food.

Name of the study: Healthy school food environments in New Brunswick: Analysis of exemplary schools.

Principal Investigator: Suchitra Roy, PhD Student, Department of Interdisciplinary studies, University of New Brunswick (UNB), Tel: 5062381150, email: sroy10@unb.ca

Supervisor: Dr. Mary McKenna. Professor, Department of Kinesiology, University of New Brunswick (UNB), Tel: 1-506-451-6872, email: mmckenna@unb.ca

Dear School Food Leader,

We would like to invite you to participate in this research study and this letter is to request your formal consent. It is important that you understand the goal and nature of this research before you give consent. The purpose of this research is to understand the positive changes that your school made in food environments. We are interested to learn your views on the programs you lead, and the positive changes created in school food. This research project is not designed to evaluate school food; we are simply trying to

capture the success story - the process, maintenance, support, challenges and keys to success.

We would like to conduct an interview with you at your school; or, depending on the pandemic we might ask to conduct the interview virtually. The principal investigator will conduct the interview, and no other person will be present. The interview will take 40 to 60 minutes and will be audio recorded.

There is no known or anticipated risk in this participation. Your participation is completely voluntary. If your mind changes after you give consent, you can withdraw from this research. In that case, any information you provide before withdrawal will be destroyed. During the discussion or interview you may decline to answer any question.

Dissertations, articles or presentations from this study will not mention your name or the school's name or provide identifying details about you. You will be given a pseudonym, and your school will be given a number, e.g., S1. However, Because of the innovative school food and related programs that occur here, people who are familiar with the school may be able to identify it. Care will be taken to remove any identifying information about any of the participants.

The information and audio script from this interview will be stored in a secured cabinet at researcher's home office; the electronic version of data will be saved in a personal laptop protected by secure passwords. Only the principal investigator and the supervisors of this project will have access to the data. Data will be stored for a

maximum of seven years. The potential benefits of this study for your school is that it will provide you with clear documentation of the food-related activities of your school (a school summary in electronic form), and the opportunity to share information with other schools, that may in turn by influenced to improve their school food environments. If you have any questions or comments about this research in general or particularly about your role in this research, please feel free to contact Suchitra Roy, email: sroy10@unb.ca.

We would like to assure that the Research Ethics Board of UNB reviewed this research proposal, and it is on the file as REB 2022-031. If you have any questions and concerns about this process and your participation in the research, please contact Dr. Renée Audet-Martel (REB Coordinator) at ethics@unb.ca. This research also obtained approval from the required groups within educational system.

---

Based on the information in this invitation, here is the statement pertaining to consent:

I _____ understand the nature of the research project titled Healthy school food environments in New Brunswick: Analysis of Exemplary Schools conducted by Suchitra Roy and give consent to participate in this research. My signature below indicates my consent.

_____ _____

Signature of the participant Date

_____ _____

Signature of the principal investigator Date

# Appendix 3

**Invitation and informed consent form for parent/guardian of student focus group participant**

*(Completed by Researcher)*

*Date:*

*Name of the school:*

*Address:*

Subject: Participation of your child in a group discussion as a part of research on school food.

Name of the study: Healthy school food environments in New Brunswick: Analysis of exemplary schools

Principal Investigator: Suchitra Roy, PhD Student, Department of Interdisciplinary studies, University of New Brunswick (UNB), Tel; 5062381150, email: sroy10@unb.ca

Supervisor: Dr. Mary McKenna. Professor, Department of Kinesiology, University of New Brunswick (UNB), Tel: 1-506-451-6872, email: mmckenna@unb.ca

Dear guardian/parent,

We would like to invite your child to participate in this research study, as suggested by his/her school and this letter is to request your formal consent. It is important that you understand the goal and nature of this research before you complete the consent form. The purpose of the research is to understand the positive changes that the school made

regarding school food, and food programs or activities. We are very interested in hearing about your child's involvement and views about these topics.

We will conduct a group discussion in the school; depending on the situation of the pandemic we might need to ask to conduct the discussion virtually. Other participants in this group discussion will be selected from the same school. The group discussion will be conducted by the principal investigator of this research, with the supervisor (a university professor) present for assistance. The discussion will take 40 to 60 minutes, and it will be audio recorded.

There is no known or anticipated risk in this participation. This participation is completely voluntary. If your mind changes after you give consent, your child has the option to withdraw from this research. In this case, any information provided before withdrawal will be destroyed. During the discussion your child may decline to answer any question. We will request all the students in this group not to disclose any information about this discussion including names of other students who participate. Dissertations, articles or presentations from this study will not mention your child's name or the school's name. However, because of the innovative school food and related programs that occur there, people who are familiar with the school may be able to identify it. Care will be taken to remove any identifying information about any of the participants.

The information and audio script from this interview will be stored in a locked cabinet at the researcher's home office, and an electronic version of data will be saved in a

personal laptop protected by secure passwords. Only the principal investigator and the supervisors of this project will have access. Data will be stored for a maximum of seven years. After completion of this research, a report on the school food activities will be sent to the school. The findings of this study can be useful to other schools to improve their food environments. If you have any questions or comments about this research in general or particularly about your child's role in this research, please feel free to contact Suchitra Roy, email: sroy10@unb.ca.

We would like to assure you that the Research Ethics Board of UNB reviewed this research proposal, and it is on the file as REB 2022-031. If you have any questions and concerns about this process and your participation in the research, please contact Dr. Renée Audet-Martel (REB Coordinator) at ethics@unb.ca. This research also obtained affirmation from school district/school authorities.

---

Based on the information in this invitation, here is the statement pertaining to consent:

I _____ understand the nature of the research project titled Healthy school food environments in New Brunswick: Analysis of Exemplary Schools conducted by Suchitra Roy and give consent to participation of my child in this research. My signature below indicates my consent.

| _____ | _____ | _____ |
|---|---|---|
| Name of student | Signature of the parent/guardian | Date |

_____ _____

Signature of the principal investigator Data

# Appendix 4

## Invitation and assent form for student participants

*(Completed by researcher)*

*Date:*

*Name of the school:*

*Address:*

Subject: Participation in a group discussion as a part of research on school food.

Name of the study: Healthy school food environments in New Brunswick: Analysis of exemplary schools

Principal Investigator: Suchitra Roy, PhD Student, Department of Interdisciplinary studies, University of New Brunswick (UNB), Tel; 5062381150, email: sroy10@unb.ca

Supervisor: Dr. Mary McKenna. Professor, Department of Kinesiology, University of New Brunswick (UNB), Tel: 1-506-451-6872, email: mmckenna@unb.ca

Dear student,

We would like to invite you to participate in our research study, as suggested by your school. The purpose is to understand the positive changes that your school made regarding school food, and food programs or activities. We are very interested in hearing about your involvement and your views about these topics. We are inviting you to participate in group discussion (approximately five students) in your school; depending on the situation of the pandemic we might ask to do the discussion virtually. Other participants in this group discussion will be selected from your school. The group discussion will be conducted by the lead person for this research, with a university

professor present for assistance. The discussion will take 40-60 minutes and will be audio recorded.

There is no known or anticipated risk in this group discussion. The results of this research can help other schools to plan for improvement of their food environments. Your participation is completely voluntary and if you decide not to participate, that is fine (there are no consequences). If you agree and then change your mind, you can withdraw from this group. During the discussion, you will not have to answer questions that you do not wish. This will not affect your position, activities and relations with others in the school. You can talk with your principal if you do not like anything about this group discussion. We will request all the students in your group not to disclose any information about this discussion including names of other students who participate. You will not be identified in any reports, presentations, or articles based on the results of the discussion.

---

Based on the information in this invitation, here is the statement pertaining to assent:

I _____ , grade_____ understand the nature of the research project titled Healthy school food environments in New Brunswick: Analysis of Exemplary Schools conducted by Suchitra Roy and decided to participate in this research. My signature below indicates my decision.

_____ _____

Signature of the student Date

_____ _____

Signature of the principal investigator Date

**Data Collection Tools**

# Appendix A

## Observation Checklist for Food and Beverage Items

School name: Date:

**Breakfast from the cafeteria**

| Food items | Price | Details; comments |
|---|---|---|
| Sandwiches | | |
| Eggs | | |
| Meat | | |
| Cereals | | |
| White refined grain product | | |
| Whole grain products | | |
| Granola bar/cereal bar | | |
| White milk | | |
| Chocolate milk | | |
| Cheese | | |
| Fruits | | |
| Juice (100% fruit juice) | | |
| Cookies | | |
| Muffins/loaf breads/ Pastry | | |
| Yogurt | | |
| Condiments: | | |
| Other: | | |

School name: Date:

**Breakfast program (free)**

| **Food Items** | **Price** | **Details; comments** |
|---|---|---|
| Sandwiches | | |
| Eggs | | |
| Meat | | |
| Cereals | | |
| White refined grain products | | |
| Whole grain products | | |
| Granola bar/cereal bar | | |
| White milk | | |
| Chocolate milk | | |
| Cheese | | |
| Fruits | | |
| Juice | | |
| Pastry | | |
| Cookies | | |
| Muffin/Loaf bread | | |
| Yogurt | | |
| Condiments | | |
| Others | | |
| | | |

School name Date:

**Hot Lunch/cafeteria complete lunch 1**

| **Food Items** | **Price** | **Details; comments** |
|---|---|---|
| 1. Entree: | | |
| 2. Main course: | | |
| 3. Vegetables offered on the side: | | |
| 4. Potatoes offered on the side: | | |
| 5. Cereal product offered on the side: | | |
| 6. White milk | | |
| 6.1 Chocolate milk | | |
| 7.1 Fruit, fresh: | | |
| 7.2 Fruit sauce, canned fruit: | | |
| 7.3 Fruit based dessert: | | |
| 7.4 Yogurt | | |
| 7.5 Milk based dessert: | | |
| 7.7 Cookies/Muffins/Loaf bread | | |
| 8.1 Whole wheat bread/crackers | | |
| 8.2 Refined bread/crackers | | |
| others: | | |
| | | |

School name Date:

**Hot Lunch/cafeteria complete lunch 2**

| **Food Items** | **Price** | **Details; comments** |
|---|---|---|
| 1. Entree: | | |
| 2. Main course: | | |
| 3. Vegetables offered on the side: | | |
| 4. Potatoes offered on the side: | | |
| 5. Cereal product offered on the side: | | |
| 6. White milk offered: | | |
| 7.1 Fruit, fresh: | | |
| 7.2 Fruit/Fruit sauce, canned : | | |
| 7.3 Fruit based dessert: | | |
| 7.4 Yogurt 2% or less fat | | |
| 7.5 Milk based dessert: | | |
| 7.7 Cookies/Muffins/Loaf breads: | | |
| 8.1 Whole wheat bread/crackers | | |
| 8.2 Refined bread/crackers | | |
| others: | | |

School name Date:

**À la carte items:**

| Food Items | Price | Details; comments |
|---|---|---|
| Sandwich | | |
| Subs/ wraps | | |
| Soups | | |
| Salads | | |
| Vegetables | | |
| Potatoes | | |
| Fries | | |
| Rice | | |
| Pasta | | |
| Cold cut plate | | |
| Pizzas | | |
| Garlic Fingers | | |
| Burger | | |
| Chicken burger | | |
| White milk | | |
| Chocolate milk | | |
| Juice (100% fruit) | | |
| Yogurt drinks | | |
| Other beverages | | |
| Fruit (fresh) | | |
| Fruit sauce/canned | | |
| Fruit based dessert | | |
| Milk based dessert | | |
| Yogurt | | |
| Cookies | | |
| Muffins/ Loaf breads | | |
| Whole wheat bread/crackers | | |
| Refined bread/crackers | | |
| Water, plain, unflavored | | |
| Carbonated drinks, sweetened | | |
| Carbonated drinks, artificial sweeteners | | |
| Sparkling plain water | | |
| Artificially flavoured water, sweetened | | |
| Artificially flavoured water, artificial sweetener | | |

| | | |
|---|---|---|
| Vitamin-enhanced drinks | | |
| Sports drinks | | |
| Energy drinks | | |
| Coffee | | |
| Tea | | |
| Iced tea | | |
| Cappuccino and other coffee drinks | | |
| Hot chocolate | | |
| Syrup | | |
| Jam | | |
| Caramel / Nutella | | |
| Regular salad dressing | | |
| Low fat salad dressing | | |
| other: | | |

School name: Date:

**Snack program**

| **Snack items** | **Price** | **Details; comments** |
|---|---|---|
| Chips/Pretzel | | |
| Crackers | | |
| Cookies | | |
| Pastry/pizza snacks | | |
| Muffins | | |
| Yogurt | | |
| Cheese | | |
| Milk | | |
| Smoothies | | |
| Vegetables | | |
| Fruits | | |
| Juice (100% fruit) | | |
| Frozen dessert | | |
| Sweetened beverages/ Slushies | | |
| Candy/ fruit gummies/ fruit leathers | | |
| Pop Corn | | |
| Pudding | | |
| Others | | |
| | | |

School name Date:

**Vending machine sites and contents**

| Vending machine no |
|---|

| **Site** | **Comments** |
|---|---|
| In or near cafeteria | |
| Near sports facilities | |
| Others; specify: | |

| **Available items** | **Price** | **Comments** |
|---|---|---|
| Water | | |
| Chips/Pretzels | | |
| Crackers | | |
| Granola/ Cereals Bars | | |
| Cookies | | |
| Pastry/Pizza snacks | | |
| Muffins | | |
| Yogurt | | |
| Cheese | | |
| White Milk | | |
| Chocolate milk | | |
| Smoothies | | |
| Vegetables | | |
| Fruits | | |
| Juice | | |
| Frozen desserts | | |
| Sweetened beverages | | |
| Candy/fruit gummies/fruit leathers | | |
| Pop Corn | | |
| Pudding | | |
| Other | | |
| | | |

School Name: Date:

**Emergency Cupboard:**

| **Food Items** | **Details; comments** |
|---|---|
| ---------- <br> ---------- <br> ---------- | |

School name: Date:

**Backpack program:**

| **Food Items** | **Details; comments** |
|---|---|
| ---------- <br> ---------- <br> ---------- | |

# Appendix B

## Observation Checklist (tools) for Food Environment

Name of school**:** _____

Date: _____

Grade levels:_____

Number of students: _____

Location and size of community were located: _____

**Food Environment Observation:**

School observations

1. What outlets for food are present at the school?
    a. Cafeteria (breakfast of lunch)
    b. Breakfast preparation room
    c. Canteen
    d. Vending machines accessible to students (number and location)
    e. Emergency cupboard
    f. Other
2. What food is provided at each outlet?
    a. See tool from assessment document
    b. Note if any program exists that brings in food for students from outside vendors (such as a hot lunch program)
    c. Photos of foods available (without students)
3. What foods do the students buy or take at each outlet?

a. Observations of meal/snack times to monitor foods and beverages taken by students
b. Sample photos of foods taken by students (no photos of students)

4. Other observations
    a. Food/nutrition/health related messages or promotions or announcements
    b. School/community gardens (e.g., gardens or off site, composting, greenhouses, garden towers, micro-greens, animals used in agriculture, other)
    c. Facilities for food preparation by students (either as part of the curriculum or extra-curricular)
    d. Any other food-related activity on observation days, e.g., school celebration, fundraiser involving food
    e. Other observations

    Breakfast and lunch observations

5. How long do the students actually have to eat?

    Instruction: Record the time from when the last student gets his/her meal to the time when the lunch break ends.

    _____

6. Cafeteria Only: How long does it take for a student to buy his/her lunch?

    Instruction: For the longest cafeteria line-up, record the time it takes for one student to enter the cafeteria line until he/she has paid.

    _____

7. Before the meal, are the tables clean?

    Instruction: Rating: Scale of 1-5 with 5 being excellent

---

8. Is there enough seating for everyone to sit and eat comfortably?

   Instruction: Rating: Scale of 1-5 with 5 being excellent

---

9. Level of supervision

   Instruction: Rating: No supervision, inadequate, adequate, excessive (e.g. shouting at students)

---

10. Observe
    a. The attractiveness of food displays
    b. Freshness of the food
    c. Placement of the food (e.g. visible to students? proximity to cash register (impulse buying)?
    d. Any promotion of food items, e.g., serving on display, opportunity to taste)
    e. Any signage that indicates a food is local?
    f. Any nutrient/calorie information
    g. Other promotion of healthy foods
11. Obtain menus from all food programs and services:
    a. Breakfast program
    b. Lunch program
    c. Cafeteria programs
    d. Hot lunch programs
    e. Other programs

12. Any other observations? ----------

# Appendix C

**Individual interview guide for person in charge of the school (e.g., Principal)**

Thank you for meeting with me. As you know, I asked your school to participate in this project to learn more about the positive actions the school takes to provide healthy food and food-related education and activities. First, I would like to review the results from the surveys we sent earlier about school food actions. I would then like to ask you broader questions about how school food is organized and how the school developed its programs. This is not an evaluation. The research does not have any expectations about how you do things in your school. The overall goal is to understand all aspects of school food to share with your school and others.

**Review results from Self-Assessment Survey Tool (Appendix F)**

Check if they had any questions about completion.

Ask any questions about responses that were unclear/incomplete, etc. or where further details would be valuable.

**Overview**

1. Overall, what role(s) does food play at this school?
2. How would you characterize your role when it comes to school food?

   Probe:

   a. What is your personal interest in food and school food, if any?
3. Is there a school committee responsible for health or healthy eating?

Probe:

If yes, what are the responsibilities of the committee?

How many members are on the committee_____;

4. Are there any sources of information (people or documents) about food and nutrition that you use when making decisions about school food?

**Partnerships**

5. Do any external groups or organizations partner with the school on food-related programs or activities (e.g., grocery stores, farmers, community organizations such as boys and girls clubs of Canada, Breakfast club of Canada, government agencies)?

| Name of organization/ group | Programs/activities with partner | Partner contribution for specific activity | Year partnership started |
|---|---|---|---|
| | | | |
| | | | |
| | | | |

6. Overall, how important are school partners in providing food programs and activities?

   Probe: What would happen to a program if a partner left?

7. How does the school manage the external food partnerships?

   Probes:

   a. Do you have any protocols specific to partnerships?

   b. Is there any policy/ written agreements/ committees/monitoring process?

   c. What formal partner/school accountability exists, if any?

8. Do you work with any partners or share resources within the school?

   Examples:

   a. Students in courses or clubs assist with food preparation for food programs/meals,
   b. Growing vegetables and herbs in the garden and using them in cooking classes.
   c. The same kitchen, staff and volunteers assist with different programs.

**Communication**

9. Does the school communicate about healthy eating, within or outside the school, and if so, with whom?

   Probes:

   a. Communicate with teachers, school staff, parents or partners?
   b. Types of communication about school food and approximately how often they occur (e.g., food information in school newsletters, cafeteria or food program menus, notification of food-related events and opportunities)?

10. Does the school obtain input from students about school food programs or activities? If yes, how is the input obtained?

**History of School Food**

The last set of questions are about the changes made by the school to improve school food.

11. When did your school first start making improvements to school food?
12. What was the motivation behind making the first changes?

probes:

a. Any information/ evidence (e.g., wellness survey results)
b. Personal enthusiasm of any staff -
c. Actions by other schools
d. Any event such as participation in a workshop, project etc.
e. Provincial / district policy
f. Incentives/funds

13. Who took the lead in the beginning?
    a. Principal
    b. Any teacher/staff
    c. Parents group
14. Please tell the story of what happened over time? What food changes were made first and what has changed over time due to local needs, conditions, and opportunities?

    Probes:

    a. Were there any changes in leadership since the beginning of the changes?
    b. If yes, how did they affect school food?
    c. Were there unexpected events that influenced the process (positive or negative)?
15. What steps does the school take to maintain its current school food programs and activities? How easy or difficult is it to maintain them?
16. In your view, how dependent is the school on one person or group for school food programs and healthy eating activities?

probe:

a. If you ended your involvement with school food, what do you think would happen with school food activities?

17. To what extent is school food part of the culture of this school – how important is it?
18. The province has a policy (policy 711) healthy eating in schools. To what extent does that policy influence your decisions about healthy eating?

Probe:

a. Does the school have any other formal or informal policies or principles for food and food activities, if any? (example - food safety, local food purchase, nut free environment, guidelines for food during celebration/class parties, role modelling of the teachers or staff)

19. Does the school or groups within the school use foods for fundraising? If so, what types of foods are used?
20. At present what types of support are available to your school for healthy eating?

probes:

a. Funding
b. Champion
c. Students' and parents' involvement
d. Any community partner
e. Others

21. What are your challenges? Please provide suggestions how the challenges might be overcome.

Probe:

a. Any resource that would be helpful.

22. What are the main outcomes of the school's food-related activities (each one)? What changes have you noticed over time? Please provide examples.

23. How are these outcomes assessed or measured?

24. What types of evaluation or monitoring activities occur?

Examples:

a. Monitoring of food used for fundraising.

b. Food served in the school.

c. Evaluation of policy 711

25. Does the school receive any recognition for its work on school food? If so, please describe (e.g., newspaper articles, peer recognition)

26. Overall, what are the keys to your success?

probes:

a. Champion -paid/unpaid, taking charge as a part of job responsibility/ extra responsibility

b. Policy

c. Partnership/ networking

d. Other initiatives/factors (please specify)

27. What are your top priorities for the future of school food? How can these priorities be addressed?

28. Are there any other comments you would like to share?

# Appendix D

## Individual Interview guide for program leader

Thank you for meeting with me. As you know, I asked your school to participate in this project to learn more about the positive actions the school takes to provide healthy food and food-related education and activities. First, I want to thank you and your colleagues who completed the online survey questions we sent earlier. We can take a little time to review those first and discuss the results and I can answer any questions you may have. After that, I have some questions about the past, present, and future of the program/activity and a few questions about yourself.

**Review of Survey Questions (Appendix F)**

Check if they had any questions about completion.

Ask any questions about responses that were unclear/incomplete, etc. or where further details would be valuable.

**School Food Environment: Past, Present, Future**

*Now we will move to the topic of most of the interview questions: the past, present and future of the activity/program.*

Now that we are meeting, would you please provide me with a brief description of the current food-related activity or program that you lead?

***Past***

*Now we will go back to the past . . .*

1. When did this activity/program begin?

2. What was the motivation behind starting it?

   probes:
   a. Any information/ evidence (e.g., wellness survey results)
   b. Personal enthusiasm of any staff -
   c. Actions by other schools
   d. Any event such as participation in workshop, project etc.
   e. Provincial / district policy
   f. Incentives/funds

3. Who took the lead in the beginning?
   a. Principal,
   b. Any teacher/staff
   c. Parents group

**Please tell the story of what happened over time to the program/activity? What changes were made first and what has changed over time due to local needs, conditions, and opportunities?**

4. Was there any change in leadership since the beginning of the changes? If yes, how did they affect the program/activity?

5. Were there unexpected events that influenced the process (positive or negative)?

***Current program***

*At the outset, you described the current activity/program. I have a few more questions about it.*

6. Do you partner or rely on other individuals or groups in order to offer the program or activity, within or outside the school?

| Types of partners (e.g., farmers, community groups) | Contributions |
|---|---|
| 1. | |
| 2. | |
| 3. | |

7. Is this program or activity connected with any other food activities or non-food programs (mental, physical) at the school?

   Probes:

   a. Students in courses or clubs assist with food preparation for food programs/meals,
   b. Growing food in the garden or local farms.

8. How do other groups/administrators determine what the program/activity does and how it operates?

   Probes:

   a. Role of school policy, role of policy 711 or
   b. Other policies such as public health regulations,
   c. Role of funders,
   d. Need to follow curriculum or guidelines from another agency.

9. What steps does the school take to maintain this food program/activity? How easy or difficult is it to do so?
10. If you ended your involvement with this program/activity, what do you think would happen to it?
11. In your view, how dependent is the school on one person or group for this program /activity?

12. What are your current challenges with this program/activity? Do you have any suggestions how the challenges might be overcome?
13. At present, what types of support are available for this program/activity?

    probes:

    a. Funding
    b. Champion
    c. Students' and parents' involvement
    d. Any community partner
    e. Others
14. Are there any resources for the program/activity you don't have now that would be helpful?
15. What are the main outcomes of this program/activity? What changes have you noticed over time, if any? Please provide examples.
16. How are these outcomes assessed or measured?
17. Does the school monitor any of its food-related programs or activities?

    If yes, what types of evaluation or monitoring activities occur?

    Examples:

    a. Monitoring of food used for fundraising.
    b. Food served in the school.
    c. Evaluation of policy 711
18. Does the school receive any recognition for this program/activity? If so, please describe.
19. Overall, what are the keys to the school's success re food and healthy eating?

    Probes:

a. Champion -paid/unpaid, taking charge as a part of job responsibility/ extra responsibility
b. Policy
c. Partnership/ networking
d. Other initiatives/factors (please specify)

***Future***

*I also have a few questions about the future.*

20. What advice would you give a school that wanted to improve school food or implement this program/activity?
21. What are your top priorities for the future of this program/activity?
22. How can these priorities be addressed?

***Leadership***

*The questions so far focused on the activity/program. I also have a few questions about you*

23. What is your role with the project/activity? How long have you been in this position?
24. What is your (academic/work/experience with food) background, i.e., how did you end up taking this role?
25. Are you provided with any training/professional development to assist you? If yes, what was it?
26. What is your role in the school?
    a. Teacher

b. School staff

c. External staff

27. Do you have any additional comments you wish to make about this program or activity or about school food in general?

# Appendix E

## Student Focus Group Interview Guide

Thank you for meeting with us. As you know, we asked your school to participate in this project to learn more about the positive actions the school takes to provide healthy food and food-related education and activities. We would like to ask you a few questions about what you think about school food and how it influences your food activities. We will record responses for every question. Your identity (name, grade) will not be included. There are no right and wrong answers to these questions. Even if you are not actively involved in a particular food program that is fine. Please feel free to share your thoughts. The overall goal is to understand all aspects of school food to share with your school and others.

**Food Available**

1. What is your favourite food, inside or outside school?
2. If you were telling someone from another school about food at this school, what would you say about it, in a few words (in terms of quality, price, taste, health, appeal)?
3. Do you eat food at this school?

   Yes/no, what are the main reasons for your yes/no answer?
4. Where do you eat food at school – what food outlet?
    a. Cafeteria
    b. Hot lunch
    c. Canteens

d. Vending machines

e. Other food outlets/programs

**Nutrition Education**

5. Do you learn about healthy eating at school?
6. What types of things do you learn?

**Food Activities**

7. Are you involved in any food activities at school?
    a. Participate in a cooking class
    b. Help in the school garden, greenhouse, etc.
    c. Member of a food committee
    d. Sell food for fundraising
    e. Others
8. What do you do as part of this activity? (pick one activity if involved in more than one)
9. How did you get involved in this activity?
    a. Encouragement from teachers and school staff
    b. Friends participate
    c. Want to have a future career related to food

**Other**

10. Overall, has food at this school influenced how you eat or how you think about food?

Awareness about health and healthy eating, etc.

11. Has it resulted in other changes for you?

Probes:

a. Enjoyment of school
b. Improved attendance
c. New skill
d. How you feel about school.

12. If you were in charge of this/these activities, what things would you leave the same and what would you change?
13. Do you have other comments you would like to make about school food/education/ activities?

*Thank you for your helping us to better understand food at your school! We will be asking the same questions to students at five other schools and then writing a report that includes your answers. We will send a summary of the report to your school when it is ready and ask your school to be sure you get a copy.*

# Appendix F

## Self-Assessment Survey Tool

This research aims to better understand the food and nutrition programs and practices within New Brunswick schools. This survey is an important part of the research and I request that each part of the survey be completed by the person or people with the most knowledge about the specific topic it covers. If you need any assistance with completing the survey, please feel free to contact me by email OR I will be happy to help during our on-site visits. There are six sections to this survey:

Section A. School overview

Section B: Breakfast program

Section C: Lunch program

Section D: Cafeteria food services

Section E: Food/nutrition education and activities

Section F: Other food programs, outlets, and practices

Please keep a copy of the completed survey for your records and use. I will compile all the data from this school into a summary report and send it to you (only), once I complete the research in the coming months. Thank you and I look forward to visiting your school in the near future.

Sincerely,

Suchitra Roy

PhD Student, UNB

**Section A. School overview**

Completed by _____ (please print name)

Position _____

Date _____

What is the name of this school?

_____

How many students attend this school? _____

What grade levels are available (check all that apply)

___ Kindergarten

___ Grade 1 and 2

___ Grade 3 and 4

___ Grade 5

___ Grade 6, 7, and 8

___ Grade 9 – 12

___ Other, please specify: _____

**Section B: Breakfast program**

Completed by: _____ (please print name)

Position: _____

Date: _____

*Please complete this survey if this school offers a breakfast program to students at no or low cost. If the school offers other foodservices in the morning (e.g., cafeteria) where most or all students pay the full cost of the food items, please complete Section D.*

**What is the most accurate description of the type of breakfast program at your school? (check one response)**

___ Sit and eat breakfast in a breakfast room, cafeteria, or other designated location (e.g., multi-purpose room, school entrance-way)

If other designated room or place is used, please specify_____

___ Breakfast in the Classroom (e.g., breakfast distributed to individual classrooms)

___ Grab 'n' Go Breakfast (i.e., students pick up the breakfast and eat it elsewhere)

If so, where do students pick up the breakfast, please specify_____

___ Other type of breakfast program, please specify,

_____

_____

_____

**Who is eligible to participate in the breakfast program? (check one response)**

___ All students

___ All students who have permission from a parent or guardian

___ Students who the school has identified as needy

Please specify the criteria for eligibility for needy students:

_____

_____

_____

_____

___ Other, please specify who is eligible

_____

_____

_____

**What is the approximate number of students who participate in the program?**

**Please indicate if this number is a total of students per day, per week, or per month.**

Total number of students _____ per _____ (e.g., 110 per week)

**What months does the program operate (check one response)?**

___ From September to June

___ For another time period. Please specify:

From _____ (month) to _____ (month)

**What days of the week is the program offered (check all that apply)?**

___ Every day, Mon – Fri

___ Monday

___ Tuesday

___ Wednesday

___ Thursday

___ Friday

**What are the operating hours of the program (e.g., 7:15 am to 8:15 am)?**

_____

**What is the cost-structure of the program (check all that apply)?**

___ Free of cost to all students

___ Students pay a small set cost (e.g., cost recovery basis)

Please specify how much students pay per breakfast: _____

___ The program has a pay what you can model (e.g., parents contribute monthly)

___ Other, please specify

_____

**How is the program funded (check all that apply)?**

___ Monetary donations from *charitable groups*

Please provide an example of a group that funds the program:

_____

___ Monetary donations from *private companies*

Please provide an example of a group that funds the program:

_____

____ Food donations or food vouchers from charitable groups or private companies

____ Donations from parents, families, and/or individuals

____ In-kind donations of equipment, tools, or other resources (not staffing)

____ School/district fund-raisers

____ Direct funding from the school or school district

____ Other, please specify

_____

**Is there a committee to oversee the administration of the breakfast program?**

___ Yes

If yes, what is the role(s) of the committee

_____

_____

_____

_____

__ No

**Who manages the program (check one response)?**

___ Paid staff specifically hired by the school/school district to manage the program

___ A volunteer leader paid an honorarium by the school/school district to manage the program

___ Teachers or other school staff not hired specifically to manage the program.

___ Volunteers manage the program

___ A paid external provider or contractor (for profit) manages the program

___ A community organization that is an external provider or contractor (e.g., not for profit group) manages the program with volunteers/paid staff/use of honoraria

___ Other type of management model, please specify._____

_____

_____

**Who is involved in the direct delivery of the program, including program planning; food purchasing, serving, and cleanup; accountability, fundraising, monitoring etc. (please check all that apply)?**

___ Administrators

___ Teachers

___ Custodians

___ Administrative Assistants

___ Other school staff, please specify_____.

___ Parent/family/community volunteers

___ Students

___ External partners (e.g., community group(s), local farmers), please specify

_____

_

_____

_

___ Others (please specify) _____.

**If you responded "yes" to student involvement, how are students involved in delivering the program (check all that apply):**

___ Menu planning

___ Taste testing/approving menu items

___ Program operations, such as program or food preparation, serving food, clean-up

___ Fundraising

___ Other, please specify _____

**What types of facilities are available to prepare food for the program (check one response)?**

___ Full preparation facilities (e.g., cafeteria, kitchen)

Please specify:

_____

___ Partial preparation facilities (e.g., kitchenette)

Please specify:

_____

___ No preparation facilities. If so, where is food prepared/how do you provide a program?

_____

_

_____

_

**What are the top 5 factors that influence the types of foods and beverages the program offers (place a 1, 2, 3, 4, or 5 beside the item, with 1 as the most influence and 5 as the least influence)?**

___ Ability to prepare food (i.e., space, equipment, storage capacity, etc.)

___ Amount of food packaging/environmental considerations

___ Convenience to prepare/serve the food and/or clean up after

___ Cost of food

___ Cultural or religious considerations

___ Eating location (e.g., where the students eat the food, seating)

___ Food preferences of students

___ Food donations

___ Healthiness of the food

___ Provincial School Nutrition Policy (Policy711)

___ Locally grown/produced/seasonal foods

___ Staffing/volunteers – number and/or skills

___ Other top 5 factor, please specify

_____

_____

_____

**What additional components other than providing food does the program offer, if any (check all that apply)?** Opportunities for:

___ students to prepare food and assist with program delivery

___ students to provide community service (e.g., volunteer as part of the program in the community or fundraise on behalf of the program)

___ students to learn about sources of local foods or other information about food

___ students to learn about healthy foods and personal health

___ students to practice social/leadership skills

___ students to interact with people of different backgrounds and ages

___ students with special needs to acquire life skills

___ Other opportunities, please specify:

_____

_____

**How often is the program monitored, at all?**

___ Not monitored

___ Monitored less than once per year

___ Monitored once per year or more

If the program is monitored, which of the following aspects are monitored: (check all that apply)

___ Student program participation numbers

___ Student school attendance

___ Student behaviour

___ Student academic performance

___ Student food intake

___ Foods offered (e.g., fruit and vegetable availability, program menus)

___ Food waste

___ Staff and volunteers numbers/participation

___ Food costs and/or other costs

___ Monetary and other donations

___ Student feedback about the program

___ Other feedback (e.g., volunteers, partners, parents/families)

___ Other, please specify: _____

**If monitoring occurs, how is the information collected (check all that apply)?**

___ Ongoing collection of program data (e.g., number of participating students)

___ Survey required or recommended by the school or district

___ Survey or other information required or recommended by funder(s)

___ School completes "Healthy Eating Module" of Healthy School Planner website

___ Students complete NB "Student Wellness Survey"

___ Other monitoring (please specify)

_____

**Please feel free to add additional information about the breakfast program**.

_____

_____

**Section C: Lunch program**

Completed by: _____ (please print name)

Position: _____

Date: _____

*Please complete this survey if this school offers a lunch program to students at no or low cost. If the school offers other foodservices at lunch (e.g., cafeteria) where most or all students pay the full cost of the food items, please complete Section D.*

**What is the most accurate description of the type of lunch program at your school (check one response)?**

___ Sit and eat lunch in a lunchroom, cafeteria, or other designated location (e.g., multi- purpose room, school entrance-way)

If other designated room or place is used, please specify_____

___ Lunch in the Classroom (e.g., lunch distributed to individual classrooms)

___ Grab 'n' Go Lunch (i.e., students pick up lunch and eat it elsewhere)

If so, where do students pick-up the lunch, please specify_____

___ Other type of lunch program, please specify,

_____

_____

__

**Who is eligible to participate in the lunch program? (check one response)**

___ All students

___ All students who have permission from a parent or guardian

___ Students who the school has identified as needy

Please specify the criteria for eligibility for needy students:

_____

_____

___ Other, please specify who is eligible

_____

_____

**What is the approximate number of students who participate in the program?**

**Please indicate if this number is a total of students per day, per week, or per month.**

Total number of students _____ per _____ (e.g., 110 per week)

**What months does the program operate (check one response)?**

___ From September to June

___ For another time period, please specify:

From _____ (month) to _____ (month)

**What days of the week is the program offered (check all that apply)?**

___ Every day, Mon – Fri

___ Monday

___ Tuesday

___ Wednesday

___ Thursday

___ Friday

**What are the operating hours of the program (e.g., 11:30 am to 1:30 pm)?**

_____

**What is the cost-structure of the program (check all that apply)?**

___ Free of cost to all students

___ Students pay a small set cost (e.g., cost recovery basis)

Please specify how much students pay per lunch:

_____

___ The program has a pay what you can model (e.g., parents contribute monthly)

___ Other, please specify

_____

**How is the program funded (check all that apply)?**

___ Monetary donations from *charitable groups*

Please provide an example of a group that funds the program:

_____

___ Monetary donations from *private companies*

Please provide an example of a group that funds the program:

_____

____ Food donations or food vouchers from charitable groups or private companies

____ Donations from parents, families, and/or individuals

____ In-kind donations of equipment, tools, or other resources (not staffing)

____ School/district fund-raisers

____ Direct funding from the school or school district

____ Other, please specify

_____

**Is there a committee to oversee the administration of the lunch program?**

___ Yes, the same committee as the breakfast program

___ Yes, a separate committee from the breakfast program

If a separate committee, what is its role(s)

_____

_____

_____

_____

__ No

**Who manages the program (check one response)?**

___ Paid staff specifically hired by the school/school district to manage the program

___ A volunteer leader paid an honorarium by the school/school district to manage the program

___ Teachers or other school staff not hired specifically to manage the program.

___ Community/parent volunteers manage the program

___ A paid external provider or contractor (for profit) manages the program

___ A community organization that is an external provider or contractor (e.g., not for profit group) manages the program with volunteers/paid staff/use of honoraria

___ Other type of management model, please specify._____

_____

_____

**Who is involved in the direct delivery of the program, including program planning; food purchasing, serving, and cleanup; accountability, fundraising, monitoring etc. (please check all that apply)?**

___ Administrators

___ Teachers

___ Custodians

___ Administrative Assistants

___ Other school staff, please specify_____.

___ Parent/family/community volunteers

___ Students

___ External partners (e.g., community group(s), local farmers), please specify

_____

_

_____

_

___ Others (please specify) _____.

**If you responded "yes" to student involvement, how are students involved in delivering the program (check all that apply):**

___ Menu planning

___ Taste testing/approving menu items

___ Program operations, such as program or food preparation, serving food, clean-up

___ Fundraising

___ Other, please specify

_____

**What types of facilities are available to prepare food for the program (check one response)?**

___ Full preparation facilities (e.g., cafeteria, kitchen)

Please specify:

_____

___ Partial preparation facilities (e.g., kitchenette)

Please specify:

_____

___ No preparation facilities. If so, where is food prepared/how do you provide a program?

_____

_

_____

_

**What are the top 5 factors that influence the types of foods and beverages the program offers (place a 1, 2, 3, 4, or 5 beside the item, with 1 as the most influence and 5 as the least influence)?**

___ Ability to prepare food (i.e., space, equipment, storage capacity, etc.)

___ Amount of food packaging/environmental considerations

___ Convenience to prepare/serve the food and/or clean up after

___ Cost of food

___ Cultural or religious considerations

___ Eating location (e.g., where the students eat the food, seating)

___ Food preferences of students

___ Food donations

___ Healthiness of the food

___ Provincial School Nutrition Policy (Policy711)

___ Locally grown/produced/seasonal foods

___ Staffing/volunteers – number and/or skills

___ Other top 5 factor, please specify

_____

_____

**What additional components other than providing food does the program offer, if any (check all that apply)?** Opportunities for:

___ students to prepare food and assist with program delivery

___ students to provide community service (e.g., volunteer as part of the program in the community or fundraise on behalf of the program)

___ students to learn about sources of local foods or other information about food

___ students to learn about healthy foods and personal health

___ students to practice social/leadership skills

___ students to interact with people of different backgrounds and ages

___ students with special needs to acquire life skills

___ Other opportunities, please specify:

_____

_____

**How often is the program monitored, if at all?**

___ Not monitored

___ Monitored less than once per year

___ Monitored once per year or more

If the program is monitored, which of the following aspects are monitored: (check all that apply)?

___ Student program participation numbers

___ Student attendance at school

___ Student behaviour

___ Student academic performance

___ Student food intake

___ Foods offered (e.g., fruit and vegetable availability, program menus)

___ Food waste

___ Staff and volunteers numbers/participation

___ Food costs and/or other costs

___ Monetary and other donations

___ Student feedback about the program

___ Other feedback (e.g., volunteers, partners, parents/families)

___ Other, please specify: _____

**If monitoring occurs, how is the information collected (check all that apply)?**

___ Ongoing collection of program data (e.g., number of participating students)

___ Survey required or recommended by the school or district

___ Survey or other information required or recommended by funder(s)

___ School completes “Healthy Eating Module” of Healthy School Planner website

___ Students complete NB “Student Wellness Survey”

___ Other monitoring (please specify)

_____

**Please feel free to add additional information about the lunch program**.

_____

_____

_____

**Section D: Cafeteria food services**

Completed by: _____ (please print name)

Position: _____

Date: _____

*Please complete this survey if this school offers foodservices at a cafeteria where most or all students pay the full cost of the food items.*

**What months does the program operate (check one response)?**

___ From September to June

___ For another time period, please specify:

From _____ (month) to _____ (month)

**What days of the week is the cafeteria open? Please check all that apply.**

___ everyday, Mon – Fri

___ Monday

___ Tuesday

___ Wednesday

___ Thursday

___ Friday

**Please complete the following table indicating when the cafeteria is open and the estimated number of students who use the cafeteria? Please indicate if this number is an average of per day, per week, or per month (e.g., 209 per week).**

| Cafeteria | Open | Number of students per day/week/month |
|---|---|---|
| Breakfast | ___ Yes<br>___ No | _____<br>per_____ |
| Lunch | ___ Yes<br>___ No | _____<br>per_____ |
| Others (e.g., snack) | ___ Yes<br>___ No | _____per____<br>____ |

**What are the operating hours of each of the following (e.g., 8:00 am to 10:30 am)?**

**If it doesn't operate at a time period, please respond with 0.**

| | |
|---|---|
| Breakfast | _____ |
| Lunch | _____ |
| Other (e.g., snack) | _____ |

**Who operates the cafeteria (check one response)?**

___ Private organization (for profit)

___ Private organization (not for profit)

___ Non-governmental/community group (for profit)

___ Non-government/community group (not for profit)

___ The school district/school with paid staff hired specifically to run the program

___ The school district/school with volunteers

___ The school district/school with a paid employee(s) assisted by students

___ Other, please specify._____.

**Is there a committee that oversees the administration of the cafeteria?**

___ Yes

If yes, what is the role(s) of the committee

_____

_____

_____

__ No

**Are students involved in any aspects of the cafeteria (check all that apply):**

___ menu planning

___ taste testing

___ program delivery, such as preparation, service, clean-up

___ fundraising

___ other, please

specify_____

**What are the top 5 factors that influence the types of foods and beverages the cafeteria offers (place a 1, 2, 3, 4, or 5 beside the item, with 1 as the most and 5 as the least influence)?**

___ Ability to prepare food (i.e., space, equipment, storage capacity, etc.)

___ Amount of food packaging/environmental considerations

___ Convenience to prepare/serve the food and/or clean up after

___ Cost of food

___ Cultural or religious considerations

___ Eating location (e.g., where the students eat the food, seating)

___ Food preferences of students

___ Healthiness of the food

___ Provincial School Nutrition Policy (Policy711)

___ Locally grown/produced/seasonal foods

___ Staffing/volunteers – number and/or skills

___ Other top 5 factor, please specify

_____

_____

**Has the cafeteria implemented any of the following practices (check all that apply)?**

___ Preparing foods using healthier methods (e.g., fewer sauces, less sugar and/or fat, more unprocessed vegetables/fruits)

___ Using whole grain ingredients and/or foods

___ Promoting healthier foods via messages, posters, contests, or other means

___ Identifying and promoting healthier foods produced locally or provincially

___ Providing nutrition information/nutrition education

____ Charging a lower price for healthier foods

___ Combining foods from major food groups (fruits and vegetables, whole grain products, meat or alternatives and milk or alternatives) in a meal as much as possible.

___ Displaying healthier foods in prominent places/within easy reach for students to choose

___ Other practices, please specify

_____

**How often is the program monitored, if at all?**

___ Not monitored

___ Monitored less than once per year

___ Monitored once per year or more

If the program is monitored, which of the following aspects are monitored: (check all that apply)

___ Student participation numbers

___ Student food intake

___ Foods offered (e.g., fruit and vegetable availability, program menus)

___ Food waste

___ Staff and volunteers numbers/participation

___ Food costs and/or other costs

___ Student feedback about the cafeteria

___ Other feedback (e.g., suppliers)

___ Other, please specify: _____

**If monitoring occurs, how is the information collected (check all that apply)?**

___ Ongoing collection of data (e.g., number of participating students)

___ Survey required or recommended by the school or district

___ Annual review of the program (e.g., data collected for a set time period)

___ Other monitoring (please specify)

_____

**Please feel free to add additional information about the cafeteria programs**.

_____

_____

_____

**Section E: Food/nutrition education and activities**

Completed by: _____ (please print name)

Position: _____

Date: _____

*Please complete this survey if this school offers educational opportunities for students related to food and/or nutrition, curricular or extra-curricular*

**Which of the following topics on healthy eating are covered through classroom learning? Please check all that apply.**

___ Healthy food choices and health

___ Food safety

___ Canada's Food Guide

___ Food labels

___ Growing healthy food (e.g., growing vegetables to eat)

___ Preparation of healthy foods (e.g., opportunities to cook)

___ Monitoring personal food habits (e.g., collecting and analyzing dietary information)

___ Actions to improve personal food habits (e.g., tips to increase water intake)

___ Common nutrition challenges of young people (e.g., breakfast skipping)

___ Healthy recommendations for food choices (e.g., healthy breakfasts, snacks)

___ Healthy food recommendations for special groups (e.g., athletes)

___ Nutrition misinformation and nutrition/food fads

___ Food advertising and marketing

___ Healthy weights and/or dieting and/or body image and/or gender

___ Factors that influence eating habits

___ Nutrition and food choices offered at school

___ Health and the food supply (e.g., environmental sustainability, ultra-processed foods)

___ Nutrition, health, and food waste (e.g., composting food)

___ Nutrition/food advocacy (e.g., promoting societal change to improve food and health)

**Please complete the following table, indicating which of the following programs occur at this school within the curriculum and/or as part of an extra-curricular activity or program, the person in charge and how many students participate? Check all that apply.**

| **Name of the program or activity** | **Mark an X if within the curriculum** | **Mark an X if extra-curricular** | **Person in charge of the program and role in the school** | **Approximate total number of students who participate** |
|---|---|---|---|---|
| Cooking class/ food preparation that focuses on healthy eating | | | | |
| Contests to make seasonal foods | | | | |
| Dehydration and storage of healthy foods | | | | |
| Use of kitchen tools to make healthy foods, e.g., apple spirals | | | | |
| Smoothie bicycles | | | | |
| School garden | | | | |
| Garden tower(s) | | | | |
| Greenhouse | | | | |
| Grow lights to grow microgreens or other food | | | | |
| Grow vegetables in the classroom | | | | |
| Visits to farms by students | | | | |
| Farmer visits to school | | | | |

| | | | | |
|---|---|---|---|---|
| School fundraising with local foods | | | | |
| Composting school food waste | | | | |
| Raising agricultural animals at school (e.g., chickens) | | | | |
| Raising fish at school | | | | |
| Guest speakers who promote healthy eating/ food awareness | | | | |
| Other, please specify | | | | |

**Please feel free to add additional information about food/nutrition education at this school**.

_____

_____

## Section F: Other food programs, outlets, and practices

Completed by: _____ (please print name)

Position: _____

Date: _____

Completed by: _____ (please print name)

Position: _____

Date: _____

*This survey asks questions about other food programs, outlets, and practices within the school (it may require the input of more than one person to complete)*

**OTHER FOOD PROGRAMS**

**Please provide information about the following programs: Hot Lunch Program*(Set lunch (limited options) sold to students that is either prepared onsite or purchased from an external provider or restaurant.)**

| Hot Lunch Program at this school? | Number of days/week offered | Type of program offered | Cost to student per lunch | Number of lunches sold per week |
|---|---|---|---|---|
| Yes<br>No | 1 2<br>3 4<br>5 | Food prepared onsite<br>Food purchased from an external provider | _____<br>($) | _____<br>(meals) |

*Or submit a menu of the hot lunch program

**How does the hot lunch program operate?**

___ Not for profit basis

___ For profit basis

**School Milk Program (Milk is sold at a reduced price to students)**

| **School milk program at this school?** | **Number of days/week offered** | **Type(s) of milk offered** | **Cost of milk to student** | **Number of cartons sold per week** |
|---|---|---|---|---|
| Yes<br>No | 1 2<br>3 4<br>5 | White<br>Chocolate | _____<br>Cents | _____<br>cartons |

**Emergency Cupboard (non-perishable food items kept on site for students in need)**

| **Emergency Cupboard at this school** | **Type(s) of foods offered** | **Number of participants per month** |
|---|---|---|
| Yes No | ___ Granola bars<br>___ Soups<br>___ Noodles<br>___ Dried fruit<br>___Other, please specify<br>_____<br>_____ | _____ |

**Student Backpack Program (food sent home with students in need on weekends/ holidays)**

| **Backpack program at this school?** | | **Number times per month offered** | | **Number of participants per month** |
|---|---|---|---|---|
| Yes | No | 1 | 2 | _____ |
| | | 3 | 4 | students |

What food items are included in the backpacks:

_____
_____
_____

**Other food outlets**

**How many vending machines in school are accessible to students?**

_____ number of machines accessible to students

.

**Who is responsible for operating the vending machines (check one response)?**

___ Private, for-profit company (e.g., vending company)

___ School district/School employee with other regular responsibilities

___ Parents or community volunteers

___ Student school organization (e.g., student council)

___ A community external provider or contractor (e.g., not for profit group)

___ Other (please specify)

_____

**How are the items in the vending machines priced?**

___ Not for profit basis

___ For profit basis

**Does the school have a canteen?**

___ Yes

___ No

**When is it open to students (check all that apply)?**

___ Before school in the morning

___ During recess

___ At lunchtime

___ Other times, please specify: _____.

**Who manages the canteen?**

___ Private, for-profit company

___ School district/School employee with other regular responsibilities

___ Parents or community volunteers

___ Student school organization (e.g., student council)

___ A community external provider or contractor (e.g., not for profit group)

___ Other (please specify)

_____

**How are the food items in the canteen priced?**

___ Not for profit basis

___ For profit basis

**Practices**

**Does the school organize celebrations and/or events that include food?**

___ Yes

If yes, how frequently? _____ (number of times per year)

If yes, what types of food and beverages are served?

_____

_____

___

_____

___

___ No

**Do families bring food for classroom celebrations (e.g., birthday)?**

___ Yes

If yes, what types of foods? _____

_____

___ No

Are you aware if food is used as a reward or punishment by teachers or other school staff?

___ Yes

___ No

**Are there any other food programs or outlets at this school?**

___ Yes. If yes, please describe

_____

_____

_____

_____

_____

_____

___ No

**Please feel free to add any comments about food and nutrition at this school.**

_____
_____
_____
_____

Thank you for your assistance in providing this information about food at your school!

# Appendix G

## Codebook

| Theme | Subtheme | Code | Code definition | Code description |
|---|---|---|---|---|
| 1. Characteristics of food environments | 1. Explicit program purpose | Motive | Discussions on what motivates the starting of different food and related programs. | Providing food at the beginning of the school is important because many students do not have food for many reasons including poverty. Healthy food is also related to good heath and educational outcomes. In case of nutrition education programs, school's intention was to introduce students to basic skills of growing food and preparation of food. |
| | 2. Clarity in cost structure | Cost | Discussion on how the costs were maintained | Some food programs are free of charge, they get monetary supports from different community organizations. In paid programs the school made no profit to minimal profit. Any profit made from any program went to the program. |

| | | | | |
|---|---|---|---|---|
| | 3. Adapting resources to need | Easiness | Discussion how easy or difficult to manage the programs | Program leaders feel that it needs some preparation and planning, sometimes multitasking. At present, things are organized in away that they can run the programs efficiently. Secured fund made the program easy to run |
| | 4. Non-stigmatizing nature | Stigma | Discussion of avoiding stigma | Some programs are free for all to avoid stigma. When a particular group was provided food, school identified them and keep them anonymous |
| 2. Inner setting | 1. Support from the school staff | Team work | Discussion on how the programs work | The success of a program is outcome of a teamwork. It is important that having the involved persons such as teachers, staff in the same page. |
| | | Support from internal staff | Discussion on if program leader received supports from other teachers, and administration schools | Program leaders receive moral supports from the principals, teachers and other staff. This gives confidence that further support will be available when needed. Teachers distribute food to the class, helped registration for |

| | | | | |
|---|---|---|---|---|
| | | | | food-related activities. In few programs student volunteers help. |
| | 2. Sustainable leadership | Dependency | Discussion on if the programs were dependent on one person or system driven. | Some of the program leaders which is hired for a particular position such as community school coordinator would be hired. Other program leader (teachers) will be replaced by other teachers. |
| 3. Outer setting | 1. Outsourcing of fundings | Grants | Discussion source of funds they have | Schools receive grants and donations from different community organizations for breakfast programs, cooking classes, milk programs and other food activities |
| | | Financial support | Discussion on how available funds helps school food | Financial support is identified as an important support for school food and key factor for their success. They use funds for healthy food items including fruits and vegetables, ingredients for cooking classes and gardens. Funds helps to adopt new program. |

| | | | | |
|---|---|---|---|---|
| | | Importance of financial support | Discussion on how much significant the funds are. | The financial support from the community and partner organizations was vital for school food programs. Schools feel lucky to have financial assistance. Without this support schools would not be able to offer because some of the programs were totally dependent of financial support from the community. |
| | 2. Complimentary workforce from the community | Volunteers | Discussions on responsibilities of volunteers in schools | Community members, grant parents, retired persons, come and help in food programs and activities including breakfast and lunch programs, garden activities. |
| | | Volunteer supports | Discussions on how volunteers help | Volunteers are identified as one of the most important supports to school food. Without volunteers the programs would be different and, in some cases, impossible. |
| 4. Individual characteristics | 1. Constructive attitude | Perceptions | Discussions on significance of school food in schools | School food is considered important specially for students financially challenged. Healthy food is important for students. Leaders felt satisfaction in working for school food. It has |

| | | | | |
|---|---|---|---|---|
| | | | | become a part of education system because of its effects on education. Some participants has personal interest in food. |
| | 2. Optimistic views | Students' view | Discussion on students view on their school food and their involvement in school food | Students have positive attitude towards their school food. They think their school food are tasty and healthy. |
| | | Implications | Discussions on outcomes of the program | The outcomes of the food and related programs are positive. Food programs specifically, breakfast programs help students to start their day with full stomach and it has positive effects in their behaviours.<br>Students developed interest in food preparation and healthy eating from the nutrition education activities.<br>Students think that the activities they are involved in have positive effects in school food environments and their personal lives. Students learn leadership skill, time and money management |
| 5.Implementation process | 1. Flexibility in food selections | Student inputs | Discussion on if student's input is | Students' preference is monitored informally – from their |

| | | | | |
|---|---|---|---|---|
| | | | considered in food selections. | participation in the programs, and student's uptake and appreciation of particular food items. Menu is modified accordingly |
| | | Guidelines | Discussions on what guidelines or policy schools followed for food selection. | Schools follow the policy 711 as much as possible. Schools tried to select food from available healthy options |
| | 2. Customized approaches | Role of leaders | Discussions on what responsibilities the program leaders carry to deliver the food and related programs | The responsibilities of program leaders differed depending on the structure of the programs. They do the plannings. Program leaders manage the financial aspects including securing funds, buy groceries, ordered food from outside organizations, in some cases prepare food in hot lunch; make arrangements for cooking classes and sometimes deliver cooking classes. |

# Appendix H

## COREQ list

| Name of the Domain | Description | Status in the report including no of chapters, paragraphs where mentioned |
|---|---|---|
| Domain 1 Research team and reflexivity | | |
| Personal Characteristics | | |
| 1.Interviewer/facilitator | Which author/s conducted the interview or focus group | Mentioned in Chapter 3: 3.5.2.1 |
| 2.Credentials | What were the researcher's credentials? E.g. PhD, MD | Mentioned, title page |
| 3. Occupation | Credentials What was their occupation at the time of the study? | N/A |
| 4. Gender | Was the researcher male or female? | Mentioned, Chapter 3: 3.10 |
| 5. Experience and training | What experience or training did the researcher have? | Mentioned in Chapter 3: 3.10 |
| Relationship with participant | | |
| 6. Relationship established | Was a relationship established prior to study commencement? | Mentioned, Chapter 3: 3.3, 3.5.2.1 |
| 7. Participant knowledge of the interviewer | What did the participants know about the researcher? e.g. personal goals, reasons for doing the research | Mentioned, Chapter 3: 3.5.21<br>Appendix- (consent letters) |
| 8. Interviewer characteristics | What characteristics were reported about the interviewer/facilitator? e.g. Bias, assumptions, reasons and interests in the research topic | Mentioned, Chapter 3: 3.10 |
| Domain 2: study design | | |

| | | |
|---|---|---|
| Conceptual framework | | |
| 9. Methodological orientation and Theory | What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis | Mentioned, Chapter 2: 2.1.1,2.1.2, 2.3.4 |
| Participant selection | | |
| 10. Sampling | How were participants selected? e.g. purposive, convenience, consecutive, snowball | Mentioned, Chapter 3: 3.3, 3.4; Chapter 4: 4.3.1, 4.3.2; Chapter 5: 5.3.1, 5.3.2; Chapter 6: 6.3.1, 6.3.2 |
| 11. Method of approach | How were participants approached? e.g. face-to-face, telephone, mail, email | Mentioned, Chapter 3: 3.3, 3.5.2.1 |
| 12. Sample size | How many participants were in the study? | Mentioned, Chapter 3: 3.3, 3.4; Chapter 4: 4.3.1, 4.3.2; Chapter 5: 5.3.3, 5.3.2; Chapter 6: 6.3.1; 6.3.2 |
| 13. Non-participation | How many people refused to participate or dropped out? Reasons | Mentioned, Chapter 3: 3.3 |
| Setting | | |
| 14. Setting of data collection | Where was the data collected? e.g. home, clinic, workplace | Mentioned, Chapter 3: 3.5.1, 3.5.2 and 3.5.3 |
| 15. Presence of non-participants | Was anyone else present besides the participants and researchers? | N/A |
| 16. Description of sample | What are the important characteristics of the sample? e.g. demographic data, date Data collection | Chapter 3: 3.3, 3.4, 3.5 |
| 17. Interview guide | Were questions, prompts, guides provided by the authors? Was it pilot tested? | Chapter 3: 3.2.3, 3.2.4<br>Appendix (tools) |
| 18. Repeat interviews | Were repeat interviews carried out? If yes, how many? | N/A |
| 19. Audio/visual recording | Did the research use audio or visual recording to collect the data? | Mentioned, Chapter 3: 3.5.2 |

| | | |
|---|---|---|
| 20. Field notes | Were field notes made during and/or after the interview or focus group? | Mentioned, Chapter 3: 3.5 |
| 21. Duration | What was the duration of the interviews or focus group? | Mentioned, Chapter 3: 3.5.2 |
| 22. Data saturation | Was data saturation discussed? | Adequate |
| 23. Transcripts returned | Were transcripts returned to participants for comment and/or correction? | No |
| Domain 3: analysis and findings | | |
| Data analysis | | |
| 24. Number of data coders | How many data coders coded the data? | Mentioned, Chapter 3: 3.8 |
| 25. Description of the coding tree | Did authors provide a description of the coding tree? | Mentioned, Chapter 3: 3.8 Appendix-G |
| 26. Derivation of themes | Were themes identified in advance or derived from the data? | Mentioned, Chapter 6: 6.3.4 |
| 27. Software | What software, if applicable, was used to manage the data? | Mentioned, Chapter 3: 3.8; Chapter 4: 4.3.3; Chapter 5: 5.3.4; Chapter 6: 6.3.4 |
| 28. Participant checking | Did participants provide feedback on the findings | Mentioned, Chapter 3: 3.11 |
| Reporting | | |
| 29. Quotations presented | Were participant quotations presented to illustrate the themes / findings? Was each quotation identified? e.g. participant number | Yes, Chapter 5: 5.4.1-6, Chapter 6: 6.4.1-5 |
| 30. Data and findings consistent | Was there consistency between the data presented and the findings? | Yes, Chapter 5: 5.4.1-6, Chapter 6: 6.4.1-5 |
| 31. Clarity of major themes | Were major themes clearly presented in the findings? | Yes, Chapter 6: 6.4.1-5 |
| 32. Clarity of minor themes | Is there a description of diverse cases or discussion of minor themes | Yes, Chapter 6: 6.4.1-5 |

## Curriculum Vitae

**Candidate's Full Name:** Suchitra Roy

**Universities Attended** (with dates and degrees obtained):

University of Dhaka, Dhaka, Bangladesh. 2000-2005, MBBS (Bachelor of Medicine and Bachelor of Surgery)

**Publications:**

McKenna, M., Wall, J., Roy, S. (2020). What's on the menu? Succulent sustainability goes to school. Kevany, K.M.(Ed). *Plant based diets for succulence and sustainability* (pp. 203-216). Routledge.

**Conference Presentations:**

Suchitra Roy, Mary McKenna and Stephan Dombrowski. (2022, Nov 16 & 17). *Analyzing School Nutrition Policies across Canada: Implications for New Brunswick.* (Poster). Advancing New Brunswick: Using Research to Optimize Impact. New Brunswick Health Research Foundation. New Brunswick, Canada

Suchitra Roy & Mary McKenna. (2022, May 15-19). *School nutrition policy in Canada: Analysing current policies to inform future decision making.* (Poster- Online). 24th IUHPE World Conference on Health Promotion: Promoting Policies for Health, Well being and Equity. Montreal, Canada

Mary McKenna and Suchitra Roy. (2017, June 26-28). *What's in a Policy?* (Co-presentation) Children's Health and the Environment Workshop & Symposium: Moving Research to Action for Healthy Kids. Ontario, Canada